

DEPARTMENT OF VETERANS AFFAIRS
VHA MASTER SPECIFICATIONS

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SECTION 034500

PRECAST ARCHITECTURAL CONCRETE

1.1 QUALITY ASSURANCE

- A. Installer: PCI-certified erector.
- B. Fabricator: PCI-certified plant.
- C. Quality-Control Standard: PCI MNL 117.
- D. Sample panels for each finish, color, and texture variation.

1.2 PERFORMANCE REQUIREMENTS

- A. Design Standards: ACI 318 (ACI 318M) and PCI MNL 120.

1.3 MATERIALS

- A. Concrete Materials:
 - 1. Portland Cement: ASTM C 150/C 150M, Type I or Type III.
 - 2. Aggregates: Normal weight
 - a. Face-Mixture: match color and texture of precast at Building 12.
 - 3. Coloring admixture, as required to match color of existing precast on building 12.
- B. Steel Connections: galvanized.
- C. Stainless steel connections.
- D. Grout: Epoxy resin

1.4 CONCRETE MIXTURES

- A. Compressive Strength (28 Days):
 - 1. Normal-Weight Concrete Face and Backup Mixtures: [5000 psi (34.5 MPa)]
 - 2. Lightweight Concrete Backup Mixtures: [5000 psi (34.5 MPa)]

1.5 FABRICATION

- A. Finishes: match existing

END OF SECTION

SECTION 07 24 00
EXTERIOR INSULATION AND FINISH SYSTEMS

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Exterior insulation and finish systems (EIFS).

1.2 RELATED REQUIREMENTS

- A. Gypsum Board Sheathing 09 29 00, GYPSUM SHEATHING.

1.3 APPLICABLE PUBLICATIONS

- A. Comply with references to extent specified in this section.

B. American National Standards Institute (ANSI):

1. A108/A118/A136-14 - Installation of Ceramic Tile.
2. A137.1-12 - Ceramic Tile - Version 1.

C. ASTM International (ASTM):

1. B117-11 - Operating Salt Spray (Fog) Apparatus.
2. C67-14 - Sampling and Testing Brick and Structural Clay Tile.
3. C177-13 - Steady-State Heat Flux Measurements and Thermal Transmission Properties by Means of the Guarded-Hot-Plate Apparatus.
4. C297/C297M-15 - Flatwise Tensile Strength of Sandwich Constructions.
5. C578-15 - Rigid, Cellular Polystyrene Thermal Insulation.
6. C666/C666M-15 - Resistance of Concrete to Rapid Freezing and Thawing.
7. C920-14a - Elastomeric Joint Sealants.
8. D968-15 - Abrasion Resistance of Organic Coatings by Falling Abrasive.
9. D2794-93(2010) - Resistance of Organic Coatings to the Effects of Rapid Deformation (Impact).
10. E84-15a - Surface Burning Characteristics of Building Materials.
11. E96/E96M-15 - Water Vapor Transmission of Materials.
12. E119-15 - Fire Tests of Building Construction and Materials.
13. E330/E330M-14 - Structural Performance of Exterior Windows, Doors, Skylights and Curtain Walls by Uniform Static Air Pressure Difference.
14. E331-00(2009) - Water Penetration of Exterior Windows, Skylights, Doors, and Curtain Wall by Uniform Static Air Pressure Differences.

15. E2486/E2486M-13 - Impact Resistance of Class PB and PI Exterior Insulation and Finish Systems (EIFS).
16. G90-10 - Performing Accelerated Outdoor Weathering of Nonmetallic Materials Using Concentrated Natural Sunlight.

1.4 PREINSTALLATION MEETINGS

- A. Conduct preinstallation meeting at project site minimum 30 days before beginning Work of this section.
 1. Required Participants:
 - a. Contracting Officer's Representative.
 - b. Architect/Engineer.
 - c. Contractor.
 - d. Installer.
 - e. Other installers responsible for adjacent and intersecting work, including air barriers and sealants.
 2. Meeting Agenda: Distribute agenda to participants minimum 3 days before meeting.
 - a. Installation schedule.
 - b. Installation sequence.
 - c. Preparatory work.
 - d. Protection before, during, and after installation.
 - e. Installation.
 - f. Terminations.
 - g. Transitions and connections to other work.
 - h. Inspecting and testing.
 - i. Other items affecting successful completion.
 3. Document and distribute meeting minutes to participants to record decisions affecting installation.

1.5 SUBMITTALS

- A. Submittal Procedures: Section 01 33 23, SHOP DRAWINGS, PRODUCT DATA, AND SAMPLES.
- B. Submittal Drawings:
 1. Show size, configuration, and fabrication and installation details.
 2. Show details for corner treatment, sills, soffits, dentils, quoins, lintels, openings, penetrations, flashing, and other special applications.
- C. Manufacturer's Literature and Data:

1. Description of each product.
2. Installation instructions.
3. Warranty.

D. Samples:

1. Two 300 mm (1 foot) square samples of EIFS finishes over cement board identical to proposed installation in thickness, color, texture insulation and workmanship.

E. Test reports: Certify each product and complete system complies with specifications.

F. Qualifications: Substantiate qualifications comply with specifications.

1. Installer with project experience list.

1.6 QUALITY ASSURANCE

A. Installer Qualifications:

1. Regularly installs specified products.
2. Installed specified products with satisfactory service on five similar installations for minimum five years.
 - a. Project Experience List: Provide contact names and addresses for completed projects.

1.7 DELIVERY

- A. Deliver products in manufacturer's original sealed packaging.
- B. Mark packaging, legibly. Indicate manufacturer's name or brand, type, production run number, and manufacture date.
- C. Before installation, return or dispose of products within distorted, damaged, or opened packaging.

1.8 STORAGE AND HANDLING

- A. Store products indoors in dry, weathertight conditioned facility.
- B. Protect products from damage during handling and construction operations.

1.9 FIELD CONDITIONS

A. Environment:

1. Unless greater temperature is required by system manufacturer, install products only when ambient air temperature is minimum 7 degrees C (45 degrees F) and rising and predicted to persist for 24 hours after installation.

1.10 WARRANTY

- A. Construction Warranty: FAR clause 52.246-21, "Warranty of Construction."
- B. Manufacturer's Warranty: Warrant EIFS system materials against material and manufacturing defects.
 - 1. Warranty Period: 10 years.

PART 2 - PRODUCTS

2.1 PRODUCTS - GENERAL

- A. Basis of Design: match existing EIFS system in color, texture, and thickness. Provide samples for approval by architect prior to installation.
- B. Provide system components from one manufacturer and from one production run.

2.2 EXTERIOR INSULATION AND FINISH SYSTEM (EIFS)

- A. Description: Polymer-Based (PB) system consists of Type I molded rigid polystyrene insulation adhered to sheathing and finished with glass-fiber-mesh reinforced base-coat and textured finish coat.
- B. Performance Requirements:
 - 1. Surface Burning Characteristics: When tested according to ASTM E84.
 - a. Flame Spread Rating: 25 maximum.
 - b. Smoke Developed Rating: 450 maximum.
 - 2. Full Scale Wall Fire Test: No significant surface flaming or propagation of vertical or lateral flames when tested according to ASTM E119.
 - 3. Impact Resistance (Sample to be cured. Finish, base coat and fabric over 25 mm (1 inch) insulation typical of project application), ASTM E2486/E2486M:
 - a. Standard Impact Resistance - 2.83 to 5.54 J (25-49 inch-lbs.).
 - 4. Structural Performance: (Test panels 1200 mm x 1200 mm (4 feet by 4 feet) typical of project application): ASTM E330/E330M, no permanent deformation, delamination or deterioration for positive and negative pressures as required.
 - a. Wind Loads: Uniform pressure as indicated on Drawings.
 - 5. Water Penetration: ASTM E331, no water penetration minimum 720Pa (15psf) for windows and 300 Pa (6.24 psf) for curtain wall assembly.

6. Abrasion Resistance: ASTM D968, 500 liters of sand with slight smoothing and no loss of film integrity.
7. Accelerated Weathering: ASTM G90; 2000 hours with no deterioration.
8. Salt Spray Resistance: ASTM B117; Withstand 300 hours with no deleterious effects.
9. Water Vapor: ASTM E96/E96M; Maximum 12 g/h/sq. m (18 grains/hour/sf.).
10. Absorption-Freeze-Thaw (Pre-weighed 100 mm x 200 mm (4 inch by 8 inch) specimens; 25 mm (1 inch) insulation, faced with finish coat cured and stored in air; tested with edges and back open), ASTM C67.
 - a. 50 Cycles: 20 hours at 9 degrees C (4 degrees F); 4-hour thaw in water.
 - b. After 50 cycles; total weight gain of maximum 6.2 grams. No checking splitting, or cracking.
- C. Adhesive: Manufacturers standard product including primer compatible with sheathing.
- D. Insulation:
 1. Thermal Resistance: Thermal resistance (R-value), as indicated, measured by ASTM C177.
 2. Insulating Material: ASTM C578, as recommended by EIFS manufacturer and treated to be compatible with EIFS components. Age insulation minimum of 6 weeks before installation.
 3. Provide Type I Molded Expanded Polystyrene (MEPS) insulation board for Type PB systems, in sizes as required except maximum 600 mm X 1200 mm (24 X 48 inches) boards, and maximum 100 mm (4 inches) thick.
- E. Mechanical Anchors: As recommended by EIFS manufacturer.
- F. Accessories:
 1. Trim, control joints, weep screed, edging, anchors, expansion joints, and other items required for proper installation as recommended by EIFS manufacturer.
 2. Metal Items and Fasteners: Corrosion resistant.
- G. Reinforcing Fabric: Balanced, open weave, glass fiber fabric made from twisted multi-end strands specifically treated for compatibility with the other materials of system.
 1. Minimum weight 100 g/sq. m (4.3 oz./sq. yd.).
- H. Base Coat: Manufacturer's standard.

- I. Finish Coat: Manufacturer's standard. Minimum thickness 1.5 mm (1/16 inch), complying with performance requirements.
- J. Sealant: ASTM C920; Class 50 with 100 percent recovery. Type, grade and use as recommended by sealant manufacturer.
 - 1. When required, provide non-staining primer, bond breaker, and backer rods as recommended by sealant manufacturer.
 - 2. Do not use absorptive materials as backer rods.

PART 3 - EXECUTION

3.1 PREPARATION

- A. Examine and verify substrate suitability for product installation.
- B. Protect existing construction and completed work from damage.
- C. Notify Contracting Officer's Representative in writing of conditions detrimental to proper completion of work.
- D. Do not proceed with work until unsatisfactory conditions are corrected.

3.2 INSTALLATION - GENERAL

- A. Install products according to manufacturer's instructions and approved submittal drawings
 - 1. When manufacturer's instructions deviate from specifications, submit proposed resolution for Contracting Officer's Representative consideration.

3.3 CONTROL JOINT INSTALLATION

- A. See drawings for location of building control joints and surface control joints.
- B. Install surface control joints as follows:
 - 1. Direct Exterior Finish: Install at 6 meters (20 feet) maximum on center, both directions, erecting continuous vertical joints first at building expansion joints, intersection of dissimilar substrates or finishing materials where concentrated stresses or movement is anticipated. Leave 13 mm (1/2 inch) minimum continuous gap between board panels to receive control joint.
 - 2. Unit Finish: Install at 5 meters (16 feet) maximum on center, both directions, or at lesser spacing as recommended by manufacturer, erecting continuous vertical joints first. Leave 13 mm (1/2 inch) minimum, continuous gap between board panels to receive control joint or sealant backer and sealant.

3. Exterior Insulation and Finish System. Install at 15 meters (50 feet) maximum in both directions and at building expansion joints, floor lines and where EIFS intersects other materials per manufacturer's recommendations.

3.4 SEALANT INSTALLATION

- A. Exterior Insulation and Finish System: Apply sealant according to EIFS manufacturer's recommendation.
- B. Do not apply sealant in locations intended for water drainage.

3.5 EXTERIOR INSULATION AND FINISH SYSTEM INSTALLATION

- A. Insulation Board Layout: Place horizontally from level base line. Stagger vertical joints and interlock at corners. Butt joints tightly. Provide flush surfaces at joints. Offset insulation board joints from joints in sheathing minimum 200 mm (8 inches). Do not align joints with corners of doors, windows and other openings. Do not leave insulation board exposed longer than recommended by insulation manufacturer.
- B. Adhesive: Apply directly to entire back surface of the insulation board as recommended by the system manufacturer and immediately apply to gypsum board substrate. Apply firm pressure over entire board to ensure uniform contact and level surface. Allow adhesive to cure for 24 hours minimum before sanding.
- C. Create means of drainage between insulation board and gypsum board sheathing.
- D. Flash penetrations and terminations to discharge water to exterior.
- E. Mechanical Fasteners: Fasten with manufacturer's standard anchors, spaced as recommended by manufacturer, maximum 600 mm (24 inches) on center horizontally and vertically.
- F. Sanding: Sand entire surface of insulation before applying base coat, level high joints and remove dirt and weathering damage. Do not pre-fill low areas with basecoat.
- G. Base Coat: Trowel apply uniform thickness of base coat to insulation with minimum thickness of 1-1/2 times reinforcing fabric thickness and minimum 2.4 mm (3/32 inches) wet thickness.
- H. Install reinforcing fabric embedded in base coat. Provide diagonal reinforcement at opening corners, back wrapping, and other reinforcement recommended by EIFS manufacturer. Ensure fabric pattern

is not visible beneath the surface of the basecoat after installation.
Cure basecoat 24 hours minimum before applying finish coat.

