SCHEMMER

Design with Purpose. Build with Confidence.

DATE: May 9, 2024

FROM: The Schemmer Associates
Architects-Engineers-Planners
1044 North 115th Street, Suite 300
Omaha, Nebraska 68154-4436
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TO: Prospective Bidders and Plan Holders

RE: Addendum No. 2 to the Bidding Documents for:
Grand Island Fire Station No. 3
Schemmer Project No. 09285.001

This addendum is issued by the Architect to the Contractor. This Addendum shall be made a part of the Contract Documents. Acknowledge receipt of this Addendum shall be provided on the Bid Form. Failure to do so may subject Bidder to disqualification.

Prior approval of manufacturers is a general approval only for bidding purposes. Final approval of the products is contingent upon the submittal of product data and/or shop drawings which will have to meet the specific design requirements and the specifications.

This addendum consists of seventy-four (74) pages of written addendum items, including this sheet, and nine (9) pages of supplemental drawings.

THE SCHEMMER ASSOCIATES INC.

PRO ECT MANUAL

ARCHITECTURAL

I□□□ N□. SA-1
Added metal ladders to specification section 05-5000 Metal Fabrications.

I□□□ N□. SA-2
Added specification section 08-3323 Overhead Coiling Doors.

I□□□ N□. SA-3
Added approved alternate stone to specification section 04-4300 Stone Masonry.

I□□□ N□. SA-4
Granular insulating fill shall be Perlite Loose Fill insulation. Revised specification is provided which revises the references to Foam Cell Insulation.

I□□□ N□. SA-5
Removed Miscellaneous Steel from Unit Prices Form. Please see attached updated Specification Section 00-4322 Unit Prices.

I□□□ N□. SA-6
Upward Acting Sectional Doors are to be High Lift with Sidemount Jackshaft Operators. Doors are to have bottom section solid.

I□□□ N□. SA-7
In Specification Section 07-3113 Shingle Roofing Flasshing, Radiant Barrier Roof Sheathing is not part of the Project.

I□□□ N□. SA-8
In Specification Section 08-7100 Door Hardware, add the Door Hardware Groups.

MECHANICAL

I□□□ N□. SM-1 S□□□□□ 233423
Soler Palau is an acceptable manufacturer for exhaust fans.

I□□□ N□. SM-2 S□□□□□ 233439
Sky Blade is an acceptable manufacturer for HVLS fans.

I□□□ N□. SM-3 S□□□□□ 235533
Detroit Radiant Products Company is an acceptable manufacturer for gas fired unit heaters.

ELECTRICAL

I□□□ N□. SE-1 S□□□□□ 26-0533.13
Galvanized EMT to be used, not stainless steel EMT. See updated spec section attached for updated conduit types.

I□□□ N□. SE-1 S□□□□□□ 27-1000
Panduit is an acceptable manufacturer for Division 27

I□□□ N□. SE-1 S□□□□□□ 28-4600
Potter is an acceptable manufacturer for the fire alarm system.

DRA ING S

ARCHITECTURAL

I□□□ N□. DA-1, S□□□□A101
Added metal ladder to Mechanical Room 205 for maintenance access on 2/A101 Second Floor Plan.

I□□□ N□. DA-2, S□□□□A101
Revised desk countertops to be Quartz for bedrooms 118, 119, and 120 on Enlarged Plan 4/A101.

I□□□ N□. DA-3, S□□□□A203
Added metal ladder to Mechanical Room 205 for maintenance access on 3/A203 Building Section.

I□□□ N□. DA-4, S□□□□A203
Building sections 3, 5, 6/A203 have been modified to stop CMU at 20’ above finish floor in the apparatus bays.

I□□□ N□. DA-5, S□□□□A504
Revised keynote and material callout for stainless steel countertop to be 0640.61 “QUARTZ SURFACE COUNTERTOP WITH 4” SPLASH AS SHOWN.” QUARTZ SURFACE COUNTERTOP WITH 4” SPLASH AS SHOWN” on Millwork Details 7/A504 and 10/A504.

I□□□ N□. DA-6, S□□□□A502
Revised millwork section 19 and 20/A502 to provide dimensions and additional keynote notes. The shop bench is to made out of 2x4 framing with plywood and stainless steel countertop. Glulam is not required for the shop bench.

I□□□ N□. DA-7, S□□□□A504
Revised keynote 1230.19 on detail 6/A504 to be 0640.61 “QUARTZ SURFACE COUNTERTOP WITH 4” SPLASH AS SHOWN.”

I□□□ N□. DA-8, S□□□□A404
Add the Door Hardware Sets to the Door Schedule.

STRUCTURAL

I□□□ N□. DS-1 S□□□□S01 Added deferred submittal section.

I□□□ N□. DS-2 S□□□□S303 Changed verbage in detail 17/S303 to clarify intent of glulam truss delegated design.

I□□□ N□. DS-2 S□□□□S304 Clarified top of CMU elevation applicable in apparatus bay in details 6/S304 and 8/S304.

I□□□ N□. DS-2 S□□□□S305 Clarified top of CMU elevation applicable in apparatus bay in details 6/S305.

END OF ADDENDUM NO. 2

SECTION 00-4322 – UNIT PRICES FORM

1.01 BID INFORMATION

A. Bidder: _____.

B. Project Name: Grand Island Fire Station No. 3

C. Project Description: New Fire Station

D. Project Location: 2310 S. Webb Rd., Grand Island, NE 68803

E. Owner: City of Grand Island

F. Architect: Dan Kerns, AIA, NCARB - Schemmer

G. Architect Project Number: 09285.001

1.02 BID FORM SUPPLEMENT

A. This form is required to be attached to the Bid Form.

B. If the unit price does not affect the Work of this Contract, the Bidder shall indicate "NOT APPLICABLE."

1.03 UNIT PRICES

A. Unit-Price No. 1: Removal of unsatisfactory soil and replacement with structural fill material.
   1. _____ dollars ($_____) per unit.

B. Unit-Price No. 2: Cutting and patching of concrete floor slabs.
   1. _____ dollars ($_____) per unit.

1.04 SUBMISSION OF BID SUPPLEMENT

A. Respectfully submitted this ____ day of _____, 2024.

B. Submitted By:_____

   (Insert name of bidding firm or corporation).

C. Authorized Signature:_____

   (Handwritten signature).

D. Signed By:_____

   (Type or print name).

E. Title:_____

END OF DOCUMENT 00 43 22

SECTION 04-2000 – UNIT MASONRY ASSEMBLIES

PART 1 - GENERAL

1.01 RELATED DOCUMENTS

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

B. General Coordination Procedures, (Reference Specification Section 01 31 00) General Contractor shall coordinate construction operations included in different Sections of the Specifications to ensure efficient and orderly installation of each part of the Work that depend on each other for proper installation, connection, and operation.

1.02 SUMMARY

A. This Section includes unit masonry assemblies consisting of the following:
   1. Concrete masonry units (CMU's).
   2. Mortar and grout.
   3. Reinforcing steel.
   4. Masonry joint reinforcement.
   5. Ties and anchors.
   6. Embedded flashing.
   7. Miscellaneous masonry accessories.
   8. Masonry-cell insulation.

B. Related Sections include the following:
   1. Division 07 Section - Fluid Applied Membrane Air Barriers for membranes applied to exterior face of gypsum sheathing at exterior masonry cavity walls.
   2. Division 07 Section – Water and Vapor barriers.
   3. Division 07 Section - Flashing and Sheet Metal for exposed sheet metal flashing.
   4. Division 07 Section - Firestopping for firestopping at openings in masonry walls.
   5. Division 07 Section - Joint Sealants for sealing control and expansion joints in unit masonry.
   6. Division 07 Section - Building Insulation for cavity wall insulation.

C. Products furnished, but not installed, under this Section include the following:
   1. Dovetail slots for masonry anchors, installed under Division 03 Section - Cast-in-Place Concrete.

D. Products installed, but not furnished, under this Section include the following:
   1. Steel lintels and shelf angles for unit masonry, furnished under Division 05 Section – Structural Steel.
   2. Manufactured reglets in masonry joints for metal flashing, furnished under Division 07 Section - Sheet Metal Flashing and Trim.
   3. Cast-stone trim in unit masonry.
   4. Cavity wall insulation

1.03 DEFINITIONS

A. CMU(s): Concrete masonry unit(s).

B. Reinforced Masonry: Masonry containing horizontal reinforcing and vertical steel reinforcing in grouted cells.

C. MCAA: Masonry Contractors Association of America

1.04 SUBMITTALS

A. Product Data: For each type of product indicated.
B. Shop Drawings: For the following:
   1. Masonry Units: Show sizes, profiles, coursing, and locations of special shapes.
   2. Reinforcing Steel: Detail bending and placement of unit masonry reinforcing bars. Comply with ACI 315, "Details and Detailing of Concrete Reinforcement." Show elevations of reinforced walls.
   3. Fabricated Flashing: Detail corner units, end-dam units, and other special applications.
C. Samples for Verification: For each type and color of the following:
   1. Pigmented and colored-aggregate mortar. Make Samples using same sand and mortar ingredients to be used on Project. Label Samples to indicate types and amounts of pigments used.
   2. Weep holes/vents.
   3. Accessories embedded in masonry.
D. List of Materials Used in Constructing Mockups: List generic product names together with manufacturers, manufacturers' product names, model numbers, lot numbers, batch numbers, source of supply, and other information as required to identify materials used. Include mix proportions for mortar and grout and source of aggregates.
   1. Submittal is for information only. Neither receipt of list nor approval of mockup constitutes approval of deviations from the Contract Documents unless such deviations are specifically brought to the attention of Architect and approved in writing.
E. Qualification Data: For testing agency.
F. Installer Qualifications: Submit evidence of contractor state license, MCAA company certification and personnel training and experience in constructing masonry structures of similar nature to this project, with a minimum of 5 years of on the job successful construction experience. List project superintendent for masonry work's, experience, training and certifications.
G. Material Certificates: Include statements of material properties indicating compliance with requirements including compliance with standards and type designations within standards. Provide for each type and size of the following:
   1. Masonry units.
      a. Include material test reports substantiating compliance with requirements.
      b. For masonry units used in structural masonry, include data and calculations establishing average net-area compressive strength of units.
   2. Cementitious materials. Include brand, type, and name of manufacturer.
   3. Preblended, dry mortar mixes. Include description of type and proportions of ingredients.
   4. Grout mixes. Include description of type and proportions of ingredients.
   5. Reinforcing bars.
   6. Joint reinforcement.
   7. Anchors, ties, and metal accessories.
H. Mix Designs: For each type of mortar and grout. Include description of type and proportions of ingredients.
   1. Include test reports, per ASTM C 780, for mortar mixes required to comply with property specification.
   2. Include test reports, per ASTM C 1019, for grout mixes required to comply with compressive strength requirement.
I. Cold-Weather Procedures: Detailed description of methods, materials, and equipment to be used to comply with cold-weather requirements.

1.05 QUALITY ASSURANCE

A. Testing Agency Qualifications: An independent agency qualified according to ASTM C 1093 for testing indicated, as documented according to ASTM E 548.
B. Applicator's Qualifications:

1. Supervision: Maintain competent supervisor who is at Project during times specified Work is in progress, and, who is experienced in installing systems similar to type and scope required for Project.
2. Experience: Company licensed in the State where the work will be performed and a MCAA certified company in good standing with not less than 5 years continuous experience under the current name in performing specified work similar in design, products, and extent to scope of this Project; with a record of successful in-service performance; and with sufficient production capability, facilities, and personnel to produce required Work.
3. Upon request, submit list of a minimum of 5 completed projects of comparable or greater size and complexity to this Work. Include for each project:
    a. Project name and location.
    b. Name and contact information for Owner.
    c. Name and contact information of General Contractor (if applicable).
    d. Name and contact information of Architect.
    e. Date of completion.

C. Source Limitations for Masonry Units: Obtain exposed masonry units of a uniform texture and color, or a uniform blend within the ranges accepted for these characteristics, through one source from a single manufacturer for each product required.

D. Source Limitations for Mortar Materials: Obtain mortar ingredients for each type exposed unpainted masonry of a uniform quality, including color, from a single manufacturer for each cementitious component and from one source or producer for each aggregate.

E. Preinstallation Conference: Conduct conference at Project site to comply with requirements in Division 01 Section - Project Management and Coordination.

1.06 DELIVERY, STORAGE, AND HANDLING

A. Store masonry units on elevated platforms in a dry location. If units are not stored in an enclosed location, cover tops and sides of stacks with waterproof sheeting, securely tied. If units become wet, do not install until they are dry.

B. Store cementitious materials on elevated platforms, under cover, and in a dry location. Do not use cementitious materials that have become damp.

C. Store aggregates where grading and other required characteristics can be maintained and contamination avoided.

D. Deliver preblended, dry mortar mix in moisture-resistant containers designed for lifting and emptying into dispensing silo. Store preblended, dry mortar mix in delivery containers on elevated platforms, under cover, and in a dry location or in a metal dispensing silo with weatherproof cover.

E. Store masonry accessories, including metal items, to prevent corrosion and accumulation of dirt and oil.

1.07 PROJECT CONDITIONS

A. Protection of Masonry: During construction, cover tops of walls, projections, and sills with waterproof sheeting at end of each day's work. Cover partially completed masonry when construction is not in progress.
1. Extend cover a minimum of 24 inches down both sides and hold cover securely in place.
2. Where 1 wythe of multiwythe masonry walls is completed in advance of other wythes, secure cover a minimum of 24 inches down face next to unconstructed wythe and hold cover in place.

B. Do not apply uniform floor or roof loads for at least 12 hours and concentrated loads for at least 3 days after building masonry walls or columns.

C. Stain Prevention: Prevent grout, mortar, and soil from staining the face of masonry to be left exposed or painted. Immediately remove grout, mortar, and soil that come in contact with such masonry.
   1. Protect base of walls from rain-splashed mud and from mortar splatter by spreading coverings on ground and over wall surface.
   2. Protect sills, ledges, and projections from mortar droppings.
   3. Protect surfaces of window and door frames, as well as similar products with painted and integral finishes, from mortar droppings.
   4. Turn scaffold boards near the wall on edge at the end of each day to prevent rain from splashing mortar and dirt onto completed masonry.

D. Cold-Weather Requirements: Do not use frozen materials or materials mixed or coated with ice or frost. Do not build on frozen substrates. Remove and replace unit masonry damaged by frost or by freezing conditions. Comply with cold-weather construction requirements contained in ACI 530.1/ASCE 6/TMS 602.
   1. Cold-Weather Cleaning: Use liquid cleaning methods only when air temperature is 40 deg F and above and will remain so until masonry has dried, but not less than 7 days after completing cleaning.

E. Hot-Weather Requirements: Comply with hot-weather construction requirements contained in ACI 530.1/ASCE 6/TMS 602.

PART 2 - PRODUCTS

2.01 MANUFACTURERS

A. Source Limitations for Masonry Units: Obtain exposed masonry units of a uniform texture and color, or a uniform blend within the ranges accepted for these characteristics, from single source from single manufacturer for each product required.

B. Source Limitations for Mortar Materials: Obtain mortar ingredients of a uniform quality, including color for exposed masonry, from single manufacturer for each cementitious component and from single source or producer for each aggregate.

2.02 PERFORMANCE REQUIREMENTS

A. Provide unit masonry that develops indicated net-area compressive strengths at 28 days.
   1. Determine net-area compressive strength of masonry from average net-area compressive strengths of masonry units and mortar types (unit-strength method) according to TMS 602/ACI 530.1/ASCE 6.

2.03 MASONRY UNITS, GENERAL

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

B. Fire-Resistance Ratings: Where indicated, provide units that comply with requirements for fire-resistance ratings indicated as determined by testing according to ASTM E 119, by equivalent masonry thickness, or by other means, as acceptable to authorities having jurisdiction.

2.04 CONCRETE MASONRY UNITS (CMU'S)

A. Shapes: Provide shapes indicated and as follows:
   1. Provide special shapes for lintels, corners, jambs, sashes, movement joints, headers, partial height wall caps, bonding, and other special conditions.

2. Provide custom shapes for all outside corners that are not 90 degrees.
3. Provide bullnose units at all exposed interior outside corners, including corners of door and window openings, of finished CMU walls and bullnosed blocks with solid top at CMU window sills not indicated to receive other sill material on top of the CMU sill.
    a. Bullnoses may be site-tooled for standard and burnished block provided mockups for site tooling and finishing are approved by Architect.
    b. Provide square-edged units for other outside corners, unless otherwise indicated.

B. Concrete Masonry Units: ASTM C 90.
1. Unit Compressive Strength: Per Drawings.
2. Weight Classification: Normal weight, unless otherwise indicated.
3. Size (Width): Manufactured to dimensions 3/8 inch less than nominal dimensions.
4. Exposed Faces: Provide color and texture matching the range represented by Architect's sample.

2.05 MASONRY LINTELS

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

2.06 MORTAR AND GROUT MATERIALS

A. Portland Cement: ASTM C 150, Type IL. Provide natural color cement with pigments as required to produce mortar color indicated:
1. As selected by Architect from full range of available colors.

B. Hydrated Lime: ASTM C 207, Type S.

C. Water-Repellent Admixture: Liquid water-repellent mortar admixture intended for use with CMUs only, containing integral water repellent by same manufacturer.
1. Products: Subject to compliance with requirements, provide one of the following:
    a. ACM Chemistries, Inc.; RainBloc for Mortar.
    b. BASF; MasterPel 240 Mortar Admixture.
    c. Grace Construction Products, W. R. Grace & Co. - Conn.; Dry-Block Mortar Admixture.

D. Aggregate for Mortar: ASTM C 144.
1. For mortar that is exposed to view, use washed aggregate consisting of natural sand or crushed stone.
2. For joints less than 1/4 inch thick, use aggregate graded with 100 percent passing the No. 16 sieve.

E. Aggregate for Grout: ASTM C 404.

2.07 REINFORCEMENT

A. Uncoated Steel Reinforcing Bars: ASTM A 615/A 615M or ASTM A 996/A 996M, Grade 60.

B. Masonry Joint Reinforcement, General: ASTM A 951/A 951M.
1. Interior Walls: Hot-dip galvanized, carbon steel.
2. Exterior Walls: Stainless Steel Type 304.
3. Wire Size for Side Rods: 0.187-inch diameter.
4. Wire Size for Cross Rods: 0.148-inch diameter.
5. Wire Size for Veneer Ties: 0.187-inch diameter.
6. Spacing of Cross Rods, Tabs, and Cross Ties: Not more than 16 inches o.c.
7. Provide in lengths of not less than 10 feet, with prefabricated corner and tee units.

C. Masonry Joint Reinforcement for Single-Wythe Masonry: Either ladder or truss type with single pair of side rods, unless otherwise noted in Structural Drawings or Specifications.

D. Masonry Joint Reinforcement for Multiwythe Masonry:
   1. Adjustable (two-piece) type, either ladder or truss design, with one side rod at each face shell of backing wythe unless otherwise noted in Structural Drawings or specifications, and with separate adjustable ties with pintle-and-eye connections having a maximum adjustment of 1-1/4 inches. Size ties to extend at least halfway through facing wythe but with at least 5/8-inch cover on outside face.
   2. Available products:
      a. Dur-O-Wall; Truss design DA3700 Dur-O-Eye.
      b. Wire-Bond; Series 900 Level Hook and Eye Truss.

2.08 TIES AND ANCHORS

A. Materials: Provide ties and anchors specified in subsequent paragraphs that are made from materials that comply with subparagraphs below, unless otherwise indicated.
   1. Stainless Steel, Type 304, ASTM A580/ASTM 580M.
B. Wire Ties, General: Unless otherwise indicated, size wire ties to extend at least halfway through veneer but with at least 5/8-inch cover on outside face. Outer ends of wires are bent 90 degrees and extend 2 inches parallel to face of veneer.
C. Adjustable Anchors for Connecting to Structure: Provide anchors that allow vertical or horizontal adjustment but resist tension and compression forces perpendicular to plane of wall.
   1. Connector Section for Concrete: Dovetail tabs for inserting into dovetail slots in concrete and attached to tie section; formed from 0.053-inch- thick, steel sheet, galvanized after fabrication.
D. Adjustable Masonry-Veneer Anchors at metal studs
   1. General: Provide anchors that allow vertical adjustment but resist tension and compression forces perpendicular to plane of wall, for attachment over sheathing to wood or metal studs, and as follows:
      a. Structural Performance Characteristics: Capable of withstanding a 100-lbf load in both tension and compression without deforming or developing play in excess of 0.05 inch.
   2. Masonry Anchors for Uncoursed or Random Coarsed Stone Masonry at CMU Back-up: Galvanized ties that are bent in the form of triangular loops designed to be attached to masonry joint reinforcement with vertical wires passing through ties and through eyes projecting from masonry joint reinforcement.
      a. System provides for vertical adjustment for stone pattern indicated in Division 04, Section “Stone Masonry”.
      b. Available Products:
         1) Hohmann & Barnard, Inc,; HVR-295 V.
         2) Wire Bond; Stone Tab Ladder.
   3. Screw-Attached, Masonry-Veneer Anchors: Units consisting of a wire tie and a metal anchor section.
      a. Anchor Section: Rib-stiffened, sheet metal plate with screw holes top and bottom, and having slotted holes for inserting vertical legs of wire tie specially formed to fit anchor section.
      b. Fabricate sheet metal anchor sections and other sheet metal parts from 0.067-inch-thick, Stainless Steel, Type 304, ASTM A580/ASTM 580M.
      c. Wire Ties: Triangular-, rectangular-, or T-shaped wire ties fabricated from 0.188-inch-diameter, Stainless Steel, Type 304, ASTM A580/ASTM 580M.
      d. Available Products: Basis of Design Product**[s]** are:
         1) For Coursed Masonry: Hohmann & Barnard, Inc.
            a) X-Seal Anchor
            b) HB-213-2X Anchor

c) Provide with membrane flashing tape at air barrier, provided and installed under Division 07 “Air Barrier” Section(s), or : Hohmann & Barnard, Inc. X-Seal Tape may be substituted if allowed by air barrier manufacturer.

4. Stainless-Steel Drill Screws for Steel Studs: Proprietary fastener consisting of carbon-steel drill point and 300 Series stainless-steel shank, complying with ASTM C 954 except manufactured with hex washer head and neoprene washer, No. 10 diameter by length required to penetrate steel stud flange with not less than three exposed threads.
   a. Available Products:
      1) Dayton Superior Corporation, Dur-O-Wal Division; Stainless Steel SX Fastener.
      2) ITW Buildex; Scots long life Teks.

2.09 EMBEDDED FLASHING MATERIALS

A. Flexible Flashing (Copper Composite): For flashing not exposed to the exterior, use the following, unless otherwise indicated:
   1. Copper-Laminated Flashing: ASTM B370, CDA Alloy 110, 3-oz./sq. ft. copper core laminated polymer fabric on both sides with non-asphaltic adhesive. Extend flashing past face of veneer and trim flush after inspection.
      a. Product:
         1) York Manufacturing, Inc.; York Copper Fabric Flashing, “Multi-Flash 500”.
         2) STS Coatings, Inc.; Wall Guardian Copper TWF
         3) Wire-Bond, Inc.; Copper Seal
   2. Copper Laminated Flashing shall not be used for any flashings that will be exposed to view in the completed work. Refer to Division 07 Section “Sheet Metal Flashing and Trim” for material type(s) for embedded flashings that are exposed to view or partially exposed to view. General Contractor shall coordinate responsibility to provide and install other flashing types.

B. Adhesives, Primers, and Seam Tapes for Flashings: Flashing manufacturer's standard products or products recommended by flashing manufacturer for bonding flashing sheets to each other and to substrates.
   1. One part 100% solids, solvent-free formulated silyl-terminated polyether (STPE), ASTM C920-11, Type S, Grade NS, Class 50, York “Universeal US100” or equivalent.

C. Termination bars: Provide stainless steel termination bars in cavity walls where copper flashing will be installed with termination bars to concrete block backup and with waterproof sealant to protect top side of terminations refer to Division 07 section on “Sealant”.
   1. Do not use termination bars at face of sheathing unless specifically detailed otherwise in the Drawings. Through-wall flashings at stud construction shall extend through and turn up behind exterior sheathing and ci insulation. Air barrier system materials (per Division 07 Air Barrier Sections) shall lap over and down the face of the through-wall flashings.
   2. Termination Bars for Flexible Flashing: #304 Stainless steel sheet 0.090 inch by 3/4 inches minimum with a 3/16 inch minimum sealant flange at top, 8 inch oc pre-punched bolt holes minimum.
   3. Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:
      a. OMG Roofing Products
      b. Hohmann & Barnard, Inc. (T1 with Foam-Tite option)
      c. Wire-Bond.

2.10 MISCELLANEOUS MASONRY ACCESSORIES

A. Compressible Filler: Premolded filler strips complying with ASTM D 1056, Grade 2A1; compressible up to 35 percent; of width and thickness indicated; formulated from neoprene.

B. Preformed Control-Joint Gaskets: Made from styrene-butadiene-rubber compound, complying with ASTM D 2000, Designation M2AA-805 and designed to fit standard sash block and to maintain lateral stability in masonry wall; size and configuration as indicated.

C. Bond-Breaker Strips: Asphalt-saturated, organic roofing felt complying with ASTM D 226, Type I (No. 15 asphalt felt).

D. Weep/Vent Products:
   1. Cellular Plastic Weep/Vent: One-piece, flexible extrusion made from UV-resistant polypropylene copolymer, full height and width of head joint and depth 1/8 inch less than depth of outer wythe, in color selected from manufacturer's standard.
      a. Available Products:
         1) Advanced Building Products Inc.; Mortar Maze weep vent.
         2) Dayton Superior Corporation, Dur-O-Wal Division; Cell Vents.
         3) Heckmann Building Products Inc.; No. 85 Cell Vent.
         4) Hohmann & Barnard, Inc.; Quadro-Vent.
         5) Wire-Bond; Cell Vent.

E. Cavity Drainage Material: Free-draining mesh, made from polymer strands that will not degrade within the wall cavity.
   1. Provide one of the following configurations:
      a. Strips, full-depth of cavity and 10 inches wide, with dovetail shaped notches 7 inches deep that prevent mesh from being clogged with mortar droppings.
      b. Strips, not less than 1-1/2 inches thick and 10 inches wide, with dimpled surface designed to catch mortar droppings and prevent weep holes from being clogged with mortar.
   2. Available Products:
      a. Advanced Building Products Inc.; Mortar Break II.
      b. Dayton Superior Corporation, Dur-O-Wal Division; Polytite MortarStop.
      c. Mortar Net USA, Ltd.; Mortar Net.

F. Reinforcing Bar Positioners: Wire units designed to fit into mortar bed joints spanning masonry unit cells with loops for holding reinforcing bars in center of cells. Units are formed from 0.142-inch steel wire, hot-dip galvanized after fabrication. Provide units with either two loops or four loops as needed for number of bars indicated.
   1. Available Products:
      a. Dayton Superior Corporation, Dur-O-Wal Division; D/A 810, D/A 812 or D/A 817.
      b. Heckmann Building Products Inc.; No. 376 Rebar Positioner.
      c. Hohmann & Barnard, Inc.; #RB or #RB-Twin Rebar Positioner.
      d. Wire-Bond; O-Ring or Double O-Ring Rebar Positioner.
   2. In event of conflict with reinforcing bar positions required in Structural Drawings, provide type indicated in Structural Drawings.

2.11 MASONRY-CELL INSUALTION

A. Where indicated, units shall contain masonry cell insulation designed for installing in cores of masonry units.

B. Loose-Fill Insulation: Perlite complying with ASTM C549, Type II (surface treated for water repellency and limited moisture absorption) or Type IV (surface treated for water repellency and to limit dust generation).

2.12 MASONRY CLEANERS

A. Proprietary Acidic Cleaner: Manufacturer's standard-strength cleaner designed for removing mortar/grout stains, efflorescence, and other new construction stains from new masonry without discoloring or damaging masonry surfaces. Use product expressly approved for intended use by cleaner manufacturer and manufacturer of masonry units being cleaned. The use of muriatic acid is prohibited.

1. Available Manufacturers:
   a. Diedrich Technologies, Inc.
   b. EaCo Chem, Inc.
   c. ProSoCo, Inc.
2. Do not use materials or methods that can damage masonry finishes. Use only manufacturer's approved products and methods.

2.13 MORTAR AND GROUT MIXES

A. General: Do not use admixtures, including pigments, air-entraining agents, accelerators, retarders, water-repellent agents, antifreeze compounds, or other admixtures, unless otherwise indicated.
   1. Do not use calcium chloride in mortar or grout.
   2. Limit cementitious materials in mortar to portland cement and lime.
   3. Limit cementitious materials in mortar for exterior masonry to portland cement and lime.
   4. Add cold-weather admixture (if used) at same rate for all mortar that will be exposed to view, regardless of weather conditions, to ensure that mortar color is consistent.

B. Mortar for Unit Masonry: Comply with ASTM C 270, Property Specification.

C. Pigmented Mortar: Use colored cement product.
   1. Application: Use pigmented mortar for exposed mortar joints at all veneer masonry.
   2. Final colors as approved by mock-up review.

D. Grout for Unit Masonry: Comply with ASTM C 476.
   1. Use grout of type indicated or, if not otherwise indicated, of type (fine or coarse) that will comply with Table 1.15.1 in ACI 530.1/ASCE 6/TMS 602 for dimensions of grout spaces and pour height.
   2. Provide grout with a slump of 8 to 11 inches as measured according to ASTM C 143/C 143M.

2.14 SOURCE QUALITY CONTROL

A. Owner will engage a qualified independent testing agency to perform source quality-control testing indicated below:
   1. Payment for these services will be made by Owner.
   2. Retesting of materials failing to comply with specified requirements shall be done at Contractor's expense.

B. Clay Masonry Unit Test: For each type of unit furnished, per ASTM C 67.

C. Concrete Masonry Unit Test: For each type of unit furnished, per ASTM C 140.

PART 3 - EXECUTION

3.01 EXAMINATION

A. Examine conditions, with Installer present, for compliance with requirements for installation tolerances and other conditions affecting performance of work.
   1. For the record, prepare written report, endorsed by Installer, listing conditions detrimental to performance of work.
   2. Verify that foundations are within tolerances specified.
   3. Verify that reinforcing dowels are properly placed.

B. Before installation, examine rough-in and built-in construction for piping systems to verify actual locations of piping connections.

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

3.02 COORDINATION

A. Contractor is responsible to coordinate between trades prior to concrete slab pours to avoid conflicts with CMU wall construction, including but not limited to the following:
   1. Positions, sizes, and other requirements for locating all reinforcing coming up through slab. Unless otherwise noted in Structural Drawings, post-installation with epoxy anchors is not an equivalent method of installation. Any request to substitute post-installed anchors in masonry construction should be pre-approved by Contractor via RFI to the Structural Engineer of record, and the Structural Engineer may reject requests for such substitution.
   2. Coordinate all conduits and pipes as shown on MEP drawings for concealed installation to greatest extent possible.
   3. Reinforced / grouted cells will not be in conflict with electrical conduits, plumbing pipes, or other items built into CMU cells. This includes the quantity, sizes, and locations to comply with all notes, specific location details, and typical details, as indicated in the Structural Drawings.
      a. A large number of conduits in a line could cause non-compliance with Structural requirements, either for the CMU wall, or in the concrete slab. In areas where many conduits are required for electrical items, request clarification from Architect and Structural Engineer as to allowable routings of conduits to avoid adverse impact on the structural system.
   4. Storm Shelters: Confirm that perimeter walls of the impact-resisting structure of the Storm Shelter complies with the following:
      a. No conduits, pipes, or other similar construction is allowed inside the cells of 8” CMU.
      b. At 12” CMU, Where conduits or pipes are indicated in Drawings to be located inside CMU wall construction, locate them inside the cells of CMU subject to the following requirements:
         1) No pipe or conduit larger than 1” shall be located in any CMU cell of the impact-resisting structure of the Storm Shelter.
         2) Only one pipe or conduit is allowed inside each CMU cell, and all pipe or conduit shall be located tight to the interior wall face of the CMU cell.
         3) Only one recessed wall box is allowed per CMU cell, and all recessed boxes shall be located on the interior side of CMU only.
         4) Additionally, locate pipe and conduit such that it will not interfere with required cell reinforcing.
      c. Any electrical devices indicated in conflict with a. and b. above must have electrical wiring routed to the device(s) within surface mounted raceway. Obtain approval of Architect for routing to minimize visual clutter, including minimizing the number of bends in exposed raceways.
      d. Coordinate specific structural requirements indicated in Structural Drawings and notes for CMU at storm shelter construction, which likely differs from other areas of CMU. Such differences may include, but are not limited to, such things as:
         1) Fully grouted cells throughout
         2) More stringent requirements for cell or bond beam reinforcement
         3) More stringent requirements for size or spacing of horizontal joint reinforcing.
         4) No allowance for use of post-installed anchors, even if other CMU walls are allowed to use post-installed anchors, including by approved substitution requests unless storm shelter CMU is specifically approved by such requests.
         5) No pipe, conduit or other penetration greater than 2” diameter is allowed through the impact-resisting structure without providing impact baffling.
      e. In event of apparent conflicts, notify Architect to confirm the proper resolution.
   5. Confirm sill sealer gaskets are installed where studs meet concrete slabs, prior to beginning veneer installation.

3.03 INSTALLATION, GENERAL

A. Thickness: Build cavity and composite walls and other masonry construction to full thickness shown. Build single-wythe walls to actual widths of masonry units, using units of widths indicated.
B. Build chases and recesses to accommodate items specified in this and other Sections.
C. Leave openings for equipment to be installed before completing masonry. After installing equipment, complete masonry to match the construction immediately adjacent to opening.
D. Use full-size units without cutting if possible. If cutting is required to provide a continuous pattern or to fit adjoining construction, cut units with motor-driven saws; provide clean, sharp, unchipped edges. Allow units to dry before laying unless wetting of units is specified. Install cut units with cut surfaces and, where possible, cut edges concealed. Do not install any cut units at corner conditions.
E. Select and arrange units for exposed unit masonry to produce a uniform blend of colors and textures.
    1. Mix units from several pallets or cubes as they are placed.
F. Do not wet CMU.
G. Comply with construction tolerances in ACI 530.1/ASCE 6/TMS 602 and with the following:
    1. For conspicuous vertical lines, such as external corners, door jambs, reveals, and expansion and control joints, do not vary from plumb by more than 1/8 inch in 10 feet, 1/4 inch in 20 feet, or 1/2 inch maximum.
    2. For vertical alignment of exposed head joints, do not vary from plumb by more than 1/4 inch in 10 feet, or 1/2 inch maximum.
    3. For conspicuous horizontal lines, such as lintels, sills, parapets, and reveals, do not vary from level by more than 1/8 inch in 10 feet, 1/4 inch in 20 feet, or 1/2 inch maximum.
    4. For exposed bed joints, do not vary from thickness indicated by more than plus or minus 1/8 inch, with a maximum thickness limited to 1/2 inch. Do not vary from bed-joint thickness of adjacent courses by more than 1/8 inch.
    5. For exposed head joints, do not vary from thickness indicated by more than plus or minus 1/8 inch. Do not vary from adjacent bed-joint and head-joint thicknesses by more than 1/8 inch.
    6. For faces of adjacent exposed masonry units, do not vary from flush alignment by more than 1/16 inch except due to warpage of masonry units within tolerances specified for warpage of units.
    7. For exposed bed joints and head joints of stacked bond, do not vary from a straight line by more than 1/16 inch from one masonry unit to the next.

3.04 LAYING MASONRY WALLS

A. Lay out walls in advance for accurate spacing of surface bond patterns with uniform joint thicknesses and for accurate location of openings, movement-type joints, returns, and offsets. Avoid using less-than-half-size units, particularly at corners, jambs, and, where possible, at other locations.
B. Bond Pattern for Exposed Masonry: Unless otherwise indicated, lay exposed masonry in running bond; do not use units with less than nominal 4-inch horizontal face dimensions at corners or jambs.

C. Lay concealed masonry with all units in a wythe in running bond or bonded by lapping not less than 4-inches. Bond and interlock each course of each wythe at corners. Do not use units with less than nominal 4-inch horizontal face dimensions at corners or jambs.
D. Stopping and Resuming Work: Stop work by racking back units in each course from those in course below; do not tooth. When resuming work, clean masonry surfaces that are to receive mortar, remove loose masonry units and mortar.
E. Built-in Work: As construction progresses, build in items specified in this and other Sections. Fill in solidly with masonry around built-in items. Install pipes and conduit as shown on MEP

drawings, and conceal within masonry cells all locations. Alert Architect to conflicts before installation.

F. Fill space between steel frames and masonry solidly with mortar, unless otherwise indicated.

G. Where built-in items are to be embedded in cores of hollow masonry units, place a layer of metal lath, wire mesh, or plastic mesh in the joint below and rod mortar or grout into core.

H. Fill cores in hollow concrete masonry units with grout 24 inches under bearing plates, beams, lintels, posts, and similar items, unless otherwise indicated.
   1. Fill all cores of CMU at storm shelter impact-resisting perimeter walls, and any other locations so indicated in Structural Drawings.

I. Build non-load-bearing interior partitions full height of story to underside of solid floor or roof structure above, unless otherwise indicated.
   1. Install compressible filler in joint between top of partition and underside of structure above.
   2. Fasten partition top anchors to structure above and build into top of partition. Grout cells of CMUs solidly around plastic tubes of anchors and push tubes down into grout to provide 1/2-inch clearance between end of anchor rod and end of tube. Space anchors 48 inches o.c., unless otherwise indicated.
   3. Wedge non-load-bearing partitions against structure above with small pieces of tile, slate, or metal. Fill joint with mortar after dead-load deflection of structure above approaches final position.
   4. At fire-rated partitions, treat joint between top of partition and underside of structure above to comply with Division 07 Section - Fire-Resistive Joint Systems.

3.05 MORTAR BEDDING AND JOINTING

A. Lay concrete masonry units as follows:
   1. With face shells fully bedded in mortar and with head joints of depth equal to bed joints.
   2. With webs fully bedded in mortar in all courses of piers, columns, and pilasters.
   3. With webs fully bedded in mortar in grouted masonry, including starting course on footings.
   4. With entire units, including areas under cells, fully bedded in mortar at starting course on footings where cells are not grouted.

B. Lay solid masonry units with completely filled bed and head joints; butter ends with sufficient mortar to fill head joints and shove into place. Do not deeply furrow bed joints or slush head joints.

C. Mortar joints to be tooled (concave), except special joints as detailed.

3.06 CAVITY WALLS

A. Bond wythes of cavity walls together using one of the following methods:
   1. Individual Metal Ties: Provide ties as shown installed in horizontal joints, but not less than one metal tie for 1.77 sq. ft. of wall area spaced not to exceed 16 inches o.c. horizontally and 16 inches o.c. vertically. Stagger ties in alternate courses. Provide additional ties within 12 inches of openings and space not more than 36 inches apart around perimeter of openings. At intersecting and abutting walls, provide ties at no more than 24 inches o.c. vertically.
      a. Where bed joints of wythes do not align, use adjustable (two-piece) type ties.
      b. Where one wythe is of clay masonry and the other of concrete masonry, use adjustable (two-piece) type ties to allow for differential movement regardless of whether bed joints align.
   2. Masonry Joint Reinforcement: Installed in horizontal mortar joints.
      a. Where bed joints of both wythes align, use ladder-type reinforcement extending across both wythes.

b. Where bed joints of wythes do not align, use adjustable (two-piece) type reinforcement.
c. Where one wythe is of clay masonry and the other of concrete masonry, use adjustable (two-piece) type reinforcement to allow for differential movement regardless of whether bed joints align.

B. Keep cavities clean of mortar droppings and other materials during construction. Bevel beds away from cavity, to minimize mortar protrusions into cavity. Do not attempt to trowel or remove mortar fins protruding into cavity.

C. Coat cavity face of backup wythe to comply with Division 07 Section - Bituminous Dampproofing. Where indicated on drawings.

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

E. Membrane Dampproofing: Re: Division 07

3.07 MASONRY-LOOSE FILL CELL INSULATION

Pour loose-fill insulation into cavities to fill void spaces. Maintain inspection ports to show presence of fill at extremities of each pour area. Close the ports after filling has been confirmed. Limit the fall of fill to one story high, but not more than 20 feet (6 m).

3.08 CONCRETE MASONRY JOINT REINFORCEMENT

A. General: Install entire length of longitudinal side rods in mortar with a minimum cover of 5/8 inch on exterior side of walls, 1/2 inch elsewhere. Lap reinforcement a minimum of 6 inches.
1. Space reinforcement not more than 16 inches o.c.
2. Space reinforcement not more than 8 inches o.c. in foundation walls and parapet walls, and at storm shelter perimeter walls forming the impact-resistant shell of the Storm Shelter.
3. Provide reinforcement not more than 8 inches above and below wall openings and extending 12 inches beyond openings.
a. Reinforcement above is in addition to continuous reinforcement.

B. Interrupt joint reinforcement at control and expansion joints, unless otherwise indicated.

C. Provide continuity at wall intersections by using prefabricated T-shaped units.

D. Provide continuity at corners by using prefabricated L-shaped units.

E. Cut and bend reinforcing units as directed by manufacturer for continuity at corners, returns, offsets, column fireproofing, pipe enclosures, and other special conditions.

3.09 ANCHORING MASONRY VENEERS

A. Anchor masonry veneers to wall framing or concrete and masonry backup with masonry-veneer anchors to comply with the following requirements:
1. Fasten screw-attached anchors through sheathing to wall framing and to concrete and masonry backup with metal fasteners of type indicated. Use two fasteners unless anchor design only uses one fastener.
2. Insert slip-in anchors in metal studs as sheathing is installed. Provide one anchor at each stud in each horizontal joint between sheathing boards.
3. Embed tie sections in masonry joints. Provide not less than 2 inches of air space between back of masonry veneer and face of insulation.
4. Locate anchor sections to allow maximum vertical differential movement of ties up and down.

5. Space anchors as indicated, but not more than 16 inches o.c. vertically and 16 inches o.c. horizontally, with not less than 1 anchor for each 2 sq. ft. of wall area. Install additional anchors within 12 inches of openings and at intervals, not exceeding 8 inches, around perimeter.
6. Provide self-sealing tape to seal around shaft of screw and legs of anchor at the point of penetration. Unless otherwise indicated in Division 07 “Air Barrier” sections, tape may be applied at each anchor or in continuous vertical strips, however continuous strips are highly recommended where exterior insulation will visually obscure the tape locations at the air barrier.

3.10 CONTROL AND EXPANSION JOINTS

A. General: Install control and expansion joint materials in unit masonry as masonry progresses. Do not allow materials to span control and expansion joints without provision to allow for in-plane wall or partition movement.
B. Form control joints in concrete masonry as follows using one of the following methods:
   1. Fit bond-breaker strips into hollow contour in ends of concrete masonry units on one side of control joint. Fill resultant core with grout and rake out joints in exposed faces for application of sealant.
   2. Install preformed control-joint gaskets designed to fit standard sash block.
   3. Install interlocking units designed for control joints. Install bond-breaker strips at joint. Keep head joints free and clear of mortar or rake out joint for application of sealant.
   4. Install temporary foam-plastic filler in head joints and remove filler when unit masonry is complete for application of sealant.
C. Form expansion joints in veneer made from clay or shale as follows:
   1. Build in compressible joint fillers where indicated.
   2. Form open joint full depth of veneer wythe and of width indicated, but not less than 3/8 inch for installation of sealant and backer rod specified in Division 07 Section - Joint Sealants.
D. Location of expansion joints:
   1. At long walls no greater than 25 feet maximum.
   2. At offsets in walls.
   3. Near corners (10 ft. maximum).
   4. At intersections of walls.
   5. Where short runs of masonry intersect long runs of masonry.
   6. Where materials of different coefficients of thermal expansion are joined.
E. Form open joint full depth of veneer wythe and of width indicated, but not less Provide horizontal, pressure-relieving joints by inserting a compressible filler of width required for installing sealant and backer rod specified in Division 07 Section - Joint Sealants, but not less than 3/8 inch.
   1. Locate horizontal, pressure-relieving joints beneath shelf angles supporting masonry.

3.11 LINTELS

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

3.12 FLASHING, WEEPS, CAVITY DRAINAGE, AND VENTS

A. General: Install embedded flashing and weeps in masonry at shelf angles, lintels, ledges, other obstructions to downward flow of water in wall, and where indicated. Install vents at 2'-0" on

center at top of masonry walls shelf angles, ledges, and other obstructions to upward flow of air in cavities, and where indicated. Embed flashing in manufacturer's recommended sealant. Seal lap joints as recommended by manufacturer.

B. Install flashing as follows, unless otherwise indicated:
   1. Prepare masonry surfaces so they are smooth and free from projections that could puncture flashing. Where flashing is within mortar joint, place through-wall flashing on sloping bed of mortar and cover with mortar. Before covering with mortar, seal penetrations in flashing with adhesive, sealant, or tape as recommended by flashing manufacturer.
   2. At multi-wythe masonry walls, including cavity walls, extend flashing through outer wythe, across air space behind veneer, behind ci insulation and turned up face of bituminous coated masonry inner wythe a minimum of 8 inches. Secure to the inner wythe with continuous termination bar. Seal top of termination bar and install ci insulation over flashing.
   3. At stud-framed walls with masonry-veneer walls, extend flashing through veneer, across air space behind veneer, up face of sheathing at least 8 inches, through sheathing and up back of sheathing a minimum of 4 inches. Install ci insulation and water/vapor barrier over flashing.
   4. At lintels and shelf angles, extend flashing a minimum of 6 inches into masonry at each end. At heads and sills, extend flashing 6 inches at ends, turn up and fold not less than 2 inches to create a folded end dam, per manufacturers recommendations & literature.
   5. Cut flexible flashing off flush with face of wall after masonry wall construction is completed and reviewed by architect.

C. Install reglets and nailers for flashing and other related construction where they are shown to be built into masonry.

D. Install weeps in head joints in exterior wythes of first course of masonry immediately above embedded flashing and as follows:
   1. Use specified weep/vent products to form weeps.
   2. Form weeps above flashing under masonry sills.
   3. Space weeps 24 inches o.c., unless otherwise indicated.

E. Place cavity drainage material in cavities to comply with configuration requirements for cavity drainage material in Part 2 "Miscellaneous Masonry Accessories" Article. At a minimum, place Mortar Net to a height equal to the height of the first course, but not less than 8 inches. Place immediately above the top of flashings embedded in the wall, as masonry construction progresses, to catch mortar droppings and to maintain drainage.

F. Install vents in head joints in exterior wythes at spacing indicated. Use specified weep/vent products to form vents.
   1. Close cavities off vertically and horizontally with blocking in manner indicated. Install through-wall flashing and weep holes above horizontal blocking.

G. Install sill sealer at sill plate per manufacturer's written instructions.

3.13 REINFORCED UNIT MASONRY INSTALLATION

A. Temporary Formwork and Shores: Construct formwork and shores as needed to support reinforced masonry elements during construction.
   1. Construct formwork to provide shape, line, and dimensions of completed masonry as indicated. Make forms sufficiently tight to prevent leakage of mortar and grout. Brace, tie, and support forms to maintain position and shape during construction and curing of reinforced masonry.
   2. Do not remove forms and shores until reinforced masonry members have hardened sufficiently to carry their own weight and other temporary loads that may be placed on them during construction.

B. Placing Reinforcement: Comply with requirements in ACI 530.1/ASCE 6/TMS 602.

C. Grouting: Do not place grout until entire height of masonry to be grouted has attained enough strength to resist grout pressure.
   1. Comply with requirements in ACI 530.1/ASCE 6/TMS 602 for cleanouts and for grout placement, including minimum grout space and maximum pour height.
   2. Limit height of vertical grout pours to not more than 60 inches.

3.14 FIELD QUALITY CONTROL

A. Testing and Inspecting: Owner will engage special inspectors to perform tests and inspections and prepare reports. Allow inspectors access to scaffolding and work areas as needed to perform tests and inspections. Retesting of materials that fail to comply with specified requirements shall be done at Contractor's expense.
B. Inspections: Special inspections per drawings.

3.15 REPAIRING, POINTING, AND CLEANING

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

3.16 MASONRY WASTE DISPOSAL

A. Salvageable Materials: Unless otherwise indicated, excess masonry materials are Contractor's property. At completion of unit masonry work, remove from Project site.
B. Waste Disposal as Fill Material: Dispose of clean masonry waste, including excess or soil-contaminated sand, waste mortar, and broken masonry units, by crushing and mixing with fill material as fill is placed.
   1. Crush masonry waste to less than 4 inches in each dimension.
   2. Mix masonry waste with at least two parts of specified fill material for each part of masonry waste. Fill material is specified in Division 31 Section - Earthwork.
   3. Do not dispose of masonry waste as fill within 18 inches of finished grade.

END OF SECTION 04 81 00

SECTION 04-4300 – STONE MASONRY

PART 1 - GENERAL

1.01 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.
B. General Coordination Procedures, (Reference Specification Section 01 31 00) General Contractor shall coordinate construction operations included in different Sections of the Specifications to ensure efficient and orderly installation of each part of the Work that depend on each other for proper installation, connection, and operation.

1.02 SUMMARY

A. Section Includes:
   1. Provide stone exterior wall material, laid up like masonry, as shown on the Drawings and as specified herein.
B. Related Sections include the following:
   1. Division 05 Section - Steel Lintels, loose.
   2. Division 07 Section - Flashing, Sheet Metal.
   3. Division 07 Section - Sealants.

1.03 SUBMITTALS

A. Submit shop drawings per requirements of Division 01 Section, showing layout and details of construction, anchors, jointing and setting.
B. Submit three 12" x 12" samples of each type of finish of stone specified, showing full range of colors, for approval by Architect.
C. Copies of complete data on stone fabricator. Architect reserves the right to reject the fabricator if adequate past experience in the production of the types of units specified is not assured by the data submitted.
D. Copies of supplier’s specifications and test data for type of stone required, including certification that stone complies with the specified requirements. Include instructions for handling, storage, installation and protection of stone.
E. Copies of complete data showing all colors, textures and finishes available.

1.04 PRODUCT DELIVERY, STORAGE AND HANDLING

A. Protect mortar materials from moisture absorption and damage; reject damaged containers.
B. Store sand to prevent inclusion of foreign matter.
C. Delivery of Materials:
   1. Carefully pack and unload stone with necessary caution to avoid damaging or soiling stone.
   2. Deliver stone in original package or pallets, plainly marked with identification of materials and manufacturer.
D. Storage of Materials:
   1. Store stone minimum of 4 inches above ground on non-staining skids made of non-chemically treated wood or of wood not containing tannin.
   2. Provide non-staining spacers between pieces and polyethylene or other suitable film as protective covering.
   3. Cover stone on all sides and bottom with waterproof paper, clean canvas or polyethylene.

4. Protect mortar materials from moisture absorption and damage; reject damaged containers.
5. Store sand to prevent inclusion of foreign matter.

1.05 JOB CONDITIONS

A. Coordinate stonework with other trades whose work relates to this section, in any manner, for placing of all required backing, blocking and leave-outs, etc.
B. Masonry work shall not be placed when there is any possibility of the water freezing before it has attained its initial set. In weather below freezing, all masonry units and mortar shall be heated. Walls which have frozen after making their initial set shall not be built upon until they have had sufficient time to make a proper set at temperatures above freezing.
C. All newly placed masonry shall be protected against damage from action of the elements and under no condition shall rain be allowed to fall on, drive against or flow down masonry surfaces until mortar has set a minimum of 12 hours. Tops of all walls shall be covered with a waterproof material at the end of each day.
D. All newly placed stone shall be protected from damage of any sort.