I. Finish Coat:

1. Inspect basecoat for damage or defects and repair before applying finish coat.
2. Trowel apply finish coat minimum 1.6 mm (1/16 inch) thick.
3. Texture finish as required.
4. Surface Tolerance: Maximum 1/500 (1/4 inch in 10 feet) deviation from plumb and plane.

- - E N D - -

SECTION 07 27 27
FLUID-APPLIED MEMBRANE AIR BARRIERS, VAPOR RETARDING

PART 1 - GENERAL

1.1 DESCRIPTION:

This section specifies fluid-applied vapor-retarding membrane air barrier material and accessories used for exterior above grade wall assembly air barriers and their extension and connection to adjacent air barrier components in roof and opening construction to provide a durable, continuous, air- and moisture- impermeable full-building system.

1.2 RELATED WORK

- A. General quality assurance and quality control requirements: Section 01 45 29 TESTING LABORATORY SERVICES.
- B. Flashing components of factory finished roofing and wall systems to which membrane air barriers will transition: Division 07 roofing and wall system sections.
- C. Other flashing components to which membrane air barriers will transition: Section 07 60 00 FLASHING AND SHEET METAL.
- D. Joint Sealants: Section 07 92 00, JOINT SEALANTS.
- E. Division 08 exterior openings sections for opening transitions providing airtight seal between membrane air barrier and aluminum-framed entrances and storefronts.
- F. Wall sheathings serving as substrate for membrane air barriers: Section 09 29 00 GYPSUM BOARD.

1.3 APPLICABLE PUBLICATIONS

- A. Publications listed below form a part of this specification to the extent referenced. Publications are referenced in the text by the basic designation only. Editions of applicable publications current on date of issue of bidding documents apply unless otherwise indicated.

1. American Society of Testing and Materials (ASTM):

C920-10.....Standard Specification for Elastomeric Joint
Sealants

C1193-09.....Standard Guide for Use of Joint Sealants

D412-06.....Standard Test Methods for Vulcanized Rubber and
Thermoplastic Elastomers—Tension

D2369-10.....Standard Test Method for Volatile Content of
Coatings

E96/E96M-05.....Standard Test Methods for Water Vapor
Transmission of Materials
E162-09.....Standard Test Method for Surface Flammability
of Materials Using a Radiant Heat Energy Source
E2178-03.....Standard Test Method for Air Permeance of
Building Materials
E2357-05.....Standard Test Method for Determining Air
Leakage of Air Barrier Assemblies
2. U.S. Environmental Protection Agency (EPA):
40 CFR 59, Subpart D....National Volatile Organic Compound Emission
Standards for Consumer and Commercial Products
3. SOUTH COAST AIR QUALITY MANAGEMENT DISTRICT (SCAQMD):
1168-89(2003).....Adhesive and Sealant Applications

1.4 PERFORMANCE REQUIREMENTS

- A. General: Membrane air barrier shall be capable of performing as a continuous vapor-impermeable air barrier and as a moisture drainage plane transitioned to adjacent flashings and discharging water to the building exterior. Membrane air barriers shall accommodate substrate movement and seal expansion and control joints, construction material transitions, opening transitions, penetrations, and perimeter conditions without moisture deterioration and air leakage exceeding performance requirements.
- B. Air-Barrier Assembly Air Leakage: Maximum 0.2 L/s x sq. m of surface area at 75 Pa (0.04 cfm/sq. ft. of surface area at 1.57 lbf/sq. ft.)per ASTM E 2357.
- C. Material Compatibility: Provide membrane air barrier materials that are compatible with one another and with adjacent materials under conditions of service and application required, as demonstrated by membrane air barrier manufacturer based on testing and field experience.
- D. The airtight components and secondary moisture protection of the building enclosure and the joints, junctures and transitions between materials, products, and assemblies forming the air-tightness and moisture barrier of the building enclosure are called "the air/moisture barrier system". Services include coordination between the trades, the proper scheduling and sequencing of the work, preconstruction meetings, inspections, tests, and related actions, including reports performed by

Contractor, by independent agencies, and by governing authorities.
They do not include contract enforcement activities performed by the Architect.

- E. Air Barrier Penetrations: All penetrations of the air/moisture barrier and paths of air infiltration / exfiltration through the air/moisture barrier system shall be made air-tight.
- F. Moisture Barrier Penetrations: All penetrations of the air/moisture barrier and paths of water migration through the air/moisture barrier system shall be made water shedding.

1.5 QUALIFICATIONS:

- A. Approvals: Approval by Contracting Officer is required of products and services of proposed manufacturers, and installers, and will be based upon submissions by the Contractor.
- B. Manufacturer Qualifications: Manufacturer regularly and presently manufactures fluid-applied membrane air barrier material meeting section requirements as one of its principal products.
 - 1. Manufacturer's product submitted has been in satisfactory and efficient operation on five similar installations for at least five years.
 - a. Submit list of installations, include name and location of project and name of owner.
- C. Installer Qualifications: Installer has technical qualifications, experience, certifications, trained personnel, membrane air barrier manufacturer's approval, and facilities to install specified items.
 - 1. Installer's applicators shall be trained and certified by manufacturer of air barrier system.
 - 2. Installer's full time on-site field supervisor shall have completed three projects of similar scope within last year, be able to communicate verbally with Contractor, Architect, testing agency, and employees.
 - a. Certification: Installer's supervisor shall hold Sealant, Waterproofing, and Restoration Institute (SWRI) Wall Coating Validation Program Certificate, or similar qualification acceptable to Resident Engineer.

1.6 SUBMITTALS:

- A. Submit in accordance with Section 01 33 23, SHOP DRAWINGS, PRODUCT DATA, AND SAMPLES.
- B. Manufacturer's Literature and Data:
 - 1. Fluid-applied membrane air barrier.
 - 2. Primer.
 - 3. Mastic.
 - 4. Counterflashing strip.
 - 5. Modified bituminous strip.
 - 6. Sprayed polyurethane foam sealant.
 - 7. Opening transition assembly.
 - 8. Joint sealant.
 - 9. Printed installation instructions for conditions specified.
- C. Certificates:
 - 1. Indicating membrane air barrier manufacturer's qualifications as specified.
 - 2. Indicating approval of installer by membrane air barrier manufacturer.
 - 3. Indicating qualifications of installer and installer's personnel.
 - 4. Indicating air barrier manufacturer's determination that proposed materials are chemically and adhesively compatible with adjacent materials.
 - 5. Indicating products meet project limitations on VOC content.
- D. Inspection Reports: Daily reports of testing agency and reports of testing and inspection agency. Include weather conditions, description of work performed, tests performed, defective work observed, and corrective actions taken to correct defective work.

1.7 COORDINATION:

- A. Coordinate installation of work of this Section with adjacent and related work to ensure provision of continuous, unbroken, durable air barrier system.

1.8 PRODUCT DELIVERY, STORAGE AND HANDLING:

- A. Deliver materials to job in manufacturer's original unopened containers.
- B. Do not store material in areas where temperature is lower than 10 degrees C (50 degrees F,) or where prolonged temperature is above 32 degrees C (90 degrees F).

1.9 ENVIRONMENTAL REQUIREMENTS:

Ambient Surface and Material Conditions: Not less than 4 degrees C (40 degrees F), during application of waterproofing, visibly dry, and complying with manufacturer's written instructions.

1.10 WARRANTY:

Warrant membrane air barrier installation against air and moisture leaks subject to terms of "Warranty of Construction", except that warranty period is two years.

PART 2 - PRODUCTS

2.1 MATERIALS

- A. Source Limitations: Obtain membrane air barrier materials and accessories from single manufacturer.
- B. VOC Content: Maximum 250 g/L per 40 CFR 59, Subpart D (EPA Method 24).

2.2 MEMBRANE AIR BARRIER:

- A. Basis of Design: James Hardie Building Products, Inc., HardieWrap Weather Barrier and related products.

B. Moisture Air Barrier Sheet:

- 1. Product: HardieWrap Weather Barrier as manufactured by James Hardie Building Systems (basis of design).
- 2. Composition: Non-woven, non-perforated polyolefin.
- 3. Film: MicroTech Coating with micropores to balance water holdout and breathability.
- 4. Thickness: 11 mil (0.28 mm).
- 5. UV Stability: Up to 180 days.
- 6. Water Holdout (AATCC127): 128 inches (3250 mm).
- 7. Breathability/Water Vapor Permeance (ASTM E-96A): 15 perms.
- 8. Air Resistance (TAPPI T-460): >1800 sec/100 cc.
- 9. Tear Strength (ASTM D1117): 15 to 18 lb (6.8 to 8.2 kg).
- 10. Basis Weight: 19.4 lbs/1000 sf (9.5 kgs/100 sm).
- 11. Sizes: 3 feet by 195 feet (914 mm by 59.4 m), 9 feet by 100 feet (2743 mm by 30.5 m), 9 feet by 150 feet (2743 mm by 45.7 m), 10 feet by 100 feet (3048 mm by 30.5 m), 10 feet by 150 feet (3048 mm by 45.7 m).

C. Self-adhering Flashing: Designed for peel and stick application.

- 1. Product: HardieWrap Flashing as manufactured by James Hardie Building Systems (basis of design).
- 2. Composition: Butyl rubber adhesive non-woven polyolefin backing; coated Kraft paper release.
- 3. Total Thickness: 25 mil (0.64 mm).
- 4. UV Stability: Up to 180 days.
- 5. Application Temperature: 30 degree F to 180 degree F (-1 degree C to 82 degree C).
- 6. Operating Temperature: -30 degree F to 200 degree F (-34 degree C to 93 degree C).
- 7. Packaging: Individually shrink-wrapped.
- 8. Roll Weight: 4 inch (102 mm) = 4.6 lb (2 kg)/roll, 6 inches

(152 mm) = 6.9 lb (3 kg) /roll, 9 inches (229 mm) = 9.9 lb (4.5 kg)/roll.

9. Provide Width for Application Required: 4 inches by 100 feet (102 mm by 30.5 m) (2x4 construction), 6 inches by 100 feet (152 mm by 30.5 m) (2x4 construction), 9 inches by 100 feet (229 mm by 30.5) (2x6 construction).

D. Flexible Flashing:

1. Product: HardieWrap Flex Flashing as manufactured by James Hardie Building Systems (basis of design).
2. Composition: Butyl rubber adhesive; creped cross-laminated polyolefin backing; polyethylene film release.
3. Total Thickness: 60 mil (1.5 mm).
4. Tensile Strength (ASTM D3759): 18 lb/inch (3.2kg/cm).
5. UV Stability: Up to 180 days.
6. Water Vapor Transfer Rate (ASTM E96-94): <.2g/100 square inches/24hrs.
7. Application Temperature: 30 degree F to 180 degree F (-1 degree C to 82 degree C).
8. Operating Temperature: -30 degree F to 200 degree F (-34 degree C to 93 degree C).
9. Packaging: Each roll is packed in a convenient dispenser box
10. Roll Weight: 6 inches (152 mm) = 22.2 lb (10kg)/roll, 9 inches (229 mm) = 33.3 lb (15 kg)/roll.
11. Provide Width for Application Required: 6 inches by 75 feet (152 mm by 23.9 m) (2x4 construction), 9 inches by 75 feet (229 mm by 23.9) (2x6 construction).

E. Seam Tape:

1. HardieWrap Seam Tape as manufactured by James Hardie Building Systems (basis of design).
2. Composition: Polypropylene film coated with acrylic adhesive
Total Thickness: 3.0 mil (.08 mm).
3. Adhesion Peel to HardieWrap (PSTC-1): 22 oz/inch (25 N/100 mm).
4. Tensile Strength (ASTM D3759): 32 lb/in (.58 kg/mm).
5. Elongation: 136 percent.
6. UV Stability: Up to 90 days.
7. Application Temperature: 30 degree F to 180 degree F (-1 degree C to 82 degree C).
8. Operating Temperature: -30 degree F to 200 degree F (-34 degree C to 93 degree C).
9. Packaging: Individually shrink-wrapped.
10. Roll Weight: 1 lb(0.5 kg)/roll.
11. Roll Size: 1-7/8 inches (43 mm) by 165 feet (50 m).

PART 3 - EXECUTION

3.1 EXAMINATION:

- A. Surface Condition: Before applying membrane air barrier materials, ensure substrates are fully cured, smooth, clean, dry, and free from high spots, depressions, loose and foreign particles and other deterrents to adhesion.

- B. Verify concrete surfaces have cured for time period recommended by membrane air barrier manufacturer, free from release agents, concrete curing agents, and other contaminants.

- C. Verify masonry joints are flush and filled with mortar.

3.2 INTERFACE WITH OTHER WORK

- A. Commencement of Work: Commence work once membrane air barrier substrates are adequately protected from weather and will remain protected during remainder of construction.
- B. Sequencing of Work: Coordinate sequencing of work with work of other sections that form portions of building envelope air barrier to ensure that flashings and transition materials can be properly installed.
- C. Subsequent Work: Coordinate work with work of other sections installed subsequent to membrane air barrier to ensure complete inspection of installed membrane air barrier and sealing of membrane air barrier penetrations necessitated by subsequent work.