1.06 QUALITY ASSURANCE

A. Qualification of fabricator: Obtain each stone from single quarry source, with accepted color range and texture throughout the work as established by approved samples.
B. Sources or kinds of materials as approved shall not be changed during course of work.
C. Stone fabricator shall have successfully fabricated work similar to quality specified in quantity shown for period of not less than 5 years.
D. Stone fabricator shall have been engaged in the business of fabricating stone specified for a period of not less than (5) years. Provide reference including project name, project architect and General Contractor.
E. Installer Qualifications: A qualified installer who employs experienced stonemasons and stone fitters, with at least 5 years' documented experience in installing stone masonry of the type, scope, and complexity as required for this project.
F. Reference Standards: Comply with applicable provisions and recommendations of the following, except as otherwise shown or specified:
    1. ASTM C 97, Absorption and Bulk Specific Gravity of Natural Building Stone
    2. ASTM C 99, Modulus of Rupture of Natural Building Stone
    3. ASTM C 170, Compressive Strength of Natural Building Stone.
    4. Masonry Institute of America Handbook for Marble & Stone Slab Veneer.
G. Pre-Installation Meeting: Convene a pre-installation meeting at least one week prior to commencing Work of this Section.
H. Mockups: Build free standing pre-construction mockup **[s]** to verify selections made under Sample submittals, demonstrate understanding of the complete wall construction, demonstrate typical construction and waterproofing details, demonstrate aesthetic effects, and to set quality standards for materials and execution.
    1. Build mockup **[s]** as shown on drawings, including face and backup wythes, fenestrations, flashings and accessories.. Comply with requirements in Section 01 43 39 "Mockups".
        a. Prior to product installation a field-constructed mock-up shall be provided under the provisions of Division 1 Section - Submittals, Product Data, Samples and Mock-ups, to verify details & tie-ins, and to demonstrate the required quality of materials and installation.
        b. Construct a typical exterior wall section, incorporating back-up wall, cladding, window and sill, insulation, flashing and any other critical junctions (roof, foundation, etc.) as detailed in Drawings at typical wall locations as located by Architect.
        c. Locate mockups as directed by Architect.

d. Build mockups as indicated in Drawings.
    1) Show typical components, attachments to building structure, and methods of installation.
e. Obtain Architect's approval of mockups before starting installation.
f. Approval of mockups does not constitute approval of deviations from the Contract Documents unless Architect specifically approves such deviations in writing.
g. Maintain mockups during construction in an undisturbed condition as a standard for judging the completed Work.
h. Demolish and remove mockups when directed.

2. Clean exposed faces of mockups with masonry cleaner as indicated.
3. Protect accepted mockups from the elements with weather-resistant membrane.

PART 2 - PRODUCTS

2.01 MATERIALS

A. All stone shall be standard grade, free from cracks, seams or other imperfections which might impair its structural integrity and finish. All stone furnished must conform to and be within the range of approved samples. Cut accurately to shape and dimensions shown on final shop drawings. Variations on surfaces from true plane shall not exceed 1/8" for smooth finish.
B. Stone:
    1. Limestone:
        a. “Monarch Fossil” Provided by Upchurch Kimbrough
            1) Contact: Holly Harris, Architectural Account Manager
            713-957-1520, Cell: 713-805-0776
            hollyh@upchurchkimbrough.com
        b. Finish: Rough Cut
        c. Size: Random
    2. Approved Alternate Stone:
        a. US Stone UK Special Blend Full Thickness, Provided by Upchurch Kimbrough
            1) Contact: Holly Harris, Architectural Account Manager
            713-957-1520, Cell: 713-805-0776
            hollyh@upchurchkimbrough.com
        b. Finish: Rough Cut
        c. Size: Random

2.02 ACCESSORIES

A. Anchors: Fabricate anchors**,** including shelf angles, from stainless steel, ASTM A240/A240M or ASTM A666, Type 304; temper as required to support loads imposed without exceeding allowable design stresses. Fabricate dowels and pins for anchors from stainless steel, ASTM A276, Type 304.
B. Spacers: Impact resistant plastic (1/4” max. thickness)
C. Membrane Flashings: 32 mil thick rubberized asphalt laminated to 8 mil polyethylene film, release paper facing, self adhering
D. Joint Sealers: Specified in Division 07 Section.
E. Cleaning Solution: type that will not harm stone, joint material, or adjacent surfaces.

2.03 FABRICATION

A. Cut adjacent pieces from same block wherever possible.
B. Provide kerf slot in top and bottom of panels.
C. Form stone corners to miter kerf joint profile.
D. Anchorage:

1. Space anchors at maximum 24 inches on center and around perimeter.
2. Minimum number of anchors: four per panel.

E. Fabrication Tolerances
1. Variation in width or height: plus or minus 1/8 inch
2. Variation in thickness: plus or minus 1/8 inch
3. Variation in form true plane: plus or minus 1/16 inch in 3 feet

PART 3 - EXECUTION

3.01 INSPECTION

A. Inspect foundations to assure surfaces to support masonry are to proper grades and elevations, free of dirt or uneven surfaces. Examine all subsurfaces to receive stone work. Report in writing to General Contractor, with a copy to Architect, any cond Verify surfaces are freeitions which may prove detrimental to the work. Commencement of work will be construed as acceptance of all subsurfaces.

3.02 PREPARATION

A. Establish lines, levels and coursing. Protect from disturbance.
B. Clean stone prior to installation. Do not use wire brushes or implements that can mark or damage exposed surfaces.
C. Wet absorptive stone in preparation for placement to minimize moisture suction from mortar.

3.03 STONE INSTALLATION

A. Arrange stone pattern to provide color uniformity and constant joint sizes throughout.
B. Set stone plumb and level. Align adjacent pieces in same plane.
C. All anchors shall be concealed.
D. Coordinate with other trades for placement of inserts and anchors. Provide templates or drawings as required.
E. Execute work with skilled mechanics and employ skilled fitters at site to do necessary field cutting as stone is set.
F. Provide openings and other spaces as shown or required for contiguous work. Close up openings in stone after other work is in place. Use materials and set to match surrounding work.
G. Set stone in accordance with final shop drawings.
H. Have all work done by competent stone masons and to appearance approved by Architect.
I. Remove and replace damaged or defective stonework to match adjacent acceptable stonework.

3.04 FLASHINGS AND WEEP HOLES

A. All flashings installed in accordance with herein specified requirements and in accordance with manufacturer's recommendations so that all flashing works properly and drains water to the outside.
B. Provide smooth mortar beds, slightly pitched to the outside face of the wall at all points where flashings are to be installed over horizontal surfaces.
C. Flashing shall extend beyond outside face of wall as detailed on drawings.
D. At lintels and shelf angles, extend flashing a minimum of 6 inches into masonry at each end. At heads and sills, extend flashing 6 inches at ends, turn up and fold not less than 2 inches to create a folded end dam, per manufacturers recommendations & literature
E. Install weep vents in vertical joint of first course above flashings at 24" o.c.
F. Flashing to be installed with top edge extending behind sheathing as detailed on drawings.

3.05 CONTROL & SOFT JOINTS

A. Make adequate provisions throughout the stone work for expansion and contraction. Install preformed control joint gasket, extending from top of bearing surface to top of wall, reinforcing shall not run through.
B. Install soft joint material at top of stone.

3.06 SEALED JOINTS

A. Outside joints at the perimeter of exterior door and window frames shall not be less than 1/4" nor more than 3/8" wide and shall be cleaned out to a uniform depth of at least 3/4" for sealant, provided under Division 07 Section.

3.07 BUILT-IN WORK

A. Contractor shall carefully examine architectural and mechanical drawings providing all slots, chases, recesses in masonry work as required. No pipes shall be enclosed unless tested.

3.08 INSTALLATION TOLERANCES

A. Maximum variation from level and plumb: 1/8 inch in 10 feet, noncumulative.
B. Maximum variation in plane between adjacent pieces as joint: Plus or minus 1/16 inch.

3.09 CLEANING

A. Clean stone with stiff brushes and water.
B. If initial cleaning does not produce acceptable results, apply cleaner in accordance with manufacturer's instructions
    1. Prior to applying, clean sample panel in area as directed by Architect. If approved, use same materials and techniques for cleaning remainder of stone.
    2. Protect adjacent surfaces.
    3. Wet stone prior to applying cleaner.
    4. Thoroughly rinse surfaces with water after completion of cleaning: remove all traces of cleaning solution.

3.10 PROTECTION

A. Protect stonework from soiling and damage during all phases of construction.

END OF SECTION 04 43 00

SECTION 05-5000 – METAL FABRICATIONS

PART 1 - GENERAL

1.01 RELATED DOCUMENTS

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

B. General Coordination Procedures, (Reference Specification Section 01 31 00) General Contractor shall coordinate construction operations included in different Sections of the Specifications to ensure efficient and orderly installation of each part of the Work that depend on each other for proper installation, connection, and operation.

1.02 SUMMARY

A. General: Furnish all labor, supervision, materials, tools, equipment, appliances and services necessary for the fabrication, delivery and installation of all miscellaneous metal items. All work shall be as shown or indicated on the drawings and as specified in this section.

B. Scope of Work:
1. Embedded angles and plates
2. Guardrails, Handrails, and Handrail Brackets
3. Ladders and safety cages
4. Disappearing Stairways
5. Expansion Joint Covers
6. Steel Countertop Supports
7. Steel Equipment Supports
8. Metal Gratings
9. Steel Plate Covers for Sidewalk Culverts
10. Pipe Guards
11. Downspout Protection
12. Pipe Bollards
13. Steel Gate Frames and metal infill panels
14. Miscellaneous metal work and related items.
15. Shop Priming and Finishing of Metal Fabrications

C. Related Sections include the following:
1. Division 03 Section - Concrete.
2. Division 04 Section - Unit Masonry.
3. Division 06 Section - Rough Carpentry, for concealed blocking for attachment of metal fabrications.
4. Division 08 Section - Access Doors and Panels, for metal floor hatches.
5. Division 09 Section - Painting.
6. Division 09 Section - Special Coatings.
7. Division 11, 23 and other Sections for equipment requiring miscellaneous steel support structure.

1.03 PERFORMANCE REQUIREMENTS

A. Delegated Design: Design ladders including engineering analysis by a qualified professional engineer, using performance requirements and design criteria indicated.

B. Design Criteria:
1. Ladders designed to withstand live loading conditions of 100 lb. per square feet.
2. Handrails, Guardrails, or other protective enclosures shall be designed to withstand stresses to which they would be normally subjected, and to support a load of 50 lb per linear foot applied perpendicular at the top of the rail or guard, and to withstand a load of 200 lbs. applied in any direction at any point on the top of the rail or guard without deflection.

3. Connections other than those already listed shall be designed to safely support design load (dead load plus live load) of not less than 100 psi without exceeding working stresses permitted for materials.
4. Miscellaneous countertop supports designed to safely support a load of 200 lb per linear foot of countertop applied at the outside edge, as well as any additional requirements as specified in Division 06 Section - Architectural Woodwork.
5. Miscellaneous equipment supports per local code requirements, equipment Manufacturers' requirements and as specified herein.

1.04 QUALITY ASSURANCE

A. Steel stairs in accordance with latest NAAMM Standards and AISC.

B. Welding shall conform to American Welding Society's Standard Code for Arc and Gas Welding in Building Construction. Welding shall be continuous along entire area of contact, except where tack welding is specifically shown or specified. Grind all exposed welds.

1.05 SUBMITTALS

A. Shop drawings based on the Contract Documents shall be submitted to the Architect for review prior to ordering of materials.

B. Failure by the contractor to submit shop drawings, test reports, etc. required above shall release the Architect and the Engineer from any liabilities due to the negligence on the part of the contractor to comply with the construction documents.

C. Approval will cover size and arrangement of members, character of construction, but not dimensions.

D. Contractor shall verify actual dimensions at the construction site.

E. Manufacturer's data sheets on each product used, including:
1. Preparation instructions & recommendations.
2. Storage and handling requirements & recommendations.
3. Installation methods.

F. Shop Drawings for Stairs:
1. Plan and section of stair installation.
2. Indicate rough opening dimensions for ceiling.

1.06 REFERENCES

A. ANSI A14.9: Safety Requirements for Ceiling Mounted Disappearing Climbing Systems

1.07 DELIVERY, STORAGE, AND HANDLING

A. Store stairway until installation inside under cover in manufacturer's unopened packaging. If stored outside, under a tarp or suitable cover.

1.08 WARRANTY

A. Disappearing Stairways Limited Warranty: One year against defective material and workmanship, covering parts only. Defective parts, as deemed by the manufacturer, will be replaced at no charge, freight excluded, upon inspection at manufacturer's plant.

1.09 MATERIALS

A. Comply with the following standards, as pertinent:
1. Steel plates, shapes, and bars: ASTM A36;
2. Steel plates to be bent or cold-formed: ASTM A283; grade C;
3. Steel tubing (hot-formed, welded, or seamless): ASTM A500; grade B;
4. Steel bars and bar-size shapes: ASTM A306; grade 65, or ASTM A36;
5. Cold-finished steel bars: ASTM A108l
6. Cold-rolled carbon steel sheets: ASTM A336;
7. Galvanized carbon steel sheets: ASTM A526, with G90 zinc coating in accordance with ASTM A525;

8. Stainless steel sheets: AISI type 302 or 304, 24 ga. with number 4 finish;
9. Gray iron castings: ASTM A48, class 10;
10. Malleable iron castings: ASTM A47;
11. Steel pipe: ASTM A53, grade A, schedule 40, black finish unless otherwise noted;
12. Concrete inserts:
    a. Threaded or wedge-type galvanized ferrous castings of malleable iron complying with ASTM A27.
    b. Provide required bolts, shims, and washers, hot-dip galvanized in accordance with ASTM A153.
13. Bolts and nuts: Provide hexagon-head regular type complying with ASTM A307, grade A.
14. Lag bolts: Provide square-head type complying with Fed Spec FF-B-561;
15. Machine screws: Provide cadmium plated steel type complying with Fed Spec FF-S-111.

B. Castings shall be made from the best grade of soft pig iron cast in stove place molding sand to a uniform thickness. Castings shall be free of defects impairing strength or appearance.

C. Accessories: Provide all anchors bolts, anchor straps, hangers and other related fittings, fastener and accessories required for proper and secure installation of all miscellaneous metal. Fasteners for exterior use shall be zinc coated. Generally, the sizes, shapes and spacing of items are shown or specified; where not shown or specified, accessories shall be adequate for the required services, subject to approval.

PART 2 - PRODUCTS

2.01 ITEMS TO BE PROVIDED

A. Lintel Angles and Bent Plates: Galvanized steel in sizes indicated on Drawings. Extend loose lintel angles 8" on each side of opening.

B. Steel Pipe Guardrails: 1-1/4" Standard galvanized steel pipe with 1/2" x 1/2" bar verticals welded to pipe frame as detailed in Drawings. Hot-dipped galvanized steel at all exterior railings.
1. Except where specifically detailed otherwise, railings in new concrete shall be mounted to cast-in galvanized steel sleeves. Field painted (refer to Division 09 – “High Performance Coatings”).

C. Steel Pipe Hand Railings: 1-1/4" Standard steel pipe fabricated with welded and round smooth connections as illustrated on Drawings or as required. Hot-dipped, galvanized steel pipe at all exterior handrailings, galvanize railings after fabrication. All railings to have closed ends.
1. Where railings do not return to post or to a vertical or horizontal surface, provide domed ends.
2. Except where specifically detailed otherwise, railings in new concrete shall be mounted to cast-in galvanized steel sleeves.
3. Heavy Duty Handrail Brackets: Model 386, as manufactured by Julius Blum & Co. Galvanized at exterior application.
4. Handrail Brackets: 1-1/2” wide x 1/4” thick steel bent plate handrail brackets, galvanized at exterior application.
5. Provide any other attachments to new and existing construction as required to comply with design loading criteria.

D. Expansion Joint Covers: Extruded aluminum anchored to wall, floor and ceiling per manufacturer's instructions. Expansion joint covers shall be as follows, or approved equal:
1. Interior Ceiling to Wall: Balco/Metaline #AC-15.
2. Interior Wall to Wall: Balco/Metaline #GP-10.
3. Interior Floor to Floor: Balco/Metaline #NBS-10.
4. Interior Ceiling to Ceiling: Balco/Metaline #AC-10.

E. Countertop Support Frames: Provide welded steel support frame for wide countertops Section - Architectural Woodwork. Provide steel tube posts located inside adjacent wall framing, with steel tube, channel, or angle horizontal beneath countertop as indicated in Drawings. Steel sizes indicated in Drawings are minimum sizes allowed; provide larger sizes where required to

meet performance criteria and delegated design. The depth of the horizontal member must be designed to fit concealed behind the front vertical side of the countertop. Design connection to floor slab to support indicated loading and to fit within wall framing dimensions. Pre-drill for screw attachment / connection of countertop underlayment as directed by millwork fabricator / installer.without intermediate supports as indicated in Drawings, and as indicated in Division 6,

F. Bench Bracket: 3” x 3” x 1/4” steel tube with mounting bracket. Provide (1) per 3’-0” of bench, to withstand 100 pounds of force per linear foot of bench.

G. Miscellaneous Equipment Supports: Field verify all dimensions and provide miscellaneous steel support structure for wall and ceiling mounted equipment as follows:
   1. For ceiling mounted projector mounts, and locations and items as specifically detailed or other items called for in the Drawings or other Sections requiring miscellaneous steel supports for complete installation.
   2. For large ceiling fans as indicated in Drawings.
   3. Where not specifically detailed, design and provide supports as required for all other equipment to be provided or installed under this contract.
   4. All supports shall comply with requirements of the equipment Manufacturer(s) for support structure and shall provide adequate strength and secure attachment to building structure, braced against lateral movement.

H. Metal Gratings:
   1. Cast Iron Grating at Trench Drains: Re: Division 25 Section – Plumbing and 33 Section - Utilities.
   2. At gratings in walk surfaces, orient grating so that short dimension of openings are perpendicular to the path of travel, and in compliance with Texas Accessibility Standards.

I. Sidewalk Culvert: 3/8" galvanized checker plate sidewalk culvert cover with countersunk screws.

J. Sidewalk Trench Cover & Frame: Standard support frame and bolted down solid checkered top of Gray Iron, Class 35 shall be Neenah Foundry Co., "Light Duty" Series #R-4991 with Type D skid resistant top, or approved equal by Barry Pattern & Foundry, Campbell, or McKinley Iron Works, in sizes as shown on drawings.

K. Pipe Guards:
   1. Fabricate from 1/4" bent steel plate, in shapes as indicated on drawings. Or where not indicated, bent to fit flat against the wall or column at both ends and to fit around pipe with 2 inch clearance between the pipe and pipe guard. Drill each end for two or more 3/4 inch anchor bolts, spaced 24" on center

L. Downspout Protections:
   1. Downspout Protection Guards:
      a. 1/4" Bent steel plate, galvanized, as indicated on drawings.
      b. Galvanized steel pipe, sized to match largest downspout size.

M. Pipe Bollards:
   1. 6" Diameter galvanized schedule 40 steel pipe with concrete fill. Mound concrete at top of bollard to shed water.
      a. Size: 7'-0" in length, recessed 3'-0" below-grade. 4'-0" height above grade, unless otherwise indicated in Drawings.
      b. Paint: Refer to Division 09, Section "Painting". Colors: safety yellow, or as selected by Architect.

N. Steel Gate: Tube frame with steel tube horizontals and verticals as detailed on drawings. Provide gate frames with truss rods and 8”x8”x1/4” triangular welded gusset plates at corners on back side of gate. Tap drill where required for cladding and hardware installation.
   1. Hardware: As shown in Drawings, and as specified in Division 32, “Chain Link Fencing and Gates”.
   2. Gate Hardware: As shown in Drawings, and as follows:
      a. Hinges: Heavy Duty gate hinges, structurally capable of supporting gate leaf and allow opening and closing without binding. Non-lift-off type hinge design shall be offset and permit gate to swing at least 120°. Provide three hinges for each leaf.

b. Latch: Extra Heavy Duty slide bolt latch with keep, lockable with padlock.

3. Cane Bolts: Provide heavy duty cane bolt for each leaf.
4. Perforated Metal Panel: As manufactured by McNichols Co., or approved equal.
   a. Material: 14 gauge Galvanized Steel.
   b. Hole shape and pattern: Slotted, Straight line.
   c. Perf Size: 1 1/2” x 1/4”
   d. Open Area: 68%
   e. Attachment to Gate Frame: Welded.
5. Finish for gate frame and metal panel: 1 coat shop primer for field painting.
6. Pre-drill frame as required for attachment of facing material(s) indicated in Drawings.

O. Miscellaneous Steel Shapes: Channels, angles, plates, tubing, connections and bolts provided where shown and detailed on drawings. Exterior imbed plates, support angles, and other miscellaneous exterior steel shall be hot-dip galvanized.

2.02 METAL LADDERS

A. General:
   1. Comply with ANSI A14.3.

B. Aluminum Ladders:
   1. Basis of Design Products: Design for access ladders are based on O'Keefe's Inc. Subject to compliance with requirements, provide the named products or approved equal products by another manufacturer.
      a. Heavy Duty Vertical Ladder: O'Keefe's Model 501 with Extended Intermediate Brackets.
      b. O'Keefe rail and harness fall arrest system with two personal harness and all connections and accessories for complete fall arrest system
   2. Space side rails of ladders min. 16 inches apart unless otherwise indicated.
   3. Side rails: Continuous extruded-aluminum tubes, not less than 2-1/2 inches deep, 3/4 inch wide, and 1/8 inch thick.
   4. Rungs: Extruded-aluminum tubes, not less than 1-1/4 inch deep and rated for 1500 lb, with anti-slip serrated, ribbed, or abrasive tread surfaces. Fit rungs in centerline of side rails; fasten by welding or with stainless-steel fasteners or brackets and aluminum rivets.
   5. Support each ladder at top and bottom and not more than 60 inches o.c. vertically, with welded or bolted aluminum brackets.
   6. Finish: Mill Aluminum

2.03 SHOP PAINTING

A. All Iron and Steel Work: Unless otherwise specified, power tool clean all surfaces to remove mill scale. Work shall receive a shop coat of paint before leaving the factory or being exposed to the weather. Aluminum work contacting dissimilar metals shall receive a protective coating preventing galvanic action.

B. Shop Paint: Shop paint shall be Fabricator's standard, fast curing, lead free, "universal" primer, compatible with finish paint system indicated and for capability to provide sound foundation for field applied topcoats.

C. Aluminum surfaces to be in direct contact with concrete and masonry shall be shop coated with zinc chromate primer.

PART 3 - EXECUTION

3.01 FABRICATION

A. Contractor shall secure and be responsible for all field measurements required for the proper and accurate fabrication and installation of the items included under this section; field alterations will not be permitted except upon specific authorization of the Architect.

B. All work shall be assembled in the most substantial manner and reinforced where necessary with structural shapes, using concealed screws, bolts or similar fastenings. Make welds of

adequate strength and durability, jointing tight, clean and smooth, flush and in true plane with base metals.

C. All screws or rivets shall be countersunk, unless otherwise noted. Provide lock washers for all bolts.

D. All steel to which wood blocking is connected shall be properly punched for anchoring blocking.

E. Exposed steel shapes with marred surfaces shall be ground or draw-filled to a fine grain finish, as approved before applying shop coat of paint.

F. Assembled work shall be completely constructed in the shop, accurately finished and the pieces match-marked for erection. Form exterior joints to exclude water, grind connections in exposed pieces smooth and polish.

G. The Contractor shall do all drilling, cutting, tapping and fitting of work to accommodate other work coming in contact with it, and shall furnish all taps, bolts and other fittings in connection therewith.

H. Except where otherwise noted, fastening to concrete, solid masonry or hollow masonry shall be with expansion bolts or anchors. Fastening to wood plugs will not be permitted. Toggle bolts may be used only when approved by the Architect.

I. Fabrication of Disappearing Stair:
   1. Completely fabricate stairway ready for installation before shipment to the site.

3.02 EXAMINATION

A. Disappearing Stair:
   1. Do not begin installation until rough opening and structural support have been properly prepared.
   2. If substrate preparation is the responsibility of another installer, notify Architect of unsatisfactory preparation before proceeding.
   3. Examine materials upon arrival at site. Notify the carrier and manufacturer of any damage.

3.03 INSTALLATION, GENERAL

A. All work included in this Contract shall be installed by the Contractor at the proper time and as rapidly as the progress of the adjacent and connecting work will permit.

B. Cutting, Fitting, and Placement: Perform cutting, drilling, and fitting required for installing metal fabrications. Set metal fabrications accurately in location, alignment, and elevation; with edges and surfaces level, plumb, true to line, and free of rack; and measured from established lines and levels.

C. Fit exposed connections accurately together to form hairline joints. Weld connections that are not to be left as exposed joints but cannot be shop welded because of shipping size limitations. Do not weld, cut, or abrade surfaces of exterior units that have been hot-dip galvanized after fabrication and are for bolted or screwed field connections.

D. Provide temporary bracing or anchors in formwork for items that are to be built into concrete, masonry, or similar construction.

E. Field Welding:
   1. Use materials and methods that minimize distortion and develop strength and corrosion resistance of base metals.
   2. Obtain fusion without undercut or overlap.
   3. Remove welding flux immediately.
   4. At exposed connections, finish exposed welds and surfaces smooth and blended so no roughness shows after finishing and contour of welded surface matches that of adjacent surface.
   5. Touch-up shop prime coats.

F. Immediately after erection, clean the field welds, bolted connections, and abraded areas of shop priming. Paint the exposed areas with same material used for shop priming.

G. Corrosion Protection: Coat concealed surfaces of aluminum that will come into contact with grout, concrete, masonry, wood, or dissimilar metals with the following:
   1. Cast Aluminum: Heavy coat of bituminous paint.
   2. Extruded Aluminum: Two coats of clear lacquer.

3.04 INSTALLATION, SPECIFIC ITEMS

A. Miscellaneous Framing and Supports:
   1. General: Install framing and supports to comply with requirements of items being supported, including manufacturers' written instructions and requirements indicated on Shop Drawings.
   2. Anchor supports securely to and rigidly brace from building structure.

B. Metal Pipe Bollards:
   1. Anchor bollards in concrete. Fill annular space around bollard solidly with nonshrink, nonmetallic grout; mixed and placed to comply with grout manufacturer's written instructions. Slope grout up approximately 1/8 inch toward bollard for positive drainage away from bollard base.
   2. Fill bollards solidly with concrete, mounding top surface to shed water.
   3. Paint bollards color(s) as approved by architect.

C. Steel Gates:
   1. Install gates square and plumb. Adjust tension on truss rod as required, after gate cladding is installed.
   2. Install with all gate hardware as detailed in Drawings, or where not detailed with same hardware as specified for chain link gates in Division 32.

3.05 ADJUSTING AND CLEANING

A. Touchup Painting: Immediately after erection, clean field welds, bolted connections, and abraded areas. Paint uncoated and abraded areas with the same material as used for shop painting to comply with SSPC-PA 1 for touching up shop-painted surfaces.

B. Galvanized Surfaces: Clean field welds, bolted connections, and abraded areas and repair galvanizing to comply with ASTM A 780/A 780M.

END OF SECTION 05 50 00

SECTION 08-3323 – OVERHEAD COILING DOORS

PART 1 - GENERAL

1.01 RELATED DOCUMENTS

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

B. General Coordination Procedures, (Reference Specification Section 01 31 00) General Contractor shall coordinate construction operations included in different Sections of the Specifications to ensure efficient and orderly installation of each part of the Work that depend on each other for proper installation, connection, and operation.

1.02 SUMMARY

A. Section Includes: Overhead coiling door assemblies including brackets, guides, tracks, hardware, operators, motors and installation accessories.
   1. Insulated OH Coiling Service doors.
   2. OH Coiling Door Operators
      a. Manual Operation
   3. OH Coiling Door Finishes
      a. Aluminum Finishes
         1) Mill Finish
         2) Clear Anodic Finish
         3) Color Anodic Finish
         4) Baked-Enamel Finish
         5) Powder-Coated Finish
   4. Maintenance Service

B. Related Requirements:
   1. Section 05 50 00 "Metal Fabrications" for miscellaneous steel supports, door-opening framing, corner guards, and bollards.
   2. Section 08 36 13 - Sectional Doors
   3. Section 08 71 00 "Door Hardware"
   4. Section 09 91 13 "Exterior Painting" and Section 09 91 23 "Interior Painting" for finish painting of factory-primed doors.

1.03 ACTION SUBMITTALS

A. Product Data: For each type and size of overhead coiling door and accessory.
   1. Include construction details, material descriptions, dimensions of individual components, profiles for slats, and finishes.

B. Submit Manufacturer's Product Safety Data Sheets for each product.

C. Shop Drawings: For each installation and for special components not dimensioned or detailed in manufacturer's product data.
   1. Include plans, elevations, sections, and mounting details.
   2. Include details of equipment assemblies, and indicate dimensions, required clearances, method of field assembly, components, and location and size of each field connection.
   3. Include points of attachment and their corresponding static and dynamic loads imposed on structure.
   4. For exterior components, include details of provisions for assembly expansion and contraction and for excluding and draining moisture to the exterior.

D. Samples for Verification: For each type of exposed finish on the following components, in manufacturer's standard sizes:
   1. Three curtain slats at least 6 inch long, representing actual construction and color.

1.04 INFORMATIONAL SUBMITTALS

A. Manufacturer Certificates: Certify products meet or exceed specified requirements.

B. Sample Warranty: For special warranty.

1.05 CLOSEOUT SUBMITTALS

A. Special warranty.

B. Maintenance Data: For overhead coiling doors to include operation manuals.

C. Record Documents: For fire-rated doors, list of door numbers and applicable room name and number to which door accesses.

1.06 QUALITY ASSURANCE

A. Distributor / Installer Qualifications: Doors shall be provided and installed by an Overhead Door Ribbon Distributor with at least the 5 previous years of continuous service as a distributor with a proven record of successful in-service performance, or equivalent qualifications if doors are provided by another Manufacturer. Submit statement of qualifications from the Manufacturer."
   1. Company specializing in performing Work of this section and approved by manufacturer, employing installers and supervisors who are trained and approved by manufacturer for both installation and maintenance of units required for this Project.
   2. Maintenance Proximity: Not more than two hours' normal travel time from Installer's place of business to Project site.

B. Design Criteria for standard exterior doors:
   1. Wind Loading: Door installed and supported to withstand a wind loading condition of 20 lbs. per square foot with a maximum deflection of 1/120 of the opening width.
   2. Cycle Life: Design doors of standard construction for normal use of up to 20 cycles per day, with minimum 50,000 cycle rated springs.
   3. Insulated Door Slat Material Requirements:
      a. Flame Spread Index of 0 and a Smoke Developed Index of 10 as tested per ASTM E84.
      b. Minimum Installed System Sound Transmission Class (STC) rating of 21 as tested per ASTM E90.
      c. Minimum R-value of 7.5 (U-factor of 0.125) as calculated using the ASHRAE Handbook of Fundamentals.
      d. Insulation is CFC-free.
   4. Air Leakage: Meets ASHRAE 90.1 & IECC 2012/2015 C402.4.3, Air leakage <1.00 cfm/ft^2.
   5. Insulated Door Slat Material Requirements:
      a. Flame Spread Index of 0 and a Smoke Developed Index of 10 as tested per ASTM E84.
      b. Minimum Installed System Sound Transmission Class (STC) rating of 21 as tested per ASTM E90.
      c. Minimum R-value of 7.5 (U-factor of 0.125) as calculated using the ASHRAE Handbook of Fundamentals.
      d. Insulation is CFC-free.
   6. Air Leakage: Meets ASHRAE 90.1 & IECC 2012/2015 C402.4.3, Air leakage <1.00 cfm/ft2.

1.07 DELIVERY, STORAGE, AND HANDLING

A. Store products in manufacturer's unopened packaging until ready for installation.

B. Protect materials from exposure to moisture. Do not deliver until after wet work is complete and dry.

C. Store materials in a dry, warm, ventilated weather tight location.

1.08 PROJECT CONDITIONS

A. Maintain environmental conditions (temperature, humidity, and ventilation) within limits recommended by manufacturer for optimum results. Do not install products under environmental conditions outside manufacturer's absolute limits.

B. Coordination: Coordinate Work with other operations and installation of adjacent materials to avoid damage to installed materials. Coordinate power and access control requirements and their rough-in locations with other trades.

1.09 WARRANTY

A. Special Warranty: Manufacturer agrees to repair or replace components of doors that fail in materials or workmanship within specified warranty period.
   1. Manufacturer to warrant door and operator system, except the counterbalance spring and finish, to be free from defects in materials and workmanship for 3 years or 20,000 cycles, whichever occurs first.

PART 2 - PRODUCTS

2.01 MANUFACTURERS

A. Source Limitations: Obtain each type of overhead coiling door from single source from single manufacturer.

2.02 PERFORMANCE REQUIREMENTS

A. Accessibility Standard: Comply with applicable provisions in the USDOJ's "2010 ADA Standards for Accessible Design" and ICC A117.1.

B. Structural Performance, Exterior Doors: Capable of withstanding the following design wind loads:
   1. Design Wind Load: As indicated on Drawings.
   2. Testing: According to ASTM E330/E330M.
   3. Deflection Limits: Design overhead coiling doors to withstand design wind load without evidencing permanent deformation or disengagement of door components.

2.03 STANDARD OVERHEAD COILING DOOR ASSEMBLY

A. Manufactured Products: Overhead coiling door formed with curtain of interlocking metal slats.
   1. Source Limitations: Obtain all components of overhead coiling door system, including framing and accessories, from single manufacturer.

B. BASIS OF DESIGN PRODUCTS
   1. Insulated Overhead Coiling Doors: Prefinished, galvanized rolling door with polyurethane insulated with thermal break construction, G90 galvanized 20 gauge interlocking flat faced steel slats 5/8 inch deep by 2-5/8 inch high with 24 gauge galvanized and primed back cover joint seals between sections, jamb seals on the ends and top seal against the header. Fit each slat with an endlock at each end to provide positive guide retention and ensure curtain alignment. Door as manufactured by Overhead Door Corp., "625 Series" Commercial Steel Doors, Model No. UFN1 with F265 "Stormtite Insulated Slats" or approved equal.

C. Operation Cycles: Door components and operators capable of operating for not less than 20,000. One operation cycle is complete when a door is opened from the closed position to the fully open position and returned to the closed position.

D. Air Infiltration: Maximum rate of 1.0 cfm/sq. ft. (5.1 L/s per sq. m) at 15 and 25 mph (24.1 and 40.2 km/h) when tested according to ASTM E283.

E. Insulated Door Curtain R-Value: 4.5 degree F x h x sq. ft./Btu (0.792 K x sq. m/W).

F. Insulated Door Assembly U-Factor: 0.45 Btu/degree F x sq. ft.

G. Door Curtain Material: Galvanized steel.

H. Door Curtain Slats: Basis of Design product standard flat profile slats designed for door opening sizes indicated..
   1. Insulated-Slat Interior Facing: Metal
   2. Gasket Seal. Manufacturer's standard continuous gaskets between slats.

I. Bottom Bar: Heavy duty extruded galvanized steel with weatherseals. Pneumatic sensing edge consisting of removable looped neoprene weather-stripping extending full length door

J. Curtain Jamb Guides: Manufacturer's standard Galvanized steel with exposed finish matching curtain slats. Vertical guide to provide weathertight closing with bracket. Horizontal tracks reinforced adequately to prevent deflection.

K. Hood: Galvanized steel.
   1. Shape: Round
   2. Mounting: Face of wall

L. Manual Door Operator: Chain-hoist operator.

M. Curtain Accessories: Equip door with weatherseals.

N. Locking: Two interior bottom bar slide bolts for manually operated doors. Chain keeper locks for chain hoist operation.

O. Door Finish:
   1. Baked-Enamel:Rust inhibitive, bonderized, baked-on prime coat and and a polyester top coat. Interior color shall be a manufacturers standard color. Color as selected by Architect from manufacturer's full range.
   2. Interior Curtain-Slat Facing: Match finish of exterior curtain-slat face.

2.04 DOOR CURTAIN MATERIALS AND CONSTRUCTION

A. Door Curtains: Fabricate overhead coiling-door curtain of interlocking metal slats, designed to withstand wind loading indicated, in a continuous length for width of door without splices. Unless otherwise indicated, provide slats of thickness and mechanical properties recommended by door manufacturer for performance, size, and type of door indicated, and as follows:
   1. Steel Door Curtain Slats: Zinc-coated (galvanized), cold-rolled structural-steel sheet; complying with ASTM A653/A653M, with G90 (Z275) zinc coating; nominal sheet thickness (coated) of 0.028 inch (0.71 mm); and as required.
   2. Insulation: Fill slats for insulated doors with manufacturer's standard thermal insulation complying with maximum flame-spread and smoke-developed indexes of 75 and 450, respectively, according to ASTM E84 or UL 723. Enclose insulation completely within slat faces.
   3. Metal Interior Curtain-Slat Facing: Match metal of exterior curtain-slat face, with minimum steel thickness of 0.010 inch (0.25 mm).

B. Curtain Jamb Guides: Manufacturer's standard angles or channels and angles of same material and finish as curtain slats unless otherwise indicated, with sufficient depth and strength to retain curtain, to allow curtain to operate smoothly, and to withstand loading. Slot bolt holes for guide adjustment. Provide removable stops on guides to prevent overtravel of curtain.

2.05 HOODS

A. General: Form sheet metal hood to entirely enclose coiled curtain and operating mechanism at opening head. Contour to fit end brackets to which hood is attached. Roll and reinforce top

and bottom edges for stiffness. Form closed ends for surface-mounted hoods and fascia for any portion of between-jamb mounting that projects beyond wall face. Equip hood with intermediate support brackets as required to prevent sagging.

1. Galvanized Steel: Nominal 0.028-inch- (0.71-mm-) thick, hot-dip galvanized-steel sheet with G90 (Z275) zinc coating, complying with ASTM A653/A653M.
2. Exterior-Mounted Doors: Fabricate hood to act as weather protection and with a perimeter sealant-joint-bead profile for applying joint sealant.

2.06 LOCKING DEVICES

A. Slide Bolt: Fabricate with side-locking bolts to engage through slots in tracks for locking by padlock, located on both left and right jamb sides, operable from coil side.

B. Chain Lock Keeper: Suitable for padlock.

2.07 CURTAIN ACCESSORIES

A. Weatherseals for Exterior Doors: Equip each exterior door with weather-stripping gaskets fitted to entire exterior perimeter of door for a weather-resistant installation unless otherwise indicated.

1. At door head, use 1/8-inch- (3-mm-) thick, replaceable, continuous-sheet baffle secured to inside of hood or field-installed on the header.
2. At door jambs, use replaceable, adjustable, continuous, flexible, 1/8-inch- (3-mm-) thick seals of flexible vinyl, rubber, or neoprene.

2.08 COUNTERBALANCE MECHANISM

A. General: Counterbalance doors by means of manufacturer's standard mechanism with an adjustable-tension, steel helical torsion spring mounted around a steel shaft and contained in a spring barrel connected to top of curtain with barrel rings. Use grease-sealed bearings or self-lubricating graphite bearings for rotating members.

B. Counterbalance Barrel: Fabricate spring barrel of manufacturer's standard hot-formed, structural-quality, seamless carbon-steel pipe, of sufficient diameter and wall thickness to support rolled-up curtain without distortion of slats and to limit barrel deflection to not more than 0.03 in./ft. (2.5 mm/m) of span under full load.

C. Counterbalance Spring: One or more oil-tempered, heat-treated steel helical torsion springs. Size springs to counterbalance weight of curtain, with uniform adjustment accessible from outside barrel. Secure ends of springs to barrel and shaft with cast-steel barrel plugs.

D. Torsion Rod for Counterbalance Shaft: Fabricate of manufacturer's standard cold-rolled steel, sized to hold fixed spring ends and carry torsional load.

E. Brackets: Manufacturer's standard mounting brackets of either cast iron or cold-rolled steel plate.

2.09 MANUAL DOOR OPERATORS

A. General: Equip door with manual door operator by door manufacturer.

B. Chain-Hoist Operator: Consisting of endless steel hand chain, chain-pocket wheel and guard, and gear-reduction unit with a maximum 25-lbf (111-N) force for door operation. Provide alloy-steel hand chain with chain holder secured to operator guide.

2.10 GENERAL FINISH REQUIREMENTS

A. Comply with NAAMM/NOMMA 500 for recommendations for applying and designating finishes.

B. Appearance of Finished Work: Noticeable variations in same piece are not acceptable. Variations in appearance of adjoining components are acceptable if they are within the range of approved Samples and are assembled or installed to minimize contrast.

2.11 STEEL AND GALVANIZED-STEEL FINISHES

A. Baked-Enamel or Powder-Coat Finish: Manufacturer's standard baked-on finish consisting of prime coat and thermosetting topcoat. Comply with coating manufacturer's written instructions for cleaning, pretreatment, application, and minimum dry film thickness.

PART 3 - EXECUTION

3.01 EXAMINATION

A. Field measure openings prior to shop drawing submittal and fabrication. Verify opening sizes, tolerances and conditions are acceptable.

B. Examine substrates areas, supports and conditions, with Installer present, for compliance with requirements for substrate construction and other conditions affecting performance of the Work.

C. Coordinate and schedule work under this section with work of other sections so as not to delay job progress.

D. Examine locations of electrical connections.

E. Proceed with installation only after unsatisfactory conditions have been corrected.

3.02 PREPARATION

A. Clean surfaces thoroughly prior to installation.

B. Prepare surfaces using the methods recommended by the manufacturer for achieving the best result for the substrate under the project conditions.

3.03 INSTALLATION, GENERAL

A. Install overhead coiling doors and operating equipment complete with necessary hardware, anchors, inserts, hangers, and equipment supports; according to manufacturer's written instructions and as specified.

B. Install overhead coiling doors, hoods, controls, and operators at the mounting locations indicated for each door.

C. Coiling door shall be mounted as indicated on drawings with guides braced in accordance with manufacturer's recommendations for installation. Door, when installed, shall fit flush, tight and level to horizontal construction with side jambs properly plumbed and supported to meet design criteria. Provide all accessory brackets and shims as may be necessary for a complete installation.

D. Use anchorage devices to securely fasten assembly to wall construction and building framing without distortion or stress.

E. Securely and rigidly brace components suspended from structure. Secure guides to structural members only.

F. Fit and align assembly including hardware; level and plumb, to provide smooth operation.

G. Coordinate installation of electrical service and access control interface with other trades. Complete wiring from disconnect to unit components.

H. Coordinate installation of sealants and backing materials at frame perimeter as specified in Division 07, Section Joint Sealants .

I. Install perimeter trim and closures.

J. Accessibility: Install overhead coiling doors, switches, and controls along accessible routes in compliance with the accessibility standard.

3.04 FIELD QUALITY CONTROL

A. Testing Agency: Owner will engage a qualified testing agency to perform tests and inspections and to furnish reports to Architect.

B. Repair or remove and replace installations where inspections indicate that they do not comply with specified requirements.

C. Reinspect repaired or replaced installations to determine if replaced or repaired door assembly installations comply with specified requirements.

3.05 STARTUP SERVICE

A. Engage a factory-authorized service representative to perform startup service.
   1. Complete installation and startup checks according to manufacturer's written instructions.
   2. After electrical circuitry has been energized, operate doors to confirm proper motor rotation and door performance.
   3. Test and adjust controls and safety devices. Replace damaged and malfunctioning controls and equipment.

3.06 ADJUSTING

A. Adjust hardware and moving parts to function smoothly so that doors operate easily, free of warp, twist, or distortion.
   1. Adjust exterior doors and components to be weather resistant.

B. Lubricate bearings and sliding parts as recommended by manufacturer.

C. Adjust seals to provide tight fit around entire perimeter.

D. Adjust hardware and operating assemblies for smooth and noiseless operation.

E. Test for proper operation and adjust as necessary to provide proper operation without binding or distortion.

3.07 MAINTENANCE SERVICE

A. Initial Maintenance Service: Beginning at Substantial Completion, maintenance service shall include three months' full maintenance by skilled employees of coiling-door Installer. Include quarterly preventive maintenance, repair or replacement of worn or defective components, lubrication, cleaning, and adjusting as required for proper door operation. Parts and supplies shall be manufacturer's authorized replacement parts and supplies.
   1. Perform maintenance, including emergency callback service, during normal working hours.

3.08 CLEANING AND PROTECTION

A. Clean curtain and components using non-abrasive materials and methods recommended by manufacturer.

B. Remove labels and visible markings.

C. Protect installed products until completion of project.

D. Touch-up, repair or replace damaged products before Substantial Completion.

3.09 DEMONSTRATION

A. Engage a factory-authorized service representative to demonstrate and train Owner's maintenance personnel to adjust, operate, and maintain overhead coiling doors.

END OF SECTION 08 33 23

SECTION 08-7100 – DOOR HARDWARE

PART 1 - GENERAL

1.01 RELATED DOCUMENTS

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

B. General Coordination Procedures, (Reference Specification Section 013100) General Contractor shall coordinate construction operations included in different Sections of the Specifications to ensure efficient and orderly installation of each part of the Work that depend on each other for proper installation, connection, and operation.

1.02 SUMMARY

A. Section includes:
   1. Mechanical and electrified door hardware for:
      a. Swinging doors.
   2. Electronic access control system components
   3. Field verification, preparation and modification of existing doors and frames to receive new door hardware.

B. Section excludes:
   1. Windows
   2. Cabinets (casework), including locks in cabinets
   3. Signage
   4. Toilet accessories
   5. Overhead doors

C. Related Sections:
   1. Division 01 Section “Alternates” for alternates affecting this section.
   2. Division 06 Section “Rough Carpentry”
   3. Division 06 Section "Finish Carpentry”
   4. Division 07 Section “Joint Sealants” for sealant requirements applicable to threshold installation specified in this section.
   5. Division 08 Sections:
      a. “Metal Doors and Frames”
      b. “Flush Wood Doors”
      c. “Stile and Rail Wood Doors”
      d. “Interior Aluminum Doors and Frames”
      e. "Aluminum-Framed Entrances and Storefronts"
      f. “Stainless Steel Doors and Frames”
      g. “Special Function Doors”
      h. "Entrances”
   6. Division 09 sections for touchup, finishing or refinishing of existing openings modified by this section.
   7. Division 26 “Electrical” sections for connections to electrical power system and for low-voltage wiring.
   8. Division 28 “Electronic Safety and Security” sections for coordination with other components of electronic access control system and fire alarm system.

1.03 REFERENCES

A. UL - Underwriters Laboratories
   1. UL 10B - Fire Test of Door Assemblies
   2. UL 10C - Positive Pressure Test of Fire Door Assemblies
   3. UL 1784 - Air Leakage Tests of Door Assemblies
   4. UL 305 - Panic Hardware

B. DHI - Door and Hardware Institute
   1. Sequence and Format for the Hardware Schedule
   2. Recommended Locations for Builders Hardware
   3. Key Systems and Nomenclature

C. NFPA – National Fire Protection Association
   1. NFPA 70 – National Electric Code
   2. NFPA 80 – 2016 Edition – Standard for Fire Doors and Other Opening Protectives
   3. NFPA 101 – Life Safety Code
   4. NFPA 105 – Smoke and Draft Control Door Assemblies
   5. NFPA 252 – Fire Tests of Door Assemblies

D. ANSI - American National Standards Institute
   1. ANSI/BHMA A156.1 - A156.29, and ANSI/BHMA A156.31 - Standards for Hardware and Specialties
   2. ANSI/BHMA A156.28 - Recommended Practices for Keying Systems

E. TAS – Texas Accessibility Standards
   1. For door hardware on doors in an accessible route, comply with provisions in the TDLR "2012 Accessibility Standards " (TAS).

1.04 SUBMITTALS

A. General:
   1. Submit in accordance with Conditions of Contract and Division 01 Submittal Procedures.
   2. Prior to forwarding submittal:
      a. Comply with procedures for verifying existing door and frame compatibility for new hardware, as specified in PART 3, "EXAMINATION" article, herein.
      b. Review drawings and Sections from related trades to verify compatibility with specified hardware.
      c. Highlight, encircle, or otherwise specifically identify on submittals: deviations from Contract Documents, issues of incompatibility or other issues which may detrimentally affect the Work.

B. Action Submittals:
   1. Product Data: Submit technical product data for each item of door hardware, installation instructions, maintenance of operating parts and finish, and other information necessary to show compliance with requirements.
   2. Riser and Wiring Diagrams: After final approval of hardware schedule, submit details of electrified door hardware, indicating:
      a. Wiring Diagrams: For power, signal, and control wiring and including:
         1) Details of interface of electrified door hardware and building safety and security systems.
         2) Schematic diagram of systems that interface with electrified door hardware.
         3) Point-to-point wiring.
         4) Risers.
   3. Samples for Verification: If requested by Architect, submit production sample of requested door hardware unit in finish indicated and tagged with full description for coordination with schedule.
      a. Samples will be returned to supplier. Units that are acceptable to Architect may, after final check of operations, be incorporated into Work, within limitations of key coordination requirements.
   4. Door Hardware Schedule:
      a. Submit concurrent with submissions of Product Data, Samples, and Shop Drawings. Coordinate submission of door hardware schedule with scheduling requirements of other work to facilitate fabrication of other work critical in Project construction schedule.

b. Submit under direct supervision of a Door Hardware Institute (DHI) certified Architectural Hardware Consultant (AHC) or Door Hardware Consultant (DHC) with hardware sets in vertical format as illustrated by Sequence of Format for the Hardware Schedule published by DHI.
c. Indicate complete designations of each item required for each opening, include:
1) Door Index: door number, heading number, and Architect's hardware set number.
2) Quantity, type, style, function, size, and finish of each hardware item.
3) Name and manufacturer of each item.
4) Fastenings and other pertinent information.
5) Location of each hardware set cross-referenced to indications on Drawings.
6) Explanation of all abbreviations, symbols, and codes contained in schedule.
7) Mounting locations for hardware.
8) Door and frame sizes and materials.
9) Degree of door swing and handing.
10) Operational Description of openings with electrified hardware covering egress, ingress (access), and fire/smoke alarm connections.

5. Key Schedule:
a. After Keying Conference, provide keying schedule that includes levels of keying, explanations of key system's function, key symbols used, and door numbers controlled.
b. Use ANSI/BHMA A156.28 "Recommended Practices for Keying Systems" as guideline for nomenclature, definitions, and approach for selecting optimal keying system.
c. Provide 3 copies of keying schedule for review prepared and detailed in accordance with referenced DHI publication. Include schematic keying diagram and index each key to unique door designations.
d. Index keying schedule by door number, keyset, hardware heading number, cross keying instructions, and special key stamping instructions.
e. Provide one complete bitting list of key cuts and one key system schematic illustrating system usage and expansion. Forward bitting list, key cuts and key system schematic directly to Owner, by means as directed by Owner.
f. Prepare key schedule by or under supervision of supplier, detailing Owner's final keying instructions for locks.
6. Templates: After final approval of hardware schedule, provide templates for doors, frames and other work specified to be factory or shop prepared for door hardware installation.

C. Informational Submittals:
1. Provide Qualification Data for Supplier, Installer and Architectural Hardware Consultant.
2. Provide Product Data:
a. Certify that door hardware approved for use on types and sizes of labeled fire-rated doors complies with listed fire-rated door assemblies.
b. Include warranties for specified door hardware.

D. Closeout Submittals:
1. Operations and Maintenance Data: Provide in accordance with Division 01 and include:
a. Complete information on care, maintenance, and adjustment; data on repair and replacement parts, and information on preservation of finishes.
b. Catalog pages for each product.
c. Factory order acknowledgement numbers (for warranty and service)
d. Name, address, and phone number of local representative for each manufacturer.
e. Parts list for each product.
f. Final approved hardware schedule edited to reflect conditions as-installed.
g. Final keying schedule
h. Copies of floor plans with keying nomenclature
i. Copy of warranties including appropriate reference numbers for manufacturers to identify project.
j. As-installed wiring diagrams for each opening connected to power, both low voltage and 110 volts.

1.05 QUALITY ASSURANCE

A. Qualifications and Responsibilities:
   1. Supplier: Recognized architectural hardware supplier with record of successful in-service performance for supplying door hardware similar in quantity, type, and quality to that indicated for this Project and that provides certified Architectural Hardware Consultant (AHC) or Door Hardware Consultant (DHC) available to Owner, Architect, and Contractor, at reasonable times during the Work for consultation.
      a. Warehousing Facilities: In Project's vicinity.
      b. Scheduling Responsibility: Preparation of door hardware and keying schedules.
      c. Engineering Responsibility: Preparation of data for electrified door hardware, including Shop Drawings, based on testing and engineering analysis of manufacturer's standard units in assemblies similar to those indicated for this Project.
      d. Coordination Responsibility: Assist in coordinating installation of electronic security hardware with Architect and electrical engineers and provide installation and technical data to Architect and other related subcontractors.
         1) Upon completion of electronic security hardware installation, inspect and verify that all components are working properly.
   2. Installer: Qualified tradesperson skilled in the application of commercial grade hardware with experience installing door hardware similar in quantity, type, and quality as indicated for this Project.
   3. Architectural Hardware Consultant: Person who is experienced in providing consulting services for door hardware installations that are comparable in material, design, and extent to that indicated for this Project and meets these requirements:
      a. For door hardware: DHI certified AHC or DHC.
      b. Can provide installation and technical data to Architect and other related subcontractors.
      c. Can inspect and verify components are in working order upon completion of installation.
      d. Capable of producing wiring diagram and coordinating installation of electrified hardware with Architect and electrical engineers.
   4. Single Source Responsibility: Obtain each type of door hardware from single manufacturer.