3.3 AIR BARRIER INSTALLATION

- A. General: Prepare substrates and install and apply air barrier components in accordance with air barrier manufacturer's written instructions consistent with manufacturer's qualifying tested assemblies and following manufacturer's warranty requirements.
- B. Moisture Air Barrier Sheet:
 - 1. Weather barrier shall be installed before window and door installation. Do not install on saturated sheathing. Weather barrier can become slippery and should not be used in any application where it may be walked on.
 - 2. Begin by affixing weather barrier extending at least 6 inches (152 mm) around a building corner. Unroll horizontally (with print side facing out) around the building covering rough window and door openings.
 - 3. Fasten to studs or nailable sheathing material with galvanized construction grade staples a maximum of 18 inches (457 mm) in the vertical and horizontal direction.
 - 4. Attach weather barrier so that it is taut and flat. The vertical overlap shall have a minimum of 6 inches (152 mm) and the vertical seam shall be taped.
 - 5. Assure that the bottom edge of the weather barrier extends over the sill plate and foundation interface by at least 1 inch (25 mm).
 - 6. Overlap upper layers of weather barrier (in shingle lap fashion) by a minimum of 6 inches below the horizontal edge, and tape the horizontal seam line.
 - 7. At roof to wall intersection (or wall to deck), affix wrap to

the wall such that it overlaps any step flashing already in place on the wall by at least 2 inches (51 mm).

C. Flexible Flashing:

1. Windows and Doors: Weather barrier is not designed nor guaranteed as a flashing material to prevent moisture or air from intruding behind weather barrier. Verify that flashing has previously been installed around all windows and door openings. Install flexible flashing per manufacturer's instructions.
 - a. Use the inverted "Y" cut method at rough window and door openings. Do not place fasteners within 9 inches (229 mm) of the rough opening, door or window heads. This area shall not be fastened to allow for proper head flashing installation. At the top corners of the rough opening, cut the weather barrier at 45 degree to extend 9 inches (229 mm) past the joint.
 - b. Fold the top flap up and out of the way and fasten temporarily.
 - c. Fold the remaining three flaps in through the opening fastening them inside the opening with staples.
2. Rough Electrical and Plumbing Penetrations: Seal with a double layer of flashing. Install the top flashing piece over the bottom flashing piece overlapping flashing layers to cover flashing cut-out necessary for placement around penetration.

D. Repairs: For minor punctures or tears, less than 3 inches (76 mm), cover and completely seal with seam tape. For larger holes, greater than 3 inches (76 mm), use slit flashing technique.

- a. Slit flashing requires making a horizontal slit above the damaged area and placing a cut piece of weather barrier into the slit, covering the damaged area. Tape the perimeter of the patched area.

3.4 PREPARATION

- A. Prepare and treat substrate in accordance with membrane air barrier manufacturer's written instructions.
- B. Mask adjacent finished surfaces.
- C. Remove contaminants and film-forming coatings from concrete.
- D. Remove projections and excess materials and fill voids with substrate patching material.
- E. Prepare and treat joints and cracks in substrate per ASTM C 1193 and membrane air barrier manufacturer's written instructions.
- F. Apply primer to substrates.

3.5 APPLICATION OF TRANSITION STRIPS

- A. Install transition strips and accessory materials according to membrane air barrier manufacturer's written instructions.
- B. Connect and seal membrane air barrier material to adjacent components of building air barrier system, including, but not limited to, roofing system air barrier, exterior glazing and window systems, curtain wall systems, door framing, and other openings.
- C. Flexible Opening Transition: Prime concealed perimeter frame surfaces of windows, storefronts, curtain walls, louvers, and doors. Apply flexible opening transition and attach or adhere in accordance with air barrier manufacturer's written instructions.
 - 1. Fill gaps at perimeter of openings with foam sealant.
- D. Penetrations: Fill gaps at perimeter of penetrations with foam sealant. Seal transition strips around penetrating objects with termination mastic.
- E. Flashings: Seal top of through-wall flashings to membrane air barrier with continuous transitions strip of type recommended by membrane air barrier manufacturer for type of flashing.

3.7 TESTING:

- A. Testing Agency: Owner will engage a qualified testing agency to perform tests and inspections, including documenting of membrane air barrier prior to concealment.
 - 1. Inspections: Air-barrier materials, accessories, and installation are subject to inspection for compliance with requirements, including the following:
 - 2. Continuity of air-barrier system has been achieved throughout the building envelope with no gaps or holes.
 - 3. Continuous structural support of air-barrier system has been provided.
 - 4. Masonry and concrete surfaces are smooth, clean, and free of cavities, protrusions, and mortar droppings.
 - 5. Site conditions for application temperature and dryness of substrates have been maintained.
 - 6. Maximum exposure time of materials to UV deterioration has not been exceeded.
 - 7. Surfaces have been primed, if applicable.
 - 8. Laps in strips and transition strips have complied with minimum requirements and have been shingled in the correct direction (or mastic has been applied on exposed edges), with no fishmouths.

9. Termination mastic has been applied on cut edges.
 10. Strips and transition strips have been firmly adhered to substrate.
 11. Compatible materials have been used.
 12. Transitions at changes in direction and structural support at gaps have been provided.
 13. Connections between assemblies (air-barrier and sealants) have complied with requirements for cleanliness, surface preparation and priming, structural support, integrity, and continuity of seal.
 14. All penetrations have been sealed.
 15. Inspections and testing shall be carried out at the following rate:
 - a. Up to 10,000 square feet (930 square meters) - one inspection
 - b. 10,001 - 35,000 square feet (931 - 3,250 square meters) - two inspections
 - c. 35,001 - 75,000 square feet (3,251 - 6,970 square meters) - three inspections
 - d. 75,001 - 125,000 square feet (6,971 - 11,610 square meters) - four inspections
 - e. 125,001 - 200,000 square feet (11,611 - 18,580 square meters) - five inspections
 - f. Over 200,00 square feet (18,580 square meters) - six inspections.
 16. Forward written inspection reports to the Resident Engineer within 5 working days of the inspection and test being performed.
 17. If the inspections reveal any defects, promptly remove and replace defective work at no additional cost to the Owner.
- B. Inspections shall include:
1. Compatibility of materials within membrane air barrier system and with adjacent materials.
 2. Suitability of substrate and support for membrane air barrier materials.
 3. Suitability of conditions under which membrane air barrier will be applied.
 4. Adequacy of substrate priming.
 5. Proper application and joint and edge treatment of transition strips, flexible opening transitions, and accessory materials.
 6. Continuity and gap-free installation of membrane air barrier, transition strips, and accessory materials.

3.8 CLEANING AND PROTECTION

- A. Clean spills, stains, and overspray resulting application utilizing cleaning agents recommended by manufacturers of affected construction. Remove masking materials.
- B. Protect membrane air barrier from damage from subsequent work. Protect membrane materials from exposure to UV light in excess of that acceptable to membrane air barrier manufacturer; replace overexposed materials and retest.

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SECTION 07 31 14
STONE COATED METAL ROOF SHINGLE

PART 1 - GENERAL

1.1 SUMMARY

- A. Related Documents: Provisions established within General and Supplementary Conditions of the Contract, Division 1 - General Requirements, and the Drawings are collectively applicable to this Section.
- B. Section Includes: Formed metal roofing panels with colored stone chip finish.
- C. Associated metal flashings.
- D. Related Sections:
 - 1. Division 7 Section "Sheet Metal Flashing and Trim" for metal flashing, gutters, and downspouts.
 - 2. Division 7 Section "Joint Sealants" for field-applied sealants.
 - 3. Division 9 Section "Painting" for painting of roof accessories.

1.2 SUBMITTALS

- A. Submit in accordance with Section 01 33 00, SHOP DRAWINGS, PRODUCT DATA AND SAMPLES.
- B. Product Data: Include construction details, material descriptions, dimensions of individual components and profiles, finishes, fasteners, accessories, and manufacturers written installation instructions.
- C. Shop Drawings: Include roof plans and elevations; sections at hips, ridges, gables, valleys, and eaves; and details of components, accessories, and attachments to other work.
- D. Samples for Initial Selection: Manufacturer's color charts and samples consisting of units or sections of units showing the full range of colors, textures, and patterns available for each type Shingle indicated.

1.3 QUALITY ASSURANCE

- A. Regulatory Requirements:
 - 1. Conform to applicable building code for roof assembly fire hazard requirements.
 - 2. Conform to building code for minimum wind uplift resistance.

1.4 REFERENCES

- A. Fire-Test-Response Characteristics: Provide Shingle with fire-test-response characteristics indicated, as determined per test method ASTM

E108 - Test for Fire Resistance of Roof Covering Materials, for application and slopes indicated.

1. Fire-Test Exposure: Class A.
- B. ASTM A792/A792M: Sheet Steel, Aluminum-Zinc Alloy Coated by the Hot Dip Process, Structural (physical) Quality.
- C. UL 1897 and UL 580: Wind Uplift Resistance of Roof Assemblies.
- D. ASTM C920: Specification for Elastomeric Joint Sealants.
- E. Impact Resistance: UL 2218, Class 4.
- F. Appraisal Certificates:
 1. International Code Council (ICC), Whittier California, Report No. ESR 1483.
 2. Underwriters Laboratories, Inc., Northbrook, Illinois, USA File No. R14710.

1.5 DELIVERY, STORAGE, AND HANDLING

- A. Store and handle roofing materials to ensure dryness. Store in a dry, well-ventilated, weather tight place. Protect from corrosion, staining and traffic and wind damage. Store rolls of felt and other sheet materials on end on pallets or another raised surface.

1.6 WARRANTY

- A. Manufacturing Warranty: Written, transferable, limited warranty, covering manufacturing defects/excessive granule loss. Refer to warranty for specifics.
 1. Warranty Period: 50 years from date of Substantial Completion.
 2. Wind Warranty: 120 mph winds, full warranty period.
 3. Hail Penetration: full warranty period.

PART 2 - PRODUCTS

2.1 MATERIALS

- A. Metal Shingle: carbon alloy steel core, with hot-dipped G90 Zinc Phosphate anti-corrosion coating, plus an exterior PVDF Paint System.
 1. Material: Rolled and pressure formed, Aluminum-Zinc Alloy Coated Steel with Slate Tile Look
 2. Finish: PVDF paint system
 3. Thickness: 26 gauge (0.019" thick)
 4. Steel: Grade 37 (Grade 255).
 5. Size: 21" wide by 48" long (uninstalled)
 6. Exposure: 18-3/16" wide by 47-1/4" long
 7. Weight: 96 pounds per square.
 8. Color: See Section 09 06 00 Schedule for Finishes.
- B. Flashing:

1. Valley: Shingle Valley and Cap, Aluminum-Zinc Alloy coated Steel sheet 0.0165 inches (.455 mm). Pressure formed into a valley with a stone coated valley cap. Finish: Match upper exposed stone coated surface of the valley cap to the shingle material/color.
 2. Fascia Metal: Shingle Starter Clip w/ Drip Edge, Aluminum-Zinc Alloy Coated Steel sheet, 0.0165 inches (.455 mm). Pressure formed to fit along the leading edge of roof panels at eave/fascia.
 3. Rake / Gable Channel: Shingle Rake/Gable Channel, Aluminum-Zinc Alloy Coated Steel sheet, 0.0165 inches (.455 mm). Pressure formed to match roofing material to be applied along rakes and gables. Pre-paint to match as needed prior to installing panels.
 4. Short Course Clip: Shingle Short Course Clip, Aluminum-Zinc Alloy Coated Steel sheet, 0.0165 inches (.455 mm). Pressure formed for use with starting a short course or when Shingle Starter Clip w/ Drip Edge will not conform to existing eave/fascia.
 5. Pipe Jack Flashing: 0.0165 inches (.455 mm) galvanized or Aluminum-Zinc Alloy Coated Steel, clean, prime and paint to match roof material.
 6. Underpan: Aluminum-Zinc Alloy Coated Steel sheet, 0.0165 inches (.455 mm), pressure formed to counter flash roof penetrations matching Shingle material profile.
- C. Hip & Ridge: Shingle Hip & Ridge covers hips and ridges matching shingle material, color, and finish.
1. Hips / Ridges: Shingle Hip & Ridge, Aluminum-Zinc Alloy Coated Steel sheet, 0.0165 inches (.455 mm). Pressure formed to match roofing material, color, and finish to be applied along hips and ridges.
 2. Screws: Minimum No. 9 hex (1/4" diameter) by 1-1/2" long (38.1 mm) minimum, corrosion resistant, color coordinated to match the panels.

2.2 ACCESSORIES

- A. Sheet Metal Materials: Aluminum-Zinc Alloy Coated Steel sheet: ASTM A 792/A 792M, Class AZ50 (AZ150) coating designation; minimum Grade 37 (Grade 255).
- B. Felt Underlayment: ASTM D 226, Type I, No.15 or ASTM D 226, Type II, No.30, non-perforated, asphalt-saturated organic felt.

- C. Perimeter Underlayment: ASTM D 1970; self-adhering, polymer-modified, bituminous sheet underlayment; 40 mils (1 mm) thick. Provide primer when recommended by underlayment manufacturer.
- D. Sealant: One-part elastomeric polyurethane, sealant as recommended in writing by panel manufacturer. Where sealant will be exposed, provide in color to match panels.
 - 1. Standard: ASTM C920-86.
- E. Fasteners: Screws: Minimum No. 9 hex (1/4" diameter) by 1-1/2" long (38.1 mm) minimum, corrosion resistant, black or color coordinated to match the panels where visible.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine substrate and conditions for compliance with requirements for maximum moisture content, soundness of roof deck and other conditions affecting performance of metal roofing.. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 PREPARATION

- A. Clean substrate of any projections and substances detrimental to metal panel roofing. Cover knotholes or other minor voids in substrate with sheet metal flashing secured with roofing nails.
- B. Coordinate installation of metal shingles with roof deck, flashing and other adjoining work to ensure proper sequencing. Do not install roofing until vent stacks and other penetrations through roofing have been installed, are securely fastened and flashing is in place.
- C. Inspect and verify exterior stucco and EIFS wall enclosures are completed.

3.3 INSTALLATION

- A. General: Comply with manufacturer's written instructions for products and applications indicated, unless more stringent requirements apply.
- B. Underlayment: Apply number of plies required by governing code, but at least one ply, with each ply overlapping the ply below at least 6 inches (152 mm) and ends lapped at least 18 inches (457 mm).
 - 1. Omit felt underlayment at areas of perimeter underlayment. Lap felt underlayment over perimeter underlayment as recommended by manufacturer, but not less than 2 inches (51 mm).
- C. Perimeter Underlayment: Apply minimum 24 inches (609 mm) wide layer of perimeter underlayment along entire perimeter of surface to receive metal shingles, including at eaves, ridges, edges, hips, valley,

skylights, dormers, and around projections through roof. Extend perimeter underlayment a minimum of 36 inches (914 mm) inside exterior wall line at edges.

- D. Valleys: Install in accordance with manufacturer's instructions with a minimum 6 inch (152 mm) overlap in direction of flow.
- E. Flashing: Install as indicated on approved submittals and in accordance with manufacturer's written instructions.
- F. Shingle Panels: Install Shingle, accessories, flashing, and hip & ridge level and plumb. Use fasteners per above specifications.
 - 1. Using the recommended offset, the first course of panels lock into the Shingle Starter Clip w/ Drip Edge.
 - 2. The second course of panels start at the rake edge, valley or hip with a panel that is 28 inches (711 mm) in length, panel exposure is 25 inches (635 mm), measured from the left side of the panel.
 - 3. Position the panel into the top clip of the panels on the course below. The center of each field panel will be placed directly above the overlap of the panels on the previous course.
 - 4. Make sure the top clips of each panel are flush. The maximum allowable gap should be 3/16 inches (76 mm).
 - 5. Once the panel is in position, firmly push (by hand or foot) on the panel in the area that overlaps the joint of the two panels below. This will help position the panel for fastener placement.
 - 6. After positioning the panel, firmly push (by hand or foot) on the left side of the panel until it is locked firmly into the clip-lock of the panel on the course below. Install a fastener in the upper left corner straight down through the panel.
 - 7. Firmly push (by hand or foot) on the right side of the panel and make sure it is locked into the previously installed panel. Install a fastener in the upper right portion of the panel. Placing this fastener at a slight upward angle (45°) will help draw the shingle panel into the proper locking position. Complete the installation with 2 additional fasteners straight down into the panel.
 - 8. Fasten each panel with minimum 4 fasteners along top edge of panel.
 - 9. Cut and slot panels that will terminate at the Shingle Rake/Gable Channel or at the Valley in accordance with the manufacturer's instructions.

- G. Hip & Ridge: Install Shingle Hip & Ridge along hips, ridges and rakes as indicated on approved submittals and in accordance with manufacturers written instructions. Bend and fold exposed ends of hips ridges and neatly, cap with an end cap or a piece of similar material.

3.4 CLEANING AND PROTECTION

- A. Damaged Units: Replace panels and other components of the work that have been dented, damaged or have deteriorated beyond successful repair by finish touchup with acrylic coating and stone chip granules.
- B. Cleaning: After completing installation, remove any debris from the roof.
- C. Foot Traffic: Avoid walking on side laps.

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SECTION 08 71 00
DOOR HARDWARE

PART 1 - GENERAL

1.1 DESCRIPTION

- A. Door hardware and related items necessary for complete installation and operation of doors.

1.2 RELATED WORK

- A. Caulking: Section 07 92 00 JOINT SEALANTS.
- B. Application of Hardware: Section 08 14 00, INTERIOR WOOD DOORS, Section 08 11 13, HOLLOW METAL DOORS AND FRAMES and Section 08 41 13, ALUMINUM-FRAMED ENTRANCES AND STOREFRONTS.
- C. Finishes: Section 09 06 00, SCHEDULE FOR FINISHES.
- D. Painting: Section 09 91 00, PAINTING.
- E. Electrical: Division 26, ELECTRICAL.
- F. Fire Detection: Section 28 31 00, FIRE DETECTION AND ALARM.

1.3 GENERAL

- A. All hardware shall comply with UFAS, (Uniform Federal Accessible Standards) unless specified otherwise.
- B. Provide rated door hardware assemblies where required by most current version of the International Building Code (IBC).
- C. Hardware for Labeled Fire Doors and Exit Doors: Conform to requirements of NFPA 80 for labeled fire doors and to NFPA 101 for exit doors, as well as to other requirements specified. Provide hardware listed by UL, except where heavier materials, large size, or better grades are specified herein under paragraph HARDWARE SETS. In lieu of UL labeling and listing, test reports from a nationally recognized testing agency may be submitted showing that hardware has been tested in accordance with UL test methods and that it conforms to NFPA requirements.
- D. Hardware for application on metal and wood doors and frames shall be made to standard templates. Furnish templates to the fabricator of these items in sufficient time so as not to delay the construction.
- E. The following items shall be of the same manufacturer, except as otherwise specified:
 - 1. Mortise locksets.
 - 2. Hinges for hollow metal and wood doors.
 - 3. Surface applied overhead door closers.
 - 4. Exit devices.
- F. This campus requires the use of the following:
 - 1. Marks Brand Grade 1 Locksets
 - 2. At Resident Bathrooms, use Marks with coin slot.
 - 3. If mortise lock, use thumb latch or similar.

1.4 WARRANTY

A. Automatic door operators, the Warranty period shall be two years in lieu of one year for all items except as noted below:

1. Locks, latchsets, and panic hardware: 5 years.
2. Door closers and continuous hinges: 10 years.

1.5 MAINTENANCE MANUALS

A. In accordance with Section 01 00 00, GENERAL REQUIREMENTS Article titled "INSTRUCTIONS", furnish maintenance manuals and instructions on all door hardware. Provide installation instructions with the submittal documentation.

1.6 SUBMITTALS

A. Submittals shall be in accordance with Section 01 33 23, SHOP DRAWINGS, PRODUCT DATA AND SAMPLES. Submit 6 copies of the schedule per Section 01 33 23. Submit 2 final copies of the final approved schedules to VAMC Locksmith as record copies (VISN Locksmith if the VAMC does not have a locksmith).

B. Hardware Schedule: Prepare and submit hardware schedule in the following form:

Hardware Item	Quantity	Size	Reference Publication Type No.	Finish	Mfr. Name and Catalog No.	Key Control Symbols	UL Mark (if fire rated and listed)	ANSI/BHMA Finish Designation

C. Samples and Manufacturers' Literature:

1. Samples: All hardware items (proposed for the project) that have not been previously approved by Builders Hardware Manufacturers Association shall be submitted for approval. Tag and mark all items with manufacturer's name, catalog number and project number.
2. Samples are not required for hardware listed in the specifications by manufacturer's catalog number, if the contractor proposes to use the manufacturer's product specified.

D. Certificate of Compliance and Test Reports: Submit certificates that hardware conforms to the requirements specified herein. Certificates shall be accompanied by copies of reports as referenced. The testing

shall have been conducted either in the manufacturer's plant and certified by an independent testing laboratory or conducted in an independent laboratory, within four years of submittal of reports for approval.

1.7 DELIVERY AND MARKING

- A. Deliver items of hardware to job site in their original containers, complete with necessary appurtenances including screws, keys, and instructions. Tag one of each different item of hardware and deliver to Resident Engineer for reference purposes. Tag shall identify items by Project Specification number and manufacturer's catalog number. These items shall remain on file in Resident Engineer's office until all other similar items have been installed in project, at which time the Resident Engineer will deliver items on file to Contractor for installation in predetermined locations on the project.

1.8 PREINSTALLATION MEETING

- A. Convene a preinstallation meeting not less than 30 days before start of installation of door hardware. Require attendance of parties directly affecting work of this section, including Contractor and Installer, Architect, Project Engineer and VA Locksmith, Hardware Consultant, and Hardware Manufacturer's Representative. Review the following:
1. Inspection of door hardware.
 2. Job and surface readiness.
 3. Coordination with other work.
 4. Protection of hardware surfaces.
 5. Substrate surface protection.
 6. Installation.
 7. Adjusting.
 8. Repair.
 9. Field quality control.
 10. Cleaning.

1.9 INSTRUCTIONS

- A. Hardware Set Symbols on Drawings: Except for protective plates, door stops, mates, thresholds and the like specified herein, hardware requirements for each door are indicated on drawings by symbols. Symbols for hardware sets consist of letters (e.g., "HW") followed by a number. Each number designates a set of hardware items applicable to a door type.

B. Keying: All cylinders shall be keyed into existing Grand Master Key System. Provide removable core cylinders that are removable only with a special key or tool without disassembly of knob or lockset. Cylinders shall be 7 pin type. Keying information shall be furnished at a later date by the Resident Engineer.

1.10 APPLICABLE PUBLICATIONS

- A. The publications listed below form a part of this specification to the extent referenced. The publications are referenced in the text by the basic designation only. In text, hardware items are referred to by series, types, etc., listed in such specifications and standards, except as otherwise specified.
- B. American Society for Testing and Materials (ASTM):
- F883-04.....Padlocks
 - E2180-07.....Standard Test Method for Determining the
Activity of Incorporated Antimicrobial Agent(s)
In Polymeric or Hydrophobic Materials
- C. American National Standards Institute/Builders Hardware Manufacturers Association (ANSI/BHMA):
- A156.1-06.....Butts and Hinges
 - A156.2-03.....Bored and Pre-assembled Locks and Latches
 - A156.3-08.....Exit Devices, Coordinators, and Auto Flush
Bolts
 - A156.4-08.....Door Controls (Closers)
 - A156.5-01.....Auxiliary Locks and Associated Products
 - A156.6-05.....Architectural Door Trim
 - A156.8-05.....Door Controls-Overhead Stops and Holders
 - A156.12-05Interconnected Locks and Latches
 - A156.13-05.....Mortise Locks and Latches Series 1000
 - A156.14-07Sliding and Folding Door Hardware
 - A156.15-06.....Release Devices-Closer Holder, Electromagnetic
and Electromechanical
 - A156.16-08.....Auxiliary Hardware
 - A156.17-04Self-Closing Hinges and Pivots
 - A156.18-06.....Materials and Finishes
 - A156.20-06Strap and Tee Hinges, and Hasps
 - A156.21-09.....Thresholds
 - A156.22-05.....Door Gasketing and Edge Seal Systems

- A156.23-04.....Electromagnetic Locks
- A156.24-03.....Delayed Egress Locking Systems
- A156.25-07Electrified Locking Devices
- A156.26-06.....Continuous Hinges
- A156.28-07Master Keying Systems
- A156.29-07Exit Locks and Alarms
- A156.30-03High Security Cylinders
- A156.31-07Electric Strikes and Frame Mounted Actuators
- A250.8-03.....Standard Steel Doors and Frames
- D. National Fire Protection Association (NFPA):
 - 80-10.....Fire Doors and Fire Windows
 - 101-09.....Life Safety Code
- E. Underwriters Laboratories, Inc. (UL):
 - Building Materials Directory (2008)

PART 2 - PRODUCTS

2.1 BUTT HINGES

- A. ANSI A156.1. Provide only three-knuckle hinges, except five-knuckle where the required hinge type is not available in a three-knuckle version (e.g., some types of swing-clear hinges). The following types of butt hinges shall be used for the types of doors listed, except where otherwise specified:
 - 1. Exterior Doors: Type A2112/A5112 for doors 900 mm (3 feet) wide or less and Type A2111/A5111 for doors over 900 mm (3 feet) wide. Hinges for exterior outswing doors shall have non-removable pins. Hinges for exterior fire-rated doors shall be of stainless steel material.
 - 2. Interior Doors: Type A8112/A5112 for doors 900 mm (3 feet) wide or less and Type A8111/A5111 for doors over 900 mm (3 feet) wide. Hinges for doors exposed to high humidity areas (shower rooms, toilet rooms, kitchens, janitor rooms, etc. shall be of stainless steel material.
- B. Provide quantity and size of hinges per door leaf as follows:
 - 1. Doors up to 1210 mm (4 feet) high: 2 hinges.
 - 2. Doors 1210 mm (4 feet) to 2260 mm (7 feet 5 inches) high: 3 hinges minimum.
 - 3. Doors greater than 2260 mm (7 feet 5 inches) high: 4 hinges.
 - 4. Doors up to 900 mm (3 feet) wide, standard weight: 114 mm x 114 mm (4-1/2 inches x 4-1/2 inches) hinges.