B. Certifications:
   1. Fire-Rated Door Openings:
      a. Provide door hardware for fire-rated openings that complies with NFPA 80 and requirements of authorities having jurisdiction.
      b. Provide only items of door hardware that are listed products tested by Underwriters Laboratories, Intertek Testing Services, or other testing and inspecting organizations acceptable to authorities having jurisdiction for use on types and sizes of doors indicated, based on testing at positive pressure and according to NFPA 252 or UL 10C and in compliance with requirements of fire-rated door and door frame labels.
   2. Smoke and Draft Control Door Assemblies:
      a. Provide door hardware that meets requirements of assemblies tested according to UL 1784 and installed in compliance with NFPA 105
      b. Comply with the maximum air leakage of 0.3 cfm/sq. ft. (3 cu. m per minute/sq. m) at tested pressure differential of 0.3-inch wg (75 Pa) of water.
   3. Electrified Door Hardware
      a. Listed and labeled as defined in NFPA 70, Article 100, by testing agency acceptable to authorities having jurisdiction.
   4. Accessibility Requirements:
      a. Comply with governing accessibility regulations cited in “REFERENCES” article, herein for door hardware on doors in an accessible route.

C. Pre-Installation Meetings
   1. Keying Conference
      a. Incorporate keying conference decisions into final keying schedule after reviewing door hardware keying system including:

1) Function of building, flow of traffic, purpose of each area, degree of security required, and plans for future expansion.
2) Preliminary key system schematic diagram.
3) Requirements for key control system.
4) Requirements for access control.
5) Address for delivery of keys.

2. Pre-installation Conference
   a. Review and finalize construction schedule and verify availability of materials, Installer's personnel, equipment, and facilities needed to make progress and avoid delays.
   b. Inspect and discuss preparatory work performed by other trades.
   c. Inspect and discuss electrical roughing-in for electrified door hardware.
   d. Review sequence of operation for each type of electrified door hardware.
   e. Review required testing, inspecting, and certifying procedures.
   f. Review questions or concerns related to proper installation and adjustment of door hardware.
3. Electrified Hardware Coordination Conference:
   a. Prior to ordering electrified hardware, schedule and hold meeting to coordinate door hardware with security, electrical, doors and frames, and other related suppliers.

D. Texas Department of Insurance Windstorm Requirements: This project falls under the Texas Department of Insurance Windstorm Inspection Program for Inland II. All products, materials and installation systems shall be evaluated and approved by the Texas Department of Insurance, Windstorm Inspection Program, and listed in the TDI Product Evaluation Index or approved by the Windstorm Engineer as outlined below. Products, materials and installation systems not presently approved by the Texas Department of Insurance, Windstorm Inspection Program, may be considered for this project however, they must be properly submitted through the Architect for review by the Windstorm Engineer. This submittal shall be a part of the initial submittal process outlines in Section 013400 and requirements for this portion are detailed within the Texas Department of Insurance Windstorm Inspection website at the following location: www.tdi.state.tx.us/wind/submittal_requi.html. Products, materials and installation systems not approved by the Windstorm Engineer shall NOT be installed or utilized on this project.

1.06 DELIVERY, STORAGE, AND HANDLING

A. Inventory door hardware on receipt and provide secure lock-up for hardware delivered to Project site. Promptly replace products damaged during shipping.

B. Tag each item or package separately with identification coordinated with final door hardware schedule, and include installation instructions, templates, and necessary fasteners with each item or package. Deliver each article of hardware in manufacturer’s original packaging.

C. Maintain manufacturer-recommended environmental conditions throughout storage and installation periods.

D. Provide secure lock-up for door hardware delivered to Project. Control handling and installation of hardware items so that completion of Work will not be delayed by hardware losses both before and after installation.

E. Handle hardware in manner to avoid damage, marring, or scratching. Correct, replace or repair products damaged during Work. Protect products against malfunction due to paint, solvent, cleanser, or any chemical agent.

F. Deliver keys to manufacturer of key control system for subsequent delivery to Owner.

1.07 COORDINATION

A. Coordinate layout and installation of floor-recessed door hardware with floor construction. Cast anchoring inserts into concrete.

B. Installation Templates: Distribute for doors, frames, and other work specified to be factory or shop prepared. Check Shop Drawings of other work to confirm that adequate provisions are made for locating and installing door hardware to comply with indicated requirements.

C. Security: Coordinate installation of door hardware, keying, and access control with Owner's security consultant.

D. Electrical System Roughing-In: Coordinate layout and installation of electrified door hardware with connections to power supplies and building safety and security systems.

E. Existing Openings: Where existing doors, frames and/or hardware are to remain, field verify existing functions, conditions and preparations and coordinate to suit opening conditions and to provide proper door operation.

1.08 WARRANTY

A. Manufacturer's standard form in which manufacturer agrees to repair or replace components of door hardware that fail in materials or workmanship within published warranty period.
   1. Warranty does not cover damage or faulty operation due to improper installation, improper use or abuse.
   2. Warranty Period: Beginning from date of Substantial Completion, for durations indicated in manufacturer’s published listings.
      a. Locksets
         1) Mechanical: 10 years
         2) Electrified: 3 year
      b. Exit Devices
         1) Mechanical: 10 years
         2) Electrified: 3 year
      c. Closers
         1) Mechanical: 30 years

1.09 MAINTENANCE

A. Furnish complete set of special tools required for maintenance and adjustment of hardware, including changing of cylinders.

B. Turn over unused materials to Owner for maintenance purposes.

PART 2 - PRODUCTS

2.01 MANUFACTURERS

A. Approval of manufacturers and/or products other than those listed as “Scheduled Manufacturer” or “Acceptable Manufacturers” in the individual article for the product category shall be in accordance with QUALITY ASSURANCE article, herein.

B. Approval of products from manufacturers indicated in “Acceptable Manufacturers” is contingent upon those products providing all functions and features and meeting all requirements of scheduled manufacturer’s product.

C. Where specified hardware is not adaptable to finished shape or size of members requiring hardware, furnish suitable types having same operation and quality as type specified, subject to Architect's approval.

2.02 MATERIALS

A. Fasteners
   1. Provide hardware manufactured to conform to published templates, generally prepared for machine screw installation.

2. Furnish screws for installation with each hardware item. Finish exposed (exposed under any condition) screws to match hardware finish, or, if exposed in surfaces of other work, to match finish of this other work including prepared for paint surfaces to receive painted finish.
3. Provide concealed fasteners for hardware units exposed when door is closed except when no standard units of type specified are available with concealed fasteners. Do not use thru-bolts for installation where bolt head or nut on opposite face is exposed in other work unless thru-bolts are required to fasten hardware securely. Review door specification and advise Architect if thru-bolts are required.
4. Install hardware with fasteners provided by hardware manufacturer.

B. Modification and Preparation of Existing Doors: Where existing door hardware is indicated to be removed and reinstalled.
1. Provide necessary fillers, Dutchmen, reinforcements, and fasteners, compatible with existing materials, as required for mounting new opening hardware and to cover existing door and frame preparations.
2. Use materials which match materials of adjacent modified areas.
3. When modifying existing fire-rated openings, provide materials permitted by NFPA 80 as required to maintain fire-rating.

C. Provide screws, bolts, expansion shields, drop plates and other devices necessary for hardware installation.
1. Where fasteners are exposed to view: Finish to match adjacent door hardware material.

D. Cable and Connectors: Hardwired Electronic Access Control Lockset and Exit Device Trim:
1. Data: 24AWG, 4 conductor shielded, Belden 9843, 9841 or comparable.
2. DC Power: 18 AWG, 2 conductor, Belden 8760 or comparable.
3. Provide type of data and DC power cabling required by access control device manufacturer for this installation.
4. Where scheduled in the hardware sets, provide each item of electrified hardware and wire harnesses with sufficient number and wire gauge with standardized Molex plug connectors to accommodate electric function of specified hardware. Provide Molex connectors that plug directly into connectors from harnesses, electric locking and power transfer devices. Provide through-door wire harness for each electrified locking device installed in a door and wire harness for each electrified hinge, electrified continuous hinge, electrified pivot, and electric power transfer for connection to power supplies.

2.03 HINGES

A. Manufacturers and Products:
1. Scheduled Manufacturer and Product: Ives 5BB series.
2. Acceptable Manufacturers and Products: Hager BB series, McKinney TA/T4A series, Stanley FBB Series.

B. Requirements:
1. Provide hinges conforming to ANSI/BHMA A156.1.
2. 1-3/4 inch thick doors, up to and including 36 inches wide:
   a. Exterior: Standard weight, bronze or stainless steel, 4-1/2 inches high
   b. Interior: Standard weight, steel, 4-1/2 inches high
3. 1-3/4 inch thick doors over 36 inches wide:
   a. Exterior: Heavy weight, bronze/stainless steel, 5 inches high
   b. Interior: Heavy weight, steel, 5 inches high
4. 2 inches or thicker doors:
   a. Exterior: Heavy weight, bronze or stainless steel, 5 inches high
   b. Interior: Heavy weight, steel, 5 inches high
5. Provide three hinges per door leaf for doors 90 inches or less in height, and one additional hinge for each 30 inches of additional door height.
6. Where new hinges are specified for existing doors or existing frames, provide new hinges of identical size to hinge preparation present in existing door or existing frame.

7. Hinge Pins: Except as otherwise indicated, provide hinge pins as follows:
    a. Steel Hinges: Steel pins
    b. Non-Ferrous Hinges: Stainless steel pins
    c. Out-Swinging Exterior Doors: Non-removable pins
    d. Out-Swinging Interior Lockable Doors: Non-removable pins
    e. Interior Non-lockable Doors: Non-rising pins
8. Width of hinges: 4-1/2 inches at 1-3/4 inch thick doors, and 5 inches at 2 inches or thicker doors. Adjust hinge width as required for door, frame, and wall conditions to allow proper degree of opening.
9. Provide hinges with electrified options as scheduled in the hardware sets. Provide with sufficient number and wire gage to accommodate electric function of specified hardware. Locate electric hinge at second hinge from bottom or nearest to electrified locking component.
10. Provide mortar guard for each electrified hinge specified.
11. Provide spring hinges where specified. Provide two spring hinges and one bearing hinge per door leaf for doors 90 inches or less in height. Provide one additional bearing hinge for each 30 inches of additional door height.

2.04 CONTINUOUS HINGES

A. Aluminum Geared
    1. Manufacturers:
        a. Scheduled Manufacturer: Ives.
        b. Acceptable Manufacturers: Select, Stanley.
    2. Requirements:
        a. Provide aluminum geared continuous hinges conforming to ANSI/BHMA A156.26, Grade 1.
        b. Provide aluminum geared continuous hinges, where specified in the hardware sets, fabricated from 6063-T6 aluminum.
        c. Provide split nylon bearings at each hinge knuckle for quiet, smooth, self-lubricating operation.
        d. Provide hinges capable of supporting door weights up to 450 pounds, and successfully tested for 1,500,000 cycles.
        e. On fire-rated doors, provide aluminum geared continuous hinges that are classified for use on rated doors by testing agency acceptable to authority having jurisdiction.
        f. Provide aluminum geared continuous hinges with electrified option scheduled in the hardware sets. Provide with sufficient number and wire gage to accommodate electric function of specified hardware.
        g. Install hinges with fasteners supplied by manufacturer.
        h. Provide hinges 1 inch shorter in length than nominal height of door, unless otherwise noted or door details require shorter length and with symmetrical hole pattern.

2.05 ELECTRIC POWER TRANSFER

A. Manufacturers:
    a. Scheduled Manufacturer: Von Duprin EPT-10.
    b. Acceptable Manufacturers: ABH PT1000, Securitron CEPT-10.

B. Requirements:
    1. Provide power transfer with electrified options as scheduled in the hardware sets. Provide with number and gage of wires sufficient to accommodate electric function of specified hardware.
    2. Locate electric power transfer per manufacturer’s template and UL requirements, unless interference with operation of door or other hardware items.

2.06 FLUSH BOLTS

A. Manufacturers:
    1. Scheduled Manufacturer: Ives.

2. Acceptable Manufacturers: Burns, Rockwood.

B. Requirements:
1. Provide automatic, constant latching, and manual flush bolts with forged bronze or stainless-steel face plates, extruded brass levers, and with wrought brass guides and strikes. Provide 12 inch steel or brass rods at doors up to 90 inches in height. For doors over 90 inches in height increase top rods by 6 inches for each additional 6 inches of door height. Provide dust-proof strikes at each bottom flush bolt.

2.07 COORDINATORS

A. Manufacturers:
1. Scheduled Manufacturer: Ives.
2. Acceptable Manufacturers: Burns, Rockwood.

B. Requirements:
1. Where pairs of doors are equipped with automatic flush bolts, an astragal, or other hardware that requires synchronized closing of the doors, provide bar-type coordinating device, surface applied to underside of stop at frame head.
2. Provide filler bar of correct length for unit to span entire width of opening, and appropriate brackets for parallel arm door closers, surface vertical rod exit device strikes or other stop mounted hardware. Factory-prepared coordinators for vertical rod devices as specified.

2.08 CYLINDRICAL LOCKS – GRADE 1

A. Manufacturers and Products:
1. Scheduled Manufacturer and Product: Schlage ND series.
2. Acceptable Manufacturers and Products: Sargent 11-Line, Best 93K Series.

B. Requirements:
1. Provide cylindrical locks conforming to ANSI/BHMA A156.2 Series 4000, Grade 1, and UL Listed for 3 hour fire doors.
2. Cylinders: Refer to “KEYING” article, herein.
3. Provide locks with standard 2-3/4 inches backset, unless noted otherwise, with 1/2 inch latch throw. Provide proper latch throw for UL listing at pairs.
4. Provide locksets with separate anti-rotation thru-bolts, and no exposed screws.
5. Provide independently operating levers with two external return spring cassettes mounted under roses to prevent lever sag.
6. Provide standard ASA strikes unless extended lip strikes are necessary to protect trim.
7. Provide electrified options as scheduled in the hardware sets.
8. Lever Trim: Solid cast levers without plastic inserts and wrought roses on both sides.
   a. Lever Design: Schlage Rhodes.

2.09 EXIT DEVICES

A. Manufacturers and Products:
1. Scheduled Manufacturer and Product: Von Duprin **99/33A series.**
2. Acceptable Manufacturers and Products: Precision APEX 2000 series, Sargent 80 series.

B. Requirements:
1. Provide exit devices tested to ANSI/BHMA A156.3 Grade 1 and UL listed for Panic Exit or Fire Exit Hardware.
2. Cylinders: Refer to “KEYING” article, herein.
3. Provide touchpad type exit devices, fabricated of brass, bronze, stainless steel, or aluminum, plated to standard architectural finishes to match balance of door hardware.
4. Touchpad must extend a minimum of one half of door width. No plastic inserts are allowed in touchpads.
5. Provide exit devices with deadlatching feature for security and for future addition of alarm kits and/or other electrified requirements.

6. Provide exit devices with weather resistant components that can withstand harsh conditions of various climates and corrosive cleaners used in outdoor pool environments.
7. Provide flush end caps for exit devices.
8. Provide exit devices with manufacturer's approved strikes.
9. Provide exit devices cut to door width and height. Install exit devices at height recommended by exit device manufacturer, allowable by governing building codes, and approved by Architect.
10. Mount mechanism case flush on face of doors, or provide spacers to fill gaps behind devices. Where glass trim or molding projects off face of door, provide glass bead kits.
11. Provide cylinder or hex-key dogging as specified at non fire-rated openings.
12. Removable Mullions: 2 inches x 3 inches steel tube. Where scheduled as keyed removable mullion, provide type that can be removed by use of a keyed cylinder, which is self-locking when re-installed.
13. Provide factory drilled weep holes for exit devices used in full exterior application, highly corrosive areas, and where noted in hardware sets.
14. Provide electrified options as scheduled.
15. Rim Exit Devices: provide devices with non-tapered smart latchbolt with 90° latchbolt to strike engagement under stress and Static Load Resistance of 2000 pounds.
16. Top latch mounting: double or single tab mount for steel doors, face mount for aluminum doors eliminating requirement of tabs, and double tab mount for wood doors.
17. Provide exit devices with optional trim designs to match other lever and pull designs used on the project.

2.10 CYLINDERS

A. Manufacturers:
   1. Scheduled Manufacturer: Match Owner's Existing Key System – BEST.

B. Requirements:
   1. Provide **interchangeable** cylinders/cores to match Owner's existing key system, compliant with ANSI/BHMA A156.5; latest revision; cylinder face finished to match lockset, manufacturer's series as indicated. Refer to "KEYING" article, herein.

C. Construction Keying:
   1. Replaceable Construction Cores.
      a. Provide temporary construction cores replaceable by permanent cores, furnished in accordance with the following requirements.
         1) 3 construction control keys
         2) 12 construction change (day) keys.

2.11 KEYING

A. Provide a factory registered keying system, complying with guidelines in ANSI/BHMA A156.28, incorporating decisions made at keying conference.

B. Requirements:
   1. Provide permanent cylinders/cores keyed by the manufacturer according to the following key system.
      a. Master Keying system as directed by the Owner.
      b. No Master Keying: Cylinders/cores only operated by change (day) keys.
   2. Forward bitting list and keys separately from cylinders, by means as directed by Owner. Failure to comply with forwarding requirements will be cause for replacement of cylinders/cores involved at no additional cost to Owner.
   3. Provide keys with the following features:
      a. Material: Nickel silver; minimum thickness of .107-inch (2.3mm)
   4. Identification:
      a. Mark permanent cylinders/cores and keys with applicable blind code per DHI publication "Keying Systems and Nomenclature" for identification. Do not provide blind code marks with actual key cuts.

b. Identification stamping provisions must be approved by the Architect and Owner.
c. Stamp cylinders/cores and keys with Owner's unique key system facility code as established by the manufacturer; key symbol and embossed or stamped with "DO NOT DUPLICATE" along with the "PATENTED" or patent number to enforce the patent protection.
d. Failure to comply with stamping requirements will be cause for replacement of keys involved at no additional cost to Owner.
e. Forward permanent cylinders/cores to Owner, separately from keys, by means as directed by Owner.

5. Quantity: Furnish in the following quantities.
   a. Change (Day) Keys: 3 per cylinder/core.
   b. Permanent Control Keys: 3.
   c. Master Keys: 6.

2.12 DOOR CLOSERS

A. Manufacturers and Products:
   1. Scheduled Manufacturer and Product: LCN 4040XP series.
   2. Acceptable Manufacturers and Products: Corbin-Russwin DC8000 series, Sargent 281 series.

B. Requirements:
   1. Provide door closers conforming to ANSI/BHMA A156.4 Grade 1 requirements by BHMA certified independent testing laboratory. ISO 9000 certify closers. Stamp units with date of manufacture code.
   2. Provide door closers with fully hydraulic, full rack and pinion action with high strength cast iron cylinder, and full complement bearings at shaft.
   3. Cylinder Body: 1-1/2 inch diameter with 5/8 inch diameter double heat-treated pinion journal.
   4. Hydraulic Fluid: Fireproof, passing requirements of UL10C, and requiring no seasonal closer adjustment for temperatures ranging from 120 degrees F to -30 degrees F.
   5. Spring Power: Continuously adjustable over full range of closer sizes, and providing reduced opening force as required by accessibility codes and standards.
   6. Hydraulic Regulation: By tamper-proof, non-critical valves, with separate adjustment for latch speed, general speed, and backcheck.
   7. Provide closers with solid forged steel main arms and factory assembled heavy-duty forged forearms for parallel arm closers.
   8. Pressure Relief Valve (PRV) Technology: Not permitted.
   9. Finish for Closer Cylinders, Arms, Adapter Plates, and Metal Covers: Powder coating finish which has been certified to exceed 100 hours salt spray testing as described in ANSI Standard A156.4 and ASTM B117, or has special rust inhibitor (SRI).
   10. Provide special templates, drop plates, mounting brackets, or adapters for arms as required for details, overhead stops, and other door hardware items interfering with closer mounting.

2.13 DOOR TRIM

A. Manufacturers:
   1. Scheduled Manufacturer: Ives.
   2. Acceptable Manufacturers: Burns, Rockwood.

B. Requirements:
   1. Provide push plates, push bars, pull plates, and pulls with diameter and length as scheduled.

2.14 PROTECTION PLATES

A. Manufacturers:
   1. Scheduled Manufacturer: Ives.
   2. Acceptable Manufacturers: Burns, Rockwood.

B. Requirements:
   1. Provide protection plates with a minimum of 0.050 inch thick, beveled four edges as scheduled. Furnish with sheet metal or wood screws, finished to match plates.
   2. Sizes plates 2 inches (51 mm) less width of door on single doors, pairs of doors with a mullion, and doors with edge guards. Size plates 1 inch (25 mm) less width of door on pairs without a mullion or edge guards.
   3. At fire rated doors, provide protection plates over 16 inches high with UL label.

2.15 OVERHEAD STOPS AND OVERHEAD STOP/HOLDERS

A. Manufacturers:
   1. Scheduled Manufacturers: Glynn-Johnson.
   2. Acceptable Manufacturers: Rixson, Sargent.

B. Requirements:
   1. Provide overhead stop at any door where conditions do not allow for a wall stop or floor stop presents tripping hazard.
   2. Provide friction type at doors without closer and positive type at doors with closer.

2.16 THRESHOLDS, SEALS, DOOR SWEEPS, AUTOMATIC DOOR BOTTOMS, AND GASKETING

A. Manufacturers:
   1. Scheduled Manufacturer: Zero International.
   2. Acceptable Manufacturers: National Guard, Reese.

B. Requirements:
   1. Provide thresholds, weather-stripping, and gasketing systems as specified and per architectural details. Match finish of other items.
   2. Smoke- and Draft-Control Door Assemblies: Where smoke- and draft-control door assemblies are required, provide door hardware that meets requirements of assemblies tested according to UL 1784 and installed in compliance with NFPA 105.
   3. Provide door sweeps, seals, astragals, and auto door bottoms only of type where resilient or flexible seal strip is easily replaceable and readily available.
   4. Size thresholds 1/2 inch high by 5 inches wide by door width unless otherwise specified in the hardware sets or detailed in the drawings.

2.17 FINISHES

A. Finish: BHMA 626/652 (US26D); except:
   1. Hinges at Exterior Doors: BHMA 630 (US32D)
   2. Continuous Hinges: BHMA 628 (US28)
   3. Push Plates, Pulls, and Push Bars: BHMA 630 (US32D)
   4. Protection Plates: BHMA 630 (US32D)
   5. Overhead Stops and Holders: BHMA 630 (US32D)
   6. Door Closers: Powder Coat to Match
   7. Wall Stops: BHMA 630 (US32D)
   8. Latch Protectors: BHMA 630 (US32D)
   9. Weatherstripping: Clear Anodized Aluminum
   10. Thresholds: Mill Finish Aluminum

PART 3 - EXECUTION

3.01 EXAMINATION

A. Prior to installation of hardware, examine doors and frames, with Installer present, for compliance with requirements for installation tolerances, labeled fire-rated door assembly construction, wall and floor construction, and other conditions affecting performance. Verify doors, frames, and walls have been properly reinforced for hardware installation.

B. Field verify existing doors and frames receiving new hardware and existing conditions receiving new openings. Verify that new hardware is compatible with existing door and frame preparation and existing conditions.

C. Examine roughing-in for electrical power systems to verify actual locations of wiring connections before electrified door hardware installation.

D. Submit a list of deficiencies in writing and proceed with installation only after unsatisfactory conditions have been corrected.

3.02 PREPARATION

A. Where on-site modification of doors and frames is required:
   1. Carefully remove existing door hardware and components being reused. Clean, protect, tag, and store in accordance with storage and handling requirements specified herein.
   2. Field modify and prepare existing doors and frames for new hardware being installed.
   3. When modifications are exposed to view, use concealed fasteners, when possible.
   4. Prepare hardware locations and reinstall in accordance with installation requirements for new door hardware and with:
      a. Steel Doors and Frames: For surface applied door hardware, drill and tap doors and frames according to ANSI/SDI A250.6.
      b. Wood Doors: DHI WDHS.5 "Recommended Hardware Reinforcement Locations for Mineral Core Wood Flush Doors."
      c. Doors in rated assemblies: NFPA 80 for restrictions on on-site door hardware preparation.

3.03 INSTALLATION

A. Mount door hardware units at heights to comply with the following, unless otherwise indicated or required to comply with governing regulations.
   1. Standard Steel Doors and Frames: ANSI/SDI A250.8.
   2. Custom Steel Doors and Frames: HMMA 831.
   3. Wood Doors: DHI WDHS.3, "Recommended Locations for Architectural Hardware for Wood Flush Doors."

B. Install each hardware item in compliance with manufacturer’s instructions and recommendations, using only fasteners provided by manufacturer.

C. Do not install surface mounted items until finishes have been completed on substrate. Protect all installed hardware during painting.

D. Set units level, plumb and true to line and location. Adjust and reinforce attachment substrate as necessary for proper installation and operation.

E. Drill and countersink units that are not factory prepared for anchorage fasteners. Space fasteners and anchors according to industry standards.

F. Install operating parts so they move freely and smoothly without binding, sticking, or excessive clearance.

G. Hinges: Install types and in quantities indicated in door hardware schedule but not fewer than quantity recommended by manufacturer for application indicated.

H. Lock Cylinders:
   1. Install construction cores to secure building and areas during construction period.
   2. Replace construction cores with permanent cores as indicated in keying section.
   3. **Furnish permanent cores to Owner for installation.**

I. Wiring: Coordinate with Division 26, ELECTRICAL sections for:
   1. Conduit, junction boxes and wire pulls.
   2. Connections to and from power supplies to electrified hardware.
   3. Connections to fire/smoke alarm system and smoke evacuation system.

4. Connection of wire to door position switches and wire runs to central room or area, as directed by Architect.
5. Testing and labeling wires with Architect's opening number.

J. Key Control System: Tag keys and place them on markers and hooks in key control system cabinet, as determined by final keying schedule.

K. Door Closers: Mount closers on room side of corridor doors, inside of exterior doors, and stair side of stairway doors from corridors. Mount closers so they are not visible in corridors, lobbies and other public spaces unless approved by Architect.

L. Closer/Holders: Mount closer/holders on room side of corridor doors, inside of exterior doors, and stair side of stairway doors.

M. Power Supplies: Locate power supplies as indicated or, if not indicated, above accessible ceilings or in equipment room, or alternate location as directed by Architect.

N. Thresholds: Set thresholds in full bed of sealant complying with requirements specified in Division 07 Section "Joint Sealants."

O. Stops: Provide floor stops for doors unless wall or other type stops are indicated in door hardware schedule. Do not mount floor stops where they may impede traffic or present tripping hazard.

P. Perimeter Gasketing: Apply to head and jamb, forming seal between door and frame.

Q. Meeting Stile Gasketing: Fasten to meeting stiles, forming seal when doors are closed.

R. Door Bottoms and Sweeps: Apply to bottom of door, forming seal with threshold when door is closed.

3.04 FIELD QUALITY CONTROL

A. Engage qualified, independent, Door Hardware Institute (DHI) Certified, Fire Door Assembly Inspector (CFDAI) or Architectural Hardware Consultant (AHC) to perform inspections, prepare inspection reports, and issue inspection reports.
1. Representative will inspect door hardware and state in each report whether installed work complies with or deviates from requirements, including whether door hardware is properly installed and adjusted.
2. Representative will inspect fire rated doors and state in report whether installed work complies with NFPA 80.

3.05 ADJUSTING

A. Initial Adjustment: Adjust and check each operating item of door hardware and each door to ensure proper operation or function of every unit. Replace units that cannot be adjusted to operate as intended. Adjust door control devices to compensate for final operation of heating and ventilating equipment and to comply with referenced accessibility requirements.
1. Electric Strikes: Adjust horizontal and vertical alignment of keeper to properly engage lock bolt.
2. Door Closers: Adjust sweep period to comply with accessibility requirements and requirements of authorities having jurisdiction.

B. Occupancy Adjustment: Approximately three to six months after date of Substantial Completion, examine and readjust each item of door hardware, including adjusting operating forces, as necessary to ensure function of doors and door hardware.

3.06 CLEANING AND PROTECTION

A. Clean adjacent surfaces soiled by door hardware installation.

B. Clean operating items per manufacturer's instructions to restore proper function and finish.

C. Provide final protection and maintain conditions that ensure door hardware is without damage or deterioration at time of Substantial Completion.

3.07 DOOR HARDWARE SCHEDULE

A. The intent of the hardware specification is to specify the hardware for interior and exterior doors, and to establish a type, continuity, and standard of quality. However, it is the door hardware supplier's responsibility to thoroughly review existing conditions, schedules, specifications, drawings, and other Contract Documents to verify the suitability of the hardware specified.

B. Discrepancies, conflicting hardware, and missing items are to be brought to the attention of the architect with corrections made prior to the bidding process. Omitted items not included in a hardware set should be scheduled with the appropriate additional hardware required for proper application.

C. Hardware items are referenced in the following hardware schedule. Refer to the above-specifications for special features, options, cylinders/keying, and other requirements.

D. Hardware Sets:

HARDWARE GROUP NO. 001

QTY		DESCRIPTION	CATALOG NUMBER		FINISH	MFR
1	EA	MORTISE CYLINDER	1E74 (CAM AS REQUIRED)		626	BES
1	EA	SFIC CORE	SFIC 7-PIN CORE AS REQ BY OWNER		626	BES
		NOTE	BALANCE OF HARDWARE BY DOOR MFR			

-COORDINATE HARDWARE WITH DOOR MFR.
-REMOVE CYLINDER AND CORE IF NOT REQUIRED.

HARDWARE GROUP NO. 207

QTY		DESCRIPTION	CATALOG NUMBER		FINISH	MFR
3	EA	HINGE	5BB1 4.5 X 4.5		652	IVE
1	EA	STOREROOM LOCK	ND80HD RHO		626	SCH
1	EA	SFIC CORE	SFIC 7-PIN CORE AS REQ BY OWNER		626	BES
1	EA	OH STOP	90S		630	GLY
1	EA	SURFACE CLOSER	4040XP RW/PA X MTG BRKT, SPCR & PLATE (REG OR PA ARM AS REQ)		689	LCN
1	EA	KICK PLATE	8400 10" X 2" LDW B-CS		630	IVE
1	EA	GASKETING	488S PSA H & J (USE SILENCERS @ NON-RATED DOORS)		BK	ZER

HARDWARE GROUP NO. 216S

QTY		DESCRIPTION	CATALOG NUMBER		FINISH	MFR
6	EA	HINGE	5BB1 4.5 X 4.5		652	IVE
1	EA	CONST LATCHING BOLT	FB51P/FB61P AS REQ		630	IVE
1	EA	DUST PROOF STRIKE	DP2		626	IVE
1	EA	STOREROOM LOCK	ND80HD RHO		626	SCH
1	EA	SFIC CORE	SFIC 7-PIN CORE AS REQ BY OWNER		626	BES
2	EA	OH STOP	90S		630	GLY
1	EA	SURFACE CLOSER	4040XP RW/PA X MTG BRKT, SPCR & PLATE (REG OR PA ARM AS REQ)		689	LCN
2	EA	KICK PLATE	8400 10" X 1" LDW B-CS		630	IVE
1	EA	GASKETING	488S PSA H & J (USE SILENCERS @ NON-RATED DOORS)		BK	ZER
1	SET	MEETING STILE	8193AA (2 PCS - 1 SET) (OMIT @ NON-RATED DOORS)		AA	ZER

HARDWARE GROUP NO. 341

QTY		DESCRIPTION	CATALOG NUMBER		FINISH	MFR
3	EA	HINGE	5BB1 4.5 X 4.5		652	IVE
1	EA	PRIVACY LOCK W/ OUTSIDE INDICATOR	ND40S RHO OS-OCC		626	SCH
1	EA	SURFACE CLOSER	4040XP RW/PA X MTG BRKT, SPCR & PLATE (REG OR PA ARM AS REQ)		689	LCN
1	EA	KICK PLATE	8400 10" X 2" LDW B-CS		630	IVE
1	EA	DOOR STOP	FS436/WS407CCV AS REQ		630	IVE
1	EA	GASKETING	488S PSA H & J (USE SILENCERS @ NON-RATED DOORS)		BK	ZER

HARDWARE GROUP NO. 341G

QTY		DESCRIPTION	CATALOG NUMBER		FINISH	MFR
3	EA	HINGE	5BB1 4.5 X 4.5		652	IVE
1	EA	PRIVACY LOCK W/ OUTSIDE INDICATOR	ND40S RHO OS-OCC		626	SCH
1	EA	SURFACE CLOSER	4040XP RW/PA X MTG BRKT, SPCR & PLATE (REG OR PA ARM AS REQ)		689	LCN
1	EA	KICK PLATE	8400 10" X 2" LDW B-CS		630	IVE
1	EA	DOOR STOP	FS436/WS407CCV AS REQ		630	IVE
1	EA	GASKETING	488S PSA H & J		BK	ZER
1	EA	DOOR SWEEP	39A		A	ZER
1	EA	THRESHOLD	545A (COORDINATE WITH SILL CONDITIONS)		A	ZER

HARDWARE GROUP NO. 401

QTY		DESCRIPTION	CATALOG NUMBER		FINISH	MFR
3	EA	HINGE	5BB1 4.5 X 4.5		652	IVE
1	EA	PASSAGE SET	ND10S RHO		626	SCH
1	EA	SURFACE CLOSER	4040XP RW/PA X MTG BRKT, SPCR & PLATE (REG OR PA ARM AS REQ)		689	LCN
1	EA	KICK PLATE	8400 10" X 2" LDW B-CS		630	IVE
1	EA	DOOR STOP	FS436/WS407CCV AS REQ		630	IVE
1	EA	GASKETING	488S PSA H & J (USE SILENCERS @ NON-RATED DOORS)		BK	ZER

HARDWARE GROUP NO. 403

QTY		DESCRIPTION	CATALOG NUMBER		FINISH	MFR
3	EA	HINGE	5BB1 4.5 X 4.5		652	IVE
1	EA	PASSAGE SET	ND10S RHO		626	SCH
1	EA	DOOR STOP	FS436/WS407CCV AS REQ		630	IVE
1	EA	GASKETING	488S PSA H & J (USE SILENCERS @ NON-RATED DOORS)		BK	ZER

HARDWARE GROUP NO. 503

QTY		DESCRIPTION	CATALOG NUMBER		FINISH	MFR
3	EA	HINGE	5BB1 4.5 X 4.5		652	IVE
1	EA	CLASSROOM LOCK	ND70HD RHO		626	SCH
1	EA	SFIC CORE	SFIC 7-PIN CORE AS REQ BY OWNER		626	BES
1	EA	DOOR STOP	FS436/WS407CCV AS REQ		630	IVE
1	EA	GASKETING	488S PSA H & J (USE SILENCERS @ NON-RATED DOORS)		BK	ZER

HARDWARE GROUP NO. 503G

QTY		DESCRIPTION	CATALOG NUMBER		FINISH	MFR
3	EA	HINGE	5BB1 4.5 X 4.5		652	IVE
1	EA	CLASSROOM LOCK	ND70HD RHO		626	SCH
1	EA	SFIC CORE	SFIC 7-PIN CORE AS REQ BY OWNER		626	BES
1	EA	DOOR STOP	FS436/WS407CCV AS REQ		630	IVE
1	EA	GASKETING	488S PSA H & J		BK	ZER
1	EA	DOOR SWEEP	39A		A	ZER
1	EA	THRESHOLD	545A (COORDINATE WITH SILL CONDITIONS)		A	ZER

HARDWARE GROUP NO. 503GS

QTY		DESCRIPTION	CATALOG NUMBER		FINISH	MFR
3	EA	HINGE	5BB1 4.5 X 4.5		652	IVE
1	EA	CLASSROOM LOCK	ND70HD RHO		626	SCH
1	EA	SFIC CORE	SFIC 7-PIN CORE AS REQ BY OWNER		626	BES
1	EA	OH STOP	90S		630	GLY
1	EA	GASKETING	488S PSA H & J		BK	ZER
1	EA	DOOR SWEEP	39A		A	ZER
1	EA	THRESHOLD	545A (COORDINATE WITH SILL CONDITIONS)		A	ZER

HARDWARE GROUP NO. 503GW

QTY		DESCRIPTION	CATALOG NUMBER		FINISH	MFR
3	EA	HINGE	5BB1 5 X 4.5		652	IVE
1	EA	CLASSROOM LOCK	ND70HD RHO		626	SCH
1	EA	SFIC CORE	SFIC 7-PIN CORE AS REQ BY OWNER		626	BES
1	EA	DOOR STOP	FS436/WS407CCV AS REQ		630	IVE
1	EA	GASKETING	488S PSA H & J		BK	ZER
1	EA	DOOR SWEEP	39A		A	ZER
1	EA	THRESHOLD	545A (COORDINATE WITH SILL CONDITIONS)		A	ZER

HARDWARE GROUP NO. 503S

QTY		DESCRIPTION	CATALOG NUMBER		FINISH	MFR
3	EA	HINGE	5BB1 4.5 X 4.5		652	IVE
1	EA	CLASSROOM LOCK	ND70HD RHO		626	SCH
1	EA	SFIC CORE	SFIC 7-PIN CORE AS REQ BY OWNER		626	BES
1	EA	OH STOP	90S		630	GLY
1	EA	GASKETING	488S PSA H & J (USE SILENCERS @ NON-RATED DOORS)		BK	ZER

HARDWARE GROUP NO. 731G

QTY		DESCRIPTION	CATALOG NUMBER		FINISH	MFR
3	EA	HINGE	5BB1HW 4.5 X 4.5		652	IVE
1	EA	PANIC HARDWARE	99-L-BE-06		626	VON
1	EA	SURFACE CLOSER	4040XP RW/PA X MTG BRKT, SPCR & PLATE (REG OR PA ARM AS REQ)		689	LCN
1	EA	KICK PLATE	8400 10" X 2" LDW B-CS		630	IVE
1	EA	DOOR STOP	FS436/WS407CCV AS REQ		630	IVE
1	EA	GASKETING	488S PSA H & J		BK	ZER
1	EA	DOOR SWEEP	39A		A	ZER
1	EA	THRESHOLD	545A (COORDINATE WITH SILL CONDITIONS)		A	ZER

HARDWARE GROUP NO. C201G

QTY		DESCRIPTION	CATALOG NUMBER		FINISH	MFR
3	EA	HINGE	5BB1 4.5 X 4.5		652	IVE
1	EA	POWER TRANSFER	EPT10 CON		689	VON
1	EA	EU STOREROOM LOCK	ND80HDEU RHO RX CON (FAIL SECURE)		626	SCH
1	EA	SFIC CORE	SFIC 7-PIN CORE AS REQ BY OWNER		626	BES
1	EA	SURFACE CLOSER	4040XP RW/PA X MTG BRKT, SPCR & PLATE (REG OR PA ARM AS REQ)		689	LCN
1	EA	KICK PLATE	8400 10" X 2" LDW B-CS		630	IVE
1	EA	DOOR STOP	FS436/WS407CCV AS REQ		630	IVE
1	EA	GASKETING	488S PSA H & J		BK	ZER
1	EA	DOOR SWEEP	39A		A	ZER
1	EA	THRESHOLD	545A (COORDINATE WITH SILL CONDITIONS)		A	ZER
1	EA	WIRE HARNESS (DOOR/FRAME)	ALLEGION CONNECT TYPE & LENGTH AS REQ			SCH
1	EA	WIRE HARNESS (TO POWER SUPPLY)	CON-6W - CONNECTION LEADS			SCH
1	EA	CREDENTIAL READER	MT11/MT15 AS REQ (CARD READER WORK OF DIVISION 28)			
1	EA	DOOR CONTACT	679-05HM (DOOR CONTACT WORK OF DIVISION 28)		BLK	SCE
1	EA	POWER SUPPLY	(POWER SUPPLY - WORK OF DIVISION 28)			VON

-ENTRY BY THE CREDENTIAL READER OR KEY OVERRIDE.
-FREE EGRESS BY LEVER.
-COORDINATE POWER SUPPLY WITH SECURITY CONTRACTOR PRIOR TO SUBMITTALS.

HARDWARE GROUP NO. C701G

QTY		DESCRIPTION	CATALOG NUMBER		FINISH	MFR
3	EA	HINGE	5BB1HW 4.5 X 4.5		652	IVE
1	EA	POWER TRANSFER	EPT10 CON		689	VON
1	EA	ELEC PANIC HARDWARE	RX-99-L-M996-06-FSE-CON (FAIL SECURE)		626	VON
1	EA	RIM CYLINDER	1E72 X CONST. CORE		626	BES
1	EA	SFIC CORE	SFIC 7-PIN CORE AS REQ BY OWNER		626	BES
1	EA	SURFACE CLOSER	4040XP RW/PA X MTG BRKT, SPCR & PLATE (REG OR PA ARM AS REQ)		689	LCN
1	EA	KICK PLATE	8400 10" X 2" LDW B-CS		630	IVE
1	EA	DOOR STOP	FS436/WS407CCV AS REQ		630	IVE
1	EA	GASKETING	488S PSA H & J		BK	ZER
1	EA	DOOR SWEEP	39A		A	ZER
1	EA	THRESHOLD	545A (COORDINATE WITH SILL CONDITIONS)		A	ZER
1	EA	WIRE HARNESS (DOOR/FRAME)	ALLEGION CONNECT TYPE & LENGTH AS REQ			SCH
1	EA	WIRE HARNESS (TO POWER SUPPLY)	CON-6W - CONNECTION LEADS			SCH
1	EA	CREDENTIAL READER	MT11/MT15 AS REQ (CARD READER WORK OF DIVISION 28)			
1	EA	DOOR CONTACT	679-05HM (DOOR CONTACT WORK OF DIVISION 28)		BLK	SCE
1	EA	POWER SUPPLY	(POWER SUPPLY - WORK OF DIVISION 28)			VON

-ENTRY BY THE CREDENTIAL READER OR KEY OVERRIDE.
-FREE EGRESS BY THE PUSH PAD.
-COORDINATE POWER SUPPLY WITH SECURITY CONTRACTOR PRIOR TO SUBMITTALS.

HARDWARE GROUP NO. CK701

QTY		DESCRIPTION	CATALOG NUMBER		FINISH	MFR
3	EA	HINGE	5BB1HW 4.5 X 4.5		652	IVE
1	EA	POWER TRANSFER	EPT10 CON		689	VON
1	EA	ELEC PANIC HARDWARE	RX-99-L-M996-06-FSE-CON (FAIL SECURE)		626	VON
1	EA	SFIC CORE	SFIC 7-PIN CORE AS REQ BY OWNER		626	BES
1	EA	SURFACE CLOSER	4040XP RW/PA X MTG BRKT, SPCR & PLATE (REG OR PA ARM AS REQ)		689	LCN
1	EA	KICK PLATE	8400 10" X 2" LDW B-CS		630	IVE
1	EA	DOOR STOP	FS436/WS407CCV AS REQ		630	IVE
1	EA	GASKETING	488S PSA H & J		BK	ZER
1	EA	WIRE HARNESS (DOOR/FRAME)	ALLEGION CONNECT TYPE & LENGTH AS REQ			SCH
1	EA	WIRE HARNESS (TO POWER SUPPLY)	CON-6W - CONNECTION LEADS			SCH
1	EA	CARD READER W/ KEYPAD	MTK15 AS REQ (CARD READER WORK OF DIVISION 28)			
1	EA	DOOR CONTACT	679-05HM (DOOR CONTACT WORK OF DIVISION 28)		BLK	SCE
1	EA	POWER SUPPLY	(POWER SUPPLY - WORK OF DIVISION 28)			VON

-ENTRY BY THE CREDENTIAL READER, KEYPAD OR KEY OVERRIDE.
-FREE EGRESS BY THE PUSH PAD.
-COORDINATE POWER SUPPLY WITH SECURITY CONTRACTOR PRIOR TO SUBMITTALS.

HARDWARE GROUP NO. K701

QTY		DESCRIPTION	CATALOG NUMBER		FINISH	MFR
3	EA	HINGE	5BB1HW 4.5 X 4.5 NRP		652	IVE
1	EA	PANIC HARDWARE	99-EO		626	VON
1	EA	ELEC EXIT DEVICE TRIM	CO-100-993R-70-KP-RHO-B 4B BATTERY OPERATED		626	SCE
1	EA	SFIC CORE	SFIC 7-PIN CORE AS REQ BY OWNER		626	BES
1	EA	SURFACE CLOSER	4040XP RW/PA X MTG BRKT, SPCR & PLATE (REG OR PA ARM AS REQ)		689	LCN
1	EA	KICK PLATE	8400 10" X 2" LDW B-CS		630	IVE
1	EA	DOOR STOP	FS436/WS407CCV AS REQ		630	IVE
3	EA	SILENCER	SR64		GRY	IVE

-ENTRY BY THE KEYPAD OR KEY OVERRIDE.
-FREE EGRESS BY THE PUSH PAD.

HARDWARE GROUP NO. S503GS

QTY		DESCRIPTION	CATALOG NUMBER		FINISH	MFR
2	EA	HINGE	5BB1 4.5 X 4.5		652	IVE
1	EA	CLASSROOM LOCK	ND70HD RHO		626	SCH
1	EA	SFIC CORE	SFIC 7-PIN CORE AS REQ BY OWNER		626	BES
1	EA	OH STOP	90S		630	GLY
1	EA	GASKETING	8303AA (4 SIDES-HEAD, JAMBS, SILL)		AA	ZER

HARDWARE GROUP NO. T141

QTY		DESCRIPTION	CATALOG NUMBER		FINISH	MFR
3	EA	HINGE	5BB1HW 4.5 X 4.5		652	IVE
1	EA	MULT PT OFFICE/ENTRY W/ OUTSIDE/INSIDE INDICATORS	LM9350T 06A L583-363 OS-LOC IS-LOC		626	SCH
1	EA	SFIC CORE	SFIC 7-PIN CORE AS REQ BY OWNER		626	BES
1	EA	SURFACE CLOSER	4040XP RW/PA X MTG BRKT, SPCR & PLATE (REG OR PA ARM AS REQ)		689	LCN
1	EA	KICK PLATE	8400 10" X 2" LDW B-CS		630	IVE
1	EA	DOOR STOP	FS436/WS407CCV AS REQ		630	IVE
1	EA	GASKETING	488S PSA H & J		BK	ZER

-FOR USE WITH STEELCRAFT PALADIN AND REPUBLIC DF DOOR ASSEMBLIES.
-MEETS ICC 500-2020 AND FEMA 320/361.
-MAXIMUM DOOR SIZE 4'0 X 8'0 (SINGLE) AND 8'0 X 8'0 (PAIR).
-IF ANOTHER DOOR MFR. IS USED CONSULT WITH THEM FOR APPROVED HARDWARE, DOORS AND HARDWARE ARE SOLD AS A COMPLETE TESTED ASSEMBLY.
-GC TO PROVIDE SIGNAGE THAT MEETS ICC 500-2020 REQUIREMENTS, AS NEEDED.
-LOCKED/UNLOCKED INDICATORS ON OUTSIDE AND INSIDE OF DOOR.

-LATCHBOLTS RETRACTED BY LEVER FROM EITHER SIDE.
-OUTSIDE LEVER IS MADE RIGID BY KEY OUTSIDE OR BY TURNING INSIDE THUMBTURN.
-KEY OUTSIDE UNLOCKS AND ENABLES OUTSIDE LEVER TO RETRACT ALL THREE LATCHES.
-ROTATING INSIDE LEVER RETRACTS LATCHBOLTS; OUTSIDE LEVER UNLOCKS WHEN THUMBTURN IS RETURNED TO VERTICAL POSITION.
-OUTSIDE LEVER REMAINS RIGID UNTIL THUMBTURN IS RETURNED TO VERTICAL OR UNLOCKED BY KEY.
-FREE EGRESS BY THE INSIDE LEVER.

HARDWARE GROUP NO. T141G

QTY		DESCRIPTION	CATALOG NUMBER		FINISH	MFR
3	EA	HINGE	5BB1HW 5 X 4.5		652	IVE
1	EA	MULT PT OFFICE/ENTRY W/ OUTSIDE/INSIDE INDICATORS	LM9350T 06A L583-363 OS-LOC IS-LOC		626	SCH
1	EA	SFIC CORE	SFIC 7-PIN CORE AS REQ BY OWNER		626	BES
1	EA	SURFACE CLOSER	4040XP RW/PA X MTG BRKT, SPCR & PLATE (REG OR PA ARM AS REQ)		689	LCN
1	EA	KICK PLATE	8400 10" X 2" LDW B-CS		630	IVE
1	EA	DOOR STOP	FS436/WS407CCV AS REQ		630	IVE
1	EA	GASKETING	488S PSA H & J		BK	ZER
1	EA	DOOR SWEEP	39A		A	ZER
1	EA	THRESHOLD	545A (COORDINATE WITH SILL CONDITIONS)		A	ZER

-FOR USE WITH STEELCRAFT PALADIN AND REPUBLIC DF DOOR ASSEMBLIES.
-MEETS ICC 500-2020 AND FEMA 320/361.
-MAXIMUM DOOR SIZE 4'0 X 8'0 (SINGLE) AND 8'0 X 8'0 (PAIR).
-IF ANOTHER DOOR MFR. IS USED CONSULT WITH THEM FOR APPROVED HARDWARE, DOORS AND HARDWARE ARE SOLD AS A COMPLETE TESTED ASSEMBLY.
-GC TO PROVIDE SIGNAGE THAT MEETS ICC 500-2020 REQUIREMENTS, AS NEEDED.
-LOCKED/UNLOCKED INDICATORS ON OUTSIDE AND INSIDE OF DOOR.

-LATCHBOLTS ARE RETRACTED BY LEVER ON EITHER SIDE.
-OUSIDE LEVER IS MADE RIGID BY KEY ON EITHER SIDE.
-KEY ON EITHER SIDE UNLOCKS AND ENABLES OUTSIDE LEVER TO RETRACTS ALL THREE LATCHES.
-OUTSIDE LEVER REMAINS RIGID UNTIL UNLOCKED BY KEY.
-FREE EGRESS BY THE INSIDE LEVER.

HARDWARE GROUP NO. WC715A-B

QTY		DESCRIPTION	CATALOG NUMBER		FINISH	MFR
1	EA	CONT. HINGE	112XY EPT		710	IVE
1	EA	POWER TRANSFER	EPT10 CON		695	VON
1	EA	ELEC PANIC HARDWARE	RX-QEL-XP99-NL-OP-CON		313	VON
1	EA	90 DEG OFFSET PULL	8190-O 10"		643E/716	IVE
1	EA	SURFACE CLOSER	4040XP SCUSH X MTG BRKT, SPCR & PLATE		695	LCN
1	EA	RAIN DRIP	142D DW + 4" (OMIT @ COVERED OPENINGS)		D	ZER
1	SET	SEAL	PERIMETER SEAL BY FRAME MFR			
1	EA	DOOR SWEEP	39D		D	ZER
1	EA	THRESHOLD	655A-V3-223		A	ZER
1	EA	WIRE HARNESS (DOOR/FRAME)	ALLEGION CONNECT TYPE & LENGTH AS REQ			SCH
1	EA	WIRE HARNESS (TO POWER SUPPLY)	CON-6W - CONNECTION LEADS			SCH
1	EA	CREDENTIAL READER	MT11/MT15 AS REQ (CARD READER WORK OF DIVISION 28)			
1	EA	DOOR CONTACT	679-05HM (DOOR CONTACT WORK OF DIVISION 28)		BLK	SCE
1	EA	POWER SUPPLY	(POWER SUPPLY - WORK OF DIVISION 28)			VON

-VERIFY WINDSTORM “CERTIFICATION” OF SPECIFIED HARDWARE W/DOOR SYSTEM.
-HARDWARE BUILT AS BASIS-OF-DESIGN AROUND KAWNEER DOOR SYSTEM.
-ENTRY BY THE CREDENTIAL READER OR KEY OVERRIDE.
-FREE EGRESS BY THE PUSH PAD.
-COORDINATE POWER SUPPLY WITH SECURITY CONTRACTOR PRIOR TO SUBMITTALS.