5. Doors over 900 mm (3 feet) to 1065 mm (3 feet 6 inches) wide,
standard weight: 127 mm x 114 mm (5 inches x 4-1/2 inches).
 6. Doors over 1065 mm (3 feet 6 inches) to 1210 mm (4 feet), heavy
weight: 127 mm x 114 mm (5 inches x 4-1/2 inches).
 7. Provide heavy-weight hinges where specified.
 8. At doors weighing 330 kg (150 lbs.) or more, furnish 127 mm (5 inch)
high hinges.
- C. See Articles "MISCELLANEOUS HARDWARE" and "HARDWARE SETS" for pivots
and hinges other than butts specified above and continuous hinges
specified below.

2.2 CONTINUOUS HINGES

- A. ANSI/BHMA A156.26, Grade 1-600.
1. Listed under Category N in BHMA's "Certified Product Directory."
- B. General: Minimum 0.120-inch- (3.0-mm-) thick, hinge leaves with
minimum overall width of 4 inches (102 mm); fabricated to full height
of door and frame and to template screw locations; with components
finished after milling and drilling are complete
- C. Continuous, Barrel-Type Hinges: Hinge with knuckles formed around a
Teflon-coated 6.35mm (0.25-inch) minimum diameter pin that extends
entire length of hinge.
1. Base Metal for Exterior Hinges: Stainless steel.
 2. Base Metal for Interior Hinges: Aluminum.
 3. Base Metal for Hinges for Fire-Rated Assemblies: Stainless steel.
 4. Provide with non-removable pin (hospital tip option) at lockable
outswing doors.
 5. Where required to clear adjacent casing, trim, and wall conditions
and allow full door swing, provide wide throw hinges of minimum
width required.
 6. Provide with manufacturer's cut-outs for separate mortised power
transfers and/or mortised automatic door bottoms where they occur.
 7. Where thru-wire power transfers are integral to the hinge, provide
hinge with easily removable portion to allow easy access to wiring
connections.
 8. Where models are specified that provide an integral wrap-around edge
guard for the hinge edge of the door, provide manufacturer's
adjustable threaded stud and machine screw mechanism to allow the
door to be adjusted within the wrap-around edge guard.

2.3 DOOR CLOSING DEVICES

- A. Closing devices shall be products of one manufacturer for each type specified.

2.4 OVERHEAD CLOSERS

- A. Conform to ANSI A156.4, Grade 1.
- B. Closers shall conform to the following:
 - 1. The closer shall have minimum 50 percent adjustable closing force over minimum value for that closer and have adjustable hydraulic back check effective between 60 degrees and 85 degrees of door opening.
 - 2. Where specified, closer shall have hold-open feature.
 - 3. Size Requirements: Provide multi-size closers, sizes 1 through 6, except where multi-size closer is not available for the required application.
 - 4. Material of closer body shall be forged or cast.
 - 5. Arm and brackets for closers shall be steel, malleable iron or high strength ductile cast iron.
 - 6. Where closers are exposed to the exterior or are mounted in rooms that experience high humidity, provide closer body and arm assembly of stainless steel material.
 - 7. Closers shall have full size metal cover; plastic covers will not be accepted.
 - 8. Closers shall have adjustable hydraulic back-check, separate valves for closing and latching speed, adjustable back-check positioning valve, and adjustable delayed action valve.
 - 9. Provide closers with any accessories required for the mounting application, including (but not limited to) drop plates, special soffit plates, spacers for heavy-duty parallel arm fifth screws, bull-nose or other regular arm brackets, longer or shorter arm assemblies, and special factory templating. Provide special arms, drop plates, and templating as needed to allow mounting at doors with overhead stops and/or holders.
 - 10. Closer arms or backcheck valve shall not be used to stop the door from overswing, except in applications where a separate wall, floor, or overhead stop cannot be used.
 - 11. Provide parallel arm closers with heavy duty rigid arm.

12. Where closers are to be installed on the push side of the door, provide parallel arm type except where conditions require use of top jamb arm.
13. Provide all surface closers with the same body attachment screw pattern for ease of replacement and maintenance.
14. All closers shall have a 1 ½" (38mm) minimum piston diameter.

2.5 DOOR STOPS

- A. Conform to ANSI A156.16.
- B. Provide door stops wherever an opened door or any item of hardware thereon would strike a wall, column, equipment or other parts of building construction. For concrete, masonry or quarry tile construction, use lead expansion shields for mounting door stops.
- C. Where cylindrical locks with turn pieces or pushbuttons occur, equip wall bumpers Type L02251 (rubber pads having concave face) to receive turn piece or button.
- D. Provide floor stops (Type L02141 or L02161 in office areas; Type L02121 x 3 screws into floor elsewhere. Wall bumpers, where used, must be installed to impact the trim or the door within the leading half of its width. Floor stops, where used, must be installed within 4-inches of the wall face and impact the door within the leading half of its width.
- E. Where drywall partitions occur, use floor stops, Type L02141 or L02161 in office areas, Type L02121 elsewhere.
- F. Provide stop Type L02011, as applicable for exterior doors. At outswing doors where stop can be installed in concrete, provide stop mated to concrete anchor set in 76mm (3-inch) core-drilled hole and filled with quick-setting cement.
- G. Omit stops where floor mounted door holders are required and where automatic operated doors occur.
- H. Provide appropriate roller bumper for each set of doors (except where closet doors occur) where two doors would interfere with each other in swinging.
- I. Provide appropriate door mounted stop on doors in individual toilets where floor or wall mounted stops cannot be used.
- J. Provide overhead surface applied stop Type C02541, ANSI A156.8 on patient toilet doors in bedrooms where toilet door could come in contact with the bedroom door.

- K. Provide door stops on doors where combination closer magnetic holders are specified, except where wall stops cannot be used or where floor stops cannot be installed within 4-inches of the wall.
- L. Where the specified wall or floor stop cannot be used, provide concealed overhead stops (surface-mounted where concealed cannot be used).

2.6 OVERHEAD DOOR STOPS AND HOLDERS

- A. Conform to ANSI Standard A156.8. Overhead holders shall be of sizes recommended by holder manufacturer for each width of door. Set overhead holders for 110 degree opening, unless limited by building construction or equipment. Provide Grade 1 overhead concealed slide type: stop-only at rated doors and security doors, hold-open type with exposed hold-open on/off control at all other doors requiring overhead door stops.

2.7 LOCKS AND LATCHES

- A. Conform to ANSI A156.2. Locks and latches for doors 45 mm (1-3/4 inch) thick or over shall have beveled fronts. Lock cylinders shall have not less than seven pins. Cylinders for all locksets shall be removable core type. Cylinders shall be furnished with construction removable cores and construction master keys. Cylinder shall be removable by special key or tool. Construct all cores so that they will be interchangeable into the core housings of all mortise locks, rim locks, cylindrical locks, and any other type lock included in the Great Grand Master Key System. Disassembly of lever or lockset shall not be required to remove core from lockset. All locksets or latches on double doors with fire label shall have latch bolt with 19 mm (3/4 inch) throw, unless shorter throw allowed by the door manufacturer's fire label. Provide temporary keying device or construction core of allow opening and closing during construction and prior to the installation of final cores.
- B. In addition to above requirements, locks and latches shall comply with following requirements:
 - 1. Mortise Lock and Latch Sets: Conform to ANSI/BHMA A156.13. Mortise locksets shall be series 1000, minimum Grade 2. All locksets and latchsets shall have lever handles fabricated from cast stainless steel. Provide sectional (lever x rose) lever design matching Existing facility. No substitute lever material shall be accepted. All locks and latchsets shall be furnished with 122.55 mm (4-7/8-

- inch) curved lip strike and wrought box. At outswing pairs with overlapping astragals, provide flat lip strip with 21mm (7/8-inch) lip-to-center dimension. Lock function F02 shall be furnished with emergency tools/keys for emergency entrance. All lock cases installed on lead lined doors shall be lead lined before applying final hardware finish. Furnish armored fronts for all mortise locks. Where mortise locks are installed in high-humidity locations or where exposed to the exterior on both sides of the opening, provide non-ferrous mortise lock case.
2. Cylindrical Lock and Latch Sets: levers shall meet ADA (Americans with Disabilities Act) requirements. Cylindrical locksets shall be series 4000 Grade I. All locks and latchsets shall be furnished with 122.55 mm (4-7/8-inch) curved lip strike and wrought box. At outswing pairs with overlapping astragals, provide flat lip strip with 21mm (7/8-inch) lip-to-center dimension. Provide lever design to match design selected by Architect or to match existing lever design. Where two turn pieces are specified for lock F76, turn piece on inside knob shall lock and unlock inside knob, and turn piece on outside knob shall unlock outside knob when inside knob is in the locked position. (This function is intended to allow emergency entry into these rooms without an emergency key or any special tool.)
 3. Auxiliary locks shall be as specified under hardware sets and conform to ANSI A156.5.
 4. Privacy locks in non-mental-health patient rooms shall have an inside thumbturn for privacy and an outside thumbturn for emergency entrance. Single occupancy patient privacy doors shall typically swing out; where such doors cannot swing out, provide center-pivoted doors with rescue hardware (see HW-2B).

2.8 PUSH-BUTTON COMBINATION LOCKS

- A. ANSI/BHMA A156.13, Grade 1. Battery operated pushbutton entry.
- B. Construction: Heavy duty mortise lock housing conforming to ANSI/BHMA A156.13, Grade 1. Lever handles and operating components in compliance with the UFAS and the ADA Accessibility Guidelines. Match lever handles of locks and latchsets on adjacent doors.
- C. Special Features: Key override to permit a master keyed security system and a pushbutton security code activated passage feature to allow access without using the entry code.

2.9 ELECTROMAGNETIC LOCKS

- A. ANSI/BHMA A156.23; electrically powered, of strength and configuration indicated; with electromagnet attached to frame and armature plate attached to door. Listed under Category E in BHMA's "Certified Product Directory."
1. Type: Full exterior or full interior, as required by application indicated.
- B. Delayed-Egress Locks: BHMA A156.24
1. Means of Egress Doors: Lock releases within 15 seconds after applying a force not more than 15 lbf (67 N) for not more than 3 seconds, as required by NFPA 101.
2. Security Grade: Activated from secure side of door by initiating device.
3. Movement Grade: Activated by door movement as initiating device.
4. The lock housing shall not project more than 4-inches (101mm) from the underside of the frame head stop.

2.10 ELECTRIC STRIKES

- A. ANSI/ BHMA A156.31 Grade 1.
- B. General: Use fail-secure electric strikes at fire-rated doors.

2.11 KEYS

- A. Stamp all keys with change number and key set symbol. Furnish keys in quantities as follows:

Locks/Keys	Quantity
Cylinder locks	2 keys each
Cylinder lock change key blanks	100 each different key way
Master-keyed sets	6 keys each
Grand Master sets	6 keys each
Great Grand Master set	5 keys
Control key	2 keys

2.12 KEY CABINET

- A. ANSI Standard A156.5. Provide key cabinet made of cold rolled, 1.2 mm (0.0478 inch) thick furniture steel electro-welded. Doors shall have "no sag" continuous brass-pin piano type hinge and be equipped with chrome plated locking door handles, hook cam and mechanical pushbutton door lock. Key Cabinet and Key Control System shall accommodate all

keys for this project plus 25 percent. Provide minimum number of multiple cabinets where a single cabinet of largest size will not accommodate the required number of keys.

- B. Key tags shall consist of two sets: Permanent self-locking and loan key snaphook type with tag colors as follows: Red fiber marker of the permanent self-locking type approximately 32 mm (1-1/4 inch) in diameter engraved with the legend "FILE KEY MUST NOT BE LOANED." Also furnish for each hook a white cloverleaf key marker with snap-hooks engraved with the legend "LOAN KEY."
- C. The manufacturer of the lock cylinders and locks shall attach a key tag to keys of each lock cylinder and shall mark thereon the respective item number and key change number. Provide each group of keys in a key gathering envelope (supplied by Key Cabinet Manufacturer) in which the lock manufacturer shall include the following information: Item number, key change number and door number. The contractor shall furnish the Key Cabinet Manufacturer the hardware and keying schedules and change keys.
- D. The Key Cabinet Manufacturer shall set up a three-way cross index system, including master keys, listing the keys alphabetically, the hooks numerically and the key changes numerically on different colored index cards. Index cards shall be typewritten and inserted in a durable binder. Attach the keys to the two sets of numbered tags supplied with the cabinet. (The permanent tag and the loan key tag). Instruct the owner in proper use of the system. Install cabinet as directed by the Resident Engineer.

2.13 ARMOR PLATES, KICK PLATES, MOP PLATES AND DOOR EDGING

- A. Conform to ANSI Standard A156.6.
- B. Provide protective plates as specified below:
 - 1. Kick plates, mop plates and armor plates of metal, Type J100 series.
 - 2. Provide kick plates and mop plates where specified. Kick plates shall be 254 mm (10 inches) or 305 mm (12 inches) high. Mop plates shall be 152 mm (6 inches) high. Both kick and mop plates shall be minimum 1.27 mm (0.050 inches) thick. Provide kick and mop plates beveled on all 4 edges (B4E). On push side of doors where jamb stop extends to floor, make kick plates 38 mm (1-1/2 inches) less than width of door, except pairs of metal doors which shall have plates 25 mm (1 inch) less than width of each door. Extend all other kick and mop plates to within 6 mm (1/4 inch) of each edge of doors. Kick

- and mop plates shall butt astragals. For jamb stop requirements, see specification sections pertaining to door frames.
3. Kick plates and/or mop plates are not required on following door sides:
- a. Armor plate side of doors;
 - b. Exterior side of exterior doors;
 - c. Closet side of closet doors;
 - d. Both sides of aluminum entrance doors.
4. Armor plates for doors are listed under Article "Hardware Sets". Armor plates shall be thickness as noted in the hardware set, 875 mm (35 inches) high and 38 mm (1-1/2 inches) less than width of doors, except on pairs of metal doors. Provide armor plates beveled on all 4 edges (B4E). Plates on pairs of metal doors shall be 25 mm (1 inch) less than width of each door. Where top of intermediate rail of door is less than 875 mm (35 inches) from door bottom, extend armor plates to within 13 mm (1/2 inch) of top of intermediate rail. On doors equipped with panic devices, extend armor plates to within 13 mm (1/2 inch) of panic bolt push bar.
5. Provide stainless steel edge guards where so specified at wood doors. Provide mortised type instead of surface type except where door construction and/or ratings will not allow. Provide edge guards of bevel and thickness to match wood door. Provide edge guards with factory cut-outs for door hardware that must be installed through or extend through the edge guard. Provide full-height edge guards except where door rating does not allow; in such cases, provide edge guards to height of bottom of typical lockset armor front. Forward edge guards to wood door manufacturer for factory installation on doors.

2.14 EXIT DEVICES

- A. Conform to ANSI Standard A156.3. Exit devices shall be Grade 1; type and function are specified in hardware sets. Provide flush with finished floor strikes for vertical rod exit devices in interior of building. Trim shall have cast satin stainless steel lever handles of design similar to locksets, unless otherwise specified. Provide key cylinders for keyed operating trim and, where specified, cylinder dogging.

- B. Surface vertical rod panics shall only be provided less bottom rod; provide fire pins as required by exit device and door fire labels. Do not provide surface vertical rod panics at exterior doors.
- C. Concealed vertical rod panics shall be provided less bottom rod at interior doors, unless lockable or otherwise specified; provide fire pins as required by exit device and door fire labels. Where concealed vertical rod panics are specified at exterior doors, provide with both top and bottom rods.
- D. Where removable mullions are specified at pairs with rim panic devices, provide mullion with key-removable feature.
- E. At non-rated openings with panic hardware, provide panic hardware with key cylinder dogging feature.
- F. Exit devices for fire doors shall comply with Underwriters Laboratories, Inc., requirements for Fire Exit Hardware. Submit proof of compliance.

2.15 FLUSH BOLTS (LEVER EXTENSION)

- A. Conform to ANSI A156.16. Flush bolts shall be Type L24081 unless otherwise specified. Furnish proper dustproof strikes conforming to ANSI A156.16, for flush bolts required on lower part of doors.
- B. Lever extension manual flush bolts shall only be used at non-fire-rated pairs for rooms only accessed by maintenance personnel.
- C. Face plates for cylindrical strikes shall be rectangular and not less than 25 mm by 63 mm (1 inch by 2-1/2 inches).
- D. Friction-fit cylindrical dustproof strikes with circular face plate may be used only where metal thresholds occur.
- E. Provide extension rods for top bolt where door height exceeds 2184 mm (7 feet 2 inches).

2.16 THRESHOLDS

- A. Conform to ANSI A156.21, mill finish extruded aluminum, except as otherwise specified. In existing construction, thresholds shall be installed in a bed of sealant with ¼-20 stainless steel machine screws and expansion shields. In new construction, embed aluminum anchors coated with epoxy in concrete to secure thresholds. Furnish thresholds for the full width of the openings.
- B. For thresholds at elevators entrances see other sections of specifications.

- C. At exterior doors and any interior doors exposed to moisture, provide threshold with non-slip abrasive finish.
- D. Provide with miter returns where threshold extends more than 12 mm (0.5 inch) from frame face.

2.17 WEATHERSTRIPS (FOR EXTERIOR DOORS)

- A. Conform to ANSI A156.22. Air leakage shall not to exceed 0.50 CFM per foot of crack length (0.000774m³/s/m).

2.18 MISCELLANEOUS HARDWARE

- A. Access Doors (including Sheet Metal, Screen and Woven Wire Mesh Types): Except for fire-rated doors and doors to Temperature Control Cabinets, equip each single or double metal access door with Lock Type E76213, conforming to ANSI A156.5. Key locks as directed. Ship lock prepaid to the door manufacturer. Hinges shall be provided by door manufacturer.
- B. Mutes: Conform to ANSI A156.16. Provide door mutes or door silencers Type L03011 or L03021, depending on frame material, of white or light gray color, on each steel or wood door frame, except at fire-rated frames, lead-lined frames and frames for sound-resistant, lightproof and electromagnetically shielded doors. Furnish 3 mutes for single doors and 2 mutes for each pair of doors, except double-acting doors. Provide 4 mutes or silencers for frames for each Dutch type door. Provide 2 mutes for each edge of sliding door which would contact door frame.

2.19 FINISHES

- A. Exposed surfaces of hardware shall have ANSI A156.18, finishes as specified below. Finishes on all hinges, pivots, closers, thresholds, etc., shall be as specified below under "Miscellaneous Finishes." For field painting (final coat) of ferrous hardware, see Section 09 91 00, PAINTING.
- B. 626 or 630: All surfaces on exterior and interior of buildings, except where other finishes are specified.
- C. Miscellaneous Finishes:
 - 1. Hinges --exterior doors: 626 or 630.
 - 2. Hinges --interior doors: 652 or 630.
 - 3. Door Closers: Factory applied paint finish. Dull or Satin Aluminum color.
 - 4. Thresholds: Mill finish aluminum.
 - 5. Other primed steel hardware: 600.

D. Anti-microbial Coating: All hand-operated hardware (levers, pulls, push bars, push plates, paddles, and panic bars) shall be provided with an anti-microbial/anti-fungal coating that has passed ASTM E2180 tests. Coating to consist of ionic silver (Ag⁺). Silver ions surround bacterial cells, inhibiting growth of bacteria, mold, and mildew by blockading food and respiration supplies.

2.20 BASE METALS

A. Apply specified U.S. Standard finishes on different base metals as following:

Finish	Base Metal
652	Steel
626	Brass or bronze
630	Stainless steel

PART 3 - EXECUTION

3.1 HARDWARE HEIGHTS

A. For new buildings locate hardware on doors at heights specified below, with all hand-operated hardware centered within 864 mm (34 inches) to 1200 mm (48 inches), unless otherwise noted:

B. Hardware Heights from Finished Floor:

1. Exit devices centerline of strike (where applicable) 1024 mm (40-5/16 inches).
2. Locksets and latch sets centerline of strike 1024 mm (40-5/16 inches).
3. Deadlocks centerline of strike 1219 mm (48 inches).
4. Hospital arm pull 1168 mm (46 inches) to centerline of bottom supporting bracket.
5. Centerline of door pulls to be 1016 mm (40 inches).
6. Push plates and push-pull shall be 1270 mm (50 inches) to top of plate.
7. Push-pull latch to be 1024 mm (40-5/16 inches) to centerline of strike.
8. Locate other hardware at standard commercial heights. Locate push and pull plates to prevent conflict with other hardware.

3.2 INSTALLATION

A. Closer devices, including those with hold-open features, shall be equipped and mounted to provide maximum door opening permitted by building construction or equipment. Closers shall be mounted on side of

door inside rooms, inside stairs, and away from corridors. At exterior doors, closers shall be mounted on interior side. Where closers are mounted on doors they shall be mounted with sex nuts and bolts; foot shall be fastened to frame with machine screws.

B. Hinge Size Requirements:

Door Thickness	Door Width	Hinge Height
45 mm (1-3/4 inch)	900 mm (3 feet) and less	113 mm (4-1/2 inches)
45 mm (1-3/4 inch)	Over 900 mm (3 feet) but not more than 1200 mm (4 feet)	125 mm (5 inches)
35 mm (1-3/8 inch) (hollow core wood doors)	Not over 1200 mm (4 feet)	113 mm (4-1/2 inches)

C. Hinge leaves shall be sufficiently wide to allow doors to swing clear of door frame trim and surrounding conditions.

D. Where new hinges are specified for new doors in existing frames or existing doors in new frames, sizes of new hinges shall match sizes of existing hinges; or, contractor may reuse existing hinges provided hinges are restored to satisfactory operating condition as approved by Resident Engineer. Existing hinges shall not be reused on door openings having new doors and new frames. Coordinate preparation for hinge cut-outs and screw-hole locations on doors and frames.

E. Hinges Required Per Door:

Doors 1500 mm (5 ft) or less in height	2 butts
Doors over 1500 mm (5 ft) high and not over 2280 mm (7 ft 6 in) high	3 butts
Doors over 2280 mm (7 feet 6 inches) high	4 butts
Dutch type doors	4 butts
Doors with spring hinges 1370 mm (4 feet 6 inches) high or less	2 butts
Doors with spring hinges over 1370 mm (4 feet 6 inches)	3 butts

F. Fastenings: Suitable size and type and shall harmonize with hardware as to material and finish. Provide machine screws and lead expansion shields to secure hardware to concrete, ceramic or quarry floor tile, or solid masonry. Fiber or rawl plugs and adhesives are not permitted. All fastenings exposed to weather shall be of nonferrous metal.

G. After locks have been installed; show in presence of Resident Engineer that keys operate their respective locks in accordance with keying requirements. (All keys, Master Key level and above shall be sent Registered Mail to the Medical Center Director along with the bitting list. Also a copy of the invoice shall be sent to the Resident Engineer for his records.) Installation of locks which do not meet specified keying requirements shall be considered sufficient justification for rejection and replacement of all locks installed on project.

3.3 FINAL INSPECTION

- A. Installer to provide letter to VA Resident/Project Engineer that upon completion, installer has visited the Project and has accomplished the following:
1. Re-adjust hardware.
 2. Evaluate maintenance procedures and recommend changes or additions, and instruct VA personnel.
 3. Identify items that have deteriorated or failed.
 4. Submit written report identifying problems.

3.4 DEMONSTRATION

- A. Demonstrate efficacy of mechanical hardware and electrical, and electronic hardware systems, including adjustment and maintenance procedures, to satisfaction of Resident/Project Engineer and VA Locksmith.

3.5 HARDWARE SETS

- A. Following sets of hardware correspond to hardware symbols shown on drawings. Only those hardware sets that are shown on drawings will be required. Disregard hardware sets listed in specifications but not shown on drawings.
- B. Hardware Consultant working on a project will be responsible for providing additional information regarding these hardware sets. The numbers shown in the following sets come from BHMA standards.

HW-01

For use on mark/door #(s):

2505	2511	2513	2515	2519	2521
2523	2525	2527	2529	2509	2507

Each To Have:

Qty		Description	Catalog Number	Finish	Mfr
3	EA	HW HINGE	5BB1HW 5 X 4.5	652	IVE
1	EA	PASSAGE SET	MA101 DG	626	FAL
1	EA	SURFACE CLOSER	SC71 RW/PA	689	FAL
1	EA	KICK PLATE	8400 8" X 1 1/2" LDW B4E TEK CS	630	IVE
1	EA	WALL STOP	WS406/407CCV	630	IVE
1	EA	DOOR VIEWER	700	626	IVE
3	EA	SILENCER	SR64	GRY	IVE

HW-02

For use on mark/door #(s):

2563	2565
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Each To Have:

Qty		Description	Catalog Number	Finish	Mfr
6	EA	HW HINGE	5BB1HWBSC 5	652	IVE
2	EA	FIRE EXIT HARDWARE	F-25-V-EO-LBR	626	FAL
2	EA	SURFACE CLOSER	SC71 RW/PA	689	FAL
2	EA	KICK PLATE	8400 8" X 1 1/2" LDW B4E TEK CS	630	IVE
2	EA	FIRE/LIFE WALL MAG	SEM7830	689	LCN
1	SET	SEALS	5050CL	CLR	NGP

HW-04

For use on mark/door #(s):

2512	2541	2543
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Each To Have:

Qty		Description	Catalog Number	Finish	Mfr
2	EA	SPRING HINGE	3SP1 4.5 X 4.5	652	IVE
1	EA	HW HINGE	5BB1HW 4.5 X 4.5	652	IVE
1	EA	PRIVACY LOCK	MA311 DG	626	FAL
1	EA	KICK PLATE	8400 8" X 1 1/2" LDW B4E TEK CS	630	IVE
1	EA	WALL STOP	WS406/407CCV	630	IVE
3	EA	SILENCER	SR64	GRY	IVE

VAMC DES MOINES
COMMUNITY LIVING CENTER
COTTAGE 1

VA PROJECT NO. 636-123
SCHEMMER NO. 06054.032

AUGUST 2018
ADDENDUM 2

HW-05

For use on mark/door #(s):

2537 2517 S4-1 2510B 2522

Each To Have:

Qty		Description	Catalog Number	Finish	Mfr
3	EA	HW HINGE	5BB1HW 4.5 X 4.5	652	IVE
1	EA	POWER TRANSFER	EPT10	689	VON
1	EA	EU STOREOOM LOCK	MA881BB7-RX DG	626	FAL
1	EA	SURFACE CLOSER	SC71 RW/PA	689	FAL
1	EA	KICK PLATE	8400 8" X 1 1/2" LDW B4E TEK CS	630	IVE
1	EA	WALL STOP	WS406/407CCV	630	IVE
3	EA	SILENCER	SR64	GRY	IVE
1	EA	MULTITECH READER			
1	EA	DOOR CONTACT			
1		RISER			
1	EA	POWER SUPPLY			
1	EA	REQUEST TO EXIT			