HARDWARE GROUP NO. WK715

QTY		DESCRIPTION	CATALOG NUMBER		FINISH	MFR
3	EA	HINGE	5BB1HW 4.5 X 4.5 NRP		630	IVE
1	EA	PANIC HARDWARE	XP99-EO		626	VON
1	EA	ELEC EXIT DEVICE TRIM	CO-100-993R-70-KP-RHO-B 4B BATTERY OPERATED		626	SCE
1	EA	SFIC CORE	SFIC 7-PIN CORE AS REQ BY OWNER		626	BES
1	EA	SURFACE CLOSER	4040XP SCUSH X MTG BRKT, SPCR & PLATE		689	LCN
1	EA	KICK PLATE	8400 10" X 2" LDW B-CS		630	IVE
1	EA	RAIN DRIP	142AA DW + 4" (OMIT @ COVERED OPENINGS)		AA	ZER
1	EA	SEALS	PS-074			STE
1	EA	DOOR SWEEP	FAS-SEAL			STE
1	EA	THRESHOLD X NO HOLES	566A-NH-223		A	ZER
1	EA	DOOR CONTACT	679-05HM (DOOR CONTACT WORK OF DIVISION 28)		BLK	SCE

-VERIFY WINDSTORM “CERTIFICATION” OF SPECIFIED HARDWARE W/DOOR SYSTEM.
-HARDWARE BUILT AS BASIS-OF-DESIGN AROUND STEELCRAFT DOOR SYSTEM.
-ENTRY BY THE KEYPAD OR KEY OVERRIDE.
-FREE EGRESS BY THE PUSH PAD.

END OF SECTION 087100

SECTION 26-0533.13 - CONDUIT FOR ELECTRICAL SYSTEMS

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Galvanized steel rigid metal conduit (RMC).
B. Galvanized steel intermediate metal conduit (IMC).
C. Flexible metal conduit (FMC).
D. Liquidtight flexible metal conduit (LFMC).
E. Galvanized steel electrical metallic tubing (EMT).
F. Rigid polyvinyl chloride (PVC) conduit.
G. Liquidtight flexible nonmetallic conduit (LFNC).

1.02 ADMINISTRATIVE REQUIREMENTS

A. Coordination:
   1. Coordinate minimum sizes of conduits with actual type and quantity of conductors to be installed, including adjustments for conductor sizes increased for voltage drop.
   2. Coordinate arrangement of conduits with structural members, ductwork, piping, equipment, and other potential conflicts.
   3. Verify exact conduit termination locations required for boxes, enclosures, and equipment.
   4. Coordinate work to provide roof penetrations that preserve integrity of roofing system and do not void roof warranty.
   5. Notify Architect of conflicts with or deviations from Contract Documents. Obtain direction before proceeding with work.
B. Sequencing:
   1. Do not begin installation of conductors and cables until installation of conduit between termination points is complete.

1.03 SUBMITTALS

A. See Section 01-3000 - ADMINISTRATIVE REQUIREMENTS for submittals procedures.
B. Product Data: Provide manufacturer's standard catalog pages and data sheets for conduits and fittings.

1.04 DELIVERY, STORAGE, AND HANDLING

A. Receive, inspect, handle, and store conduit and fittings in accordance with manufacturer's instructions.

PART 2 PRODUCTS

2.01 CONDUIT APPLICATIONS

A. Do not use conduit and associated fittings for applications other than as permitted by NFPA 70, manufacturer's instructions, and product listing.
B. Unless otherwise indicated and where not otherwise restricted, use conduit types indicated for specified applications. Where more than one listed application applies, comply with most restrictive requirements. Where conduit type for particular application is not specified, use galvanized steel rigid metal conduit.
C. Underground:
   1. Under Slab on Grade: Use rigid PVC conduit.
   2. Exterior, Direct-Buried: Use rigid PVC conduit.

3. Where rigid polyvinyl chloride (PVC) conduit is provided, transition to galvanized steel rigid metal conduit (RMC) or galvanized steel intermediate metal conduit (IMC) where emerging from underground.
4. Where rigid polyvinyl (PVC) conduit larger than 2-inch (53 mm) trade size is provided, use galvanized steel rigid metal conduit (RMC) elbows, galvanized steel intermediate metal conduit (IMC) elbows, or concrete-encased PVC elbows for bends.

D. Embedded Within Concrete:
1. Within Slab on Grade: Use rigid PVC conduit. Embed within structural slabs only where approved by Structural Engineer.

E. Concealed Within Masonry Walls: Use galvanized steel rigid metal conduit (RMC) or galvanized steel electrical metallic tubing (EMT).

F. Concealed Within Hollow Stud Walls: Use galvanized steel electrical metallic tubing (EMT).

G. Concealed Above Accessible Ceilings: Use galvanized steel electrical metallic tubing (EMT).

H. Interior, Damp or Wet Locations: Use galvanized steel rigid metal conduit (RMC) or galvanized steel intermediate metal conduit (IMC).

I. Exposed, Interior, Not Subject to Physical Damage: Use galvanized steel electrical metallic tubing (EMT).

J. Exposed, Interior, Subject to Physical Damage: Use galvanized steel rigid metal conduit (RMC) or galvanized steel intermediate metal conduit (IMC).

K. Concealed, Exterior, Not Embedded in Concrete or in Contact With Earth: Use galvanized steel electrical metallic tubing (EMT).

L. Flexible Connections to Luminaires Above Accessible Ceilings: Use flexible metal conduit (FMC).
1. Maximum Length: 6 feet.

M. Flexible Connections to Vibrating Equipment:
1. Dry Locations: Use flexible metal conduit (FMC).
2. Damp, Wet, or Corrosive Locations: Use liquidtight flexible metal conduit (LFMC).
3. Maximum Length: 6 feet unless otherwise indicated.

2.02 CONDUIT - GENERAL REQUIREMENTS

A. Comply with NFPA 70.

B. Provide conduit, fittings, supports, and accessories required for complete raceway system.

C. Provide products listed, classified, and labeled as suitable for purpose intended.

D. Minimum Conduit Size, Unless Otherwise Indicated:
1. Branch Circuits: 3/4-inch trade size.
2. Flexible Connections to Luminaires: 3/8-inch trade size.

E. Where conduit size is not indicated, size to comply with NFPA 70 but not less than applicable minimum size requirements specified.

2.03 GALVANIZED STEEL RIGID METAL CONDUIT (RMC)

A. Description: NFPA 70, Type RMC galvanized steel rigid metal conduit complying with ANSI C80.1 and listed and labeled as complying with UL 6.

B. Fittings:
1. Nonhazardous Locations: Use fittings complying with NEMA FB 1 and listed and labeled as complying with UL 514B or UL 6.

2. Material: Use steel or malleable iron.
3. Connectors and Couplings: Use threaded type fittings only. Threadless fittings, including set screw and compression/gland types, are not permitted.

2.04 GALVANIZED STEEL INTERMEDIATE METAL CONDUIT (IMC)

A. Description: NFPA 70, Type IMC galvanized steel intermediate metal conduit complying with ANSI C80.6 and listed and labeled as complying with UL 1242.

B. Fittings:
1. Nonhazardous Locations: Use fittings complying with NEMA FB 1 and listed and labeled as complying with UL 514B or UL 1242.
2. Material: Use steel or malleable iron.
3. Connectors and Couplings: Use threaded type fittings only. Threadless fittings, including set screw and compression/gland types, are not permitted.

2.05 FLEXIBLE METAL CONDUIT (FMC)

A. Description: NFPA 70, Type FMC standard-wall steel flexible metal conduit listed and labeled as complying with UL 1, and listed for use in classified firestop systems.

B. Fittings:
1. Description: Fittings complying with NEMA FB 1 and listed and labeled as complying with UL 514B.
2. Material: Use steel or malleable iron.

2.06 LIQUIDTIGHT FLEXIBLE METAL CONDUIT (LFMC)

A. Description: NFPA 70, Type LFMC polyvinyl chloride (PVC) jacketed steel flexible metal conduit listed and labeled as complying with UL 360.

B. Fittings:
1. Description: Fittings complying with NEMA FB 1 and listed and labeled as complying with UL 514B.
2. Material: Use steel or malleable iron.

2.07 GALVANIZED STEEL ELECTRICAL METALLIC TUBING (EMT)

A. Description: NFPA 70, Type EMT galvanized steel electrical metallic tubing complying with ANSI C80.3 and listed and labeled as complying with UL 797.

B. Fittings:
1. Description: Fittings complying with NEMA FB 1 and listed and labeled as complying with UL 514B.
2. Material: Use steel or malleable iron.
3. Connectors and Couplings: Use compression/gland or set-screw type.
a. Do not use indenter type connectors and couplings.

2.08 RIGID POLYVINYL CHLORIDE (PVC) CONDUIT

A. Description: NFPA 70, Type PVC rigid polyvinyl chloride conduit complying with NEMA TC 2 and listed and labeled as complying with UL 651; Schedule 40 unless otherwise indicated, Schedule 80 where subject to physical damage; rated for use with conductors rated 90 degrees C.

B. Fittings:
1. Manufacturer: Same as manufacturer of conduit to be connected.

2. Description: Fittings complying with NEMA TC 3 and listed and labeled as complying with UL 651; material to match conduit.

2.09 ACCESSORIES

A. Conduit Joint Compound: Corrosion-resistant, electrically conductive compound listed as complying with UL 2419; suitable for use with conduit to be installed.

B. Solvent Cement for PVC Conduit and Fittings: As recommended by manufacturer of conduit and fittings to be installed.

C. Pull Strings: Use nylon or polyester tape with average breaking strength of not less than 1,250 lbf.

D. Foam Conduit Sealant:
   1. Removable, two-part, closed-cell foam, specifically designed for sealing conduit openings against water, moisture, gases, and dust.
   2. Suitable for use with conductors/cables and associated insulation/jackets to be installed.
   3. Rated to hold minimum of 10 ft water head pressure.

E. Conduit Mechanical Seals:
   1. Listed as complying with UL 514B.
   2. Specifically designed for sealing conduit openings against water, moisture, gases, and dust.
   3. Suitable for sealing around conductors/cables to be installed.

F. Sealing Systems for Concrete Penetrations:
   1. Sleeves: Provide water stop ring or cement coating that bonds to concrete to prevent water infiltration.
   2. Rate for minimum of 40 psig; suitable for sealing around conduits to be installed.

PART 3 EXECUTION

3.01 EXAMINATION

A. Verify that field measurements are as indicated.

B. Verify that mounting surfaces are ready to receive conduits.

C. Verify that conditions are satisfactory for installation prior to starting work.

3.02 INSTALLATION

A. Install products in accordance with manufacturer's instructions.

B. Install conduit in accordance with NECA 1.

C. Install galvanized steel rigid metal conduit (RMC) in accordance with NECA 101.

D. Install intermediate metal conduit (IMC) in accordance with NECA 101.

E. Install rigid polyvinyl chloride (PVC) conduit in accordance with NECA 111.

F. Conduit Routing:
   1. When conduit destination is indicated without specific routing, determine exact routing required.
   2. Conceal conduits unless specifically indicated to be exposed.
   3. Conduits in the following areas may be exposed, unless otherwise indicated:
      a. Electrical rooms.
      b. Mechanical equipment rooms.
      c. Within joists in areas with no ceiling.

4. Conduits installed underground or embedded in concrete may be routed in shortest possible manner unless otherwise indicated. Route other conduits parallel or perpendicular to building structure and surfaces, following surface contours where practical.
5. Arrange conduit to provide no more than equivalent of four 90-degree bends between pull points.
6. Maintain minimum clearance of 6 inches between conduits and piping for other systems.
7. Maintain minimum clearance of 12 inches between conduits and hot surfaces. This includes, but is not limited to:
    a. Heaters.
    b. Hot water piping.

G. Conduit Support:
1. Secure and support conduits in accordance with NFPA 70 using suitable supports and methods approved by authorities having jurisdiction; see Section 26-0529.
2. Provide independent support from building structure. Do not provide support from piping, ductwork, or other systems.
3. Installation Above Suspended Ceilings: Do not provide support from ceiling support system. Do not provide support from ceiling grid or allow conduits to lay on ceiling tiles.
4. Use trapeze hangers assembled from threaded rods and metal channel/strut with accessory conduit clamps to support multiple parallel suspended conduits.
5. Use of wire for support of conduits is not permitted.

H. Connections and Terminations:
1. Use approved zinc-rich paint or conduit joint compound on field-cut threads of galvanized steel conduits prior to making connections.
2. Where two threaded conduits must be joined and neither can be rotated, use three-piece couplings or split couplings. Do not use running threads.
3. Use suitable adapters where required to transition from one type of conduit to another.
4. Provide drip loops for liquidtight flexible conduit connections to prevent drainage of liquid into connectors.
5. Terminate threaded conduits in boxes and enclosures using threaded hubs or double lock nuts for dry locations and raintight hubs for wet locations.
6. Provide insulating bushings, insulated throats, or listed metal fittings with smooth, rounded edges at conduit terminations to protect conductors.
7. Secure joints and connections to provide mechanical strength and electrical continuity.

I. Penetrations:
1. Do not penetrate or otherwise notch or cut structural members, including footings and grade beams, without approval of Structural Engineer.
2. Make penetrations perpendicular to surfaces unless otherwise indicated.
3. Provide sleeves for penetrations as indicated or as required to facilitate installation. Set sleeves flush with exposed surfaces unless otherwise indicated or required.
4. Conceal bends for conduit risers emerging above ground.
5. Provide suitable sealing system where conduits penetrate exterior wall below grade.
6. Where conduits penetrate waterproof membrane, seal as required to maintain integrity of membrane.
7. Make penetrations for roof-mounted equipment within associated equipment openings and curbs where possible to minimize roofing system penetrations. Where penetrations are necessary, seal as indicated or as required to preserve integrity of roofing system and

maintain roof warranty.

8. Install firestopping to preserve fire resistance rating of partitions and other elements.

J. Underground Installation:
   1. Provide trenching and backfilling; see Section 31-2316.13.
   2. Provide underground warning tape along entire conduit length for service entrance where not concrete-encased; see Section 26-0553.

K. Conduit Movement Provisions: Where conduits are subject to movement, provide expansion and expansion/deflection fittings to prevent damage to enclosed conductors or connected equipment. This includes, but is not limited to:
   1. Where conduits cross structural joints intended for expansion, contraction, or deflection.
   2. Where calculated in accordance with NFPA 70 for rigid polyvinyl chloride (PVC) conduit installed above ground to compensate for thermal expansion and contraction.
   3. Where conduits are subject to earth movement by settlement or frost.

L. Conduit Sealing:
   1. Use foam conduit sealant to prevent entry of moisture and gases. This includes, but is not limited to:
      a. Where conduits enter building from outside.
      b. Where service conduits enter building from underground distribution system.
      c. Where conduits enter building from underground.
      d. Where conduits may transport moisture to contact live parts.
   2. Where conduits cross barriers between areas of potential substantial temperature differential, use foam conduit sealant at accessible point near penetration to prevent condensation. This includes, but is not limited to:
      a. Where conduits pass from outdoors into conditioned interior spaces.
      b. Where conduits pass from unconditioned interior spaces into conditioned interior spaces.

M. Provide pull string in each empty conduit and in conduits where conductors and cables are to be installed by others. Leave minimum slack of 12 inches at each end.

N. Provide grounding and bonding; see Section 26-0526.

3.03 FIELD QUALITY CONTROL

A. See Section 01-4000 - QUALITY REQUIREMENTS for additional requirements.

B. Repair cuts and abrasions in galvanized finishes using zinc-rich paint recommended by manufacturer. Replace components that exhibit signs of corrosion.

C. Correct deficiencies and replace damaged or defective conduits.

3.04 CLEANING

A. Clean interior of conduits to remove moisture and foreign matter.

3.05 PROTECTION

A. Immediately after installation of conduit, use suitable manufactured plugs to provide protection from entry of moisture and foreign material and do not remove until ready for installation of conductors.

END OF SECTION

APPLICABLE CODES AND STANDARDS

1. 2021 INTERNATIONAL BUILDING CODE
2. ACI 318-19 - BUILDING CODE REQUIREMENTS FOR STRUCTURAL CONCRETE
3. TMS 402-16 - BUILDING CODE REQUIREMENTS FOR MASONRY STRUCTURES
4. AISC 360-16 - SPECIFICATION FOR STRUCTURAL STEEL BUILDINGS
5. AWC NDS-2018 - NATIONAL DESIGN SPECIFICATION FOR WOOD CONSTRUCTION WITH 2018 SUPPLEMENT

DESIGN CRITERIA

FLOOR LIVE LOAD	PSF
1. CORRIDORS - FIRST FLOOR	100
2. RECREATIONAL - GYMNASIUMS	100
3. RESIDENTIAL - PRIVATE ROOMS	40
4. RESIDENTIAL - CORRIDORS - SAME AS AREA SERVED	---
5. SIDEWALKS, VEHICULAR DRIVEWAYS	250
6. STAIRS AND EXIT WAYS	100
7. SECOND FLOOR SPACE	60
8. STORAGE - LIGHT	125
9. APPARATUS BAY MEZZANINE	125

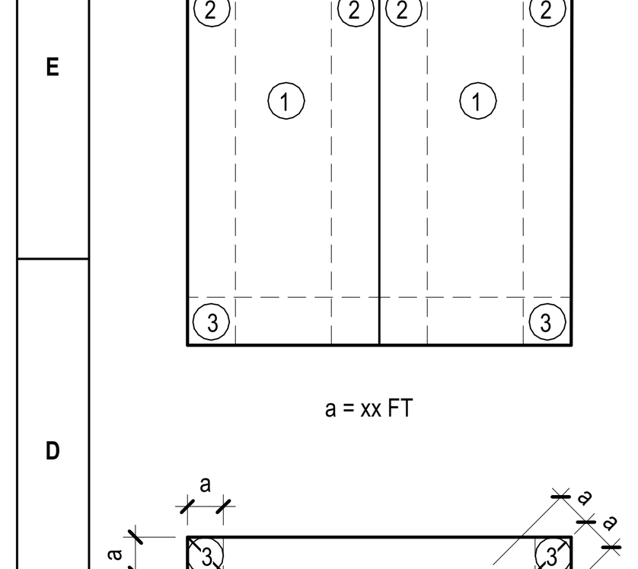
ROOF LIVE LOAD	PSF
1. ROOF LIVE LOAD (MINIMUM, NON-REDUCIBLE)	20

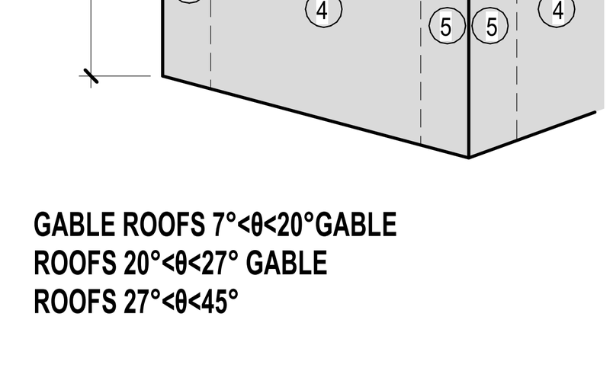
OTHER LIVE LOADS
1. OFFICE PARTITIONS (LIVE LOAD): 15 PSF
2. PARTITIONS (LATERAL LOAD): 5 PSF
3. RAILING (LATERAL LOAD AT TOP): 50 PLF OR 200 LB
4. MECHANICAL EQUIPMENT ROOM: 150 PSF OR EQUIP. WEIGHT IF GREATER

ROOF SNOW LOAD
1. GROUND SNOW LOAD (P_g): 30 PSF
2. FLAT-ROOF SNOW LOAD (P_f): 30 PSF
3. DRIFT SNOW LOAD: PER ASCE 7-16
4. SNOW EXPOSURE FACTOR (C_e): 0.9
5. SNOW LOAD IMPORTANCE FACTOR (I): 1.2
6. THERMAL FACTOR (C_t): 1.0

EARTHQUAKE DESIGN DATA
1. SEISMIC IMPORTANCE FACTOR (I): 1.0
2. RISK CATEGORY: IV
3. 0.2 SEC SPECTRAL RESPONSE ACCELERATION (S_S): 0.086
4. 1.0 SEC SPECTRAL RESPONSE ACCELERATION (S_1): 0.041
5. SITE CLASS: D
6. 0.2 SEC SPECTRAL RESPONSE COEFFICIENT (S_{DS}): 0.092
7. 1.0 SEC SPECTRAL RESPONSE COEFFICIENT (S_{D1}): 0.065
8. SEISMIC DESIGN CATEGORY: A
9. BASIC SEISMIC-FORCE-RESISTING SYSTEM:
   A. CMU SHEAR WALLS
   B. WOOD STUD SHEAR WALLS
   C. STEEL BRACED FRAMES
10. DESIGN BASE SHEAR (V): 7.5 KIPS
11. SEISMIC RESPONSE COEFFICIENT (C_S): 0.01
12. RESPONSE MODIFICATION FACTOR (R): 3.5
13. ANALYSIS PROCEDURE USED:
    A. EQUIVALENT LATERAL FORCE PROCEDURE

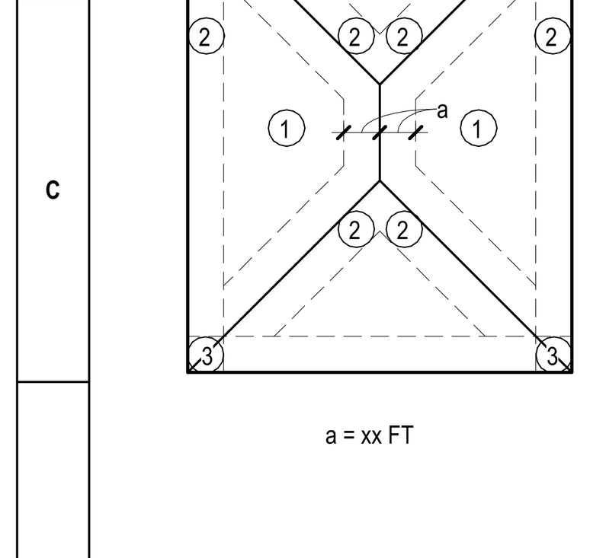
WIND DESIGN DATA
1. ULTIMATE DESIGN WIND SPEED (V_{ult}): 125 MPH
2. NOMINAL DESIGN WIND SPEED (V_{asd}): 90 MPH
3. RISK CATEGORY: IV
4. WIND EXPOSURE: CATEGORY C
5. INTERNAL PRESSURE COEFFICIENT (GC_{pi}): +/-0.18

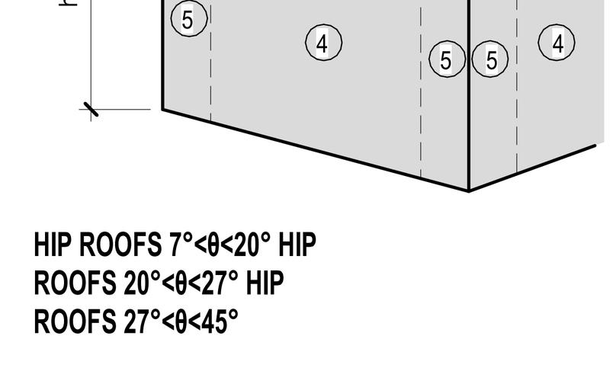




GABLE ROOFS 7°<θ<20°GABLE ROOFS 20°<θ<27° GABLE ROOFS 27°<θ<45°

a = xx FT





HIP ROOFS 7°<θ<20° HIP ROOFS 20°<θ<27° HIP ROOFS 27°<θ<45°

a = xx FT

COMPONENTS & CLADDING WIND LOAD

DESIGN WIND PRESSURE (PSF)

EFFECTIVE WIND AREA	ROOF ZONES: ZONE 1 +	ZONE 1 -	ZONE 2 +	ZONE 2 -	ZONE 3 +	ZONE 3 -	WALL ZONES: ZONE 4 +	ZONE 4 -	ZONE 5 +	ZONE 5 -
10FT²	16.0	-46.2	16.0	-60.9	16.0	-83.0	29.0	-31.4	29.0	-38.8
20FT²	16.0	-45.8	16.0	-60.5	16.0	-82.1	28.8	-31.3	28.8	-38.5
50FT²	16.0	-44.8	16.0	-59.1	16.0	-79.4	28.4	-30.8	28.4	-37.6
100FT²	16.0	-43.0	16.0	-56.9	16.0	-74.9	27.6	-30.1	27.6	-36.1
200FT²	16.0	-39.5	16.0	-52.4	16.0	-65.9	26.1	-28.6	26.1	-33.1
500FT²	16.0	-29.0	16.0	-38.8	16.0	-38.8	21.6	-24.1	21.6	-24.1

MATERIAL DATA

CONCRETE AND REINFORCING
1. CONCRETE STRENGTH (f'c @ 28 DAYS)
   A. FOOTINGS: 3,000 PSI
   B. GRADE SUPPORTED SLABS: 4,000 PSI
   C. SUSPENDED SLABS: 4,000 PSI
   D. CONCRETE NOT SPECIFIED: 3,000 PSI
2. ALL CONCRETE EXPOSED TO FREEZE-THAW CONDITIONS SHALL HAVE A MINIMUM STRENGTH (f'c @ 28 DAYS) OF 4,500 PSI. THIS DOES NOT INCLUDE FOOTINGS/GRADE BEAMS THAT ARE COVERED BY SOIL.
3. CEMENT TYPE: PORTLAND TYPE 1L
4. AGGREGATES
   A. NORMAL WEIGHT, 1 1/2" MAX. SIZE - ASTM C33
   B. PROVIDE AGGREGATES FREE OF MATERIALS WITH DELETERIOUS REACTIVITY TO ALKALI IN CEMENT, FROM A SINGLE SOURCE WITH DOCUMENTED SERVICE RECORD DATA OF AT LEAST 10 YEARS SATISFACTORY SERVICE IN SIMILAR APPLICATIONS AND SERVICE CONDITIONS USING SIMILAR AGGREGATES AND CEMENTITIOUS MATERIALS.
5. REINFORCING STEEL: ASTM A615, GRADE 60
6. REINFORCING STEEL: ASTM A706, WELDABLE
7. WELDED WIRE FABRIC: ASTM A185
8. PREFORMED EXPANSION JOINT (1/2"): ASTM D1751

MASONRY
1. MASONRY STRENGTH (f'm @ 28 DAYS): 1,500 PSI
2. CONCRETE UNITS: ASTM C90 NORMAL WEIGHT
3. UNIT COMPRESSIVE STRENGTH: 2,000 PSI (BASED ON NET AREA)
4. MORTAR TYPE: ASTM C270, TYPE S
5. GROUT TYPE: ASTM C476, 3/8" MAX. AGGREGATE SIZE
6. MORTAR STRENGTH (28 DAYS): 1,800 PSI
7. GROUT STRENGTH (28 DAYS): ASTM C476 - 2,000 PSI
8. WIRE REINFORCING: ASTM A82, STD. LADDER TYPE - 9 GAUGE ZINC COATED PER ASTM A116 - (DUR-O-WALL OR APPROVED EQUAL @ 16" O.C. VERTICAL SPACING)

STEEL
1. STRUCTURAL STEEL (WIDE FLANGES): ASTM A992, GRADE 50
2. STRUCTURAL STEEL (ALL OTHER TYPES): ASTM A36
3. STRUCTURAL TUBE: ASTM A500, GRADE C
4. ANCHOR RODS: ASTM F1554, GRADE 55 WITH WELDING SUPPLEMENT S1
5. BOLTED CONNECTIONS: ASTM F3125, GRADE A325N
6. WELDED CONNECTIONS: E70XX ELECTRODES
7. HEADED CONCRETE ANCHORS (HCA): ASTM A108 GRADES C1010 THROUGH C1020 (F_u=55 KSI)
8. DEFORMED BAR ANCHORS (DBA): ASTM A108 & A496 (F_y=70 KSI)
9. METAL DECKING: ASTM A611 OR ASTM A653-94

WOOD
1. WOOD SPECIES: SPRUCE PINE FIR (SPF) - 19% MAX. MOISTURE CONTENT
2. MEMBER GRADES (UNLESS OTHERWISE INDICATED ON PLAN)
   A. STUDS: NO. 2
   B. BLOCKING: STUD
   C. ROOF RAFTERS: NO. 2
   D. FLOOR JOISTS: NO. 2
   E. FLOOR BEAMS: NO. 2
   F. COLUMNS AND POSTS: NO. 2
   G. HEADERS AND LEDGERS: NO. 2
3. OSB ROOF SHEATHING: 5/8" APA RATED, EXPOSURE I, SPAN RATING 32/16
4. OSB FLOOR SHEATHING: 3/4" APA RATED, EXT. GLUE, SPAN RATING 48/24
5. OSB WALL SHEATHING: STRUCTURAL I, EXPOSURE I, SPAN RATING 24/0 (SEE SHEAR WALL SCHEDULE FOR THICKNESS)
6. LAMINATED VENEER LUMBER (LVL)
   A. MIN. FLEXURAL BENDING STRESS (F_b): 2,600 PSI
   B. MIN. MODULUS OF ELASTICITY (E): 1,900 KSI
   C. MIN. SHEAR STRESS (F_v): 285 PSI
   D. MIN. COMP. STRESS - PERP. ($F_{c\text{-}perpendicular}$): 750 PSI
7. GLUE LAMINATED TRUSS, ALASKAN YELLOW CEDAR
   A. MIN. FLEXURAL BENDING STRESS (F_b): PER GLULAM TRUSS MFR.
   B. MIN. MODULUS OF ELASTICITY (E): PER GLULAM TRUSS MFR.
   C. REFERENCE ARCH. FOR APPERANCE GRADE REQUIREMENTS

STRUCTURAL NOTES

1. ALL WORK SHALL CONFORM TO THE REQUIREMENTS OF THE APPLICABLE BUILDING CODE.
2. THE STRUCTURE HAS BEEN DESIGNED TO RESIST DESIGN LOADS ONLY AS A COMPLETED STRUCTURE
   A. APPLICATION OF ANY LOADS TO THE PARTIALLY COMPLETED STRUCTURE SHALL BE CONSIDERED BY THE CONTRACTOR AND SO INCLUDED IN THE DESIGN OF THE SHORING, BRACING, FORMWORK, AND ANY OTHER SUPPORTING ELEMENTS PROVIDED FOR CONSTRUCTION OF THE STRUCTURE.
   B. WHERE CONSTRUCTION MATERIAL AND EQUIPMENT ARE TEMPORARILY STORED ON THE ROOF OR FLOOR FRAMING, THEY SHALL BE DISTRIBUTED SO THAT THE DESIGN LIVE LOAD AT THE LOADED AREA IS NOT EXCEEDED.
   C. DO NOT BACKFILL AGAINST WALLS OR OTHER STRUCTURAL ELEMENTS UNTIL SUCH ELEMENTS HAVE REACHED THEIR INTENDED STRENGTH, HAVE BEEN ADEQUATELY BRACED, AND/OR HAVE OTHER INTEGRAL STRUCTURAL ELEMENTS IN PLACE WHICH ARE INTENDED TO RESIST THE LATERAL EARTH LOADS.
3. LATERAL LOAD RESISTING SYSTEM: ALL LATERAL LOAD RESISTANCE AND STABILITY IN THE COMPLETED STRUCTURE IS PROVIDED BY:
   A. N-S DIRECTION: WOOD STUD AND MASONRY SHEAR WALLS
   B. E-W DIRECTION: WOOD STUD, MASONRY SHEAR WALLS & STEEL BRACED FRAME
   C. ROOF DIAPHRAGM: WOOD SHEATHING
   D. FLOOR DIAPHRAGM: WOOD SHEATHING
4. STEEL STABILITY: STRUCTURAL STEEL FRAMING INDICATED IN THESE PLANS REQUIRES INTERACTION WITH NON-STRUCTURAL STEEL ELEMENTS FOR STRENGTH AND/OR STABILITY. SEE PLANS FOR SPECIFIC LOCATIONS OF THESE NON-STRUCTURAL STEEL ELEMENTS WHICH ARE LISTED BELOW:
   A. CMU SHEARWALLS
   B. WOOD SHEAR WALLS
5. DETAILS ON THE DRAWINGS INDICATED AS "TYPICAL" APPLY IN ALL AREAS WHERE CONDITIONS SIMILAR TO THE DETAIL OCCUR.
6. THE STRUCTURAL DRAWINGS ARE NOT INTENDED FOR USE AS SHOP ERECTION DRAWINGS. REPRODUCTION OF THESE DRAWINGS IN LIEU OF PREPARATION OF SHOP ERECTION DRAWINGS SIGNIFIES THE USERS' ACCEPTANCE THAT ALL INFORMATION SHOWN IS CORRECT AND APPROPRIATE FOR SHOP DRAWINGS AND THAT THE USER WILL BE FULLY RESPONSIBLE FOR EXPENSES THAT MAY OCCUR FROM SAID ACCEPTANCE.
7. UNLESS SPECIFICALLY NOTED, THERE ARE NO PROVISIONS MADE FOR FUTURE FLOORS, ROOFS, OR OTHER LOADS.

COORDINATION/VERIFICATION

1. CONTRACTOR SHALL CHECK AND VERIFY ALL DIMENSIONS AND EXISTING CONDITIONS AND REPORT ANY DISCREPANCIES TO THE ENGINEER BEFORE PROCEEDING WITH ANY PHASE OF THE WORK.
2. ANY PROPRIETARY STRUCTURAL SYSTEMS THAT ARE COMPOSED OF COMPONENTS TO BE FIELD ERECTED SHALL BE SUPERVISED BY THE SUPPLIER DURING MANUFACTURING, DELIVERY, HANDLING, STORAGE, AND ERECTION IN ACCORDANCE WITH THE INSTRUCTIONS PREPARED BY THE SUPPLIER.
3. CROSS REFERENCE STRUCTURAL DRAWINGS WITH MECHANICAL AND ELECTRICAL DRAWINGS, AND WITH THE ACTUAL EQUIPMENT SUPPLIED TO THE PROJECT, FOR THE LOCATION AND SIZE OF ALL SLAB OPENINGS, SLEEVES, INSERTS, FLOOR DEPRESSIONS, BLOCK-OUTS, CURBS, ANCHORS, BOLTS, ETC. REQUIRED FOR INSTALLATION.
4. PROVIDE ADEQUATE STRUCTURAL FRAMING AS APPROVED BY THE ENGINEER FOR ALL REQUIRED MECHANICAL OPENINGS THROUGH SLABS, WALLS, FLOOR DECK, ETC., AND SUPPORT OF ALL MECHANICAL EQUIPMENT. OPENINGS SHALL NOT BE PERMITTED THROUGH BEAMS UNLESS SPECIFICALLY DETAILED BY THE ENGINEER.
5. REFER TO ARCHITECTURAL DRAWINGS FOR ALL SURFACE FINISHES, DIMENSIONS, AND LOCATIONS OF SLAB DROPS, MASONRY CONTROL JOINTS, AND WALL OPENING REQUIREMENTS.

GEOTECHNICAL

1. BASIS OF DESIGN: THE FOUNDATION SYSTEM DESIGN IS BASED ON THE RECOMMENDATIONS OF GEOTECHNICAL REPORT NO. 09285.001 DATED JANUARY 26, 2024 PREPARED BY THE SCHEMMER ASSOCIATES INC.
2. FOUNDATION SYSTEM: SHALLOW FOOTINGS
3. MAXIMUM ALLOWABLE SOIL BEARING CAPACITY: 2,500 PSF
4. LATERAL EARTH PRESSURE:
   A. PASSIVE RESISTANCE: 180 PCF
   B. ACTIVE PRESSURE: 50 PCF
   C. AT-REST PRESSURE: 65 PCF
5. SUBGRADE PREPARATION:
   A. HEAVILY ORGANIC OR ROOT INFESTED TOPSOIL SHALL BE EXCAVATED AND DISCARDED OR STOCKPILED FOR LATER USE IN COVERING FINISHED LANDSCAPED AREAS AFTER CONSTRUCTION. REMOVE TOPSOIL TO A MINIMUM DEPTH OF 8 INCHES. DEEPER STRIPPING SHALL BE DONE IF ORGANIC MATERIALS REMAIN BELOW A DEPTH OF 8 INCHES.
   B. REMOVE ALL EXISTING STRUCTURES TO BE DEMOLISHED PRIOR TO GRADING. THIS INCLUDES PAVING, SIDEWALKS, AND OTHER MISCELLANEOUS SMALL STRUCTURES.
6. OVEREXCAVATION REQUIREMENTS:
   A. SEE GEOTECH REPORT SECTION 3.4 BUILDING AND SITE SUBGRADE PREPERATION
7. STRUCTURAL FILL REQUIREMENTS:
   A. CLEAN, INORGANIC, LOW TO MEDIUM PLASTICITY LEAN CLAY (CL) OR SILT (ML), OR A COMBINATION OF THESE TWO MATERIALS
   B. MAXIMUM LIQUID LIMIT (LL): 45
   C. MAXIMUM PLASTICITY INDEX: 22
   D. WATER CONTENT (% OF OPTIMUM): +/-3%
   E. MAXIMUM LOOSE LIFT: 8"
   F. MINIMUM COMPACTION: 95% (STANDARD PROCTOR TEST ASTM D-698)
8. SPREAD FOOTINGS SHALL BE PLACED ON NEAT, CLEAN AND DRY EXCAVATIONS. EXTREME CARE SHALL BE TAKEN WHEN EXCAVATING NEAR THE BEARING SURFACE. FOOT TRAFFIC SHALL BE KEPT TO A MINIMUM NECESSARY TO PLACE THE FOOTING REINFORCEMENT AND CONCRETE.
9. CONTRACTOR SHALL PROVIDE FOR ADEQUATE DRAINAGE OF SURFACE WATER AWAY FROM THE STRUCTURE AND EXCAVATED AREAS DURING CONSTRUCTION. THIS INCLUDES NECESSARY PUMPING, TRENCHING, BACKFILL AND/OR DIKE CONSTRUCTION.
10. GRANULAR SUBBASE UNDER SLAB ON GRADE:
    A. MINIMUM THICKNESS: SEE PLAN
    B. MINIMUM COMPACTION: 95% (STANDARD PROCTOR TEST ASTM D-698)
    C. GRADATION REQUIREMENTS
       a. 100% PASSING THE 3/4" SIEVE
       b. LESS THAN 15% PASSING THE 100 SIEVE
       c. LESS THAN 2% PASSING THE 200 SIEVE

CAST-IN-PLACE CONCRETE
(REFERENCE SPECIFICATION SECTION 033000 IN PROJECT MANUAL)

GENERAL CONCRETE REQUIREMENTS
1. CONCRETE BATCH DESIGN(S) SHALL BE PROPORTIONED AND PRODUCED IN ACCORDANCE WITH ACI 318, IN PARTICULAR CHAPTER 5, AND ACI 301. MIX AND DELIVER IN ACCORDANCE WITH ASTM C94.
2. CONCRETE STRENGTH: SEE MATERIAL DATA NOTES & SPECIFICATION SECTION 033000
3. SLUMP LIMITS: SEE SPECIFICATION SECTION 033000
4. MAXIMUM W/C RATIO: SEE SPECIFICATION SECTION 033000
5. AIR ENTRAINMENT: SEE SPECIFICATION SECTION 033000
6. ADMIXTURES: SEE SPECIFICATION SECTION 033000
7. FLY ASH: SEE SPECIFICATION SECTION 033000
8. CONCRETE TO CONCRETE COLD JOINTS - PROVIDE 1/4" INTENTIONALLY ROUGHENED SURFACE AT ALL HORIZONTAL JOINTS.
9. EXPOSED CORNERS: PROVIDE A 3/4" CHAMFER AT ALL EXPOSED CONCRETE CORNERS.
10. CURING: SEE SPECIFICATION SECTION 033000
11. REINFORCING BAR WELDING: ABSOLUTELY NO WELDING OF REINFORCING BARS OR TORCHING TO BEND REINFORCING BARS SHALL BE ALLOWED WITHOUT THE SPECIFIC APPROVAL OF THE ENGINEER.
12. MINIMUM CONCRETE CLEAR COVER:
    A. FOOTINGS
       a. TOP: 2"
       b. BOTTOM: 3"
       c. SIDES: 3"
    B. INTERIOR WALLS: 3/4"
    C. INTERIOR SLABS (TOP): SEE TYPICAL SLAB JOINT DETAIL ON SHEET S201
    D. EXTERIOR SLABS (TOP): 2"
    E. COLUMNS
       a. EXTERIOR: 2"
       b. INTERIOR: 1-1/2"
    F. OTHER COVER REQUIREMENTS SHALL BE AS NOTED IN APPLICABLE DETAILS.
13. NON-METALLIC, SHRINKAGE-RESISTANT GROUT: SEE SPECIFICATION SECTION 051200
14. VOID FILL: SEE SPECIFICATION SECTION 033000

SLAB ON GRADE REQUIREMENTS
1. SLAB THICKNESS: SEE PLAN
2. SLAB REINFORCING: SEE PLAN
3. GRANULAR SUBBASE: SEE GEOTECHNICAL NOTES
4. VAPOR RETARDER: SEE SPECIFICATION SECTION 033000. LAP AND TAPE ALL JOINTS AND HOLES.
5. CRACK CONTROL JOINTS (WHETHER CONSTRUCTION JOINTS OR SAWED JOINTS) IN SLABS ON GRADE SHALL OCCUR AS SHOWN AND ACROSS ALL DOOR OPENINGS. LOCATE JOINTS AT RE-ENTRANT CORNERS OF SLABS.
   A. MAXIMUM SPACING OF CONTROL JOINTS: 12 FEET
6. CURING: CONCRETE SHALL BE MAINTAINED IN A MOIST CONDITION FOR A MINIMUM OF SEVEN DAYS AFTER ITS PLACEMENT. APPROVED CURING: SEE SPECIFICATION SECTION 033000
7. SEAL ALL EXPOSED CONSTRUCTION/CRACK CONTROL JOINTS.
   A. SEALANT: SEE ARCHITECTURE.
8. FLOOR FINISH & FLATNESS CRITERIA: SEE SPECIFICATION SECTION 033000

ANCHORAGE REQUIREMENTS
1. HEADED CONCRETE ANCHORS (HCA): AUTOMATICALLY END WELDED IN THE SHOP OR FIELD IN ACCORDANCE WITH THE MANUFACTURER'S RECOMMENDATIONS. ANCHOR WELDS SHALL BE TESTED PER AWS SECTION 7.7.
2. POST-INSTALLED MECHANICAL ANCHORS: INSTALL USING MINIMUM TORQUE, EMBEDMENTS, EDGE DISTANCES AND SPACING (UNLESS OTHERWISE NOTED) AS RECOMMENDED BY THE ANCHOR MANUFACTURER.
3. POST-INSTALLED ADHESIVE ANCHORS: INSTALLATION TO MEET MANUFACTURER'S RECOMMENDATIONS (UNLESS NOTED OTHERWISE)INCLUDING MINIMUM EMBEDMENTS, EDGE DISTANCES, SPACING, PROCEDURES, AND CURING TIME PRIOR TO LOADING.
4. POST-INSTALLED ANCHORS SHALL BE LOCATED PER THE DETAILS.
5. AVOID CUTTING OR DAMAGING EXISTING REINFORCING. SHOULD LOCATIONS OF DRILLED HOLES BE FOUND DIRECTLY ALIGNED WITH REINFORCING BARS, NOTIFY ENGINEER FOR NECESSARY ADJUSTMENTS TO THE DESIGN.

UNIT MASONRY
(REFERENCE SPECIFICATION SECTION 042000 IN PROJECT MANUAL)

1. DESIGN CRITERIA: MASONRY SHALL BE CONSTRUCTED PER THE REQUIREMENTS OF ACI 530.
2. UNIT TYPES: SEE SPECIFICATION SECTION 042000
3. UNIT COMPRESSIVE STRENGTH: SEE MATERIAL DATA NOTES AND SPECIFICATION SECTION 042000
4. MORTAR: SEE MATERIAL DATA NOTES AND SPECIFICATION SECTION 042000
5. GROUT: SEE MATERIAL DATA NOTES AND SPECIFICATION SECTION 042000
6. CMU REINFORCING: UNLESS NOTED OTHERWISE, REINFORCE ALL CMU WALLS WITH VERTICAL #5 @ 32" O.C. FILL ALL REINFORCED CELLS WITH GROUT. MINIMUM GROUT BETWEEN MASONRY AND REINFORCING SHALL BE 1/2". MINIMUM GROUT BETWEEN PAIRS OF REINFORCING BARS SHALL BE 3/4".
   A. PROVIDE #5 VERTICAL REINFORCING AT THE FOLLOWING LOCATIONS:
      a. AT ALL CORNERS OF CMU WALLS
      b. AT ALL ENDS OF CMU WALLS
      c. EACH SIDE OF CONTROL JOINTS
      d. EACH SIDE OF WALL OPENINGS
   B. SEE ARCHITECTURAL DRAWINGS FOR LOCATIONS OF CONTROL JOINTS.
7. BOND BEAMS
   A. LOCATED AT TOP OF ALL CMU WALLS AND WHERE INDICATED IN DETAILS
   B. MINIMUM DEPTH UNLESS OTHERWISE NOTED = 8".
   C. REINFORCING - (2) #4 CONTINUOUS. LAP SPLICE = 28 IN.
   D. CORNER DOWELS - (2) #4 RIGHT ANGLE DOWELS THAT LAP A MINIMUM OF 2'-0" WITH ADJACENT BOND BEAM REINFORCING. IF BOND BEAMS AT INTERSECTING WALLS MEET AT DIFFERENT ELEVATIONS, EXTEND BOTH BOND BEAMS AROUND INTERSECTING CORNER TO FIRST INTERIOR REINFORCED CELL, BUT NOT LESS THAN 4 FEET.
   E. EXTEND BOND BEAMS THROUGH CONTROL JOINTS, BUT INTERRUPT BOND BEAM REINFORCING AT CONTROL JOINTS.
   F. ABOVE AND BELOW ALL OPENINGS FOR MECHANICAL, ELECTRICAL AND PLUMBING 16" OR WIDER
8. LINTELS
   A. PROVIDE (2) #5 BARS IN U-SHAPED LINTEL BEAM, U.N.O. GROUT U-SHAPED COURSE AND ADDITIONAL COURSES IMMEDIATELY ABOVE THE LINTEL. SEE SCHEDULE FOR TOTAL NUMBER OF LINTEL COURSES REQUIRED.
   B. PROVIDE A MINIMUM OF 8 INCHES BEARING AT EACH END.
9. LINTEL BEARING: PROVIDE A MINIMUM OF 8 INCHES BEARING AT EACH END.
10. CONTROL JOINTS: EXCEPT WHERE OFFSETS OR SLIP JOINTS ARE SHOWN, CONTROL JOINTS SHALL BE A CONTINUOUS VERTICAL LINE FROM TOP OF FOOTING TO TOP OF MASONRY WALL. SPACE CONTROL JOINTS AS FOLLOWS:
    A. INTERIOR WALLS: 36 FT. O.C. MAX.
    B. EXTERIOR WALLS: 24 FT. O.C. MAX.

STRUCTURAL STEEL FRAMING
(REFERENCE SPECIFICATION SECTION 051200 IN PROJECT MANUAL)

GENERAL STRUCTURAL STEEL REQUIREMENTS
1. DESIGN CRITERIA: STRUCTURAL STEEL SHALL BE INSTALLED PER THE REQUIREMENTS OF AISC 360.
2. STRUCTURAL STEEL GRADES: SEE MATERIAL DATA NOTES AND SPECIFICATION SECTION 051200
3. ANCHOR AND BOLT GRADES: SEE MATERIAL DATA NOTES AND SPECIFICATION SECTION 051200
4. WELD ELECTRODES: SEE MATERIAL DATA NOTES AND SPECIFICATION SECTION 051200
5. BEARING CONNECTIONS: UNLESS OTHERWISE NOTED, ALL BEAM CONNECTIONS SHALL BE SIMPLE FRAMED SHEAR BEARING CONNECTIONS IN ACCORDANCE WITH THE AISC "SPECIFICATIONS FOR STRUCTURAL JOINTS USING ASTM A325 OR A490 BOLTS."
6. DESIGN OF CONNECTIONS: BEAM CONNECTIONS SHALL BE AS DETAILED ON THE PLANS. ALTERNATIVE CONNECTIONS, DESIGNED BY A LICENSED ENGINEER FOR THE FABRICATOR, MAY BE UTILIZED PROVIDED THE ALTERNATIVE CONNECTION PROVIDES THE SAME LOAD CARRYING CAPACITY OF THE ORIGINAL DESIGN.
7. SPLICES: STEEL FABRICATOR SHALL VERIFY WITH ENGINEER ALL BEAM SPLICES OTHER THAN THOSE SHOWN ON THE PLANS. ANY FULL PENETRATION SHOP SPLICES APPROVED BY THE ENGINEER SHALL BE INSPECTED BY RADIOGRAPHIC METHODS BY A TESTING LABORATORY APPROVED BY THE ENGINEER AND PAID FOR BY THE FABRICATOR.
8. STEEL PROTECTION: ALL STRUCTURAL STEEL SHALL BE CLEANED AND PAINTED WITH PRIMER PER SPECIFICATION SECTION 051200, UNLESS NOTED OTHERWISE.
9. STEEL PROTECTION: WHERE STEEL IS INDICATED AS GALVANIZED, PROVIDE HOT-DIPPED GALVANIZED SURFACE PER SPECIFICATION SECTION 051200.
10. SHOP DRAWINGS: SEE SPECIFICATION SECTION 051200 FOR SUBMITTAL REQUIREMENTS.
11. WELDING: ALL WELDING SHALL BE PERFORMED BY QUALIFIED WELDERS PER AWS STANDARD QUALIFICATION PROCEDURES.

STEEL DECKING
(REFERENCE SPECIFICATION SECTION 053100 IN PROJECT MANUAL)

1. DECK GOVERNING CRITERIA: THE DESIGN, FABRICATION, AND ERECTION OF METAL DECKING SHALL BE IN ACCORDANCE WITH THE CURRENT EDITION OF THE SDI SPECIFICATIONS AND THE SDI DIAPHRAGM DESIGN MANUAL.
2. FLOOR DECK CONNECTIONS: FLOOR DECKING SHALL BE CONNECTED TO THE STRUCTURE AS INDICATED IN THE FLOOR DECK SCHEDULE. MAINTAIN OVERALL STRUCTURAL BRACING UNTIL ALL DECKING HAS BEEN INSTALLED.
3. FLOOR SLAB-ON-DECK DESIGN: ALL FLOOR SLABS SUPPORTED ON STEEL STRUCTURE AND METAL DECK SHALL HAVE A TOTAL THICKNESS AND REINFORCING AS INDICATED ON PLAN.

ROUGH CARPENTRY
(REFERENCE SPECIFICATION SECTION 061000 IN PROJECT MANUAL)

1. DESIGN CRITERIA: WOOD FRAMING SHALL BE INSTALLED PER THE REQUIREMENTS OF THE AF&PA [AWC] NDS.
2. WOOD SPECIES: SEE MATERIAL DATA NOTES AND SPECIFICATION SECTION 061000
3. MEMBER GRADES: SEE MATERIAL DATA NOTES AND SPECIFICATION SECTION 061000
4. LAMINATED VENEER LUMBER (LVL): SEE MATERIAL DATA NOTES AND SPECIFICATION SECTION 061000
5. NOTCHING & CUTTING IN WOOD: JOISTS, RAFTERS AND BEAMS SHALL NOT BE NOTCHED, EXCEPT WHERE SHOWN IN DETAILS. OBTAIN ENGINEER'S APPROVAL FOR ANY HOLES THROUGH OR NOTCHES IN THE TOP OF HORIZONTAL MEMBERS.
6. SILL PLATES AT LOAD BEARING WALLS:
   A. 2X SILL PLATES SHALL BE PRESSURE TREATED
   B. FASTEN TO FOUNDATION AT SHEAR WALLS PER SHEAR WALL SCHEDULE & TYPICAL DETAILS.
   C. FASTEN AT ALL OTHER LOAD BEARING WALLS PER DETAILS INDICATED ON PLAN.
7. NAILING SCHEDULE: USE THE FOLLOWING TABLE UNLESS NOTED OTHERWISE ON THE PLANS OR DETAILS (COMMON WIRE NAILS OR EQUAL)
   A. TABLE 2304.10.2 IN THE 2021 INTERNATIONAL BUILDING CODE
8. FRAMING AT WALL OPENINGS: PROVIDE TWO - 2X8 HEADERS ON CRIPPLE STUDS, AND FULL HEIGHT DOUBLE STUDS EACH SIDE OF ALL OPENINGS IN STUD WALLS NOT DETAILED OTHERWISE.
9. FRAMING AT WALLS: PROVIDE DOUBLE JOISTS UNDER ALL PARTITIONS AND WALLS PARALLEL TO THE JOIST FRAMING.
10. FRAMING AT FLOOR/ROOF OPENINGS: PROVIDE DOUBLE HEADERS AND DOUBLE JOISTS OR PURLINS EACH SIDE OF ALL OPENINGS IN FLOORS AND ROOFS UNLESS DETAILED OTHERWISE.
11. BLOCKING AT STUDS: SEE SPECIFICATION SECTION 061000
12. BLOCKING AND BRIDGING AT JOISTS: SEE SPECIFICATION SECTION 061000

SHEATHING
(REFERENCE SPECIFICATION SECTION 061000 IN PROJECT MANUAL)

1. ROOF/FLOOR SHEATHING: SEE MATERIAL DATA NOTES AND SPECIFICATION SECTION 061000
2. WALL SHEATHING: SEE MATERIAL DATA NOTES AND SPECIFICATION SECTION 061000
3. ROOF/FLOOR SHEATHING NAILING: COMMON WIRE NAILS SHALL BE USED AND PENETRATE SUPPORTING MEMBERS A MINIMUM OF 1-5/8". INDIVIDUAL PIECES OF SHEATHING SHALL NOT BE LESS THAN 24" IN THEIR SHORTEST PLAN DIRECTION NOR LESS THAN 8 SQ. FT. IN AREA:
   A. ROOF SHEATHING:
      a. SHEET EDGES: 10d @ 6" O.C.
      b. INTERMEDIATE FRAMING MEMBERS: 10d @ 12" O.C.
   B. FLOOR SHEATHING:
      a. SHEET EDGES: 10d @ 6" O.C.
      b. PANEL FIELD: 10d @ 12" O.C.
4. WALL SHEATHING NAILING: SEE SHEAR WALL SCHEDULE AND TYPICAL SHEAR WALL DETAILS
5. PROVIDE BLOCKING OR PANEL EDGE CLIPS AT ALL PANEL EDGES.
6. OPENINGS IN SHEATHING: EDGES OF ALL OPENINGS THROUGH SHEATHING SHALL BE NAILED PER THE REQUIRED EDGE NAILING ABOVE.

SHOP-FABRICATED WOOD TRUSSES
(REFERENCE SPECIFICATION SECTION 061753 IN PROJECT MANUAL)

1. DESIGN CRITERIA: TRUSS VENDOR IS TO SUBMIT TO THE ARCHITECT, ENGINEER, AND CITY DESIGN CALCULATIONS BY A LICENSED ENGINEER AND SHOP DRAWINGS FOR REVIEW PRIOR TO FABRICATION. SHOP DRAWINGS ARE TO SHOW ALL TEMPORARY AND PERMANENT BRACING REQUIRED BY DESIGN AND SIZES AND POSITIONING OF CONNECTOR PLATES. DESIGN CALCULATIONS SHALL BE SEALED BY THE LICENSED ENGINEER.
2. DESIGN RESPONSIBILITIES - TRUSSES SHALL BE DESIGNED UNDER THE FOLLOWING FORMAT:
   A. LATERAL FORCES APPLIED TO THE TRUSSES, SUCH AS DRAG TRUSS LOADS, COLLECTORS, ETC., ARE INDICATED ON THE PLANS WHERE APPLICABLE.
   B. ALL TRUSS-TO-TRUSS CONNECTIONS ARE THE RESPONSIBILITY OF THE TRUSS ENGINEER.
   C. DRAG LOADS (HORIZONTAL TRUSS TRANSFERS) CONNECTIONS BETWEEN THE TRUSS AND THE STRUCTURE ARE INDICATED ON THE PLANS WHERE APPLICABLE.
   D. ALL TRUSS-TO-STRUCTURE (WALLS OR BEAMS) CONNECTIONS ARE INDICATED ON THE PLANS WHERE APPLICABLE.
   E. IT IS THE RESPONSIBILITY OF THE TRUSS ENGINEER TO DEVELOP THE LOADING REQUIRED TO IMPLEMENT THE REQUIRED SNOW LOADS PER IBC AND ASCE 7 SPECIFICATIONS. THIS INCLUDES ADDITIONAL SNOW LOAD AT EAVES, AND UNBALANCED LOADING ON THE GABLE AND HIP ROOFS.
   F. IT IS THE RESPONSIBILITY OF THE TRUSS ENGINEER TO REVIEW ALL OF THE INDICATED DESIGN SPECIFICATIONS, ROOF TRUSS SUPPORTS, AND DRAG DETAILS AND TO INCORPORATE THESE REQUIREMENTS INTO THE ENGINEERING DESIGN OF THE ROOF TRUSS SYSTEM.
   G. THE TRUSS ENGINEER SHOULD DEVELOP A TRUSS LAYOUT PLAN FOR THE TRUSS SYSTEM THAT CLEARLY INDICATES THE TRUSS VERTICAL SUPPORT CONDITIONS, TRUSS-TO-TRUSS CONNECTIONS, DRAG TRUSSES AND COLLECTORS, AND ANY OTHER FIELD-INSTALLED REINFORCEMENT, INCLUDING FIELD-INSTALLED TOP CHORD REINFORCEMENT AT EAVES NECESSARY TO EXECUTE THE TRUSS SYSTEM DESIGN. THE TRUSS ROOF FRAMING PLAN SHALL BE SEALED BY A LICENSED PROFESSIONAL ENGINEER AND BE INCLUDED WITH THE INDIVIDUAL TRUSS CUT SHEETS. THE TRUSS ENGINEER SHOULD ALSO PROVIDE PROPER SUPERVISION OF ANY TRUSS COMPANY TECHNICIANS.
   H. TRUSS BRACING: TEMPORARY ERECTION BRACING AND PERMANENT WEB BRACING SHALL BE DESIGNED BY THE TRUSS MANUFACTURER.
3. WOOD TRUSS DESIGN LOADS (IN ADDITION TO SELF-WEIGHT)
   A. ROOF DEAD LOAD (TOP CHORD): 10 PSF
   B. ROOF DEAD LOAD (BOTTOM CHORD)
      A. MECHANICAL ROOMS & CORRIDORS: 25 PSF
      B. ALL OTHER AREAS: 10 PSF
   C. FLOOR DEAD LOAD (TOP CHORD): 15 PSF
   D. FLOOR DEAD LOAD (BOTTOM CHORD)
      A. MECHANICAL ROOMS & CORRIDORS: 25 PSF
      B. ALL OTHER AREAS: 10 PSF
   E. ROOF LIVE LOAD (TOP CHORD): SEE DESIGN CRITERIA NOTES
   F. ROOF LIVE LOAD (BOTTOM CHORD): 10 PSF
   G. FLOOR LIVE LOAD (TOP CHORD): SEE DESIGN CRITERIA NOTES

DEFERRED SUBMITTALS:

1. STRUCTURAL DELEGATED DESIGNS AND SUBSEQUENT DEFERRED SUBMITTALS ARE FOR ELEMENTS, PARTS, OR PORTIONS OF THE OVERALL STRUCTURAL SYSTEM THAT ARE INDICATED OR REFERRED TO ON THESE DRAWINGS AND THAT ARE CRITICAL TO THE PERFORMANCE OF THE OVERALL STRUCTURAL SYSTEM. DESIGN CRITERIA HAS BEEN PROVIDED FOR THESE ITEMS IN THE STRUCTURAL NOTES, PLANS AND DETAILS.
2. DEFERRED SUBMITTALS SHALL BE COMPLETE PACKAGES AND SHALL BE SUBMITTED FOR REVIEW TO THE ENGINEER OF RECORD (EOR) AND BUILDING OFFICIAL THAT INCLUDE DRAWINGS AND CALCULATIONS FOR ALL DELEGATED DESIGN ITEMS AND THEIR CONNECTIONS (AS APPLICABLE). DEFERRED SUBMITTALS SHALL BE SIGNED AND SEALED BY THE DESIGN PROFESSIONAL RESPONSIBLE FOR THEIR DESIGN.
3. NONE OF THE DEFERED SUBMITTAL ITEMS SHALL BE ERECTED OR INSTALLED UNTIL ALL SUBMITTED DOCUMENTS HAVE BEEN REVIEWED AND APPROVED BY BOTH THE EOR AND THE BUILDING OFFICIAL. IT IS THE CONTRACTOR'S RISK TO HAVE DEFERRED SUBMITTAL ITEMS FABRICATED PRIOR TO REVIEWAL AND APPROVAL BY BOTH THE EOR AND BUILDING OFFICIAL AND ANY UNAPPROVED OR MODIFIED ITEMS DURING THE REVIEW PROCESS ARE NOT AT FAULT OF THE EOR, BUILDING OFFICIAL, OR CLIENT/OWNER.
4. STRUCTURAL DEFFERED SUBMITAL ITEMS REQUIRING A DELEGATED DESIGN INCLUDE:
   a. WOOD TRUSSES
   b. GLULAM TRUSS

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STORM SHELTER DESIGN INFORMATION (PER ICC-500 2008 SECTION 107.2.1)

1. TYPE OF SHELTER: TORNADO
2. THE WIND DESIGN CONFORMS TO THE PROVISIONS OF THE ICC/NSSA STANDARD FOR THE DESIGN AND CONSTRUCTION OF STORM SHELTERS, 2008 EDITION.
3. SHELTER DESIGN WIND SPEED (V): 250 MPH
4. IMPORTANCE FACTOR (I): 1.0
5. WIND EXPOSURE CATEGORY: C
6. INTERNAL PRESSURE COEFFICIENT (GCpi): +/-0.55
7. TOPOGRAPHIC FACTOR (Kzt): 1.0
8. DIRECTIONALITY FACTOR (Kd): 1.0
9. THE STORM SHELTER HAS NOT BEEN CONSTRUCTED WITHIN AN AREA SUSCEPTIBLE TO FLOODING IN ACCORDANCE WITH CHAPTER 4 OF ICC-500 2008.
10. DOCUMENTATION FOR MISSILE IMPACT TEST REQUIREMENTS
    A. STORM SHELTER ENVELOPE MUST RESIST THE IMPACT OF A 15 POUND 2X4 MISSILE TRAVELING AT THE FOLLOWING SPEEDS:
       a. VERTICAL SURFACES: 100 MPH
       b. HORIZONTAL SURFACES: 67 MPH
    B. BASED ON RESEARCH CONDUCTED AT TEXAS TECH UNIVERSITY, THE COMPONENTS OF THE STORM SHELTER ENVELOPE HAVE THE FOLLOWING THRESHOLD MISSILE SPEEDS:
       a. CONCRETE OVER METAL DECK: 102.4 MPH
       b. CMU WALLS: 130 MPH
11. SEE PLAN ON SHEET S101 FOR LOCATION OF STORM SHELTER WITHIN BUILDING.
12. THE STORM SHELTER FINISHED FLOOR IS AT ARCHITECTURAL ELEVATION 100'-0", OR CIVIL ELEVATION 1797.80.
13. OCCUPANT LOAD OF THE STORM SHELTER IS 16.
14. STORM SHELTER FLOOR AREA IS 445 SQUARE FEET.
15. REFERENCE MECHANICAL SHEET M101 FOR VENTING LOCATIONS AND SHEET M501 FOR VENTING AREA (IN SQUARE INCHES).

STORM SHELTER DESIGN INFORMATION (PER ICC-500 2008 SECTION 106.4)

1. DURING CONSTRUCTION, THE BUILDING OWNER SHALL EMPLOY A REGISTERED DESIGN PROFESSIONAL TO CONDUCT VISUAL OBSERVATIONS OF THE CONSTRUCTION OF THE STRUCTURAL SYSTEM FOR GENERAL CONFORMANCE TO THE APPROVED CONSTRUCTION DOCUMENTS AT SIGNIFICANT CONSTRUCTION STAGES AND AT COMPLETION OF THE CONSTRUCTION OF THE STRUCTURAL SYSTEM. STRUCTURAL OBSERVATION SHALL NOT OBVIATE THE NEED FOR OTHER INSPECTIONS OR TESTING REQUIRED BY THE ICC-500 OR THE INTERNATIONAL BUILDING CODE.
2. DEFICIENCIES SHALL BE REPORTED IN WRITING TO THE OWNER AND TO THE AUTHORITY HAVING JURISDICTION. AT THE CONCLUSION OF THE WORK, THE REGISTERED DESIGN PROFESSIONAL WHO MADE THE STRUCTURAL OBSERVATIONS SHALL SUBMIT TO THE AUTHORITY HAVE JURISDICTION A WRITTEN STATEMENT THAT THE SITE VISITS HAVE BEEN MADE AND SHALL IDENTIFY ANY REPORTED DEFICIENCIES WHICH, TO THE BEST OF THE STRUCTURAL OBSERVER'S KNOWLEDGE, HAVE NOT BEEN RESOLVED.

STORM SHELTER QUALITY ASSURANCE PLAN (PER ICC-500 2008 SECTION 107.3)

SECTION 107.3.1 - DETAILED REQUIREMENTS:
CONTRACTOR SHALL ENSURE THE FOLLOWING ITEMS ARE CONSTRUCTED/INSTALLED TO MEET THE REQUIREMENTS OF THE CONSTRUCTION DOCUMENTS AS LISTED BELOW.
1. REFERENCE ARCHITECTURAL FOR ROOF CLADDING CONNECTIONS. REFERENCE SHEET S102 & INDICATED FRAMING DETAILS FOR ROOF FRAMING CONNECTIONS.
2. REFERENCE SHEET S102 & INDICATED FRAMING DETAILS FOR WALL CONNECTIONS TO ROOF DIAPHRAGM.
3. REFERENCE SHEET S102 & INDICATED FRAMING DETAILS FOR ROOF DIAPHRAGM SYSTEM.
4. THE MAIN WIND FORCE RESISTING SYSTEM CONSISTS OF CMU SHEAR WALLS.
5. REFERENCE SHEET S101 & INDICATED FOUNDATION DETAILS FOR MAIN WIND FORCE RESISTING SYSTEM CONNECTION TO THE FOUNDATIONS.
6. CMU WALLS AROUND STORM SHELTER PERIMETER SHALL BE CONSTRUCTED PER SCHEDULE ON SHEET S 00 (WALL TYPE B). STORM SHELTER ROOF SHALL BE CONSTRUCTED PER SHEET S102 & INDICATED FRAMING DETAILS.
7. REFERENCE ARCHITECTURAL DRAWINGS FOR COMPONENTS AND CLADDING REQUIREMENTS.
8. NO SPECIAL CORROSION RESISTANCE REQUIREMENTS.
9. NO SPECIAL REQUIREMENTS FOR CRITICAL SUPPORT SYSTEMS.

SECTION 107.3.2 - QUALITY ASSURANCE PLAN
1. THE QUALITY ASSURANCE PLAN SHALL APPLY TO THE MAIN WIND FORCE RESISTING SYSTEMS AND WIND RESISTING COMPONENTS. THIS INCLUDES CONCRETE OVER METAL DECK, STEEL BEAMS, CMU WALLS, AND CONCRETE FOUNDATIONS.
2. SPECIAL INSPECTIONS AND TESTING SHALL BE PROVIDED AS INDICATED ON SHEET S 01.
3. TESTING FREQUENCY SHALL BE AS INDICATED ON SHEET S 01 (SPECIAL INSPECTIONS) AND IN THE APPLICABLE SPECIFICATIONS IN THE PROJECT MANUAL / THE APPLICABLE SECTIONS IN THE STRUCTURAL NOTES.
4. SPECIAL INSPECTION FREQUENCY SHALL BE AS INDICATED ON SHEET S____ AND IN THE APPLICABLE SPECIFICATIONS IN THE PROJECT MANUAL / THE APPLICABLE SECTIONS IN THE STRUCTURAL NOTES.
5. STRUCTURAL OBSERVATIONS SHALL BE PERFORMED PER ICC-500 2008 SECTION 106.4 AND AS INDICATED IN THE NOTES ABOVE.
6. REPORTS OF TESTS, INSPECTIONS, AND STRUCTURAL OBSERVATIONS SHALL BE DISTRIBUTED TO THE AUTHORITY HAVING JURISDICTION, THE RESPONSIBLE DESIGN PROFESSIONAL, AND THE OWNER. REPORTS SHALL BE DISTRIBUTED ONCE PER WEEK, OR IMMEDIATELY IF A DISCREPANCY IS DISCOVERED.

SPECIAL INSPECTIONS (IBC 2021)
SPECIAL INSPECTIONS SHALL BE PROVIDED BY THE OWNER FOR THE WORK IN ACCORDANCE WITH IBC CHAPTER 17. CONTRACTOR SHALL NOTIFY AND ACCOMMODATE THE APPLICABLE INSPECTOR DURING APPROPRIATE PHASES OF THE WORK AS REQUIRED FOR EACH TYPE OF INSPECTION.

STEEL CONSTRUCTION - GENERAL
1. SHOP CUT AND FINISHED SURFACES IN ACCORDANCE WITH SECTION M2 OF AISC 360-16.
2. SHOP HEATING FOR STRAIGHTENING, CAMBERING AND CURVING IN ACCORDANCE WITH SECTION M2.1 OF AISC 360-16.
3. TOLERANCES FOR SHOP FABRICATION IN ACCORDANCE WITH SECTION 6.4 OF AISC 303-16.
4. STEEL DECK IN ACCORDANCE WITH SDI-QA/QC-2017
5. FIELD CUT SURFACES IN ACCORDANCE WITH SECTION M2.2 OF AISC 360-16.
6. FIELD HEATING FOR STRAIGHTENING IN ACCORDANCE WITH SECTION M2.1 OF AISC 360-16.
7. TOLERANCES FOR FIELD ERECTION IN ACCORDANCE WITH SECTION 7.13 OF AISC 303-16.

STEEL INSPECTION DEFINITIONS
O - OBSERVE THESE ITEMS ON A RANDOM BASIS. OPERATIONS NEED NOT BE DELAYED PENDING THESE INSPECTIONS.
P - PERFORM THESE TASKS FOR EACH WELDED JOINT OR MEMBER, EACH BOLTED CONNECTION, OR EACH STEEL ELEMENT.

STEEL CONSTRUCTIION - PRIOR TO WELDING
1. WELDER QUALIFICATION RECORDS AND CONTINUITY RECORDS **(QC - P; QA - O)**
2. WELDING PROCEDURE SPECIFICATIONS (WPSs) AVAILABLE. **(QC - P; QA - P)**
3. MANUFACTURER CERTIFICATIONS FOR WELDING CONSUMABLES AVAILABLE. **(QC - P; QA - P)**
4. MATERIAL IDENTIFICATION (TYPE/GRADE). **(QC - O; QA - O)**
5. WELDER IDENTIFICATION SYSTEM. **(QC - O; QA - O)**
6. FIT-UP GROOVE WELDS (INCLUDING JOINT GEOMETRY). **(QC - O; QA - O)**
   A. JOINT PREPARATION.
   B. DIMENSIONS (ALIGNMENT, ROOT OPENING, ROOT FACE, BEVEL).
   C. CLEANLINESS (CONDITION OF STEEL SURFACES).
   D. TACKING (TACK WELD QUALITY AND LOCATION).
   E. BACKING TYPE AND FIT (IF APPLICABLE).
7. CONFIGURATION AND FINISH OF ACCESS HOLES. **(QC - O; QA - O)**
8. FIT-UP FILLET WELDS. **(QC - O; QA - O)**
   A. DIMENSIONS (ALIGNMENT, GAPS AT ROOT).
   B. CLEANLINESS (CONDITION OF STEEL SURFACES).
   C. TACKING (TACK WELD QUALITY AND LOCATION).
9. CHECK WELDING EQUIPMENT. **(QC - O; QA - N/A)**

STEEL CONSTRUCTION - DURING WELDING
1. USE OF QUALIFIED WELDERS. **(QC - O; QA - O)**
2. CONTROL AND HANDLING OF WELDING CONSUMABLES. **(QC - O; QA - O)**
   A. PACKAGING.
   B. EXPOSURE CONTROL.
3. NO WELDING OVER CRACKED TACK WELDS. **(QC - O; QA - O)**
4. ENVIRONMENTAL CONDITIONS.
   A. WIND SPEED WITHIN LIMITS.
   B. PRECIPITATION AND TEMPERATURE.
5. WPS FOLLOWED. **(QC - O; QA - O)**
   A. SETTINGS ON WELDING EQUIPMENT.
   B. TRAVEL SPEED.
   C. SELECTING WELDING MATERIALS.
   D. SHIELDING GAS TYPE/FLOW RATE.
   E. PREHEAT APPLIED.
   F. INTERPASS TEMPERATURE MAINTAINED (MIN./MAX.).
   G. PROPER POSITION (F, V, H, OH).
6. WELDING TECHNIQUES. **(QC - O; QA - O)**
   A. INTERPASS AND FINAL CLEANING.
   B. EACH PASS WITH PROFILE LIMITATIONS.
   C. EACH PASS MEETS QUALITY REQUIREMENTS.
7. PLACEMENT AND INSTALLATION OF STEEL HEADED STUD ANCHORS **(QC - P; QA - P)**

SPECIAL INSPECTIONS CONTINUED (IBC 2021)

STEEL CONSTRUCTION - AFTER WELDING
1. WELDS CLEANED. **(QC - O; QA - O)**
2. SIZE, LENGTH AND LOCATION OF WELDS. **(QC - P; QA - P)**
3. WELD MEET VISUAL ACCEPTANCE CRITERIA. **(QC - P; QA - P)**
   A. CRACK PROHIBITION.
   B. WELD/BASE-METAL FUSION.
   C. CRATER CROSS SECTION.
   D. WELD PROFILES.
   E. WELD SIZE.
   F. UNDERCUT.
   G. POROSITY.
4. ARC STRIKES. **(QC - P; QA - P)**
5. K-AREA. **(QC - P; QA - P)**
6. WELD ACCESS HOLES IN ROLLED HEAVY SHAPES AND BUILT-UP HEAVY SHAPES. **(QC - P; QA - P)**
7. BACKING REMOVED AND WELD TABS REMOVED (IF REQUIRED).
8. REPAIR ACTIVITIES. **(QC - P; QA - P)**
9. DOCUMENT ACCEPTANCE OR REJECTION OF WELDED JOINT OR MEMBER. **(QC - P; QA - P)**
10. NO PROHIBITED WELDS HAVE BEEN ADDED WITHOUT THE APPROVAL OF THE EOR. **(QC - O; QA - O)**

STEEL CONSTRUCTION - PRIOR TO BOLTING
1. MANUFACTURER'S CERTIFICATIONS AVAILABLE FOR FASTENER MATERIALS. **(QC - O; QA - P)**
2. FASTENERS MARKED IN ACCORDANCE WITH ASTM REQUIREMENTS. **(QC - O; QA - O)**
3. CORRECT FASTENERS SELECTED FOR THE JOINT DETAIL (GRADE, TYPE, BOLT LENGTH IF THREADS ARE TO BE EXCLUDED FROM SHEAR PLANE). **(QC - O; QA - O)**
4. CORRECT BOLTING PROCEDURE SELECTOR FOR JOINT DETAIL. **(QC - O; QA - O)**
5. CONNECTING ELEMENTS, INCLUDING THE APPROPRIATE FAYING SURFACE CONDITION AND HOLE PREPARATION, IF SPECIFIED, MEET APPLICABLE REQUIREMENTS. **(QC - O; QA - O)**
6. PRE-INSTALLATION VERIFICATION TESTING BY INSTALLATION PERSONNEL OBSERVED AND DOCUMENTED FOR FASTENER ASSEMBLIES AND METHODS USED. **(QC - P; QA - O)**
7. PROTECTED STORAGE PROVIDED FOR BOLTS, NUTS, WASHERS AND OTHER FASTENER COMPONENTS. **(QC - O; QA - O)**

STEEL CONSTRUCTION - DURING BOLTING
1. FASTENER ASSEMBLIES PLACED IN ALL HOLES AND WASHERS ARE POSITIONED AS REQUIRED. **(QC - O; QA - O)**
2. JOINT BROUGHT TO THE SNUG-TIGHT CONDITION PRIOR TO THE PRETENSIONING OPERATION. **(QC - O; QA - O)**
3. FASTENER COMPONENT NOT TURNED BY THE WRENCH PREVENTED FROM ROTATING. **(QC - O; QA - O)**
4. FASTENERS ARE PRETENSIONED IN ACCORDANCE WITH THE RCSC SPECIFICATION, PROGRESSING SYSTEMATICALLY FROM THE MOST RIGID POINT TOWARD THE FREE EDGES. **(QC - O; QA - O)**

STEEL CONSTRUCTION - AFTER BOLTING
1. DOCUMENT ACCEPTANCE OR REJECTION OF BOLTED CONNECTIONS. **(QC - P; QA - P)**

CONCRETE CONSTRUCTION
1. INSPECTION OF REINFORCEMENT, INCLUDING PRESTRESSING TENDONS, AND VERIFY PLACEMENT. **(PERIODIC)**
2. REINFORCING BAR WELDING:
   A. VERIFY WELDABILITY OF REINFORCING BARS OTHER THAN ASTM A706. **(PERIODIC)**
   B. INSPECT SINGLE-PASS FIILLET WELDS, MAXIMUM 5/16". **(PERIODIC)**
   C. INSPECT ALL OTHER WELDS. **(CONTINUOUS)**
3. INSPECT ANCHORS CAST IN CONCRETE. **(PERIODIC)**
4. INSPECT ANCHORS POST-INSTALLED IN HARDENED CONCRETE MEMBERS.
   A. ADHESIVE ANCHORS INSTALLED IN HORIZONTALLY OR UPWARDLY INCLINED ORIENTATIONS TO RESIST SUSTAINED TENSION LOADS. **(CONTINUOUS)**
   B. MECHANICAL ANCHORS AND ADHESIVE ANCHORS NOT DEFINED IN 4.A. **(PERIODIC)**
5. VERIFY USE OF REQUIRED DESIGN MIX. **(PERIODIC)**
6. PRIOR TO CONCRETE PLACEMENT, FABRICATE SPECIMENS FOR STRENGTH TESTS, PERFORM SLUMP AND AIR CONTENT TESTS, AND DETERMINE THE TEMPERATURE OF THE CONCRETE. **(CONTINUOUS)**
7. VERIFY MAINTENANCE OF SPECIFIED CURING TEMPERATURE AND TECHNIQUES. **(PERIODIC)**
8. INSPECT ERECTION OF PRECAST CONCRETE MEMBERS. **(PERIODIC)**
9. INSPECT FORMWORK FOR SHAPE, LOCATION AND DIMENSIONS OF THE CONCRETE MEMBER BEING FORMED. **(PERIODIC)**

MASONRY CONSTRUCTION - LEVEL 1
EMPIRICALLY DESIGNED MASONRY, MASONRY VENEER, GLASS UNIT MASONRY - RISK CATEGORY IV
ALL OTHER MASONRY - RISK CATEGORY I, II OR III
TEST: VERIFICATION OF SLUMP FLOW AND VISUAL STABILITY INDEX (VSI) AS DELIVERED TO THE PROJECT SITE IN ACCORDANCE WITH SPECIFICATION ARTICLE 1.5 B.1.b.3 FOR SELF-CONSOLIDATING GROUT.
TEST: VERIFICATION OF f'm AND f'AAC IN ACCORDANCE WITH SPECIFICATION ARTICLE 1.4 B PRIOR TO CONSTRUCTION, EXCEPT WHERE SPECIFICALLY EXEMPTED BY THIS CODE.
1. VERIFY COMPLIANCE WITH THE APPROVED SUBMITTALS. **(PERIODIC)**
2. AS MASONRY CONSTRUCTION BEGINS, VERIFY THAT THE FOLLOWING ARE IN COMPLIANCE:
   A. PROPORTIONS OF SITE-PREPARED MORTAR. **(PERIODIC)**
   B. CONSTRUCTION OF MORTAR JOINTS. **(PERIODIC)**
   C. LOCATION OF REINFORCEMENT, CONNECTORS, AND ANCHORAGES. **(PERIODIC)**
3. PRIOR TO GROUTING, VERIFY THAT THE FOLLOWING ARE IN COMPLIANCE:
   A. GROUT SPACE. **(PERIODIC)**
   B. GRADE, TYPE, AND SIZE OF REINFORCEMENT AND ANCHOR BOLTS, AND ANCHORAGES. **(PERIODIC)**
   C. PLACEMENT OF REINFORCEMENT, CONNECTORS, AND ANCHORAGES. **(PERIODIC)**
   D. PROPORTIONS OF SITE-PREPARED GROUT. **(PERIODIC)**
   E. CONSTRUCTION OF MORTAR JOINTS. **(PERIODIC)**
4. VERIFY DURING CONSTRUCTION:
   A. SIZE AND LOCATION OF STRUCTURAL ELEMENTS. **(PERIODIC)**
   B. TYPE, SIZE AND LOCATION OF ANCHORS, INCLUDING OTHER DETAILS OF ANCHORAGE OF MASONRY TO STRUCTURAL MEMBERS, FRAMES OR OTHER CONSTRUCTION. **(PERIODIC)**
   C. WELDING REINFORCEMENT. **(CONTINUOUS)**
   D. PREPARATION, CONSTRUCTION, AND PROTECTION OF MASONRY DURING COLD WEATHER (TEMPERATURE BELOW 40 DEGREES FAHRENHEIT (4.4 DEGREES CELSIUS)) OR HOT WEATHER (TEMPERATURE ABOVE 90 DEGREES FAHRENHEIT (32.2 DEGREES CELSIUS)). **(PERIODIC)**
   E. PLACEMENT OF GROUT IS IN COMPLIANCE. **(CONTINUOUS)**
5. OBSERVE PREPARATION OF GROUT SPECIMENTS, MORTAR SPECIMENS, AND/OR PRISMS. **(PERIODIC)**

SOILS
1. VERIFY MATERIALS BELOW SHALLOW FOOTINGS ARE ADEQUATE TO ACHIEVE THE DESIGN BEARING CAPACITY. **(PERIODIC)**
2. VERIFY EXCAVATIONS ARE EXTENDED TO PROPER DEPTH AND HAVE REACHED PROPER MATERIAL. **(PERIODIC)**
3. PERFORM CLASSIFICATION AND TESTING OF COMPACTED FILL MATERIALS. **(PERIODIC)**
4. DURING FILL PLACEMENT, VERIFY USE OF PROPER MATERIALS AND PROCEDURES IN ACCORDANCE WITH THE PROVISIONS OF THE APPROVED GEOTECHNICAL REPORT. VERIFY DENSITIES AND LIFT THICKNESSES DURING PLACEMENT AND COMPACTION OF COMPACTED FILL. **(CONTINUOUS)**
5. PRIOR TO PLACEMENT OF COMPACTED FILL, OBSERVE SUBGRADE AND VERIFY THAT SITE HAS BEEN PREPARED PROPERLY. **(PERIODIC)**

PREFABRICATED WOOD STRUCTURAL ELEMENTS
1. MANUFACTURER'S CERTIFICATE OF COMPLIANCE TO QUALITY ASSURANCE IN ACCORDANCE WITH THE PROJECT SPECIFICATIONS IS REQUIRED.

WOOD FRAMING ELEMENTS
1. NAILING, BOLTING, ANCHORING, AND OTHER FASTENING OF SHEAR WALLS AND DIAPHRAGMS WHERE THE NAIL SPACING IS 4" OR LESS. **(PERIODIC)**
2. LOCATION, TYPE, SIZE, AND SPACING OF WOOD FRAMING CONNECTORS INCLUDING HURRICANE TIES, STRAPS, CLIPS AND HANGERS. **(PERIODIC)**
3. VERIFICATION OF SHEARWALL HOLDDOWNS AND ANCHORAGES TO CONCRETE. **(PERIODIC)**

DESIGNED:	MTW	ISSUE DATE:	03/25/2024
DRAWN:	MTW	REVISIONS:	
CHECKED:	NAS		

No.:	DATE:	BY:	DESCRIPTION:
2	5/9/2024		ADDENDUM No.2

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PROFESSIONAL STRUCTURAL ENGINEER 5/9/2024 NATHAN SCHMIDT E-20211 STATE OF NEBRASKA

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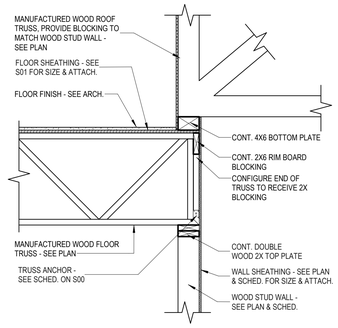
CITY OF GRAND ISLAND
GRAND ISLAND FIRE STATION NO. 3
2310 S WEBB RD, GRAND ISLAND, NE 68803

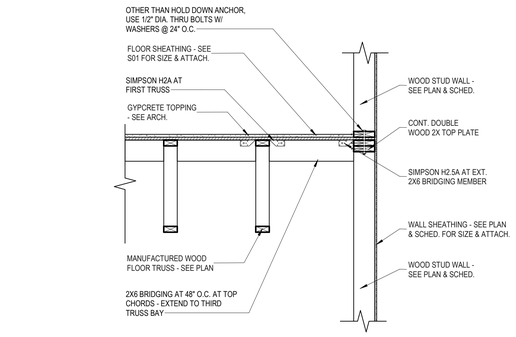
STRUCTURAL NOTES

PROJECT NO.: 09285.001

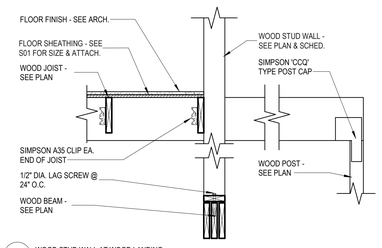
S 01



1 FLOOR TRUSS BEARING AT WOOD STUD WALL
SCALE: 3/4" = 1'-0"



2 FLOOR TRUSS AT WOOD STUD WALL
SCALE: 3/4" = 1'-0"



3 WOOD STUD WALL AT WOOD LANDING
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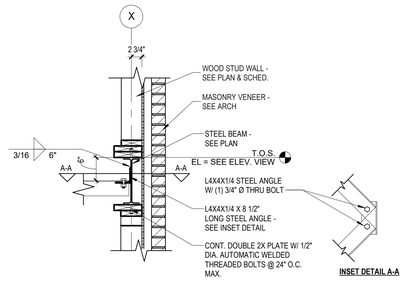
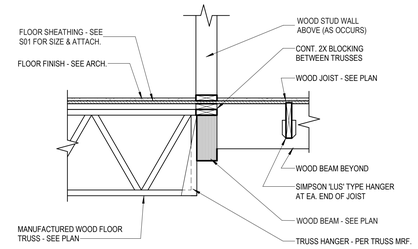
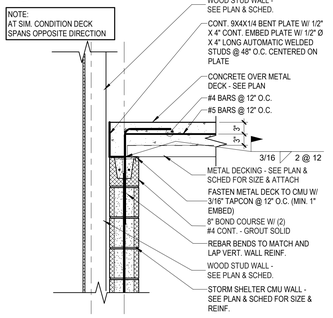


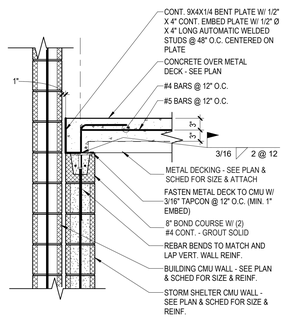
4 WOOD JOIST AT EXTERIOR STEEL BEAM
SCALE: 3/4" = 1'-0"



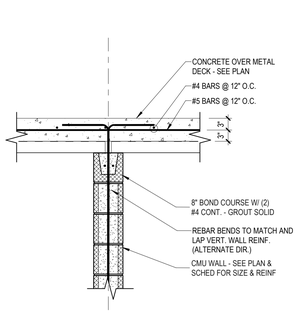
5 FLOOR TRUSS & WOOD JOIST AT WOOD BEAM
SCALE: 3/4" = 1'-0"



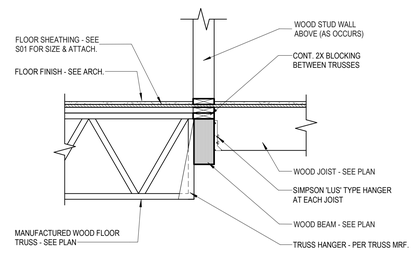
6 CONC SLAB AT STORM SHELTER WALL
SCALE: 3/4" = 1'-0"



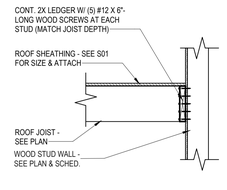
7 CONC SLAB AT STORM SHELTER WALL
SCALE: 3/4" = 1'-0"



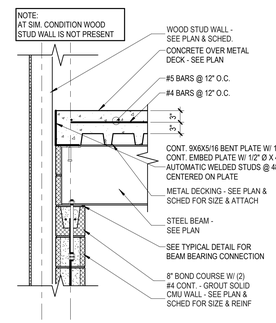
8 CONCRETE SLAB AT INT. MASONRY WALL
SCALE: 3/4" = 1'-0"



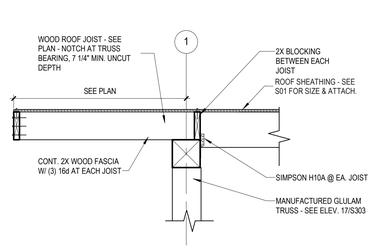
9 FLOOR TRUSS & WOOD JOIST BEARING AT WOOD BEAM
SCALE: 3/4" = 1'-0"



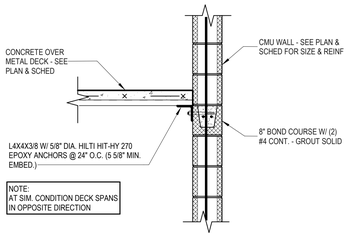
10 COVERED PATIO ROOF JOIST AT BUILDING
SCALE: 3/4" = 1'-0"



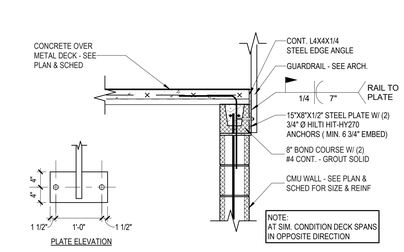
11 STEEL BEAM BEARING AT CMU WALL
SCALE: 3/4" = 1'-0"



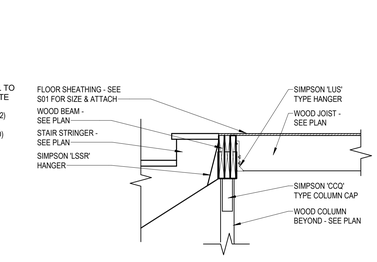
12 COVERED PATIO ROOF JOIST AT ROOF TRUSS
SCALE: 3/4" = 1'-0"



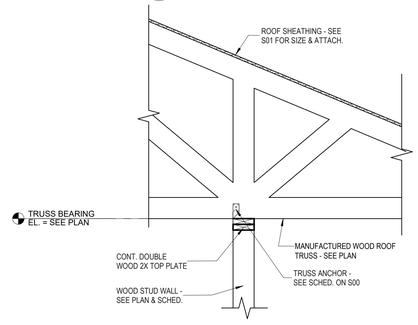
13 CONCRETE OVER METAL DECK BEARING AT EXTERIOR MASONRY WALL
SCALE: 3/4" = 1'-0"



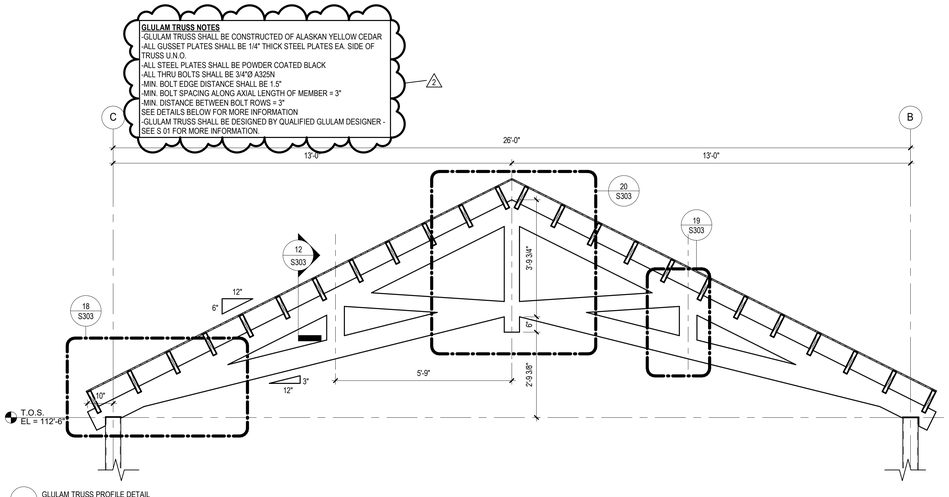
14 CONCRETE OVER METAL DECK BEARING AT MASONRY WALL
SCALE: 3/4" = 1'-0"



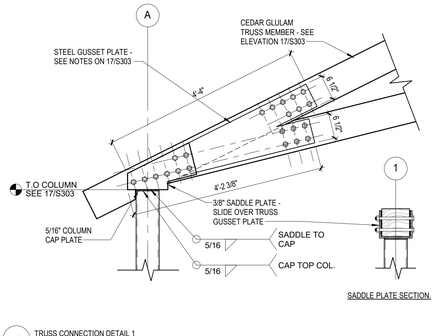
15 LANDING BEAM AT BUILT UP STUD
SCALE: 3/4" = 1'-0"



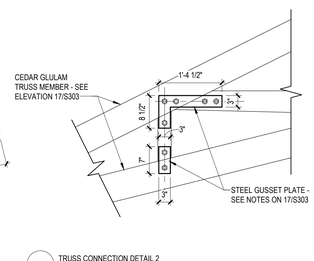
16 WOOD ROOF TRUSS AT INTERIOR BEARING WALL
SCALE: 3/4" = 1'-0"



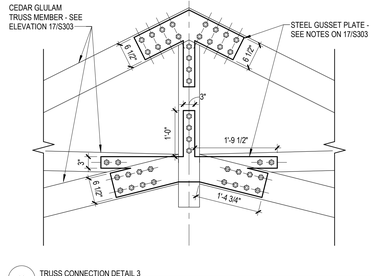
17 GLULAM TRUSS PROFILE DETAIL
SCALE: 1/2" = 1'-0"



18 TRUSS CONNECTION DETAIL 1
SCALE: 3/4" = 1'-0"



19 TRUSS CONNECTION DETAIL 2
SCALE: 3/4" = 1'-0"



20 TRUSS CONNECTION DETAIL 3
SCALE: 3/4" = 1'-0"

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		2	5/6/2024 ADDENDUM No.2

PROFESSIONAL STRUCTURAL ENGINEER
5/9/2024
NATHAN SCHMIDT
E-20217
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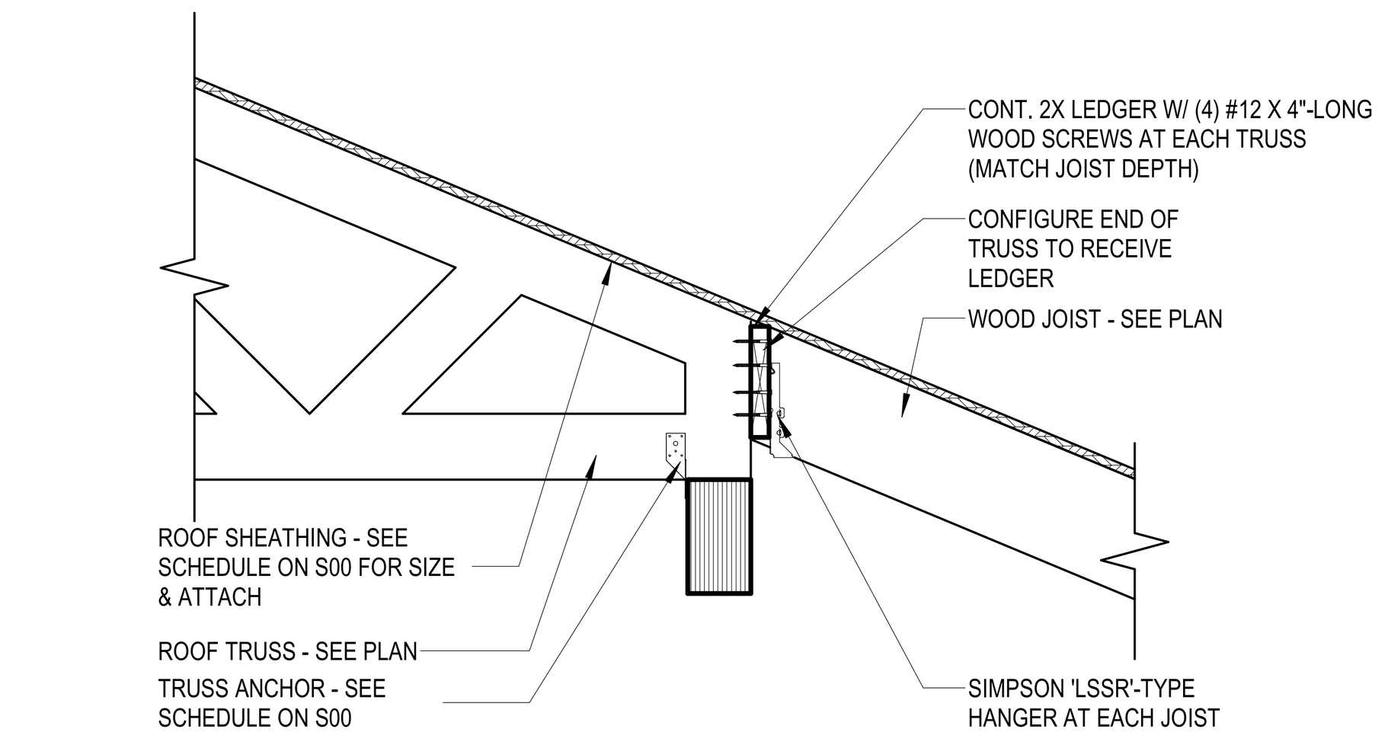
CITY OF GRAND ISLAND
GRAND ISLAND FIRE STATION NO. 3
2310 S WEBB RD, GRAND ISLAND, NE 68803

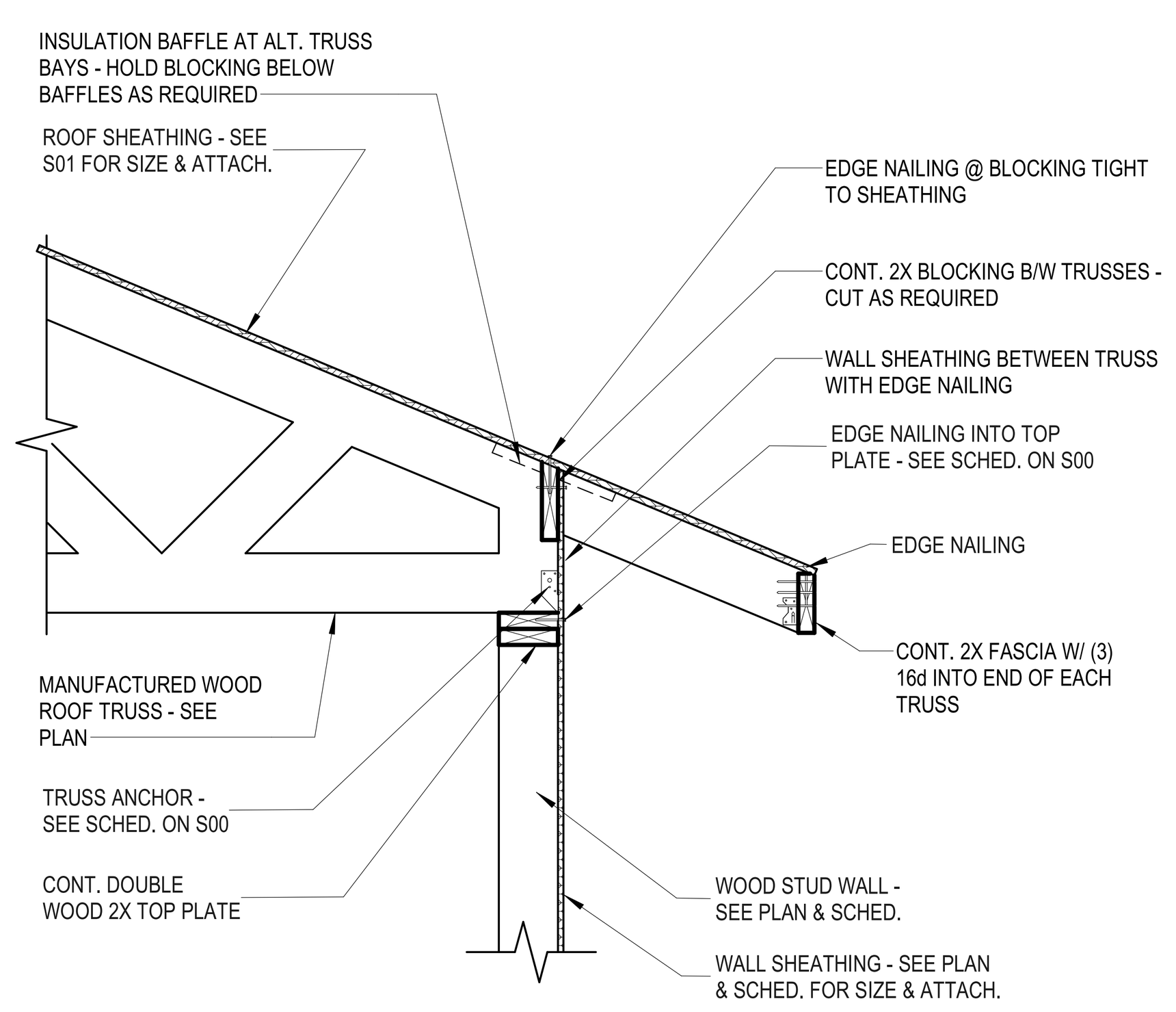
FRAMING DETAILS

PROJECT NO.: 09285.001

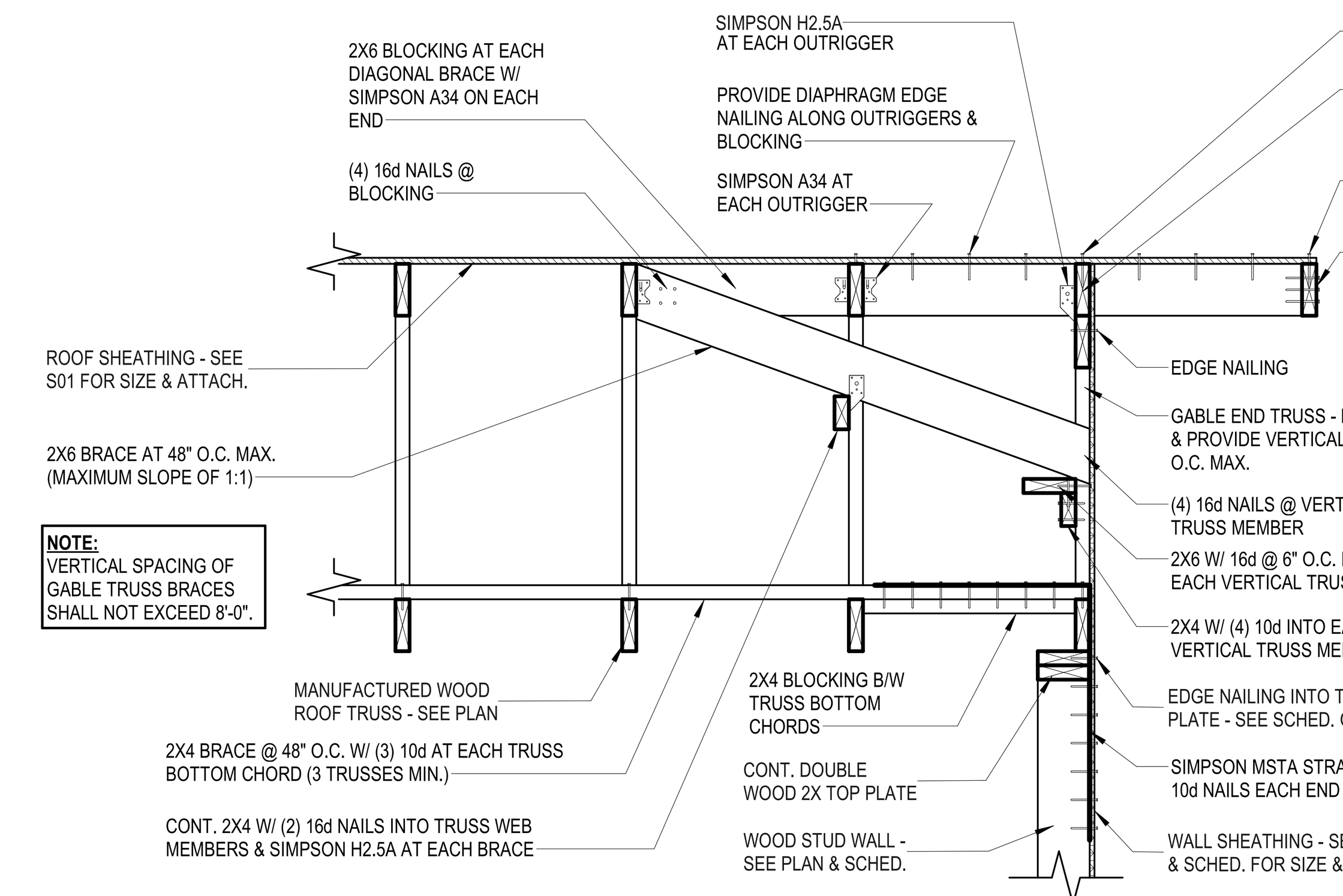
S303



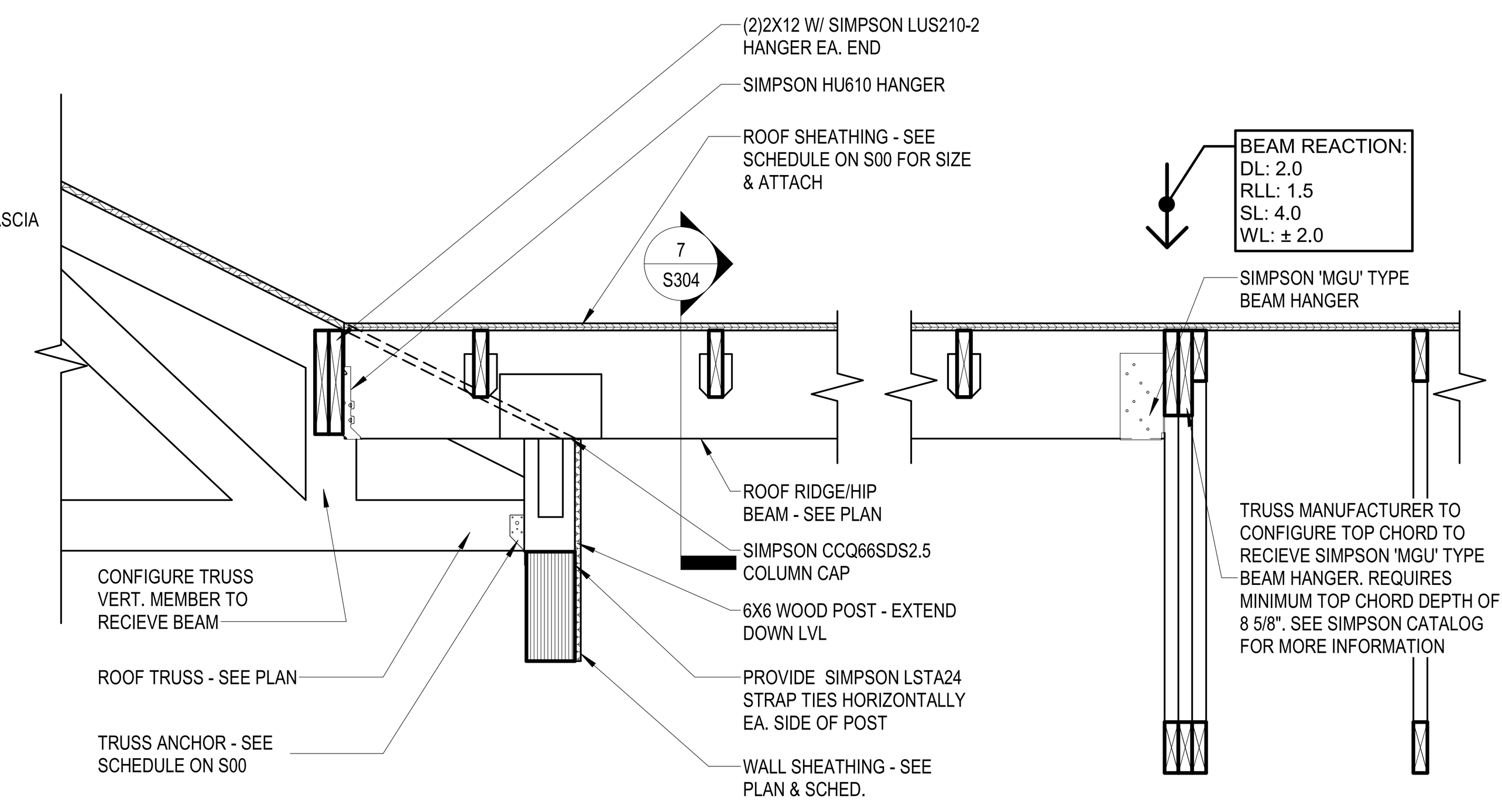
1 WOOD ROOF TRUSS AND JOISTS BEARING AT WOOD BEAM
SCALE: 3/4" = 1'-0"