HW-05A

For use on mark/door #(s):

2510A 2518 1-1

Each To Have:

Qty		Description	Catalog Number	Finish	Mfr
6	EA	HW HINGE	5BB1HW 4.5 X 4.5	652	IVE
1	EA	STOREROOM LOCK	MA581BB7 DG	626	FAL
2	EA	OH STOP	90S	630	GLY
2	EA	SURFACE CLOSER	SC71 RW/PA	689	FAL
2	EA	KICK PLATE	8400 8" X 1 1/2" LDW B4E TEK CS	630	IVE
6	EA	SILENCER	SR64	GRY	IVE

VAMC DES MOINES
COMMUNITY LIVING CENTER
COTTAGE 1

VA PROJECT NO. 636-123
SCHEMMER NO. 06054.032

AUGUST 2018
ADDENDUM 2

HW-05B

For use on mark/door #(s):

2520 2535 2533 2531 2516 2528
2551-1

Each To Have:

Qty		Description	Catalog Number	Finish	Mfr
3	EA	HW HINGE	5BB1HW 4.5 X 4.5	652	IVE
1	EA	STOREROOM LOCK	MA581BB7 DG	626	FAL
1	EA	SURFACE CLOSER	SC71 RW/PA	689	FAL
1	EA	KICK PLATE	8400 8" X 1 1/2" LDW B4E TEK CS	630	IVE
1	EA	OVERHEAD STOP	90S	630	GLY
1	SET	SEALS	5050CL	CLR	NGP

HW-06

For use on mark/door #(s):

2526 2545 2539 2552-1

Each To Have:

Qty		Description	Catalog Number	Finish	Mfr
3	EA	HW HINGE	5BB1HW 4.5 X 4.5	652	IVE
1	EA	ENTRY / OFFICE LOCK	MA541BB7 DG	626	FAL
1	EA	SURFACE CLOSER	SC71 RW/PA	689	FAL
1	EA	KICK PLATE	8400 8" X 1 1/2" LDW B4E TEK CS	630	IVE
1	EA	WALL STOP	WS406/407CCV	630	IVE
		OVERHEAD STOP (2552-1)			

AT 2552-1 PROVIDE THRESHOLD, DRIP CAP, AND DOOR SWEEP

HW-06B

For use on mark/door #(s):
2503

Each To Have:

Qty		Description	Catalog Number	Finish	Mfr
6	EA	HW HINGE	5BB1HW 4.5 X 4.5	652	IVE
1	EA	PASSAGE SET	MA101 DG	626	FAL
2	EA	SURFACE CLOSER	SC71 RW/PA	689	FAL
2	EA	KICK PLATE	8400 8" X 1 1/2" LDW B4E TEK CS	630	IVE
2	EA	OH STOP	90S	630	GLY
6	EA	SILENCER	SR64	GRY	IVE

HW-06C

For use on mark/door #(s):
2552-3 2510 2508 2552-4

Each To Have:

Qty		Description	Catalog Number	Finish	Mfr
6	EA	HW HINGE	5BB1HW 4.5 X 4.5	652	IVE
1	EA	PASSAGE SET	MA101 DG	626	FAL
2	EA	SURFACE CLOSER	SC71 RW/PA	689	FAL
2	EA	KICK PLATE	8400 8" X 1 1/2" LDW B4E TEK CS	630	IVE
2	EA	OH STOP	90S	630	GLY
6	EA	SILENCER	SR64	GRY	IVE

HW-08

For use on mark/door #(s):
2514 1-3

Each To Have:

Qty		Description	Catalog Number	Finish	Mfr
3	EA	HW HINGE	5BB1HW 4.5 X 4.5	652	IVE
1	EA	PASSAGE SET	MA101 DG	626	FAL

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1	EA	SURFACE CLOSER	SC71 RW/PA	689	FAL
1	EA	KICK PLATE	8400 8" X 1 1/2" LDW B4E TEK CS	630	IVE
1	EA	WALL STOP	WS406/407CCV	630	IVE
1	EA	OVERHEAD STOP(1-3)	90S	630	GLY
3	EA	SILENCER	SR64	GRY	IVE

HW-EXT2

For use on mark/door #(s):

2544-1 2546 C1-3E-1

Each To Have:

Qty		Description	Catalog Number	Finish	Mfr
2	EA	CONT. HINGE	112HD EPT	628	IVE
2	EA	SFIC CYLINDER	C953-B7	626	FAL
2	EA	OH STOP	90S	630	GLY
2	EA	SURF. AUTO OPERATOR	4642	689	LCN
2	EA	ACTUATOR, WALL MOUNT	8310-856	630	LCN
1	EA	DRIP CAP (2544-1 ONLY)	16A	CL	NGP
1	EA	DOOR SWEEP (2544-1 ONLY)	200NA	CL	NGP
1	EA	SADDLE THRESHOLD (2544-1 ONLY)	513	719	NGP
2	EA	DOOR SWITCH			
1		RISER			
1	EA	MAGLOCK			
1	EA	POWER SUPPLY			
1	EA	MULTITECH READER			
1	EA	KEY OVERRIDE			

HW-EXT2A

For use on mark/door #(s):

2562 2567

Each To Have:

Qty		Description	Catalog Number	Finish	Mfr
1	EA	CONT. HINGE	112HD EPT	628	IVE
1	EA	SFIC CYLINDER	C953-B7	626	FAL
1	EA	OH STOP	90S	630	GLY
1	EA	SURFACE CLOSER	SC71 RW/PA	689	FAL
1	EA	DRIP CAP	16A	CL	NGP
1	EA	DOOR SWEEP	200NA	CL	NGP
1	EA	SADDLE THRESHOLD	513	719	NGP
1	EA	MULTITECH READER			
1	EA	DOOR CONTACT			
1		RISER			
1	EA	MAGLOCK			
1	EA	POWER SUPPLY			
1	EA	KEY OVERRIDE			

HW-EXT2B

For use on mark/door #(s):
2549-1

Each To Have:

Qty		Description	Catalog Number	Finish	Mfr
2	EA	CONT. HINGE	112HD EPT	628	IVE
2	EA	ELEC FIRE EXIT HARDWARE	RX-EL-F-25-R-L-NL-DANE	626	FAL
2	EA	OH STOP	90S	630	GLY
2	EA	SURFACE CLOSER	SC71 RW/PA	689	FAL
1	EA	DRIP CAP	16A	CL	NGP
1	EA	DOOR SWEEP	200NA	CL	NGP
1	EA	SADDLE THRESHOLD	513	719	NGP
2	EA	DOOR CONTACT			
1		RISER			
2	EA	MAGLOCK			
1	EA	POWER SUPPLY			
2	EA	SURF. AUTO OPERATOR	4642	689	LCN
2	EA	ACTUATOR, WALL MOUNT	8310-856	630	LCN

HW-EXT2C

For use on mark/door #(s):
2544-2 2549-2 2549-3

Each To Have:

Qty		Description	Catalog Number	Finish	Mfr
2	EA	CONT. HINGE	112HD EPT	628	IVE
2	EA	SFIC CYLINDER	C953-B7	626	FAL
2	EA	OH STOP	90S	630	GLY
2	EA	SURF. AUTO OPERATOR	4642	689	LCN
2	EA	ACTUATOR, WALL MOUNT	8310-856	630	LCN
1	EA	DRIP CAP (2544-1 ONLY)	16A	CL	NGP
1	EA	DOOR SWEEP (2544-1 ONLY)	200NA	CL	NGP
1	EA	SADDLE THRESHOLD (2544-1 ONLY)	513	719	NGP
2	EA	DOOR SWITCH			
1		RISER			
1	EA	MAGLOCK			
1	EA	POWER SUPPLY			
1	EA	MULTITECH READER			
1	EA	KEY OVERRIDE			
1	EA	REQUEST TO EXIT			

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HW-EXT3A

MULTI TECH READER TO BE TIED INTO EXISTING ACCESS CONTROL SYSTEM.

For use on mark/door #(s):

1-2 S4-2

Each To Have:

Qty		Description	Catalog Number	Finish	Mfr
1	EA	CONT. HINGE	112HD EPT	628	IVE
1	EA	POWER TRANSFER	EPT10	689	VON
1	EA	ELEC FIRE EXIT HARDWARE	RX-EL-F-25-R-L-NL-DANE	626	FAL
1	EA	SFIC CYLINDER	C953-B7	626	FAL
1	EA	OH STOP	90S	630	GLY
1	EA	SURFACE CLOSER	SC71 RW/PA	689	FAL
1	EA	DRIP CAP	16A	CL	NGP
1	SET	SEALS	700EN	AL	NGP
1	EA	DOOR SWEEP	200NA	CL	NGP
1	EA	SADDLE THRESHOLD	513	719	NGP
1	EA	MULTITECH READER			
1	EA	DOOR CONTACT			
1	EA	POWER SUPPLY			
1		RISER			

- - - E N D - - -

SECTION 09 06 00
SCHEDULE FOR FINISHES

EXTERIOR FINISHES

THE FOLLOWING ARE BASIS OF DESIGN. SIMILAR PRODUCTS WILL BE CONSIDERED.

STONE

MANUFACTURED STONE VENEER

MANUFACTURER: CORONADO

STYLE: IDAHO DRYSTACK

COLOR: MADISON COUNTY

STONE CAP

SIZE: SEE WALL DETAILS FOR DIMENSIONS

COLOR: TO BE SELECTED BY ARCHITECT FROM MANUFACTURERS FULL RANGE OF COLORS
(INTEGRAL COLOR)

PREFINISHED CEMENTITIOUS SIDING

HORIZONTAL SIDING

MANUFACTURER: JAMES HARDIE

STYLE: SELECT CEDARMILL COLORPLUS

SIZE: 8.250"

COLOR: TO BE SELECTED BY ARCHITECT FROM MANUFACTURER'S FULL RANGE OF COLORS

VERTICAL SIDING

MANUFACTURER: JAMES HARDIE

STYLE: SMOOTH

SIZE:

COLOR: TO BE SELECTED BY ARCHITECT FROM MANUFACTURER'S FULL RANGE OF COLORS

SHINGLE SIDING

MANUFACTURER: JAMES HARDIE

STYLE: HARDIESHINGLE STRAIGHT EDGE PANEL

COLOR: TO BE SELECTED BY ARCHITECT FROM MANUFACTURER'S FULL RANGE OF COLORS

SOFFIT

MANUFACTURER: JAMES HARDIE

STYLE: VENTED SMOOTH

SIZE: 24" x 8'

COLOR: TO BE SELECTED BY ARCHITECT FROM MANUFACTURER'S FULL RANGE OF COLORS

TRIM

MANUFACTURER: JAMES HARDIE

STYLE: 4/4 HARDIE TRIM NT3 BOARDS SMOOTH

SIZE: HORIZONTAL TRIM TO BE 7.25". VERTICAL TRIM TO BE 5.5"

COLOR: TO BE SELECTED BY ARCHITECT FROM MANUFACTURER'S FULL RANGE OF COLORS

ROOF

SLATE STYLE METAL ROOF

MANUFACTURER: CERTAINTED MATTERNHORN

STYLE: SLATE

COLOR: TO BE SELECTED BY ARCHITECT FROM MANUFACTURERS FULL RANGE OF COLORS

EPDM ROOF

SEE SPECS

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ASPHALT SHINGLE (ALT. DEDUCT #7)

MANUFACTURER: CERTAINTEED

STYLE: LANDMARK

COLOR: TO BE SELECTED BY ARCHITECT FROM MANUFACTURER FULL RANGE OF COLORS

GUTTERS, DOWNSPOUTS & SCUPPERS

COLOR TO BE SELECTED FROM MANUFACTURERS FULL RANGE OF COLORS

WINDOWS

ALUMINUM FRAME: COLOR TO BE SELECTED BY ARCHITECT FROM MANUFACTURERS FULL RANGE OF COLORS

INTERIOR FINISHES

THE FOLLOWING ARE BASIS OF DESIGN. SIMILAR PRODUCTS WILL BE CONSIDERED.