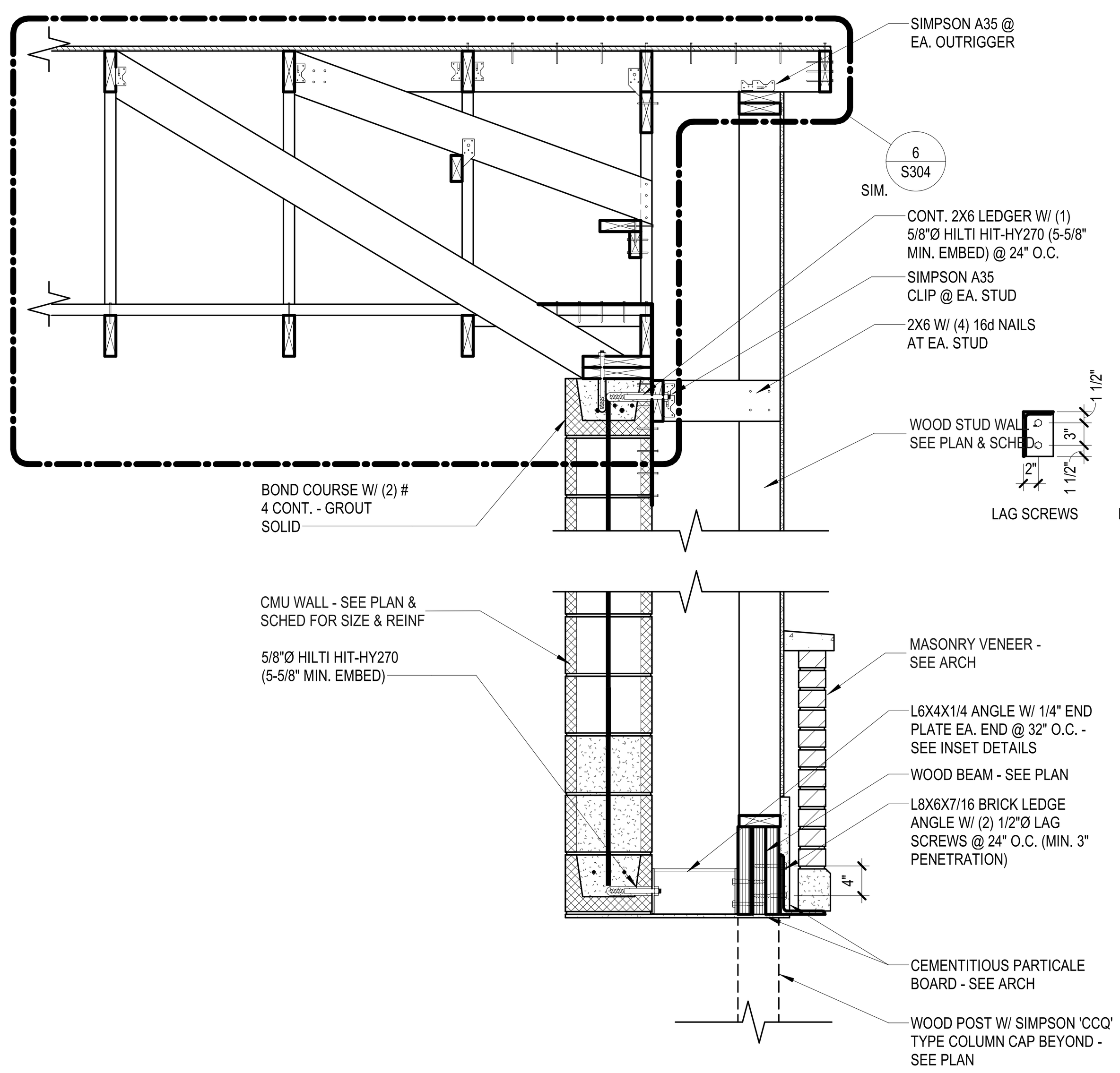
2 WOOD ROOF TRUSS AT WOOD STUD WALL
SCALE: 3/4" = 1'-0"



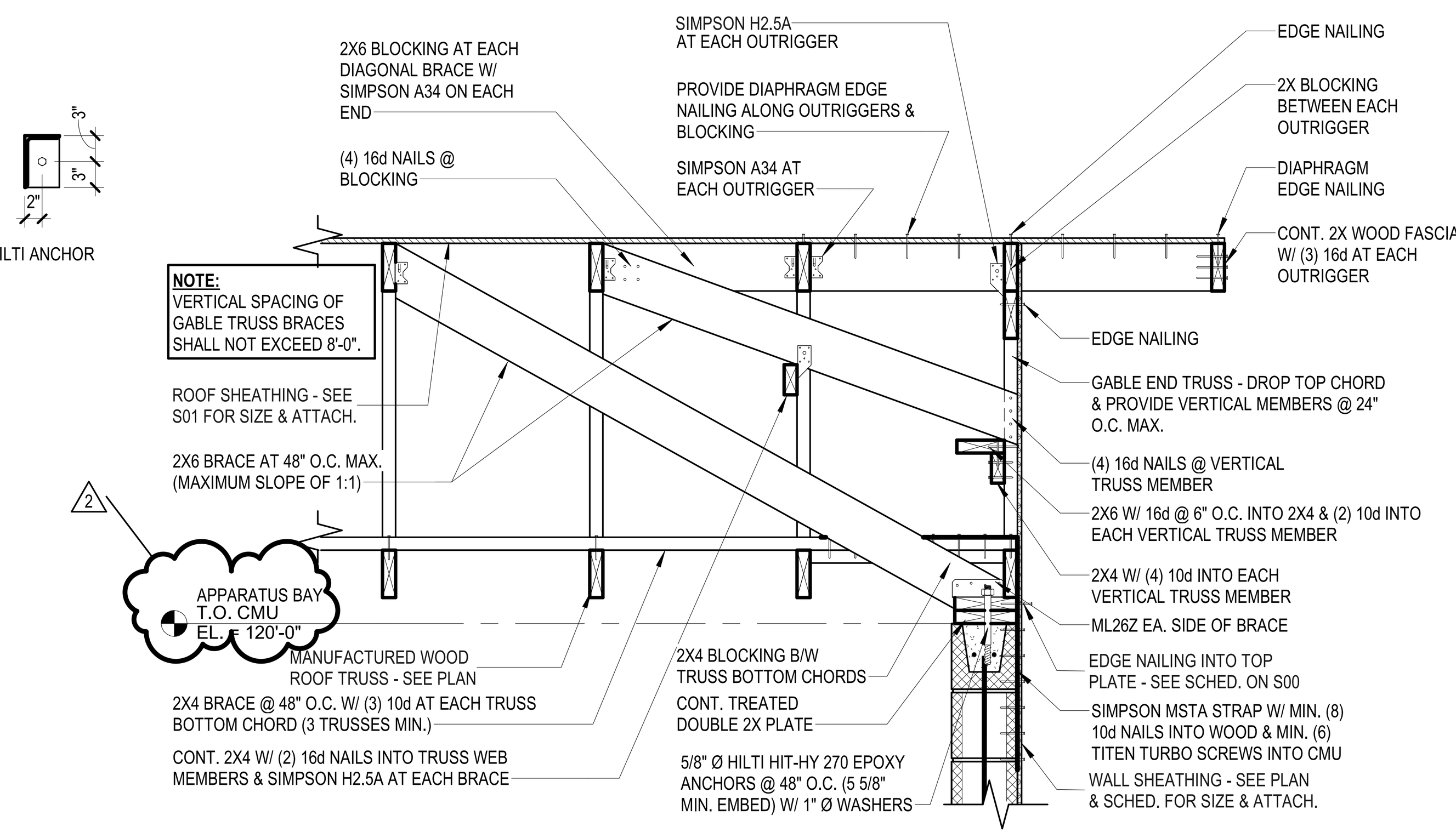
3 WOOD GABLE TRUSS CONNECTION AT WOOD STUD WALL
SCALE: 3/4" = 1'-0"



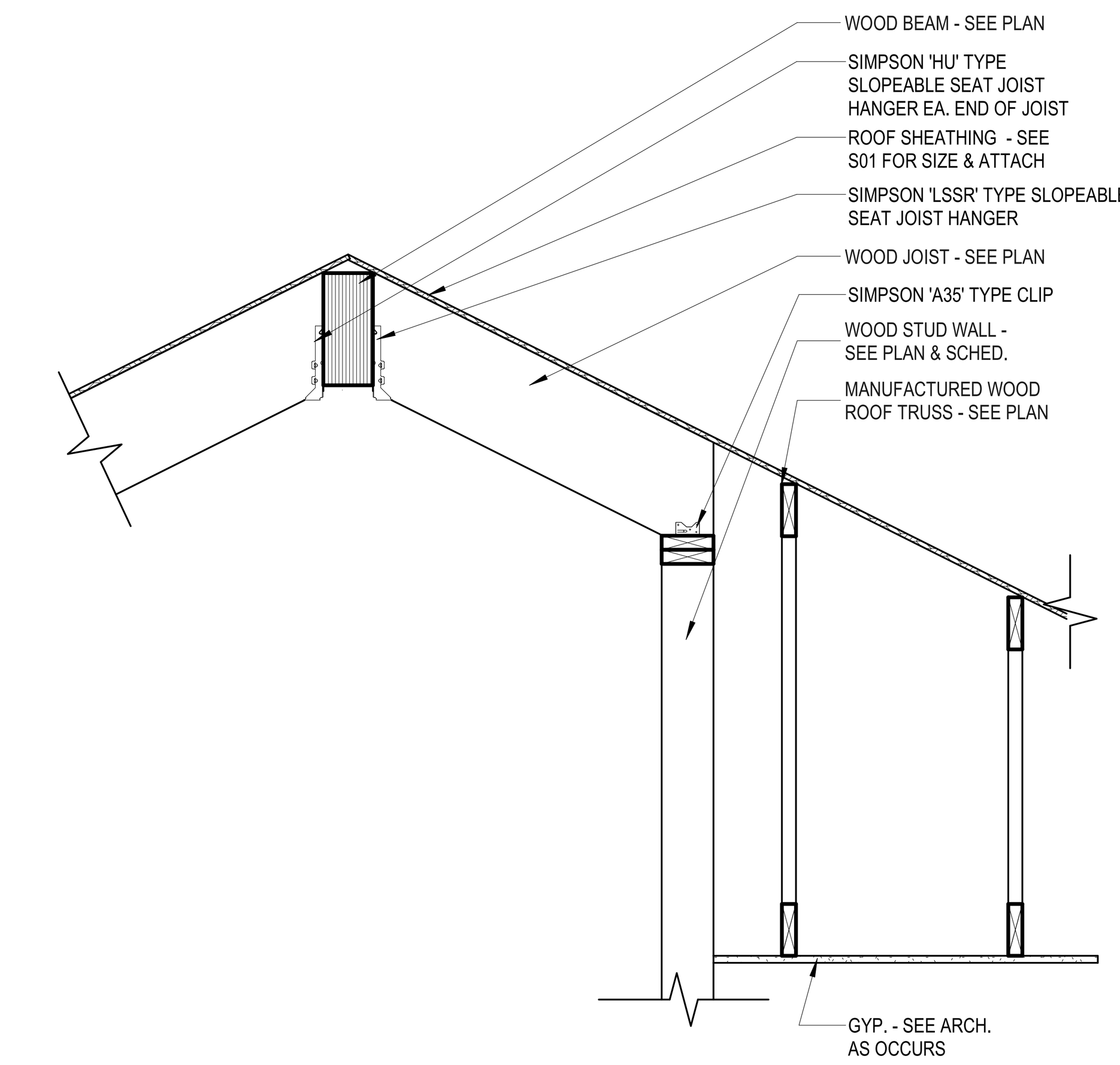
4 RIDGE/HIP BEAM AT WOOD POST
SCALE: 3/4" = 1'-0"



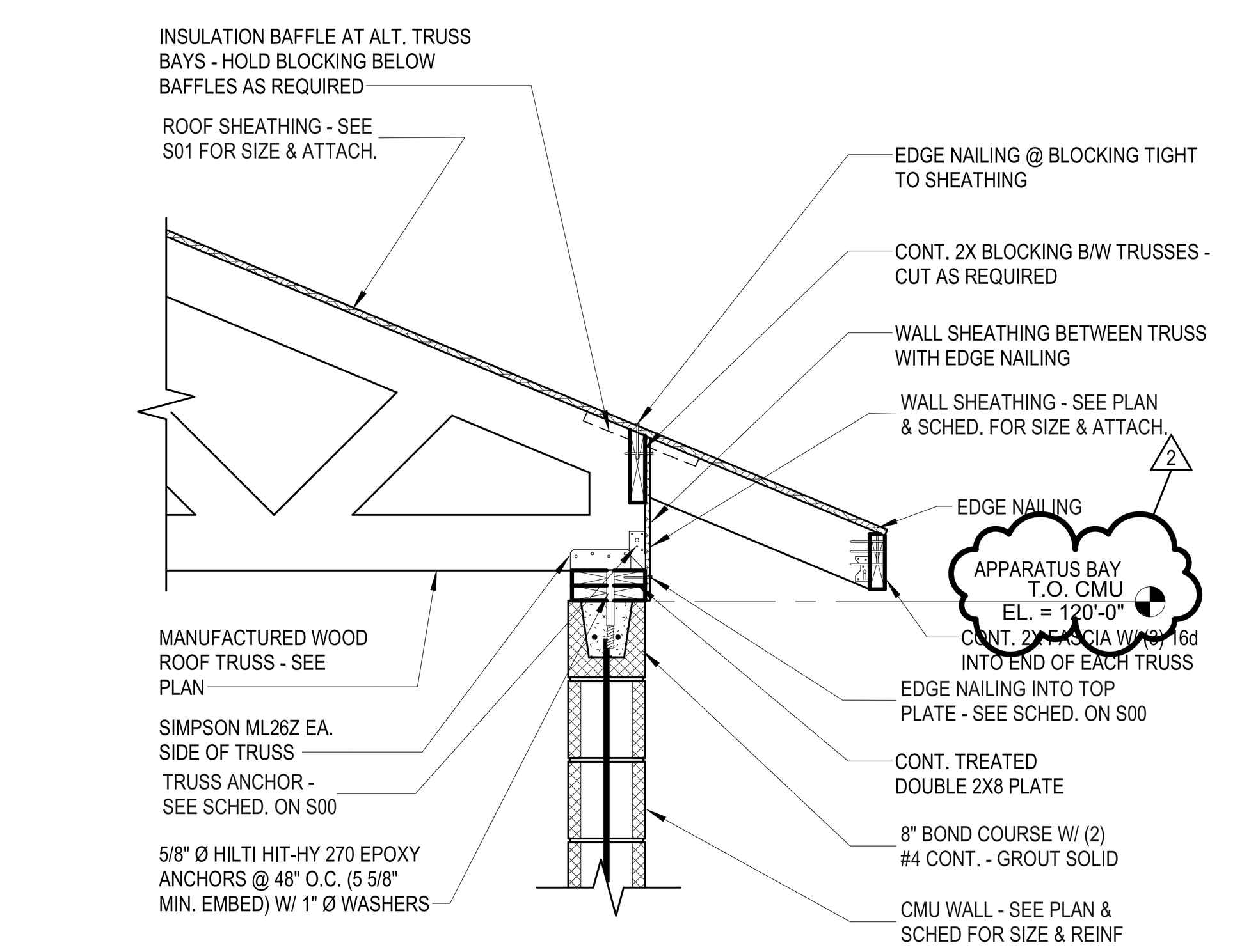
5 APPARATUS BAY OPENING DETAIL
SCALE: 3/4" = 1'-0"



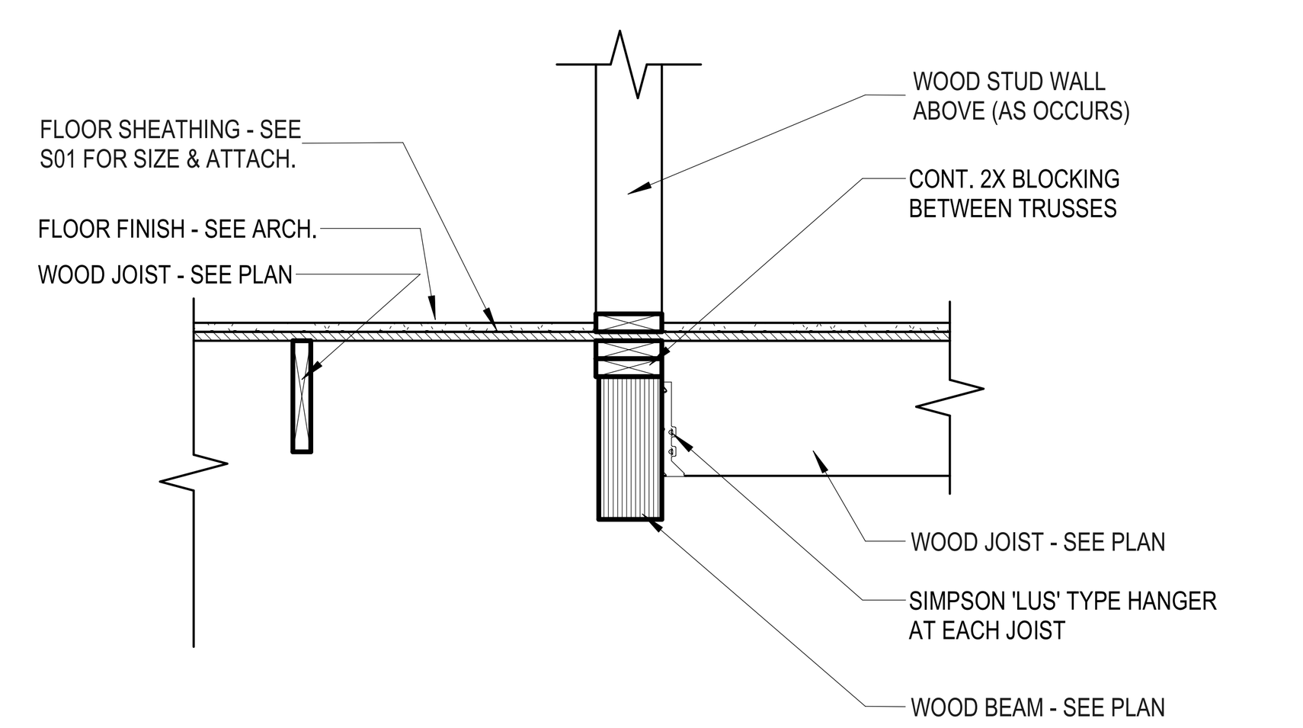
6 WOOD GABLE TRUSS CONNECTION AT CMU WALL
SCALE: 3/4" = 1'-0"



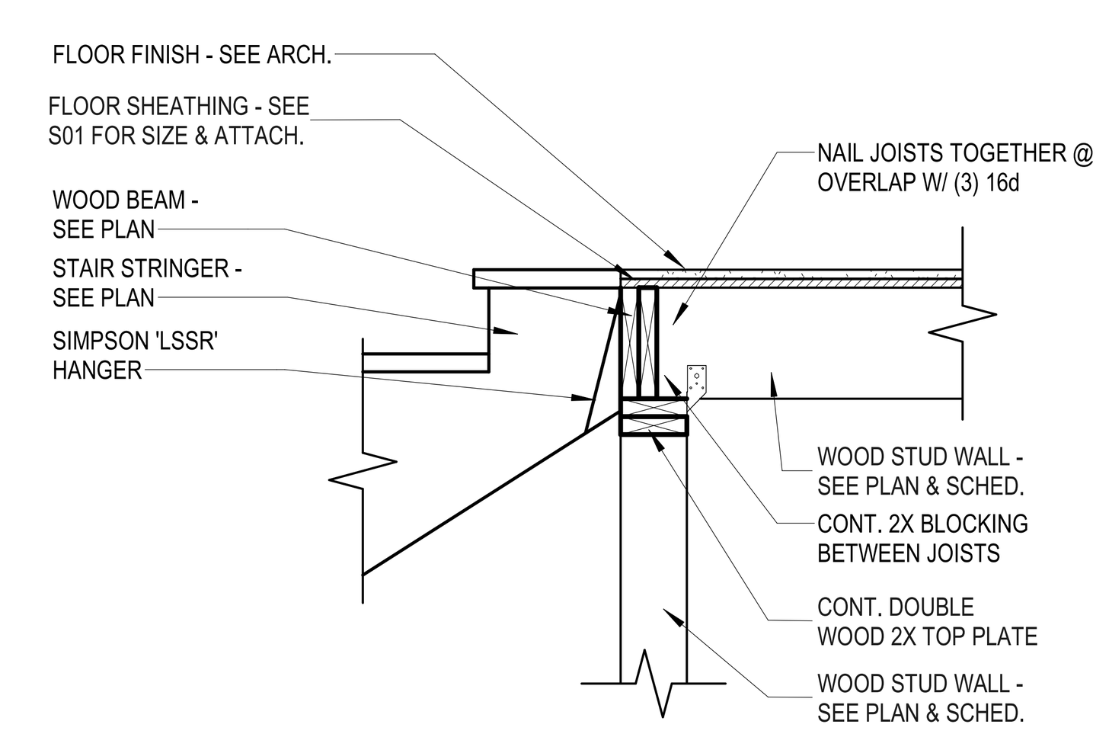
7 RIDGE BEAM FRAMING
SCALE: 3/4" = 1'-0"



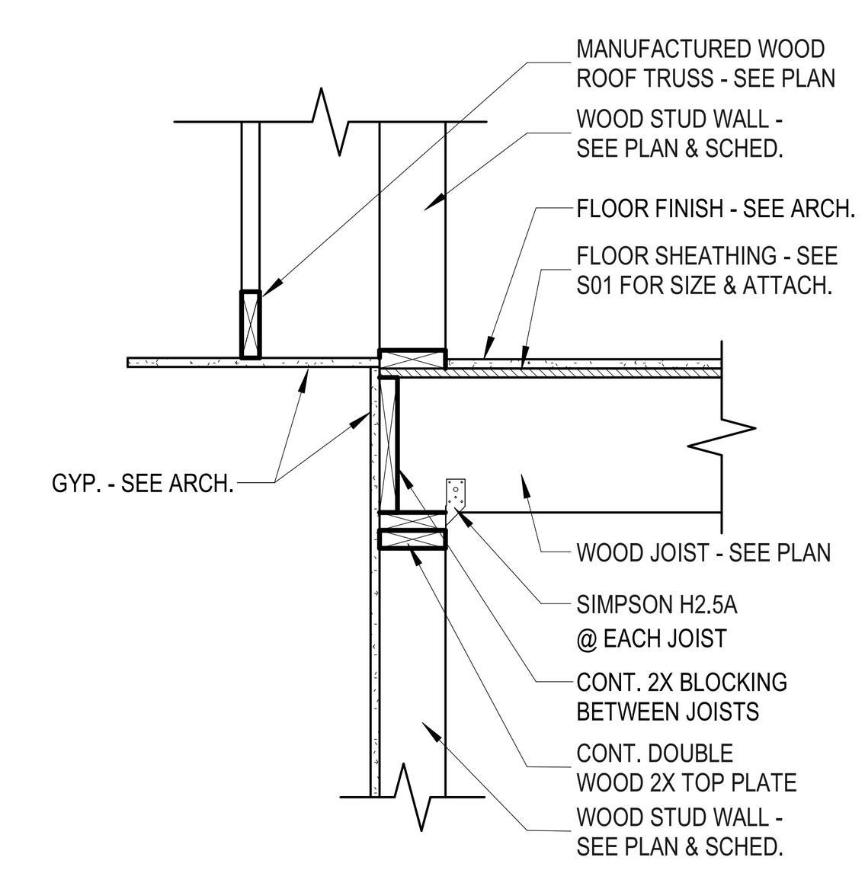
8 WOOD ROOF TRUSS AT WOOD STUD WALL MASONRY WALL
SCALE: 3/4" = 1'-0"



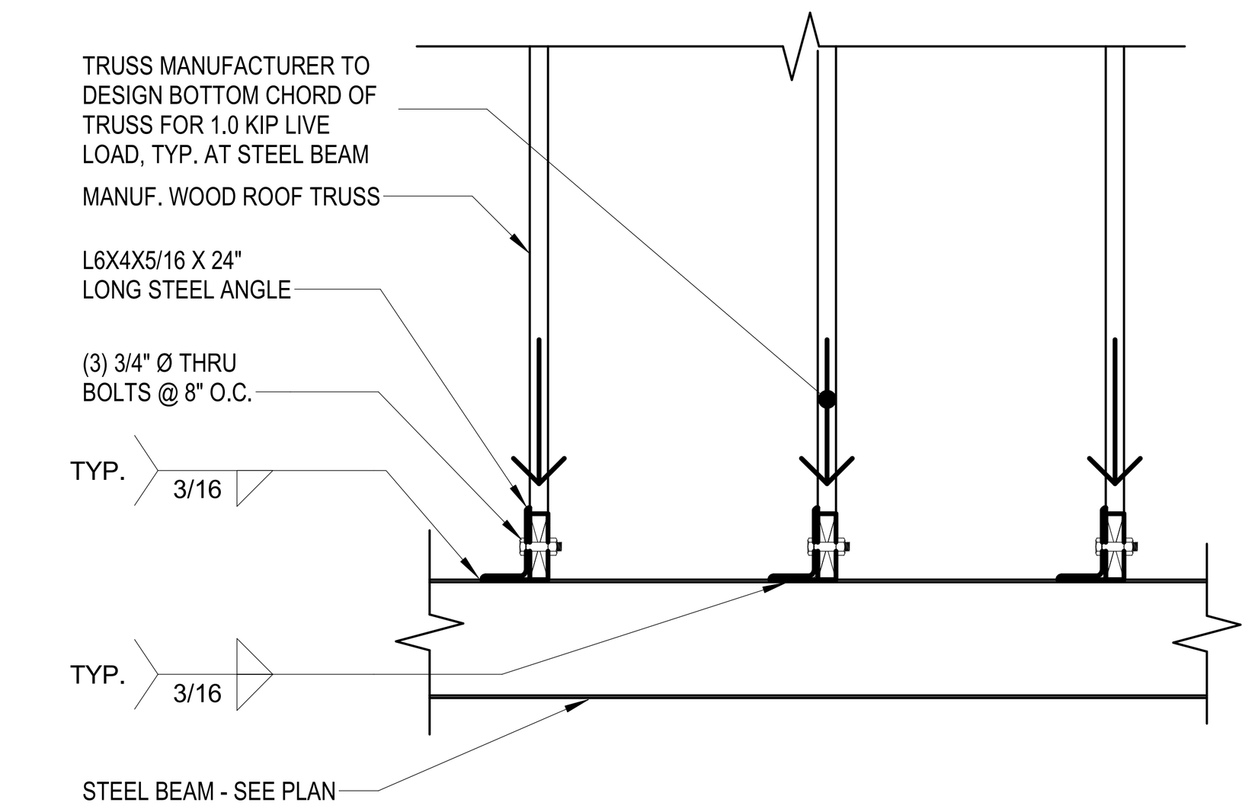
9 FLOOR TRUSS & WOOD JOIST BEARING AT WOOD BEAM
SCALE: 3/4" = 1'-0"



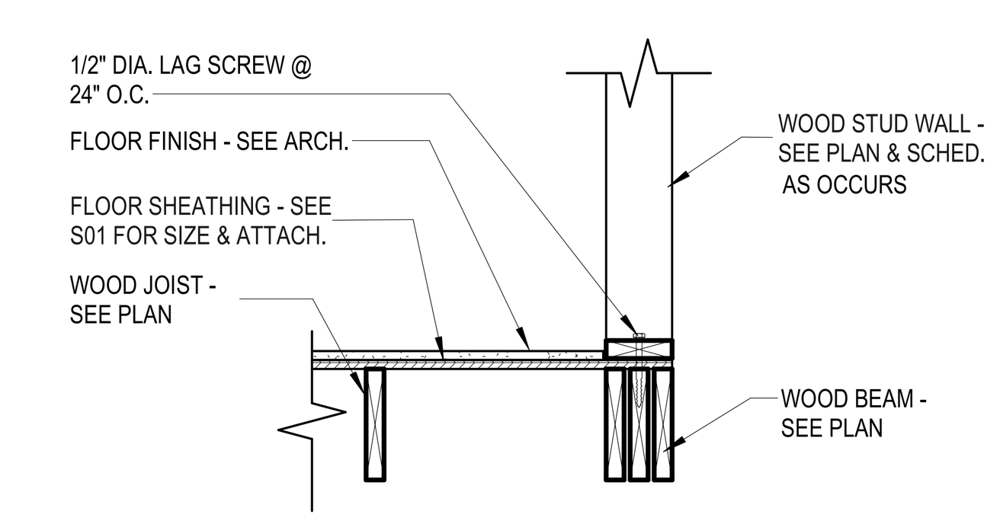
10 FLOOR TRUSS & WOOD JOIST BEARING AT WOOD BEAM
SCALE: 3/4" = 1'-0"



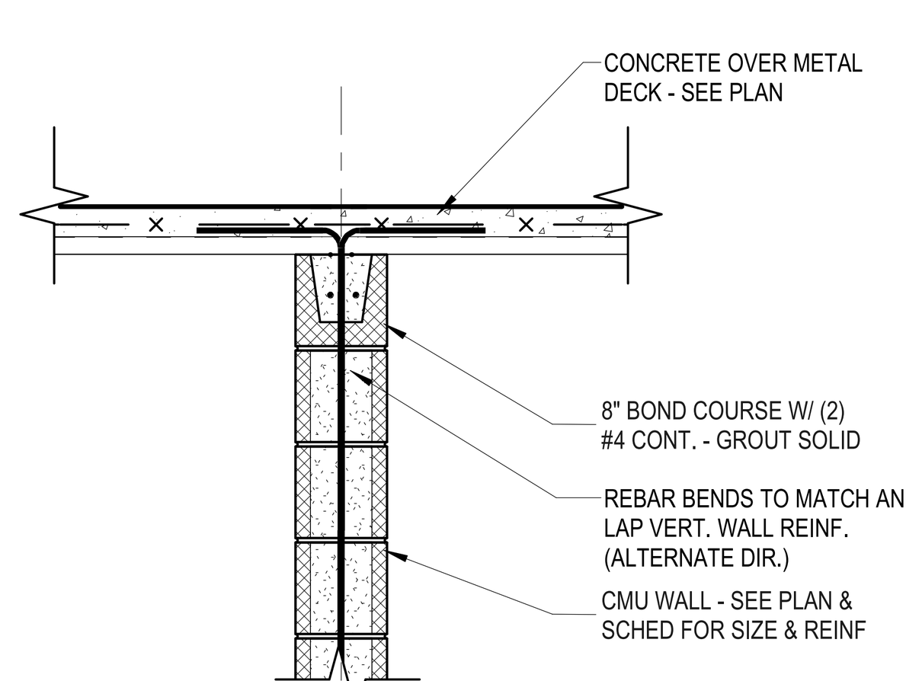
11 WOOD JOISTS BEARING AT WOOD STUD WALL
SCALE: 3/4" = 1'-0"



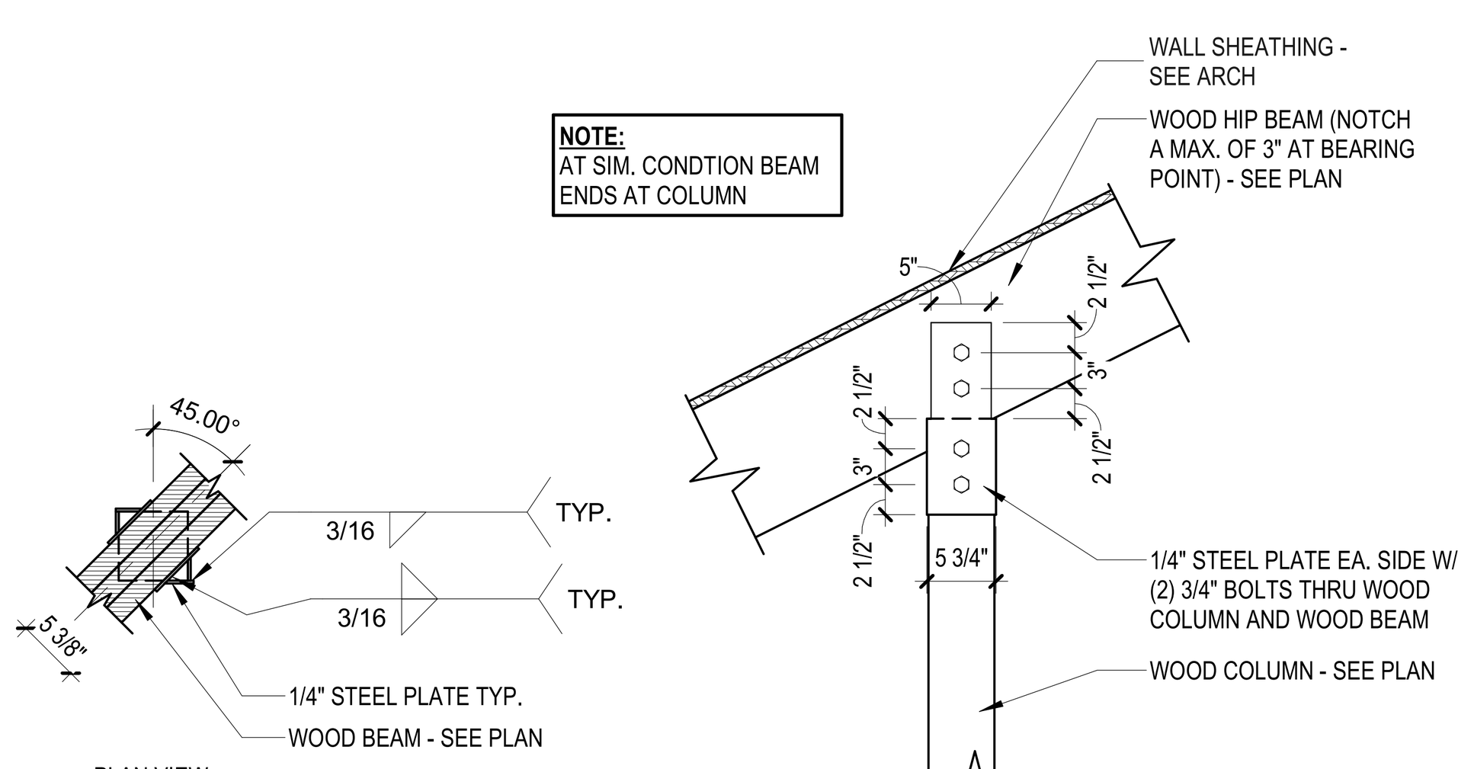
12 STEEL BEAM HANGING FROM ROOF TRUSS
SCALE: 3/4" = 1'-0"



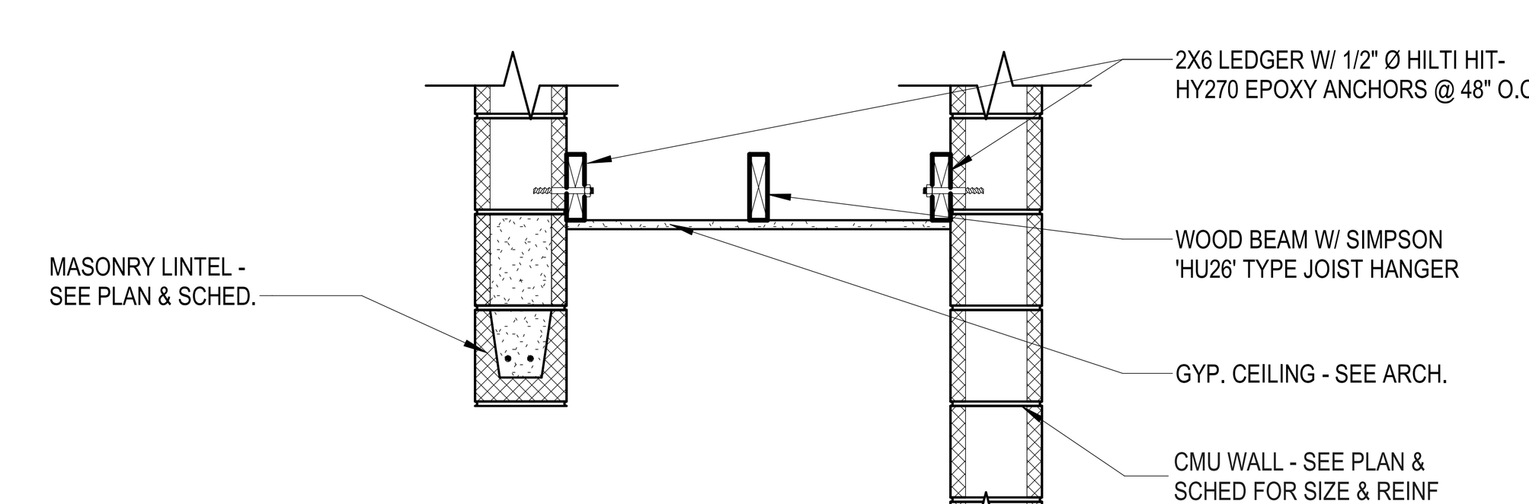
13 WOOD STUD WALL AT WOOD BEAM
SCALE: 3/4" = 1'-0"



14 CONCRETE SLAB AT INT. MASONRY WALL 2
SCALE: 3/4" = 1'-0"



15 COLUMN AT HIP BEAM
SCALE: 3/4" = 1'-0"



16 CEILING SUPPORT AT BUMPOUT
SCALE: 3/4" = 1'-0"

ISSUE DATE:	03/25/2024		
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2	5/9/2024		ADDENDUM No.2

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PROFESSIONAL STRUCTURAL ENGINEER
5/9/2024
NATHAN SCHMIDT
E-2021
STATE OF NEBRASKA

BRWARCHITECTS
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CITY OF GRAND ISLAND
GRAND ISLAND FIRE STATION NO. 3
2310 S WEBB RD, GRAND ISLAND, NE 68803

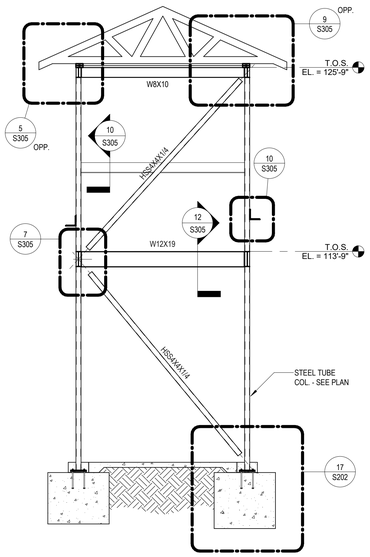
FRAMING DETAILS

PROJECT NO.: 09285.001

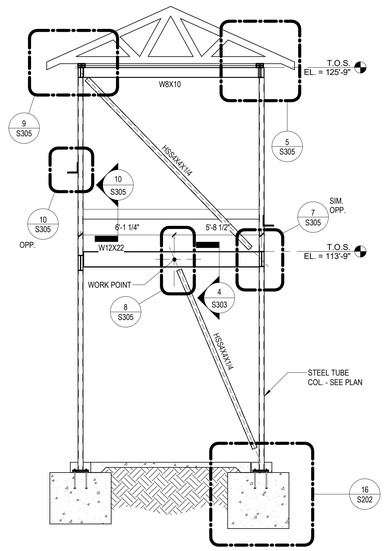
S304

Autodesk Docs://Grand Island Fire Station No. 3/GRAND ISLAND FS 3_STRUCTURAL_V24.rvt
5/8/2024 4:27:28 PM

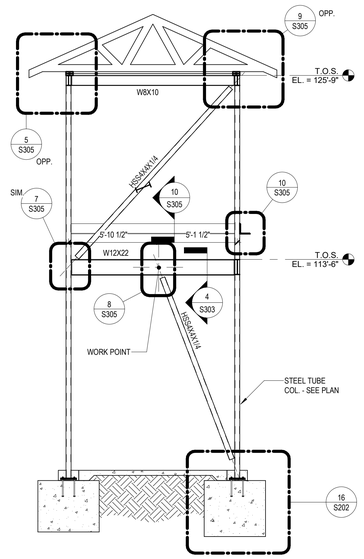
09285001-3-S304_Rev 2
FRAMING DETAILS



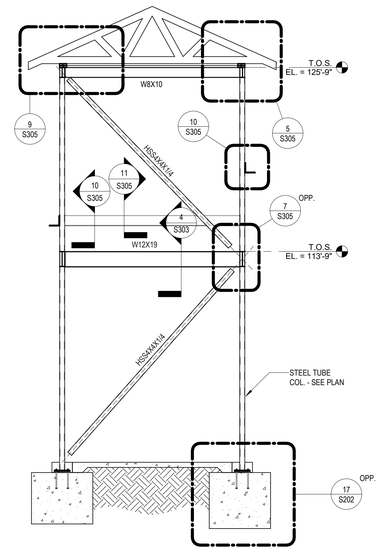
1 TOWER NORTH ELEVATION
SCALE: 1/4" = 1'-0"



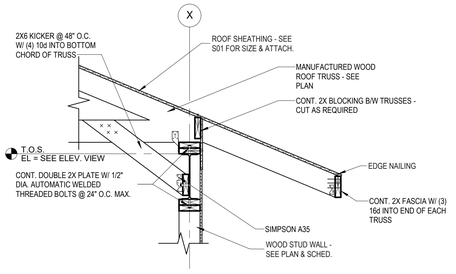
2 TOWER EAST ELEVATION
SCALE: 1/4" = 1'-0"



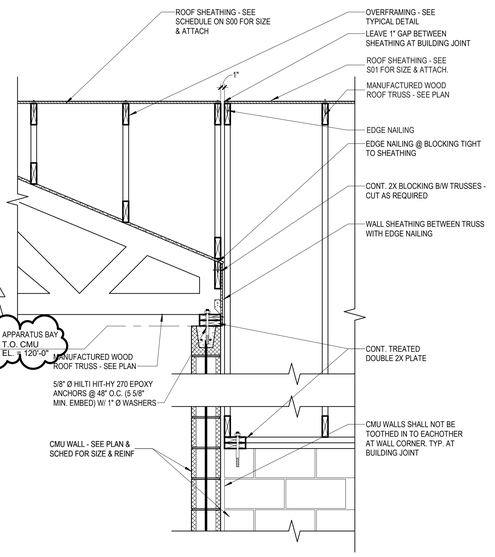
3 TOWER SOUTH ELEVATION
SCALE: 1/4" = 1'-0"



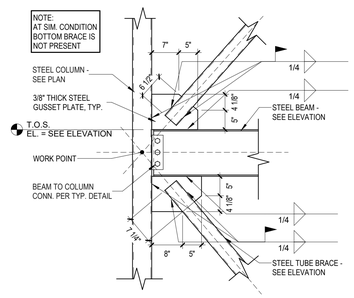
4 TOWER WEST ELEVATION
SCALE: 1/4" = 1'-0"



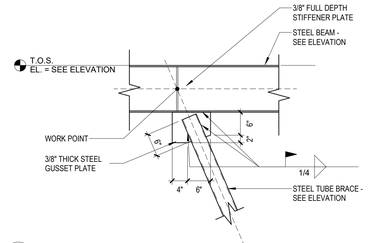
5 TOWER ROOF FRAMING DETAIL
SCALE: 3/4" = 1'-0"



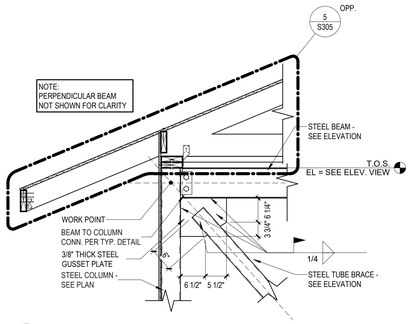
6 ROOF TRUSS AT BUILDING JOINT
SCALE: 3/4" = 1'-0"



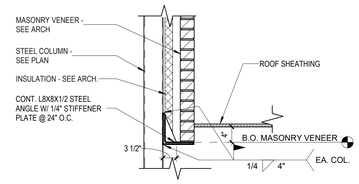
7 DOUBLE GUSSET PLATE CONNECTION
SCALE: 3/4" = 1'-0"



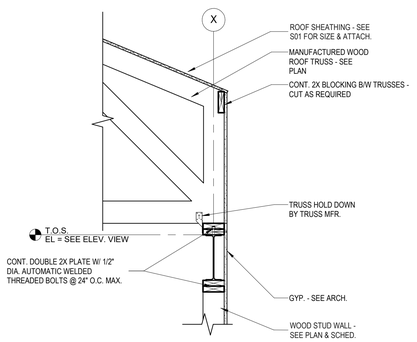
8 KNEE BRACE CONNECTION
SCALE: 3/4" = 1'-0"



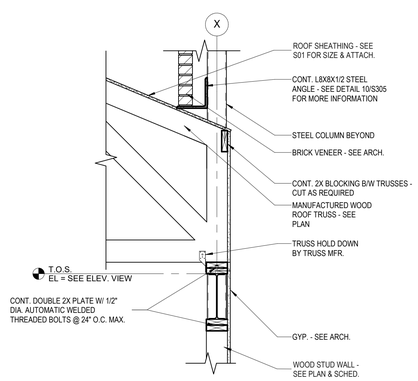
9 GUSSET PLATE CONNECTION AT ROOF
SCALE: 3/4" = 1'-0"



10 BRICK SUPPORT ANGLE ABOVE ROOF
SCALE: 3/4" = 1'-0"



11 ROOF TRUSS AT BEARING AT TOWER
SCALE: 3/4" = 1'-0"



12 ROOF TRUSS AT BEARING AT TOWER 2
SCALE: 3/4" = 1'-0"

DESIGNED:	MTW	ISSUE DATE:	03/23/2024
DRAWN:	MTW	REVISIONS:	
CHECKED:	NAS	No.:	DATE:
		2	5/6/2024

BY: DESCRIPTION:
ADDENDUM No.2

PROFESSIONAL STRUCTURAL ENGINEER
5/9/2024
NATHAN SCHMIDT
E-20211
STATE OF NEBRASKA

SCHEMMER BRW ARCHITECTS
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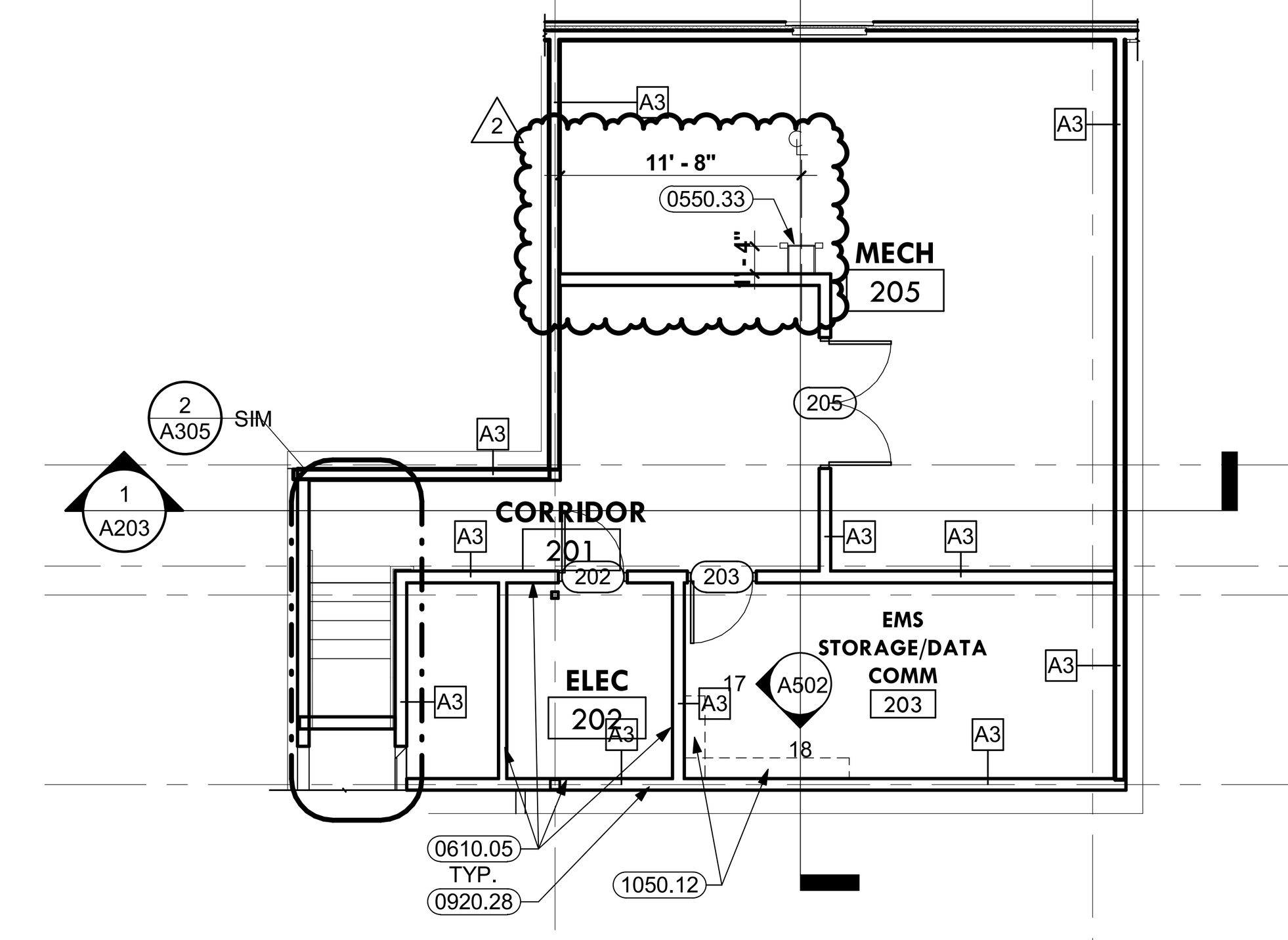
1044 North 115th Street, Suite 300, Omaha, Nebraska 68154 | 402.493.4800 | CA0095
175 CENTURY SQUARE DRIVE
SUITE 330
COLLEGE STATION, TEXAS 77840
979.694.1791
BRW-ARCHITECTS.COM
CA-4970

CITY OF GRAND ISLAND
GRAND ISLAND FIRE STATION NO. 3
2310 S WEBB RD, GRAND ISLAND, NE 68803

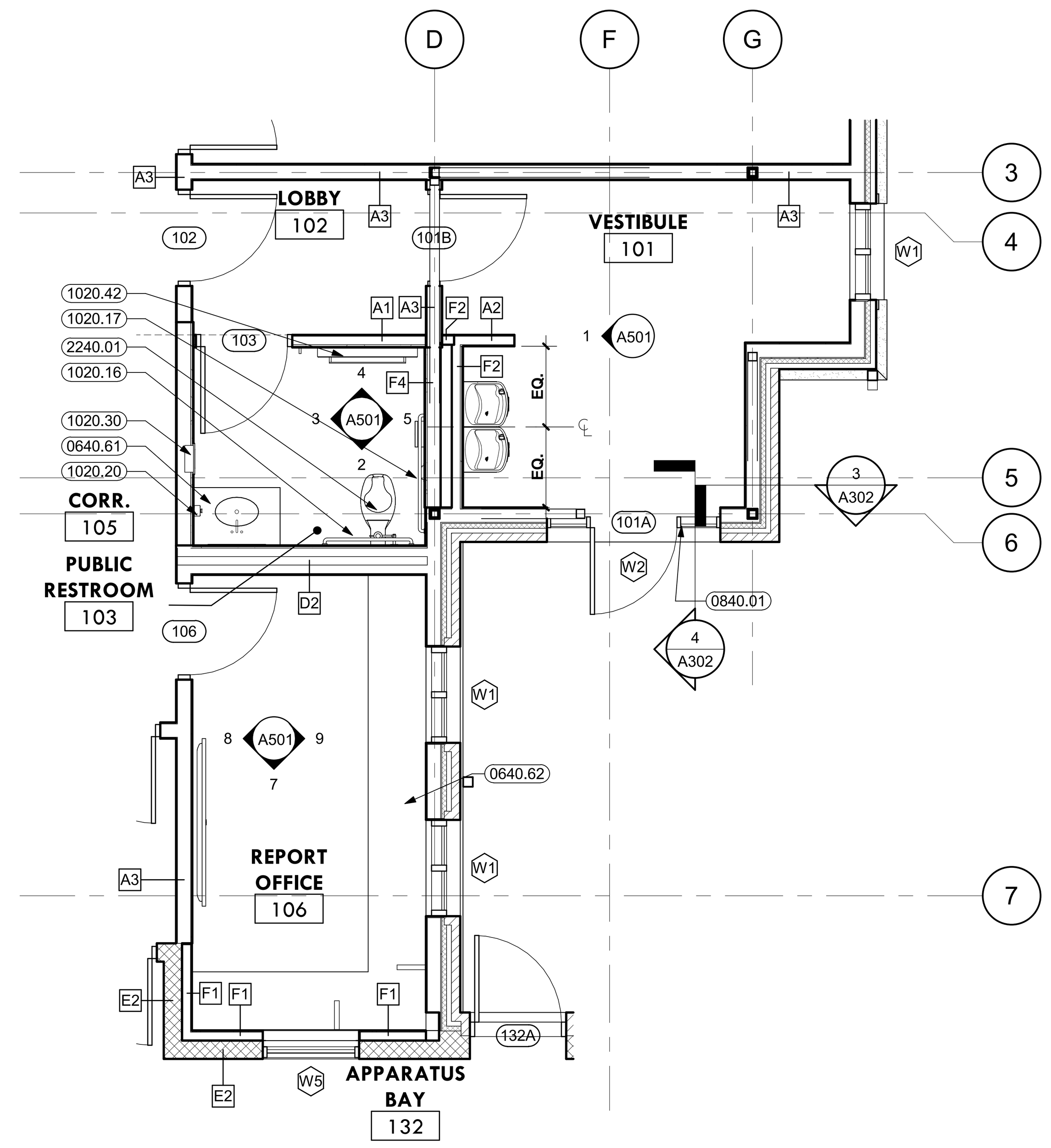
FRAMING DETAILS

PROJECT NO.: 09285.001

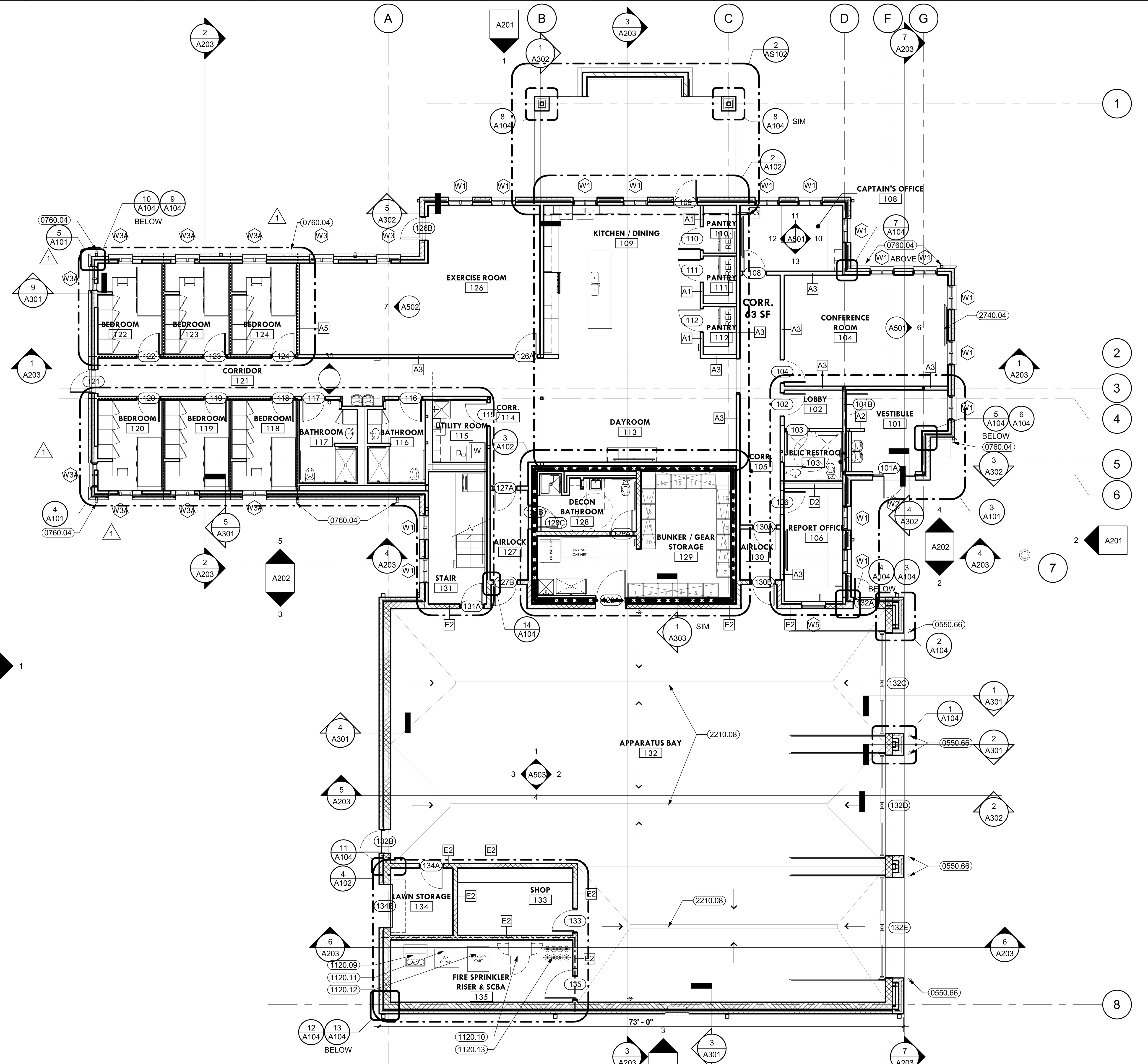
S305



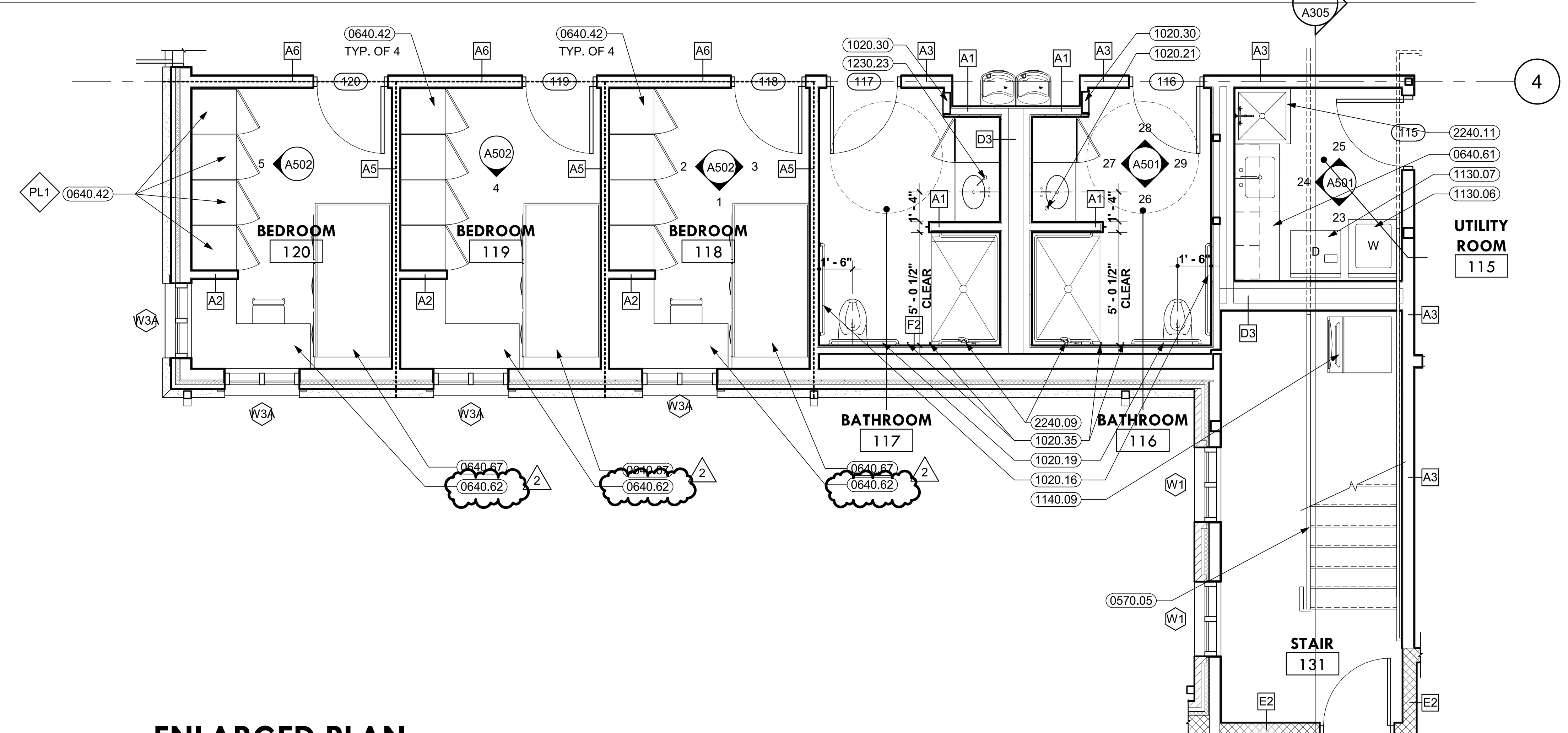
2 SECOND FLOOR PLAN
1/8" = 1'-0"



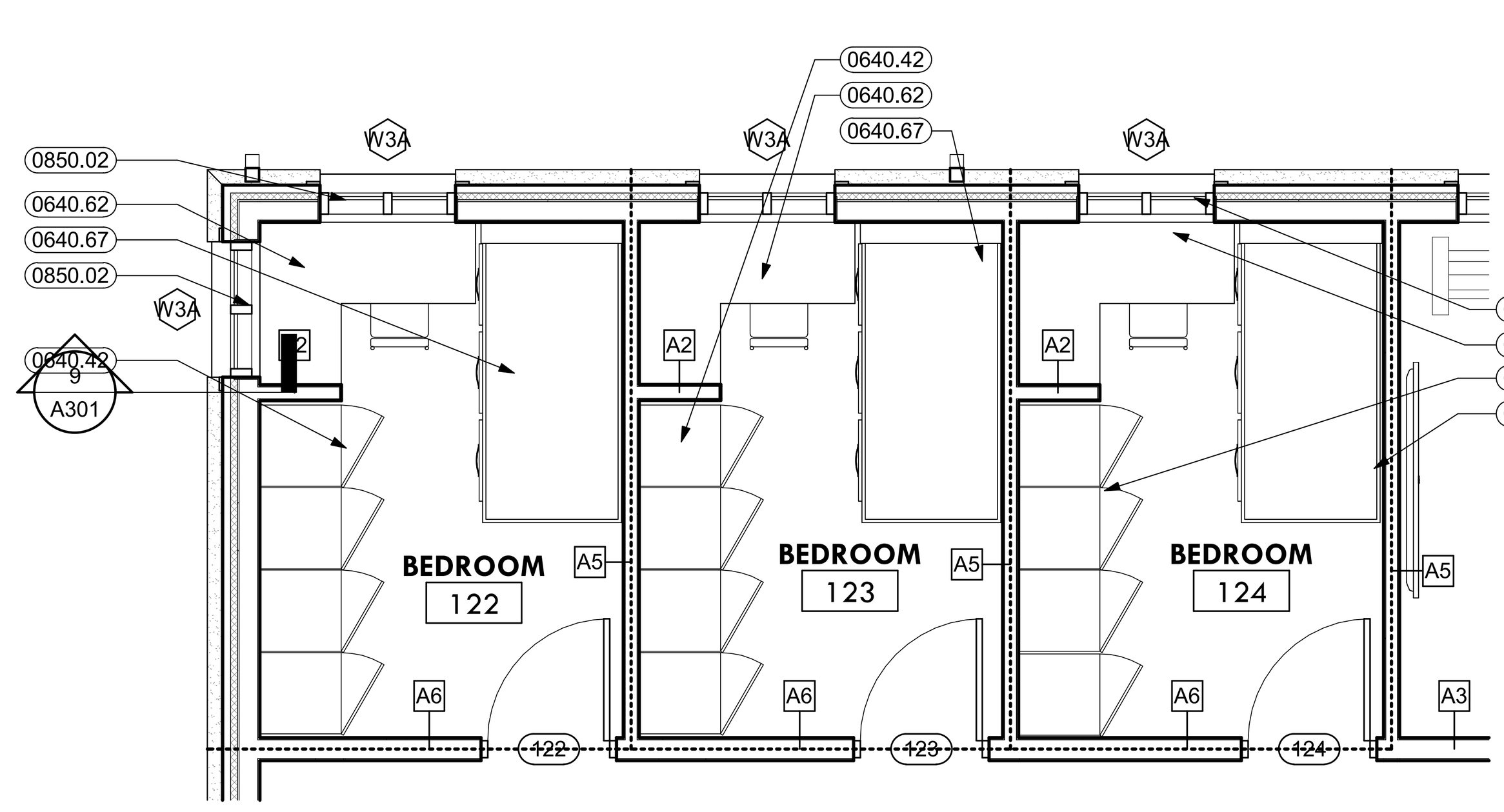
3 ENLARGED PLAN
1/4" = 1'-0"



1 FIRST FLOOR PLAN
1/8" = 1'-0"



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



5 ENLARGED PLAN
1/4" = 1'-0"

KEYNOTES

0550.33	METAL LADDER
0550.66	6" STEEL PIPE BOLLARD. FILL WITH CONCRETE (GALVANIZED AT EXTERIOR LOCATIONS), WITH DECORATIVE BOLLARD COVER
0570.05	2" X 3/4" DECORATIVE STEEL BAR CANE DETECTION RAIL
0610.05	1/2" EXTERIOR GRADE PLYWOOD
0640.42	PLASTIC LAMINATE CLAD WARDROBE
0640.61	QUARTZ SURFACE COUNTERTOP WITH 4" SPLASH AS SHOWN
0640.62	QUARTZ SURFACE COUNTERTOP
0640.67	HARDWOOD VENEER BED FRAME WITH DRAWERS
0760.04	PREFINISHED METAL DOWNSPOUT
0840.01	ALUMINUM STOREFRONT
0850.02	OPERABLE ALUMINUM WINDOW
0920.28	5/8" GYPSUM BOARD (TYPE X)
1020.16	STAINLESS STEEL 1 1/2" DIAMETER GRAB BAR (36" LONG)
1020.17	STAINLESS STEEL 1 1/2" DIAMETER GRAB BAR (42" LONG)
1020.19	STAINLESS STEEL 1 1/2" DIAMETER GRAB BAR (L-SHAPED)
1020.20	SOAP DISPENSER (SURFACE-MOUNTED)
1020.21	SOAP DISPENSER (COUNTER-MOUNTED)
1020.30	STAINLESS STEEL RECESSED PAPER TOWEL DISPENSER / TRASH RECEPTACLE
1020.35	ROBE / TOWEL HOOK
1020.42	SURFACE MOUNTED BABY CHANGING STATION
1050.12	STAINLESS STEEL ADJUSTABLE WALL MOUNTED SHELVES
1120.09	SCBA FILL STATION
1120.10	SCBA COMPRESSOR (O.F.O.I.)
1120.11	AIR COMPRESSOR (O.F.O.I.)
1120.12	OXYGEN CART STORAGE O.F.O.I.)
1120.13	SCBA BOTTLE STORAGE O.F.O.I.)
1130.06	WASHING MACHINE (O.F.O.I.)
1130.07	CLOTHES DRYER (O.F.O.I.)
1140.09	ICE MACHINE
1230.23	HARDWOOD VENEER WALL CABINET CASEWORK WITH ADJUSTABLE SHELVES
2210.08	TRAFFIC RATED TRENCH DRAIN
2240.01	WATER CLOSET. ORIENT FLUSH VALVE TOWARDS ACCESSIBLE SPACE AT ACCESSIBLE STALLS / RESTROOMS
2240.09	SHOWER HEAD
2240.11	MOP SINK
2740.04	TELEVISION OR MONITOR, O.F.O.I.

DESIGNED: MG, AH, KW, ST
DRAWN: MG, AH, KW, ST
CHECKED: MW, RH

ISSUE DATE: 05/09/2024

REVISIONS:

No.:	DATE:	BY:	DESCRIPTION:
2	05/09/2024	MG	ADDENDUM NO.2
1	04/26/2024	MG	ADDENDUM NO.1

ARCHITECT
RAY W. HOLLIDAY
A-5412
STATE OF NEBRASKA
05/09/2024

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CITY OF GRAND ISLAND
FIRE STATION NO. 3
2310 S WEBB RD, GRAND ISLAND, NE 68803

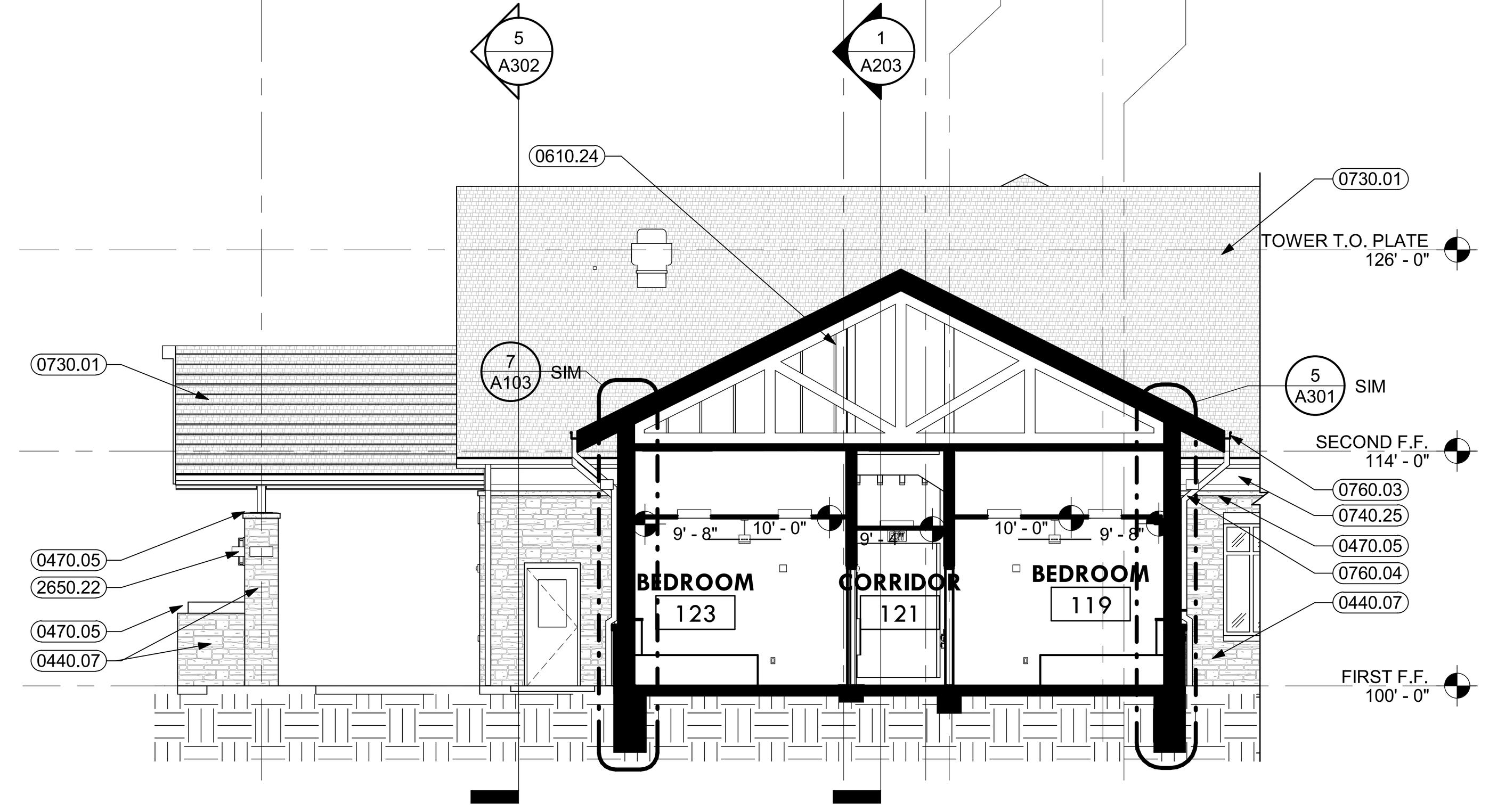
FIRST & SECOND FLOOR PLANS

PROJECT NO.: 223134.00

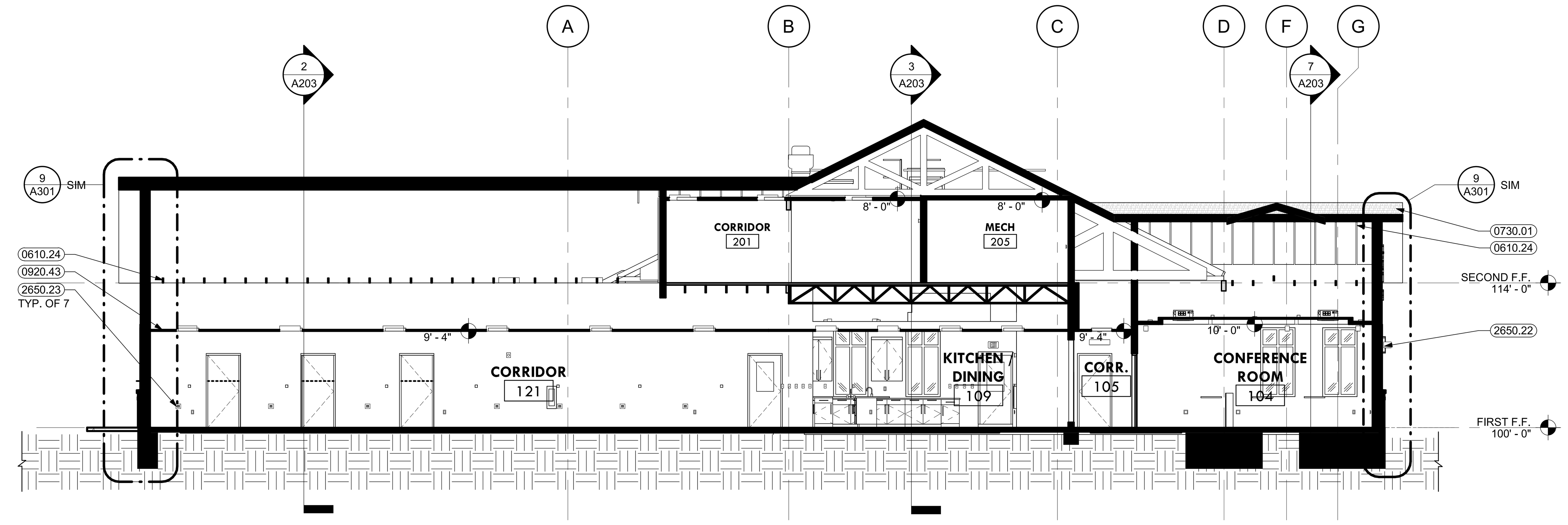
A101

KEYNOTES

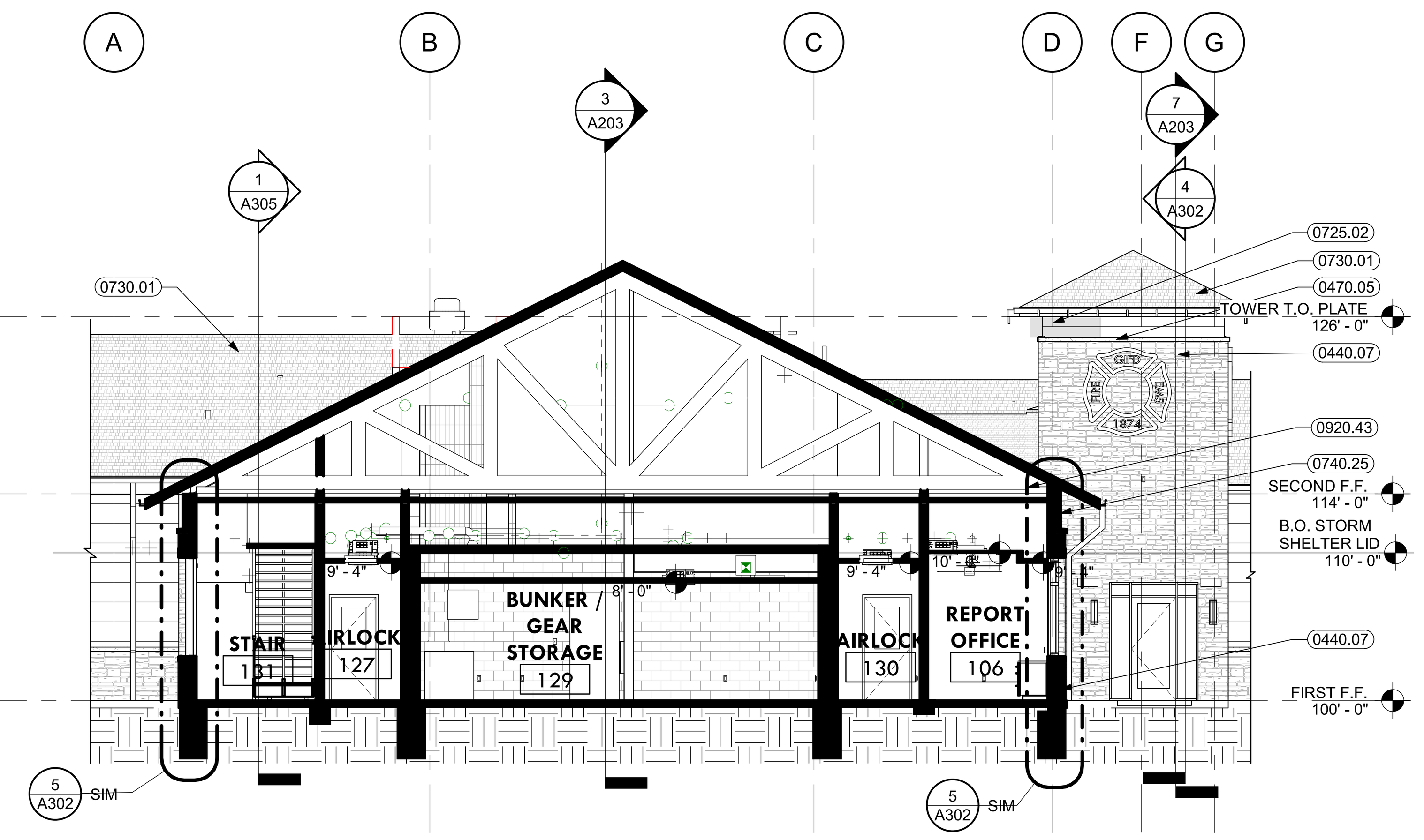
0440.07	STONE VENEER
0470.05	CAST STONE SILL WITH DRIP
0550.33	METAL LADDER
0610.24	SHOP-FABRICATED WOOD TRUSSES (RE: STRUCTURAL)
0725.02	SELF-ADHERING SHEET AIR BARRIER SYSTEM
0730.01	COMPOSITION SHINGLES, LEVEL 4 IMPACT RESISTANCE
0740.25	FIBER REINFORCED CEMENTITIOUS LAP SIDING
0750.20	5.5" RIGID ROOF INSULATION (R-30)
0760.03	PREFINISHED METAL GUTTER
0760.04	PREFINISHED METAL DOWNSPOUT
0830.17	UPWARD ACTING SECTIONAL DOOR
0920.43	5/8" GYP. BOARD (TYPE X) ON 2X WOOD FRAMING 16" O.C.
2650.03	SURFACE-MOUNTED LIGHT FIXTURE
2650.22	DECORATIVE LED EXTERIOR WALL SCONCE
2650.23	LED STEP LIGHT FIXTURE



2 BUILDING SECTION
1/8" = 1'-0"



1 BUILDING SECTION
1/8" = 1'-0"



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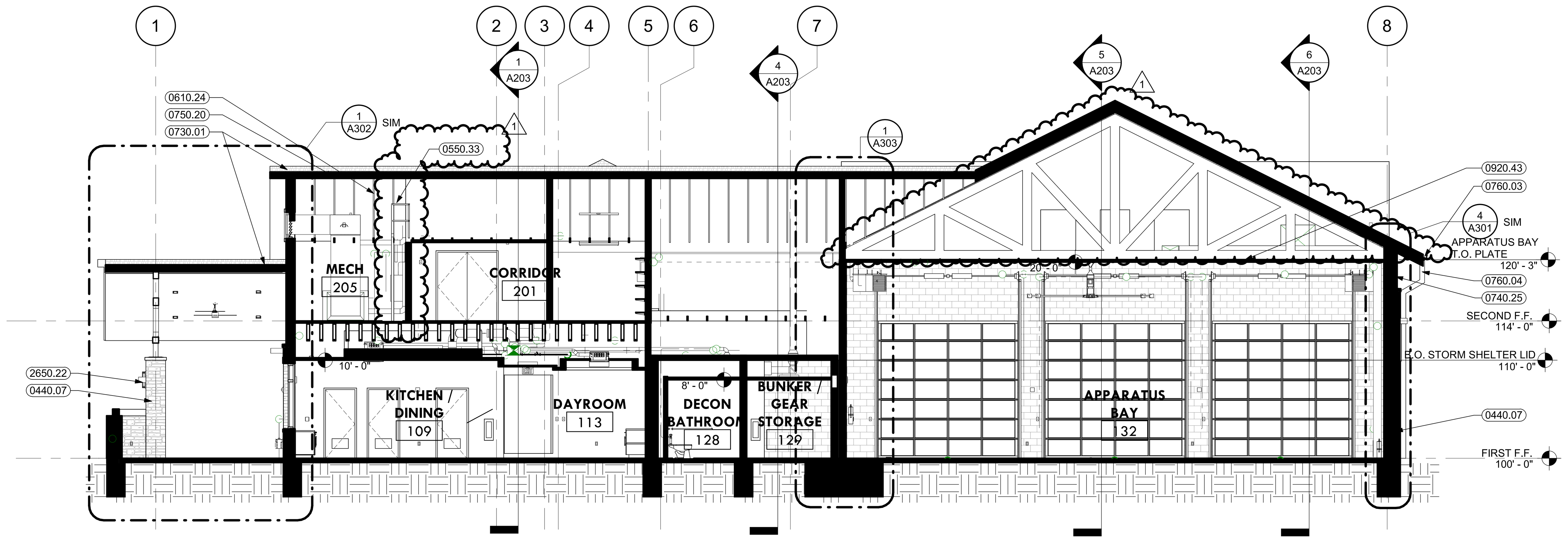
1/8" = 1'-0"



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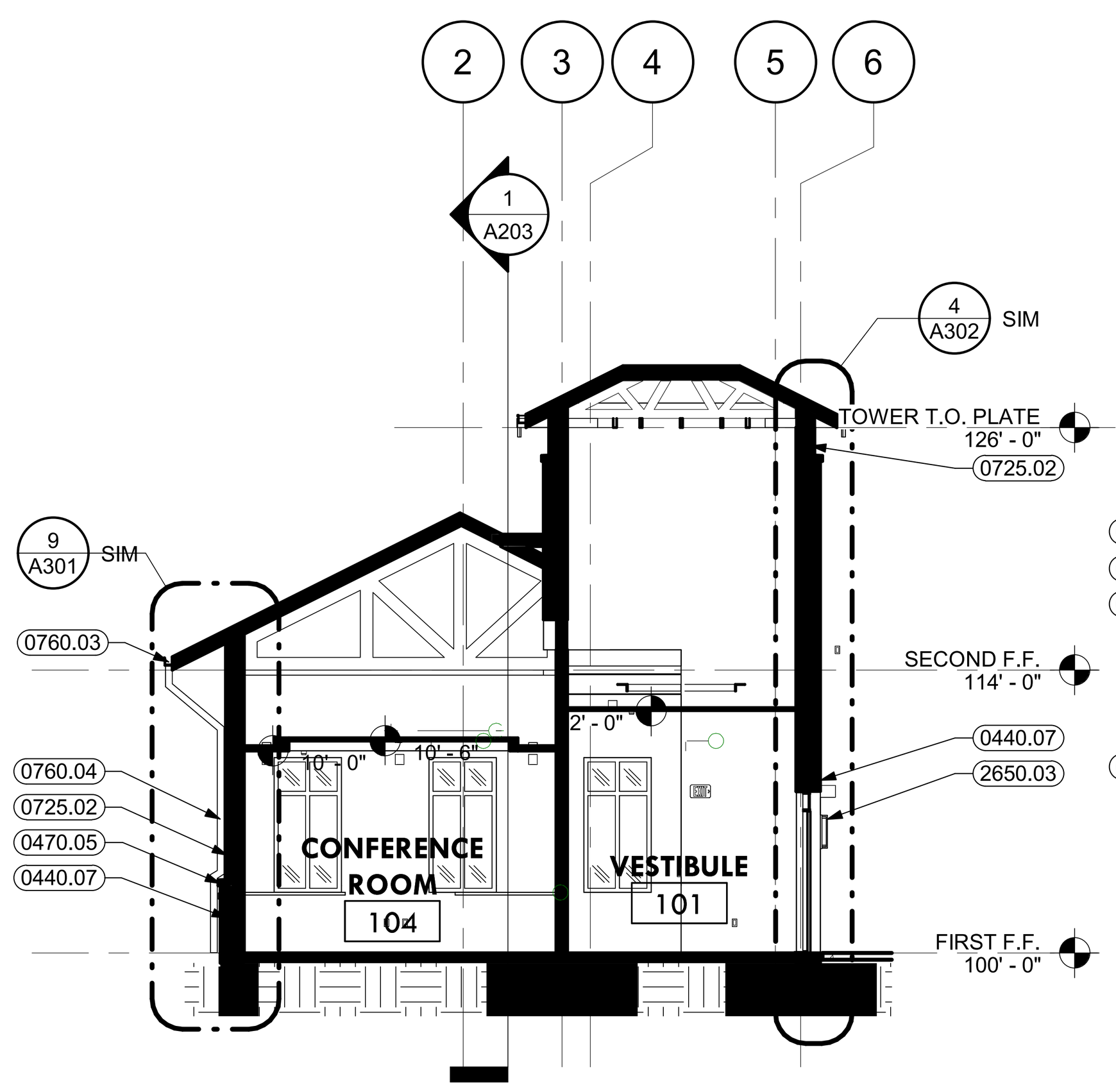

7 BUILDING SECTION
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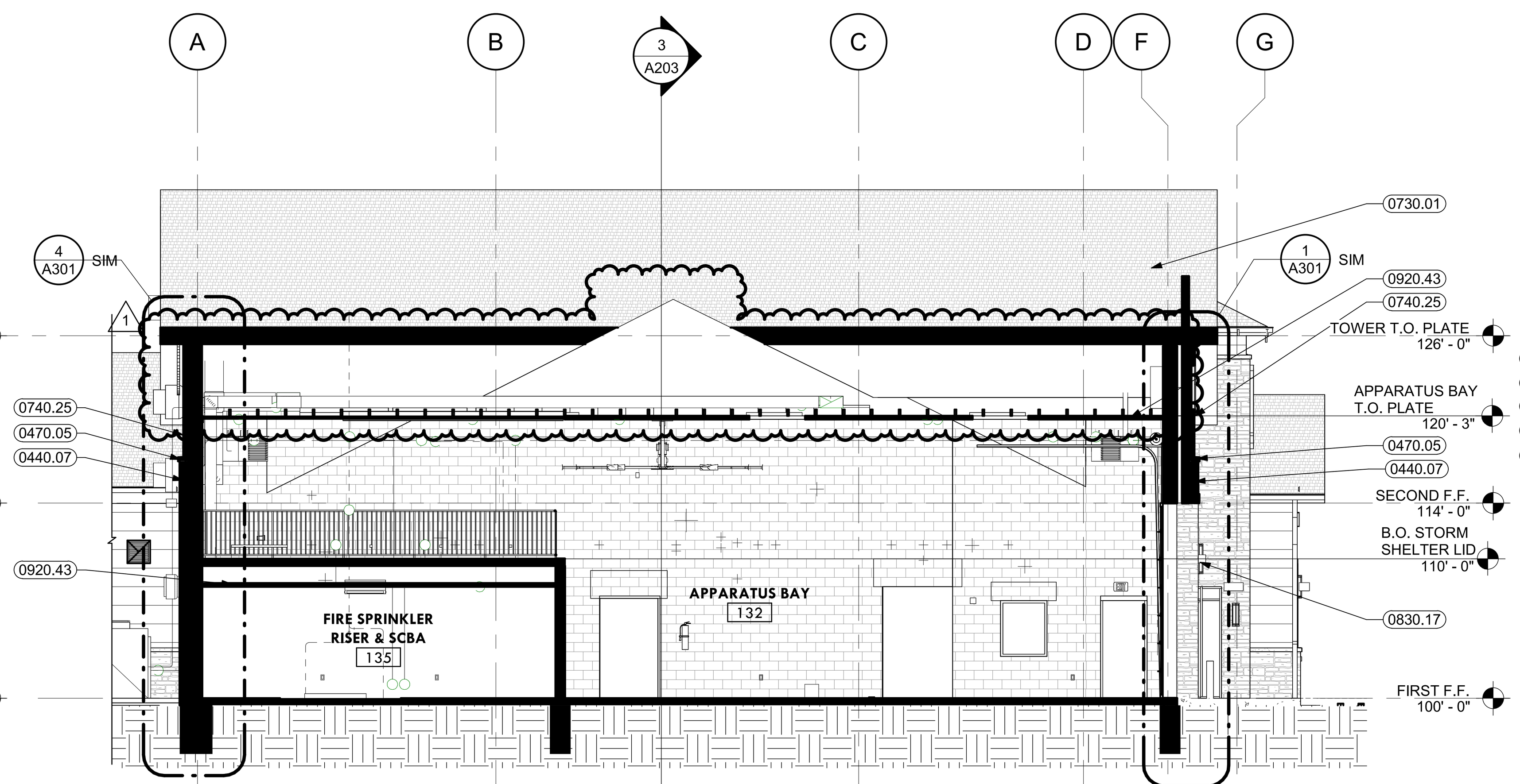
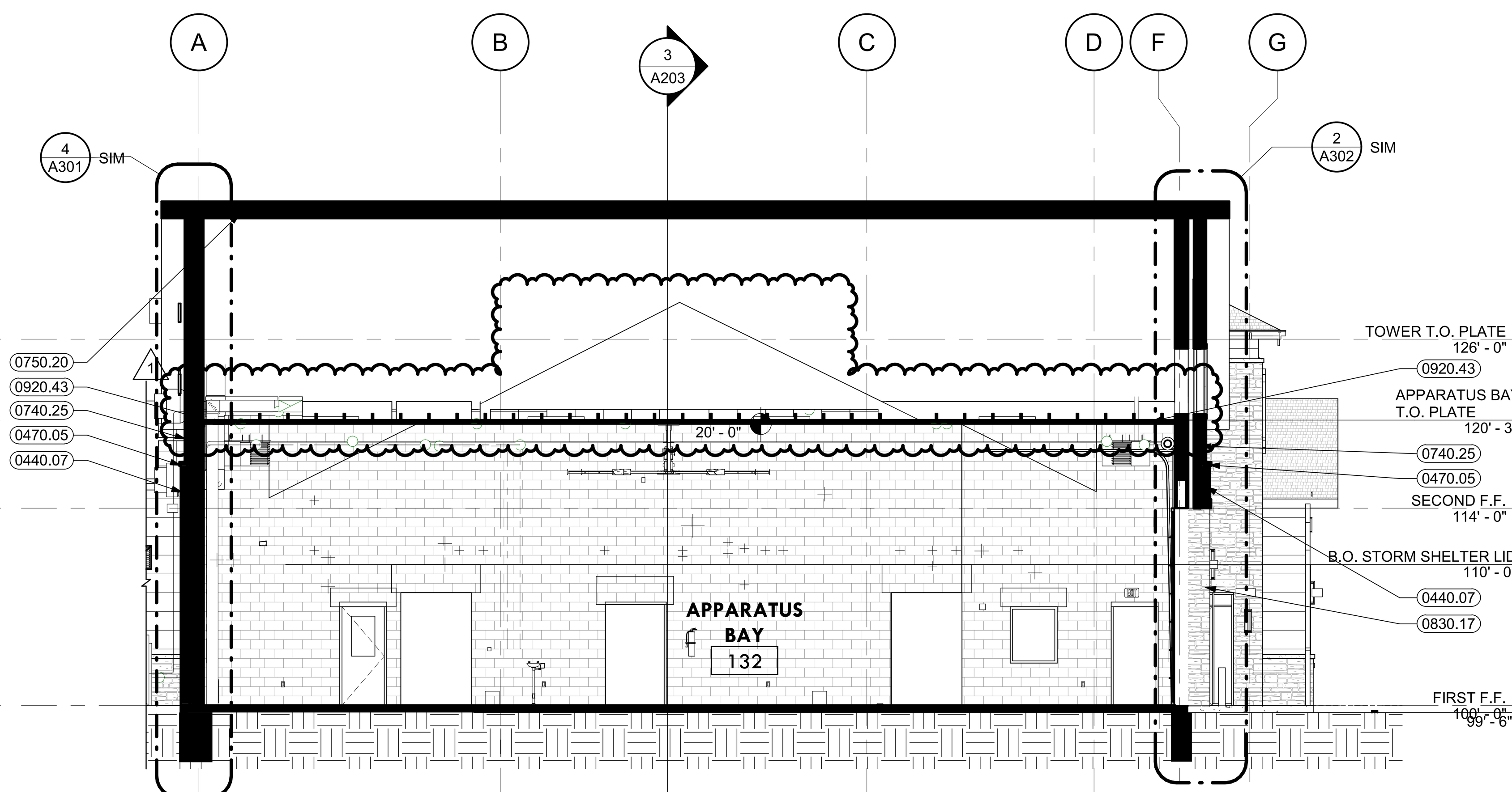


6 BUILDING SECTION
1/8" = 1'-0"

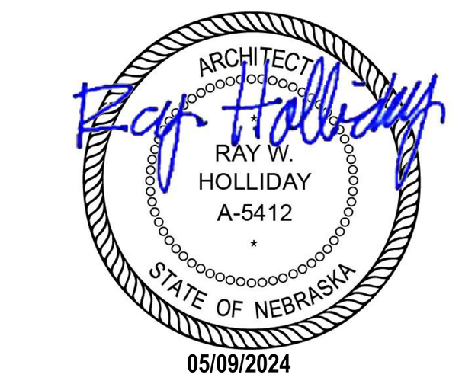


5 BUILDING SECTION
1/8" = 1'-0"

ISSUE DATE: 05/09/2024
REVISIONS:

No.:	DATE:	BY:	DESCRIPTION:
1	05/09/2024	MG	ADDENDUM NO. 2

DESIGNED: MG, AH, KW, ST
DRAWN:
CHECKED: MW, RH



05/09/2024

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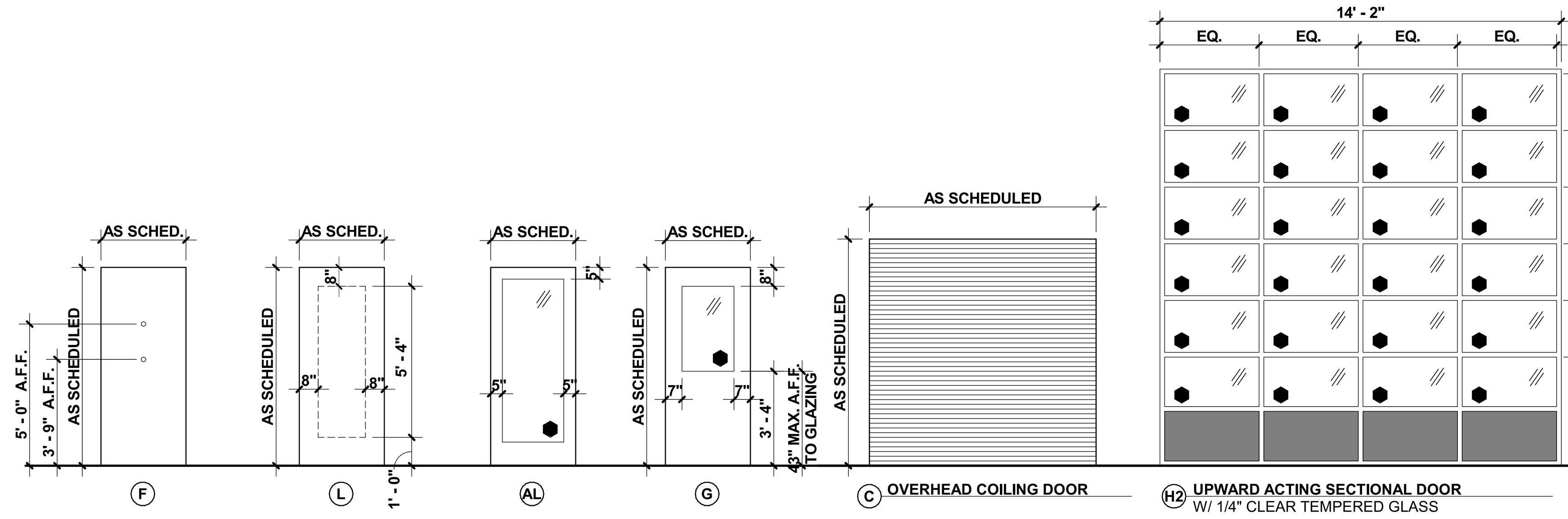
CITY OF GRAND ISLAND
FIRE STATION NO. 3
2310 S WEBB RD, GRAND ISLAND, NE 68803

BUILDING SECTIONS

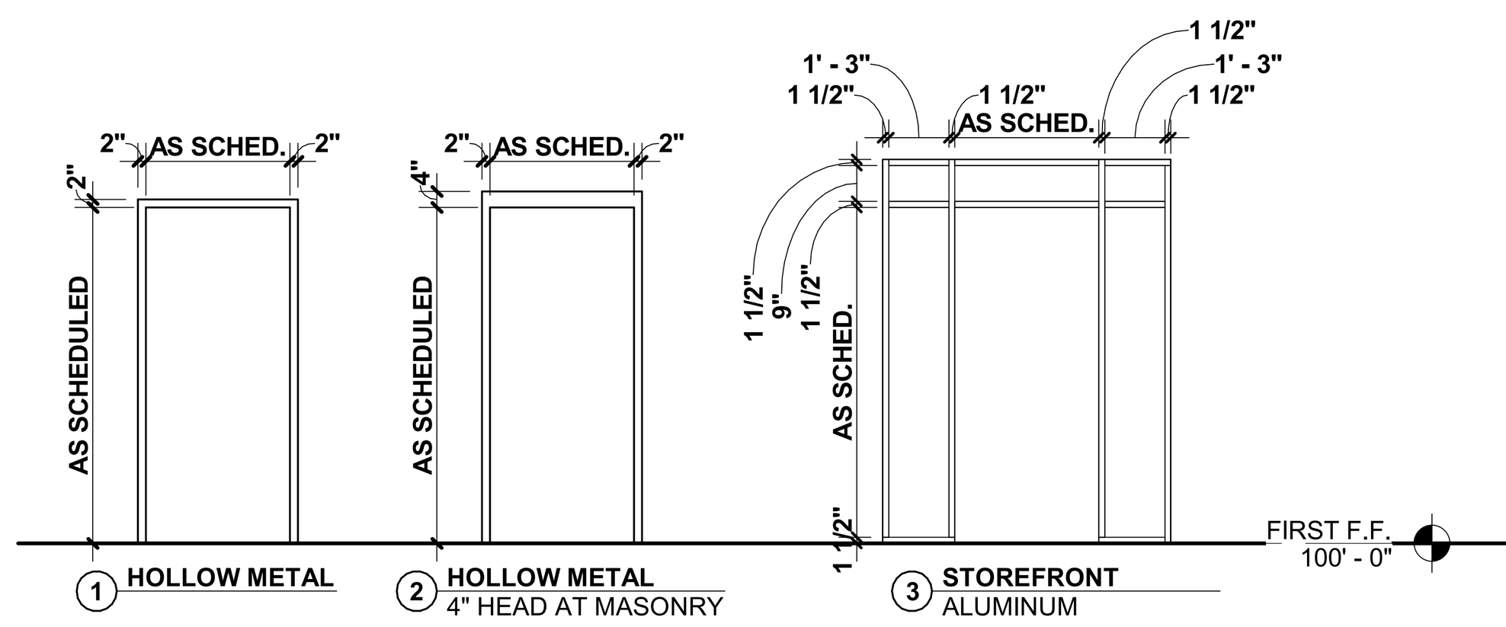
PROJECT NO.: 223134.00

A203

1 DOOR TYPES
N.T.S.



2 DOOR FRAME TYPES
1/4" = 1'-0"



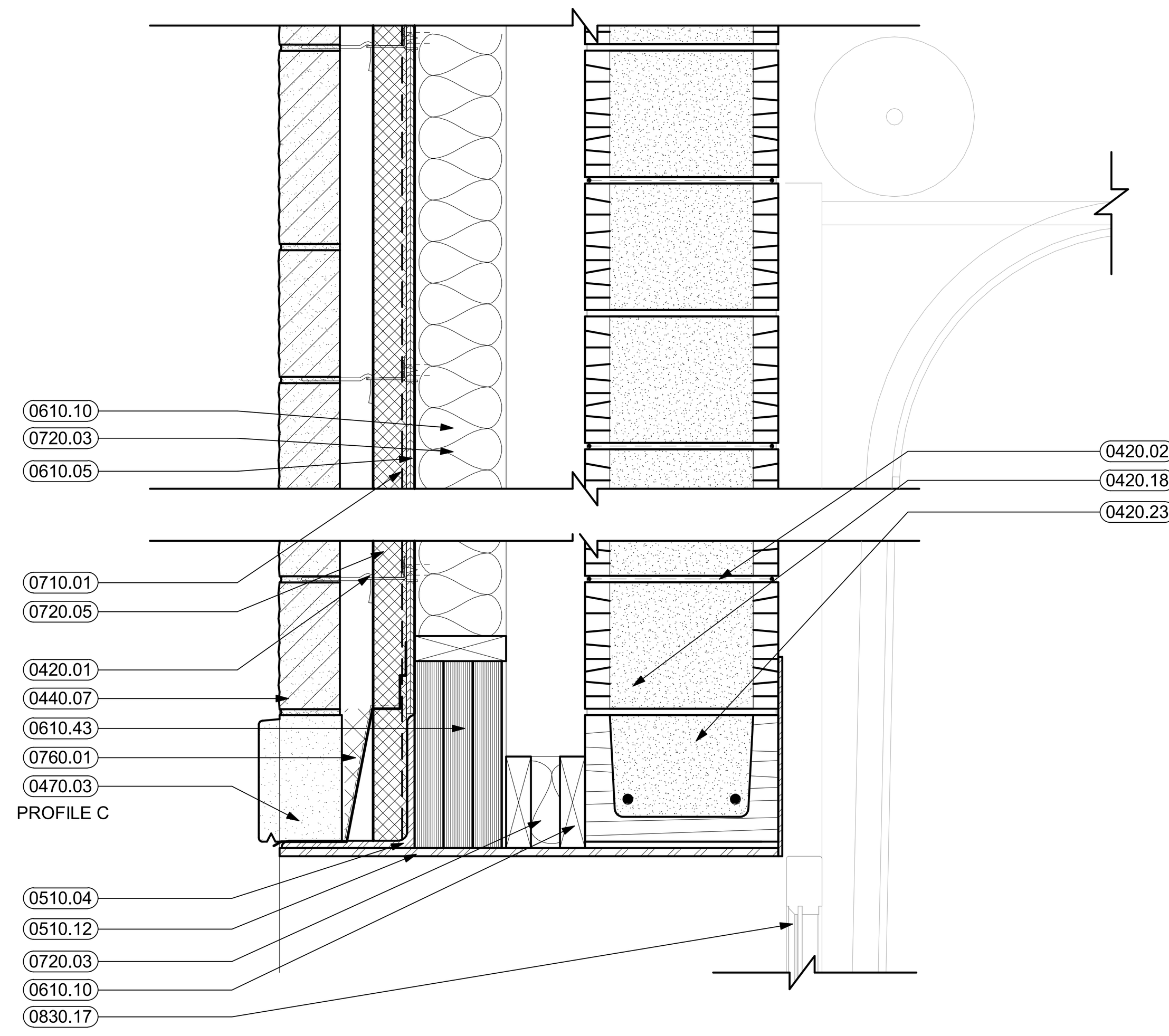
NOTE: NOT ALL TYPES LISTED ABOVE MAY BE REQUIRED IN THE PROJECT

DOOR SCHEDULE (revision 1)

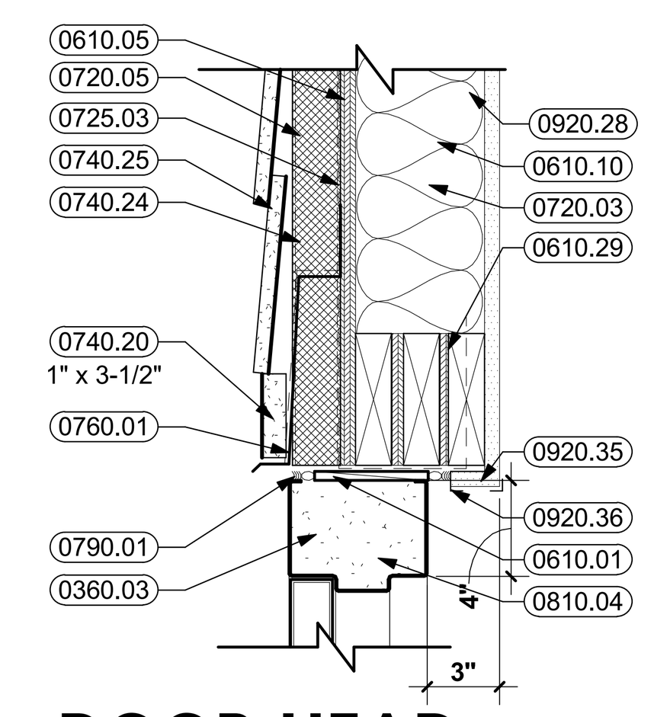
DOOR NO.	DESCRIPTION	SIZE	DOOR MTL.	DOOR TYPE	FRAME MTL.	FRAME TYPE	DETAIL REFERENCE HEAD	DETAIL REFERENCE JAMB	DETAIL REFERENCE SILL	HDWR. SET	FIRE RATING	REMARKS	TO ROOM:
FIRST F.F.													
101A	SINGLE	3' - 0" X 7' - 0" X 1 3/4"	AL	AL	AL	3				WC715A-B	--		
101B	SINGLE	3' - 0" X 7' - 0" X 1 3/4"	WD	G	HM	1	4/A401	10/A401	--	CK701	--		VESTIBULE
102	SINGLE	3' - 0" X 7' - 0" X 1 3/4"	WD	G	HM	1	4/A401	10/A401	--	K701	--		LOBBY
103	SINGLE	3' - 0" X 7' - 0" X 1 3/4"	WD	F	HM	1	4/A401	10/A401	--	341	--		PUBLIC RESTROOM
104	SINGLE	3' - 0" X 7' - 0" X 1 3/4"	WD	F	HM	1	4/A401	10/A401	--	401	--		CONFERENCE ROOM
106	SINGLE	3' - 0" X 7' - 0" X 1 3/4"	WD	G	HM	1	4/A401	10/A401	--	401	--		REPORT OFFICE
108	SINGLE	3' - 0" X 7' - 0" X 1 3/4"	WD	F	HM	1	4/A401	10/A401	--	503	--		CAPTAIN'S OFFICE
109	SINGLE	3' - 0" X 7' - 0" X 1 3/4"	HM	G	HM	2	7/A401	13/A401	16/A401	WK715	--		KITCHEN / DINING
110	SINGLE	3' - 0" X 7' - 0" X 1 3/4"	WD	L	HM	1	4/A401	10/A401	--	503S	--	LOUVERED DOOR	KITCHEN / DINING
111	SINGLE	3' - 0" X 7' - 0" X 1 3/4"	WD	L	HM	1	4/A401	10/A401	--	503S	--	LOUVERED DOOR	KITCHEN / DINING
112	SINGLE	3' - 0" X 7' - 0" X 1 3/4"	WD	L	HM	1	4/A401	10/A401	--	503S	--	LOUVERED DOOR	KITCHEN / DINING
115	SINGLE	3' - 0" X 7' - 0" X 1 3/4"	WD	F	HM	1	4/A401	10/A401	--	403	--		UTILITY ROOM
116	SINGLE	3' - 0" X 7' - 0" X 1 3/4"	WD	F	HM	1	4/A401	10/A401	--	341	--		BATHROOM
117	SINGLE	3' - 0" X 7' - 0" X 1 3/4"	WD	F	HM	1	4/A401	10/A401	--	341	--		BATHROOM
118	SINGLE	3' - 0" X 7' - 0" X 1 3/4"	WD	F	HM	1	4/A401	10/A401	--	401	20 MIN.		BEDROOM
119	SINGLE	3' - 0" X 7' - 0" X 1 3/4"	WD	F	HM	1	4/A401	10/A401	--	401	20 MIN.		BEDROOM
120	SINGLE	3' - 0" X 7' - 0" X 1 3/4"	WD	F	HM	1	4/A401	10/A401	--	401	20 MIN.		BEDROOM
121	SINGLE	3' - 0" X 7' - 0" X 1 3/4"	HM	G	HM	2	8/A401	13/A401, 14/A401	16/A401	WK715	--		CORRIDOR
122	SINGLE	3' - 0" X 7' - 0" X 1 3/4"	WD	F	HM	1	4/A401	10/A401	--	401	20 MIN.		BEDROOM
123	SINGLE	3' - 0" X 7' - 0" X 1 3/4"	WD	F	HM	1	4/A401	10/A401	--	401	20 MIN.		BEDROOM
124	SINGLE	3' - 0" X 7' - 0" X 1 3/4"	WD	F	HM	1	4/A401	10/A401	--	401	20 MIN.		BEDROOM
126A	SINGLE	3' - 0" X 7' - 0" X 1 3/4"	WD	G	HM	1	4/A401	10/A401	--	401	--		EXERCISE ROOM
126B	SINGLE	3' - 0" X 7' - 0" X 1 3/4"	HM	G	HM	2	7/A401	13/A401	16/A401	WK715	--		EXERCISE ROOM
127A	SINGLE	3' - 0" X 7' - 0" X 1 3/4"	WD	G	HM	1	4/A401	10/A401	--	731G	--		AIRLOCK
127B	SINGLE	3' - 0" X 7' - 0" X 1 3/4"	HM	G	HM	2	5/A401	11/A401	--	C701G	--		APPARATUS BAY
128A	SINGLE	3' - 0" X 7' - 0" X 1 3/4"	HM	F	HM	2	5/A401	11/A401	--	341G	--		DECON BATHROOM
128B	SINGLE	3' - 0" X 7' - 0" X 1 3/4"	HM	F	HM	2	5/A401	11/A401	--	T141	60 MIN.	ICC 500 STORM DORM	DECON BATHROOM
128C	SINGLE	3' - 0" X 3' - 0" X 1 3/4"	HM	F	HM	2	5/A401	11/A401	--	S503GS	--	4" HEAD, EXTRACTOR MAINTENANCE DOOR	BUNKER / GEAR STORAGE
129A	SINGLE	4' - 0" X 7' - 0" X 1 3/4"	HM	F	HM	2	5/A401	11/A401	--	T141G	60 MIN.	ICC 500 STORM DORM	BUNKER / GEAR STORAGE
130A	SINGLE	3' - 0" X 7' - 0" X 1 3/4"	WD	G	HM	1	4/A401	10/A401	--	731G	--		AIRLOCK
130B	SINGLE	3' - 0" X 7' - 0" X 1 3/4"	HM	G	HM	2	5/A401	11/A401	--	C701G	--		APPARATUS BAY
131A	SINGLE	3' - 0" X 7' - 0" X 1 3/4"	HM	G	HM	2	5/A401	11/A401	--	401	--		STAIR
132A	SINGLE	3' - 0" X 7' - 0" X 1 3/4"	HM	G	HM	2	6/A401	12/A401	16/A401	WK715	--		APPARATUS BAY
132B	SINGLE	3' - 0" X 7' - 0" X 1 3/4"	HM	G	HM	2	6/A401	12/A401	16/A401	WK715	--		APPARATUS BAY
132C	OVERHEAD SECTIONAL	14' - 0" X 14' - 0" X 2 1/8"	ST	D	ST	--	9/A401	1/A104, 2/A104	18/A401	001	--		APPARATUS BAY
132D	OVERHEAD SECTIONAL	14' - 0" X 14' - 0" X 2 1/8"	ST	D	ST	--	9/A401	1/A104	18/A401	001	--		APPARATUS BAY
132E	OVERHEAD SECTIONAL	14' - 0" X 14' - 0" X 2 1/8"	ST	D	ST	--	9/A401	1/A104, 2/A104	18/A401	001	--		APPARATUS BAY
133	SINGLE	3' - 0" X 7' - 0" X 1 3/4"	HM	F	HM	2	5/A401	11/A401	--	503G	--		SHOP
134A	SINGLE	3' - 0" X 7' - 0" X 1 3/4"	HM	F	HM	2	5/A401	11/A401	--	503GS	--		LAWN STORAGE
134B	OVERHEAD	6' - 0" X 8' - 0" X 2"	ST	C	ST	--				001			LAWN STORAGE
135	SINGLE	4' - 0" X 7' - 0" X 1 3/4"	HM	F	HM	2	5/A401	11/A401	--	503GW	--		FIRE SPRINKLER RISER & SCBA
SECOND F.F.													
202	SINGLE	3' - 0" X 7' - 0" X 1 3/4"	HM	F	HM	1	4/A401	10/A401	--	207	60 MIN.		CORRIDOR
203	SINGLE	3' - 0" X 7' - 0" X 1 3/4"	HM	F	HM	1	4/A401	10/A401	--	C201G	--		EMS STORAGE/DATA COMM
205	PAIR OF 3'-0" DOORS	6' - 0" X 7' - 0" X 1 3/4"	HM	F	HM	1	4/A401	10/A401	--	216S	--		MECH

KEYNOTES

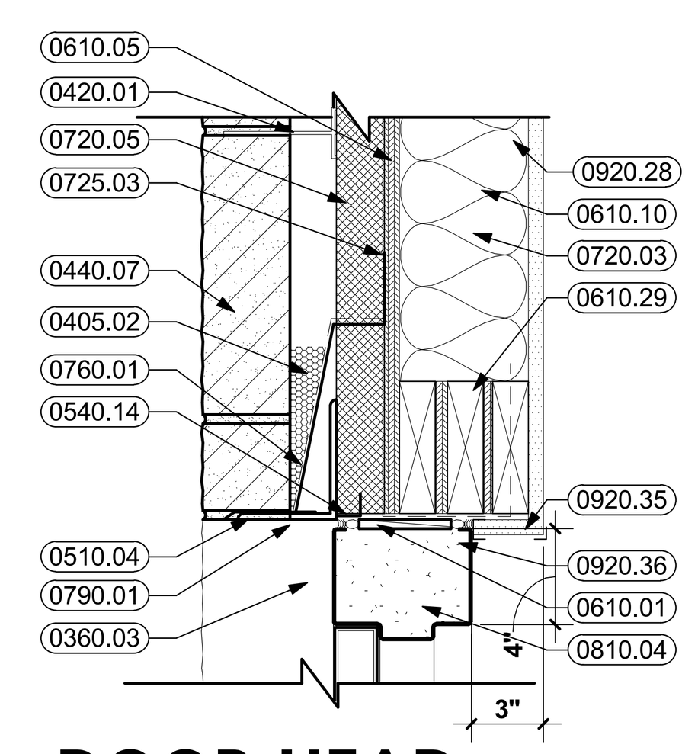
0320.01	DOWEL INTO CONCRETE SLAB
0330.01	CONCRETE
0330.05	CONCRETE GRADE BEAM
0360.03	FILL WITH GROUT
0405.02	MORTAR NET
0420.01	ADJUSTABLE MASONRY WALL TIES AT 16" O.C.E.W.
0420.02	CONCRETE MASONRY UNIT HORIZONTAL REINFORCING
0420.03	FACE BRICK
0420.14	8" CONCRETE MASONRY UNITS
0420.18	12" CONCRETE MASONRY UNITS
0420.23	CONCRETE MASONRY BOND BEAM
0440.07	STONE VENEER
0470.01	CAST STONE
0470.03	CAST STONE CORNICE WITH DRIP
0510.04	STEEL ANGLE (RE: STRUCTURAL)
0510.12	STEEL PLATE (RE: STRUCTURAL)
0540.09	COLD-FORMED METAL CHANNEL
0540.14	COLD-FORMED METAL ANGLE
0540.15	COLD -FORMED METAL STUD BRACING AS REQUIRED
0610.01	SHIM AS REQUIRED
0610.05	1/2" EXTERIOR GRADE PLYWOOD
0610.09	2 X 4 WOOD STUDS AT 16" O.C.
0610.10	2 X 6 WOOD STUDS AT 16" O.C.
0610.29	2X WOOD HEADER (RE: STRUCTURAL)
0610.43	WOOD LVL BEAM (RE: STRUCTURAL)
0710.01	BITUMINOUS DAMPPROOFING
0720.03	5 1/2" BATT INSULATION
0720.04	1 1/2" CONTINUOUS INSULATION
0720.05	2" CONTINUOUS INSULATION
0720.17	CONTINUOUS INSULATION
0725.01	UNDERSLAB VAPOR BARRIER
0725.02	SELF-ADHERING SHEET AIR BARRIER SYSTEM
0725.03	PLASTIC FILM AIR BARRIER SYSTEM
0740.20	FIBER REINFORCED CEMENTITIOUS TRIM
0740.24	RAINSCREEN ATTACHMENT SYSTEM
0740.25	FIBER REINFORCED CEMENTITIOUS LAP SIDING
0760.01	THROUGH-WALL FLASHING WITH WEEPS AT 2'-0" O.C. AND MORTAR NET
0790.01	SEALANT WITH BACKER ROD AS REQUIRED
0790.02	CAULKING
0790.07	SET IN BED OF SEALANT
0810.02	HOLLOW METAL FRAME
0810.04	HOLLOW METAL DOOR AND FRAME
0810.05	JAMB ANCHOR (3 PER JAMB)
0810.06	HOLLOW METAL DOOR
0810.08	SOLID CORE WOOD DOOR
0830.17	UPWARD ACTING SECTIONAL DOOR
0840.01	ALUMINUM STOREFRONT
0840.02	ALUMINUM STOREFRONT DOOR
0870.01	METAL THRESHOLD. SET IN BED OF SEALANT
0870.03	BRUSH SEAL
0870.10	DOOR BOTTOM WITH DRIP SKIRT
0870.11	DRIP CAP
0920.28	5/8" GYPSUM BOARD (TYPE X)
0920.35	CORNER BEAD, TYPICAL
0920.36	J-MOULD, TYPICAL
0960.01	FLOORING AS SCHEDULED
0980.02	4" MINERAL WOOL SOUND ATTENUATION BATT INSULATION
3210.10	CONCRETE CURB RAMP PER CITY REQUIREMENTS
3210.14	CONCRETE PAVING (RE: CIVIL)



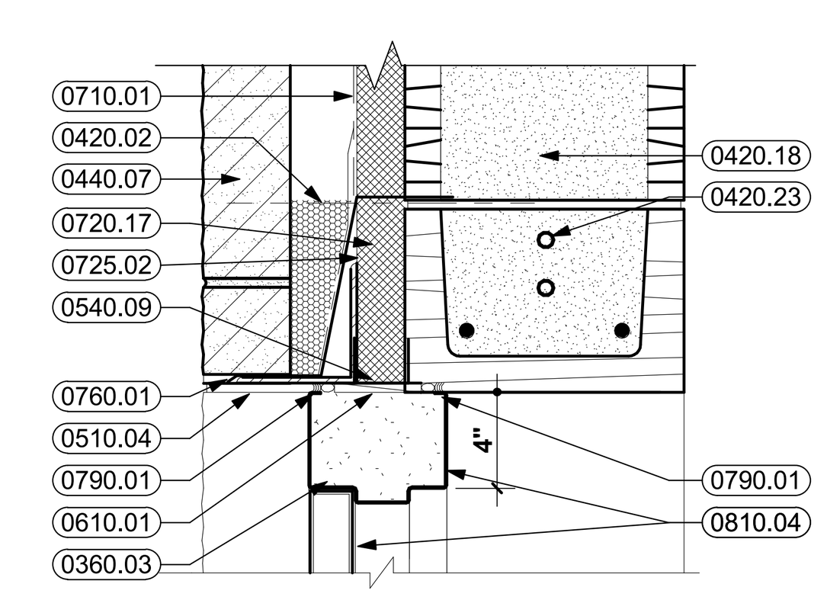
8 DOOR HEAD
1 1/2" = 1'-0"



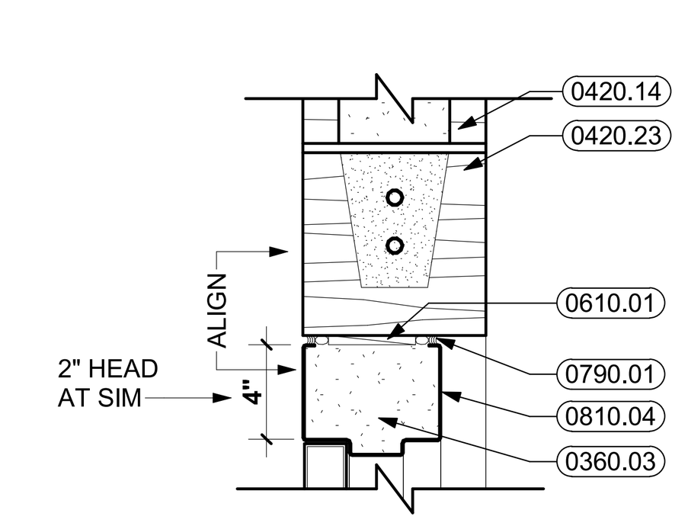
7 DOOR HEAD
1 1/2" = 1'-0"



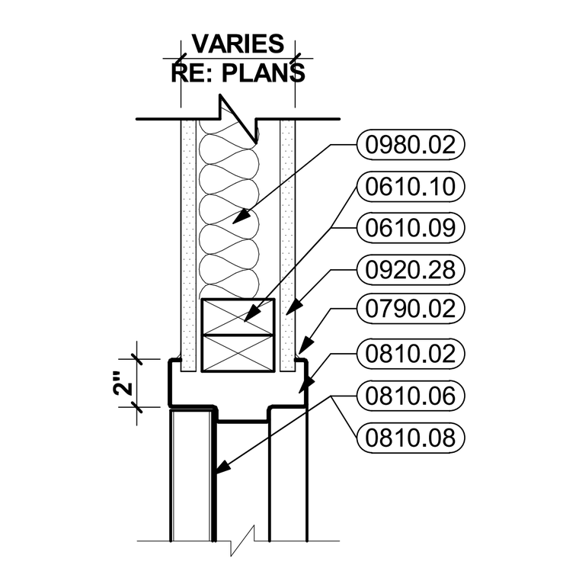
6 DOOR HEAD
1 1/2" = 1'-0"



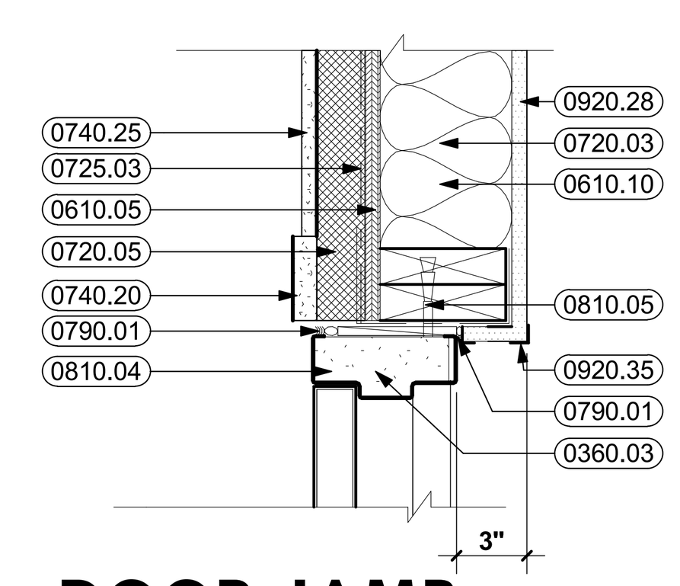
5 DOOR HEAD
1 1/2" = 1'-0"



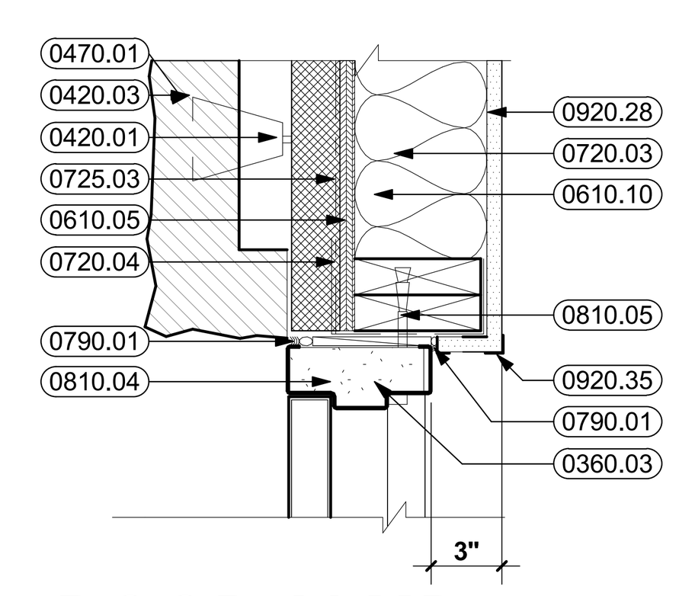
4 DOOR HEAD
1 1/2" = 1'-0"



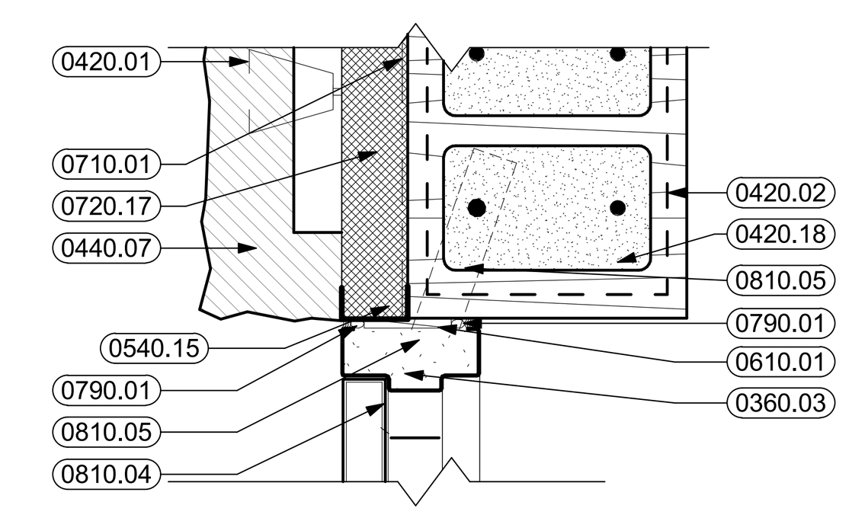
3 DOOR HEAD
1 1/2" = 1'-0"



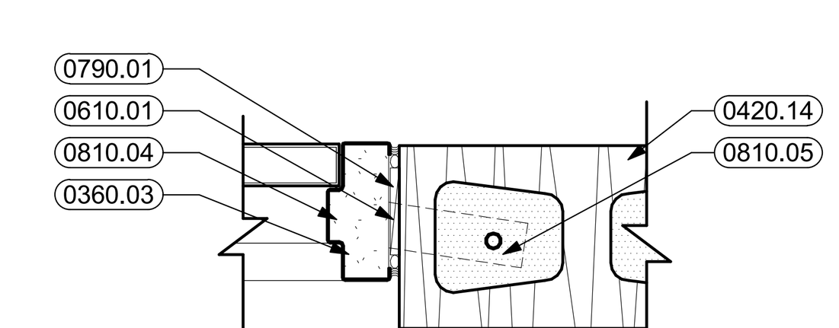
13 DOOR JAMB
1 1/2" = 1'-0"



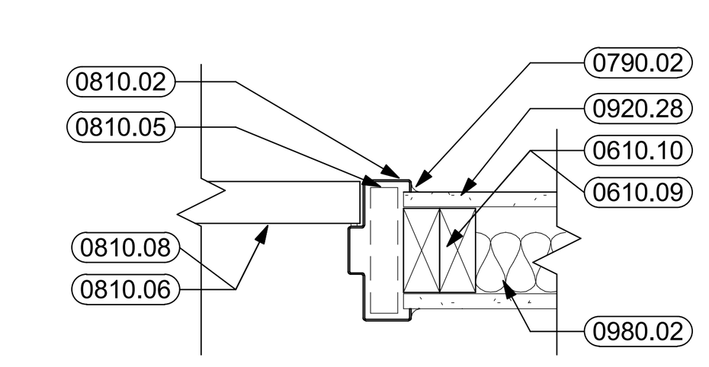
12 DOOR JAMB
1 1/2" = 1'-0"



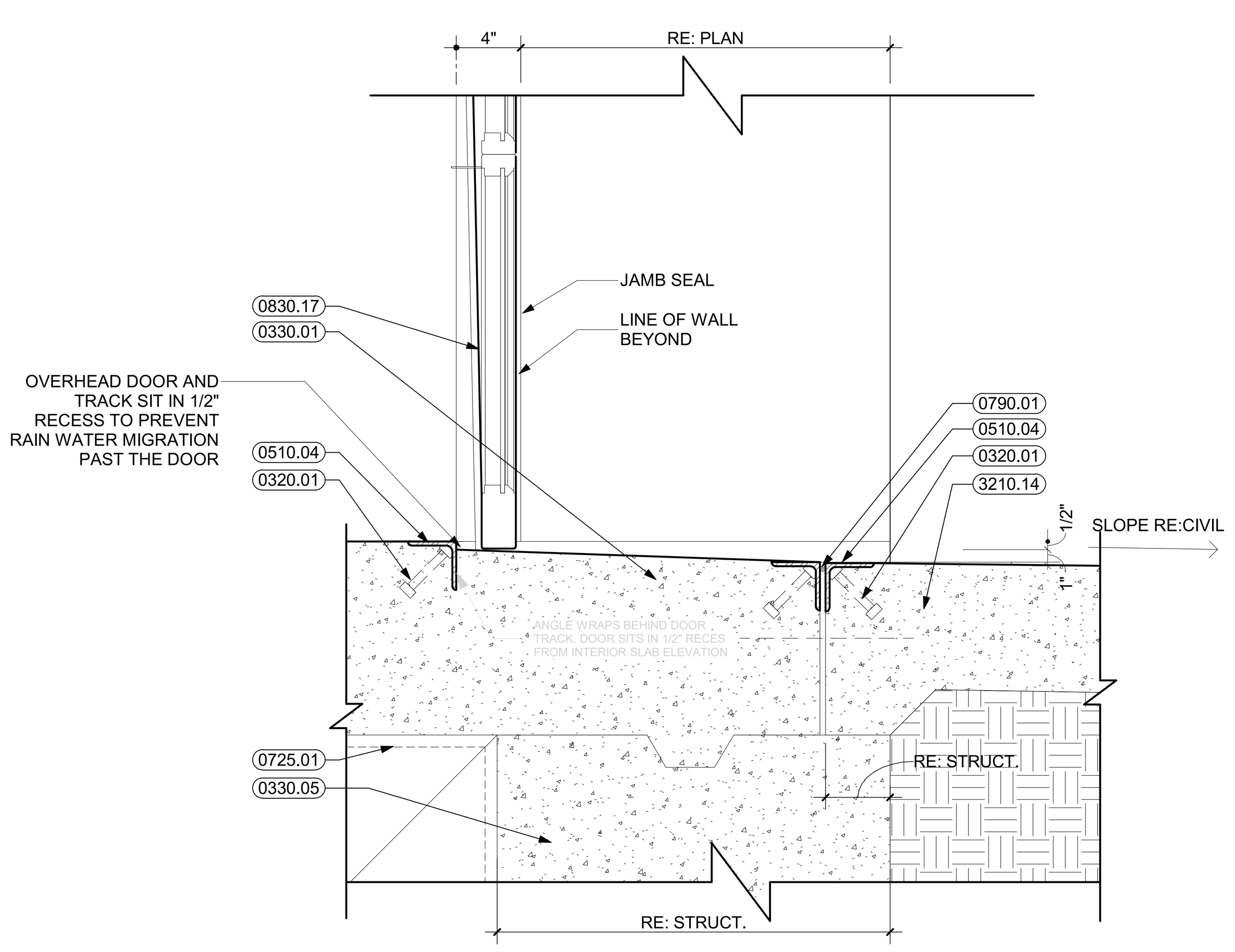
11 DOOR JAMB
1 1/2" = 1'-0"



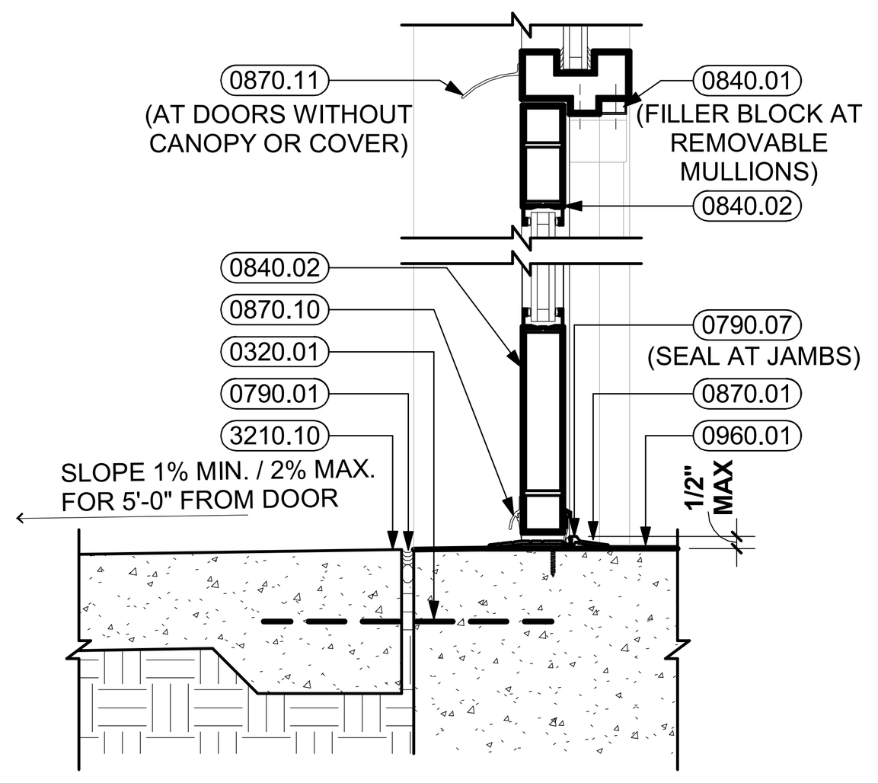
10 DOOR JAMB
1 1/2" = 1'-0"



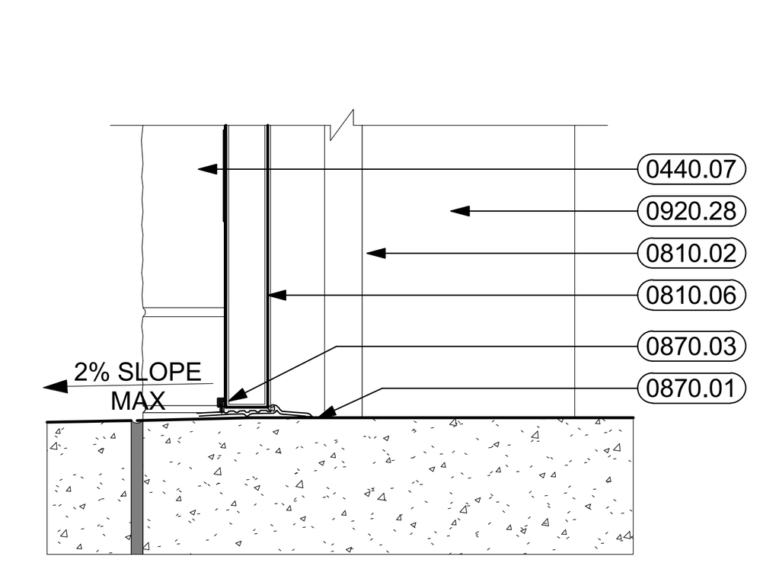
9 DOOR JAMB
1 1/2" = 1'-0"



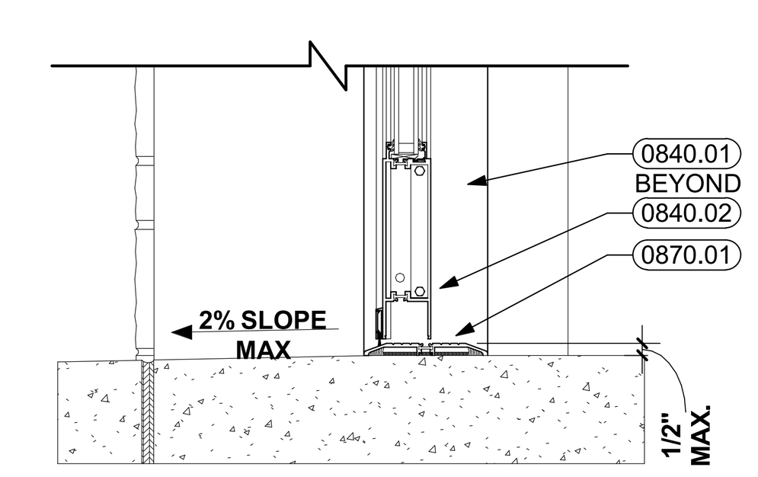
17 SECTIONAL DOOR SILL
1 1/2" = 1'-0"



16 STOREFRONT DETAIL
1 1/2" = 1'-0"



15 DOOR SILL
1 1/2" = 1'-0"



14 STOREFRONT DOOR SILL
1 1/2" = 1'-0"

DESIGNED: MG, AH, KW, ST
DRAWN: MW, RH
CHECKED:

ISSUE DATE: 05/09/2024

REVISIONS:

No.:	DATE:	BY:	DESCRIPTION:
1	05/09/2024	MG	ADDENDUM NO. 2

ARCHITECT RAY W. HOLLIDAY A-5412 STATE OF NEBRASKA 05/09/2024

BRWARCHITECTS
175 CENTURY SQUARE DRIVE SUITE 350
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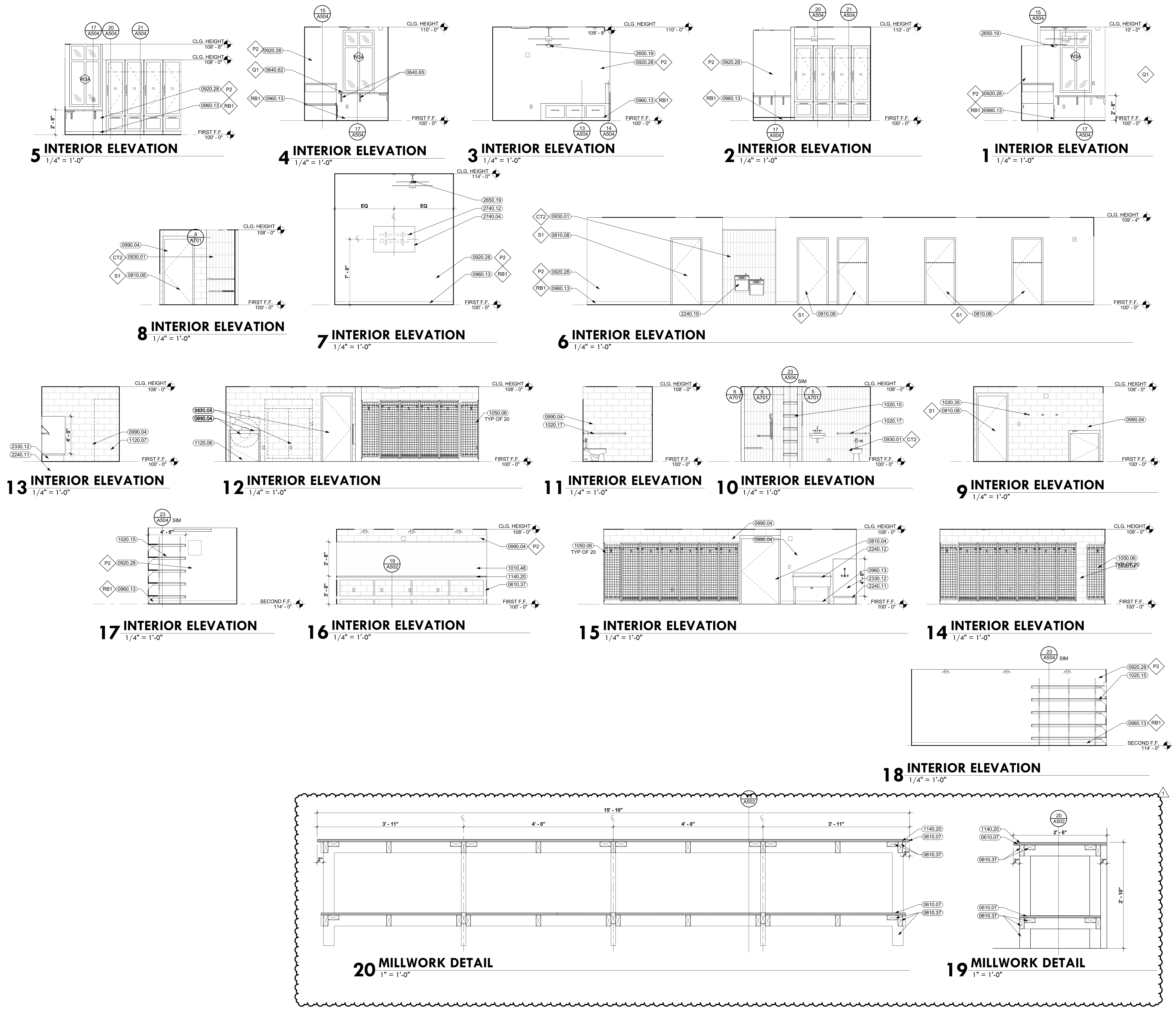
DOOR SCHEDULE AND DOOR TYPES

PROJECT NO.: 223134.00

A401



5 INTERIOR ELEVATION
1/4" = 1'-0"

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

3 INTERIOR ELEVATION
1/4" = 1'-0"

2 INTERIOR ELEVATION
1/4" = 1'-0"

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

8 INTERIOR ELEVATION
1/4" = 1'-0"

7 INTERIOR ELEVATION
1/4" = 1'-0"

6 INTERIOR ELEVATION
1/4" = 1'-0"

13 INTERIOR ELEVATION
1/4" = 1'-0"

12 INTERIOR ELEVATION
1/4" = 1'-0"

11 INTERIOR ELEVATION
1/4" = 1'-0"

10 INTERIOR ELEVATION
1/4" = 1'-0"

9 INTERIOR ELEVATION
1/4" = 1'-0"

17 INTERIOR ELEVATION
1/4" = 1'-0"

16 INTERIOR ELEVATION
1/4" = 1'-0"

15 INTERIOR ELEVATION
1/4" = 1'-0"

14 INTERIOR ELEVATION
1/4" = 1'-0"

18 INTERIOR ELEVATION
1/4" = 1'-0"

20 MILLWORK DETAIL
1" = 1'-0"

19 MILLWORK DETAIL
1" = 1'-0"

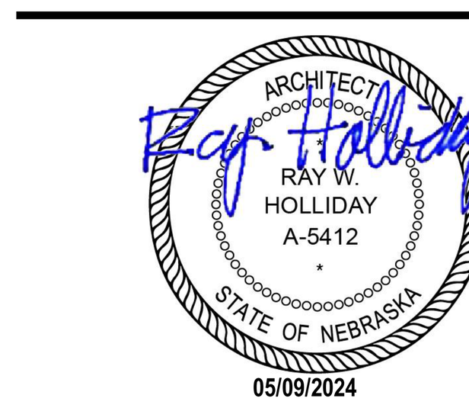
KEYNOTES

0610.07	3/4" EXTERIOR GRADE PLYWOOD
0610.37	2 X 4 WOOD FRAMING
0640.62	QUARTZ SURFACE COUNTERTOP
0640.65	HEAVY DUTY METAL COUNTER SUPPORT BRACKET
0810.04	HOLLOW METAL DOOR AND FRAME
0810.08	SOLID CORE WOOD DOOR
0920.28	5/8" GYPSUM BOARD (TYPE X)
0930.01	CERAMIC TILE
0960.13	4" RESILIENT BASE
0990.04	EPOXY PAINT
1010.48	PEG BOARD
1020.15	STAINLESS STEEL SHELF
1020.17	STAINLESS STEEL 1 1/2" DIAMETER GRAB BAR (42" LONG)
1020.35	ROBE / TOWEL HOOK
1050.06	TURNOUT GEAR LOCKERS
1120.06	WASHER EXTRACTOR
1120.07	TURNOUT GEAR DRYING CABINET
1140.20	STAINLESS STEEL COUNTERTOP WITH SQUARE EDGE
2240.11	MOP SINK
2240.12	UTILITY SINK
2240.19	WATER FOUNTAIN
2330.12	STAINLESS STEEL SPLASH PANEL
2650.19	CEILING FAN
2740.04	TELEVISION OR MONITOR, O.F.O.I.
2740.12	TELEVISION OR MONITOR BRACKET (PROVIDE BLOCKING)

ISSUE DATE: 05/09/2024
REVISIONS:

No.:	DATE:	BY:	DESCRIPTION:
1	05/09/2024	MG	ADDENDUM NO. 2

DESIGNED:
DRAWN: MG, AH, KW, ST
CHECKED: MW, RH



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CITY OF GRAND ISLAND
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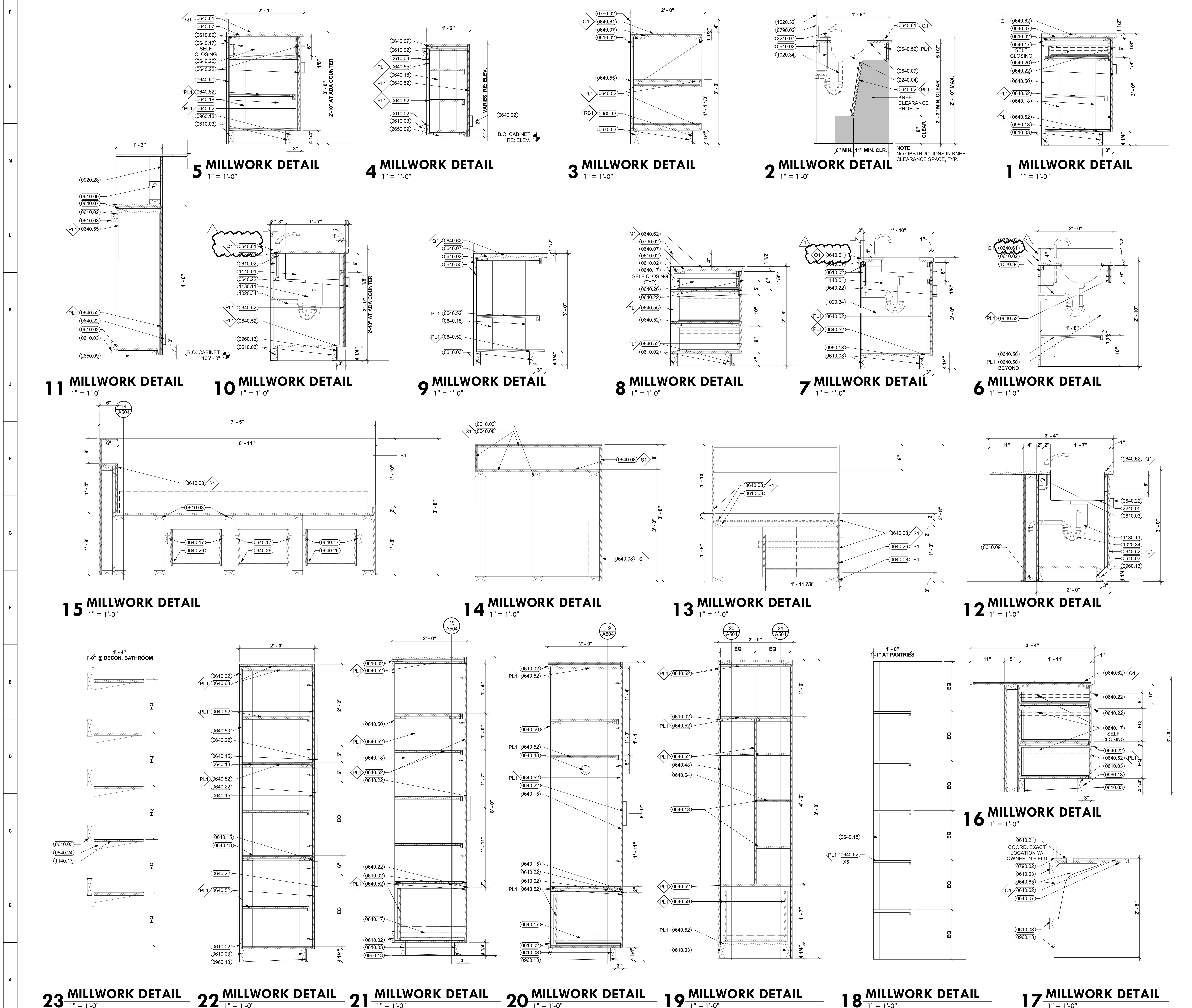
INTERIOR ELEVATIONS

PROJECT NO.: 223134.00

A502



KEYNOTES

0610.02	1X WOOD BLOCKING
0610.03	2X WOOD BLOCKING
0610.09	2 X 4 WOOD STUDS AT 16" O.C.
0640.07	3/4" PLYWOOD
0640.08	3/4" HARDWOOD VENEER PLYWOOD
0640.15	CABINET CAM LOCK
0640.17	DRAWER GLIDE
0640.18	ADJUSTABLE SHELVING
0640.21	WIRE GROMMET
0640.22	CABINET PULLS
0640.24	ADJUSTABLE METAL SHELF STANDARDS. PROVIDE BLOCKING IN WALL AS REQUIRED
0640.26	HARDWOOD DRAWER WITH 1/4" HARDWOOD BOTTOM
0640.43	3/4" PLASTIC LAMINATE CLAD PLYWOOD SUPPORT BRACKET
0640.48	HEAVY DUTY COAT ROD
0640.50	PLASTIC LAMINATE CLAD END PANEL
0640.52	3/4" PLASTIC LAMINATE CLAD PLYWOOD
0640.55	1/4" PLASTIC LAMINATE CLAD CABINET BACK
0640.56	3/4" PLASTIC LAMINATE CLAD PLYWOOD ADJUSTABLE SHELF
0640.59	CONCEALED COUNTERTOP BRACKET WITH IN-WALL CONFIGURATION HARDWARE. PROVIDE BLOCKING IN WALL AS REQUIRED
0640.61	QUARTZ SURFACE COUNTERTOP WITH 4" SPLASH AS SHOWN
0640.62	QUARTZ SURFACE COUNTERTOP
0640.63	COUNTERTOP SUPPORT BRACKET
0640.64	3/4" PLASTIC LAMINATE VENEER PLYWOOD
0640.65	HEAVY DUTY METAL COUNTER SUPPORT BRACKET
0790.02	CAULKING
0920.28	5/8" GYPSUM BOARD (TYPE X)
0960.13	4" RESILIENT BASE
1020.32	STAINLESS STEEL FRAMED MIRROR
1020.34	VINYL-COATED PIPING WRAP
1130.11	FOOD DISPOSAL
1140.01	INTEGRAL STAINLESS STEEL SINK AND DRAINBOARDS
1140.17	STAINLESS STEEL SHELVES ON ADJUSTABLE METAL STANDARDS
2240.04	PORCELAIN LAVATORY
2240.05	STAINLESS STEEL UNDERMOUNT SINK
2240.07	SINK FITTINGS
2650.09	UNDER / OVER CABINET LIGHT

ISSUE DATE: 05/09/2024

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1	05/09/2024	MG	ADDENDUM NO. 2

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DRAWN: MW, RH

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MILLWORK DETAILS

PROJECT NO.: 223134.00

A504