WALLS

P-1

MANUFACTURER: SHERWIN WILLIAMS

COLOR: KILIM BEIGE 6106

P-2

MANUFACTURER: SHERWIN WILLIAMS

COLOR: EMPIRE GOLD 0012

P-3

MANUFACTURER: SHERWIN WILLIAMS

COLOR: INTELLECTUAL GRAY 7045

P-4

MANUFACTURER: SHERWIN WILLIAMS

COLOR: RETREAT 6207

P-5

MANUFACTURER: SHERWIN WILLIAMS

COLOR: ANONYMOUS 7046

P-6

MANUFACTURER: SHERWIN WILLIAMS

COLOR: LATTE 6108

(ALL INTERIOR HM DOOR FRAMES)

CT-2

MANUFACTURER: AMERICAN OLEAN

STYLE: ABOUND

SIZE: 10"x14"

INSTALLATION: BRICK JOINT

COLOR: BILLOW; GROUT TO BE SELECTED BY ARCH FROM MANUFACTURER'S FULL LINE OF COLORS

CT-3

MANUFACTURER: AMERICAN OLEAN

STYLE: ABOUND

COLOR: BILLOW

SIZE: 2x4 STRAIGHT STACK MOSAIC

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RES-1

MANUFACTURER: STONHARD
STYLE: STONGLAZE VSD
COLOR: BEIGE

FLOORS

CPT-1

MANUFACTURER: J+J INVISION
STYLE: MEADOW 7097
INSTALLATION: MONOLITHIC
COLOR: SHADOW 2097
NOTE: PROVIDE 25 EXTRA CARPET TILE

CPT-2

(NOT USED)

CPT-3

MANUFACTURER: J+J INVISION
STYLE: CHROMA
SIZE: 24"x24"
COLOR: TO BE SELECTED BY ARCHITECT FROM MANUFACTURER'S FULL RANGE OF COLORS
NOTE: PROVIDE 10 EXTRA CARPET TILE

CPT-4

MANUFACTURER: J+J INVISION
STYLE: RUNWAY II WALK-OFF
SIZE: 24"x24"
COLOR: UMBER CHIC
NOTE: PROVIDE 5 EXTRA CARPET TILE

SV-1

MANUFACTURER: TEKNOFLOR
STYLE: FORESTSCAPES / NATURAL COLLECTION
COLOR: BEECHNUT 52209

VCT-1

MANUFACTURER: MANNINGTON COMMERCIAL
STYLE: PROGRESSIONS
COLOR: ALMOND BUFF

CT-1

MANUFACTURER: AMERICAN OLEAN
STYLE: ABOUND
SIZE: 12"x12"
COLOR: BILLOW; GROUT TO BE SELECTED BY ARCHITECT FROM MANUFACTURER'S FULL LINE OF COLORS

RES-2

MANUFACTURER: STONHARD
STYLE: STONCLAD UR
COLOR: BEECHWOOD

SC

SEALED CONCRETE

BASE

VB-1

MANUFACTURER: JOHNSONITE
STYLE: TRADITIONAL
SIZE: 4"
COLOR: TO BE SELECTED BY ARCHITECT FROM MANUFACTURER'S FULL RANGE

CEILING

ATC-1

MANUFACTURER: ARMSTRONG
STYLE: FINE FISSURED
EDGE: ANGLED TEGULAR
SIZE: 24"x24"x5/8"
COLOR: WHITE

ATC-2

MANUFACTURER: ARMSTRONG
STYLE: CERAMAGUARD
EDGE: SQUARE
SIZE: 24"x24"x15/16"
COLOR: WHITE

ATC-3

MANUFACTURER: ARMSTRONG
STYLE: WOODWORKS TEGULAR UNPERFORATED 5404W1
SIZE: 24"x24"x3/4"
VENEER: TO BE SELECTED BY ARCHITECT FROM NATURAL VARIATIONS OR CONSTANTS

CASEWORK

WOOD CABINETS (WD)

MANUFACTURER: SMART CABINETRY
STYLE: BRIGHTON
COLOR: TO BE SELECTED BY ARCHITECT FROM MANUFACTURERS FULL LINE OF COLORS

PLASTIC LAMINATE CABINETS (PL-1)

PLAM MANUFACTURER: WILSONART (CASEWORK BY OTHERS)
COLOR: WILD CHERRY 7054-6

PLASTIC LAMINATE COUNTERTOPS (PL-2)

MANUFACTURER: WILSONART
COLOR: NATURAL TIGRIS 4669-60

SOLID SURFACE

SS-1 (COUNTERTOPS)

MANUFACTURER: CORIAN
COLOR: SAGEBRUSH

SS-2 (SINKS & WINDOW SILLS)

MANUFACTURER: CORIAN
COLOR: BISQUE

WALL PROTECTION

WP-1 (CHAIR RAIL/RUBSTRIP)

MANUFACTURER: CS ACROVYN
STYLE: RUBSTRIP (HEIGHT TO MATCH WP-2)
COLOR: CAPPUCCINO

WP-2 (CHAIR RAIL/HANDRAIL)

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MANUFACTURER: CS ACROVYN
STYLE: HRB-10CN; TOP OF HANDRAIL @ 2'-10" AFF
COLOR: CLASSIC MAPLE (HORIZONTAL ACCENT TO MATCH)

WP-3 (CRASH RAIL)
MANUFACTURER: CS ACROVYN
STYLE: SCR-40N; TOP OF RAIL @ 1'-0" AFF
COLOR: IRISH CREAM

WP-4 (WALL PANEL)
MANUFACTURER: CS ACROVYN
STYLE: RUBSTRIP (SEE INTERIOR ELEV FOR HEIGHT)
COLOR: IRISH CREAM

WP-5
NOT USED

WP-6 (@ BASE OF INTERIOR COLUMNS & BASE OF FIREPLACE)
MANUFACTURER: CS ACROVYN
STYLE: SARATOGA SYSTEM INCLUDING: SMOOTH SHEETS, WAINSCOT TRIM, MITERED WALL
BASE, AND OUTSIDE VERTICAL TRIM.
SIZE: 6" BASE, 4" TOP CAP, 2" VERTICAL TRIM. HORIZONTAL TRIM PIECES TO BE
1/2" THICK. VERTICAL TRIM PIECES TO BE 3/8" THICK.
COLOR: GALVESTON GRAY

FRP-1
MANUFACTURER: PANOLAM INDUSTRIES
STYLE: FRP EMBOSSED FINISH
COLOR: BEIGE
TRIM: BEIGE PVC (SEALED)

CG (CORNER GUARD)
MANUFACTURER: CS ACROVYN
STYLE: SM-20N; 4'-0" HEIGHT (MOUNTED AT TOP OF VB)
COLOR: IRISH CREAM

C-1 (SHOWER CURTAIN)
MANUFACTURER: INPRO
PATTERN: RIPPLE, SHIELD ANTIMICROBIAL FABRIC
COLOR: TO BE SELECTED BY ARCHITECT FROM MANUFACTURER'S FULL RANGE OF COLORS

--- E N D---

SECTION 09 65 13
RESILIENT BASE AND ACCESSORIES

PART 1 - GENERAL

1.1 DESCRIPTION

This section specifies the installation of vinyl or rubber base and resilient stair treads with sheet rubber flooring on landings.

1.2 RELATED WORK

- A. Color and texture: Section 09 06 00, SCHEDULE FOR FINISHESS.
- B. Integral base with sheet flooring: Section 09 65 16, RESILIENT SHEET FLOORING.

1.3 SUBMITTALS

- A. Submit in accordance with Section 01 33 23, SHOP DRAWINGS, PRODUCT DATA, AND SAMPLES.
- B. Manufacturer's Literature and Data:
 - 1. Description of each product.
 - 2. Base and stair material manufacturer's recommendations for adhesives.
 - 3. Application and installation instructions.
- C. Samples:
 - 1. Base: 150 mm (6 inches) long, each type and color.
 - 2. Resilient Stair Treads: 150 mm (6 inches) long.
 - 3. Adhesive: Literature indicating each type.

1.4 DELIVERY

- A. Deliver materials to the site in original sealed packages or containers, clearly marked with the manufacturer's name or brand, type and color, production run number and date of manufacture.
- B. Materials from containers which have been distorted, damaged or opened prior to installation will be rejected.

1.5 STORAGE

- A. Store materials in weather tight and dry storage facility.
- B. Protect material from damage by handling and construction operations before, during, and after installation.

1.6 APPLICABLE PUBLICATIONS

- A. The publication listed below form a part of this specification to the extent referenced. The publications are referenced in the text by the basic designation only.
- B. American Society for Testing and Materials (ASTM):
 - F1344-10.....Rubber Floor Tile
 - F1859-10.....Rubber Sheet Floor Covering without Backing
 - F1860-10.....Rubber Sheet Floor Covering with Backing
 - F1861-08.....Resilient Wall Base
- C. Federal Specifications (Fed. Spec.):

RR-T-650E.....Treads, Metallic and Non-Metallic, Nonskid

PART 2 - PRODUCTS

2.1 GENERAL

Use only products by the same manufacturer and from the same production run.

2.2 RESILIENT BASE

- A. ASTM F1861, 3 mm (1/8 inch) thick, 100 mm (4 inches) high, Thermoplastics, Group 2-layered. Style B-cove.
- B. Where carpet occurs, use Style A-straight.
- C. Use only one type of base throughout.

2.4 PRIMER (FOR CONCRETE FLOORS)

As recommended by the adhesive and tile manufacturer.

2.5 LEVELING COMPOUND (FOR CONCRETE FLOORS)

Provide products with latex or polyvinyl acetate resins in the mix.

2.6 ADHESIVES

- A. Use products recommended by the material manufacturer for the conditions of use.
- B. Use low-VOC adhesive during installation. Water based adhesive with low VOC is preferred over solvent based adhesive.

PART 3 - EXECUTION

3.1 PROJECT CONDITIONS

- A. Maintain temperature of materials above 21° C (70 °F), for 48 hours before installation.
- B. Maintain temperature of rooms where work occurs, between 21° C and 27° C (70°F and 80°F) for at least 48 hours, before, during, and after installation.
- C. Do not install materials until building is permanently enclosed and wet construction is complete, dry, and cured.

3.2 INSTALLATION REQUIREMENTS

- A. The respective manufacturer's instructions for application and installation will be considered for use when approved by the Resident Engineer.
- B. Submit proposed installation deviation from this specification to the Resident Engineer indicating the differences in the method of installation.
- C. The Resident Engineer reserves the right to have test portions of material installation removed to check for non-uniform adhesion and spotty adhesive coverage.

3.3 PREPARATION

- A. Examine surfaces on which material is to be installed.
- B. Fill cracks, pits, and dents with leveling compound.
- C. Level to 3 mm (1/8 inch) maximum variations.
- D. Do not use adhesive for leveling or filling.
- E. Grind, sand, or cut away protrusions; grind high spots.
- F. Clean substrate area of oil, grease, dust, paint, and deleterious substances.
- G. Substrate area dry and cured. Perform manufacturer's recommended bond and moisture test.
- H. Preparation of existing installation:
 - 1. Remove existing base and stair treads including adhesive.
 - 2. Do not use solvents to remove adhesives.
 - 3. Prepare substrate as specified.

3.4 BASE INSTALLATION

- A. Location:
 - 1. Unless otherwise specified or shown, where base is scheduled, install base over toe space of base of casework, lockers, laboratory, pharmacy furniture island cabinets and where other equipment occurs.
 - 2. Extend base scheduled for room into adjacent closet, alcoves, and around columns.
- B. Application:
 - 1. Apply adhesive uniformly with no bare spots.
 - 2. Set base with joints aligned and butted to touch for entire height.
 - 3. Before starting installation, layout base material to provide the minimum number of joints with no strip less than 600 mm (24 inches) length.
 - a. Short pieces to save material will not be permitted.
 - b. Locate joints as remote from corners as the material lengths or the wall configuration will permit.
- C. Form corners and end stops as follows:
 - 1. Score back of outside corner.
 - 2. Score face of inside corner and notch cove.
- D. Roll base for complete adhesion.

3.6 CLEANING AND PROTECTION

- A. Clean all exposed surfaces of base and adjoining areas of adhesive spatter before it sets.
- B. Keep traffic off resilient material for at least 72 hours after installation.

C. Clean and polish materials in the following order:

1. After two weeks, scrub resilient base, sheet rubber and treads materials with a minimum amount of water and a mild detergent. Leave surfaces clean and free of detergent residue. Polish resilient base to a gloss finish.

2. Do not polish tread and sheet rubber materials.

D. When construction traffic is anticipated, cover tread materials with reinforced kraft paper and plywood or hardboard properly secured and maintained until removal is directed by the Resident Engineer.

E. Where protective materials are removed and immediately prior to acceptance, replace damaged materials and re-clean resilient materials. Damaged materials are defined as having cuts, gouges, scrapes or tears and not fully adhered.

- - - E N D - - -

SECTION 12 31 00
MANUFACTURED METAL CASEWORK

PART 1 - GENERAL

1.1 DESCRIPTION:

- A. This section specifies metal shelves.

1.2 RELATED WORK:

- A. Sealants: Section 07 92 00, JOINT SEALANTS.
B. Backing Plates for Wall Mounted Casework: Section 09 22 16,
NON-STRUCTURAL METAL FRAMING.

1.3 QUALITY ASSURANCE:

- A. Approval by Contracting Officer Representative (COR) is required of manufacturer and installer based upon certification of qualifications specified.
- B. Manufacturer's Qualifications:
1. Manufacturer is regularly engaged in design and manufacture of metal of scope and type similar to requirements of this project for a period of not less than five (5) years.
 2. Manufacturer has successfully completed at least three (3) projects of scope and type similar to requirements of this project.
 3. Submit manufacturer's qualifications and list of projects.
- C. Installer Qualifications:
1. Installer has completed at least three (3) projects in least five (5) years in which these products were installed.
 2. Submit installer qualifications.

1.4 SUBMITTALS:

- A. Submit in accordance with Section 01 33 23, SHOP DRAWINGS, PRODUCT DATA, AND SAMPLES.
- B. Certificates:
1. Manufacturer's Certificate of qualifications specified.
 2. Certificate of installer's qualifications specified.
- C. Manufacturer's Literature and Data:
1. Brochures showing name and address of manufacturer, and catalog or model number of each item incorporated into the work.
 2. Manufacturer's illustration and detailed description.
 3. List of deviations from contract specifications.
 4. Locks, each kind.
- D. Shop Drawings (1/2 Full Scale):

1. Showing details of casework construction, including kinds of materials and finish, hardware, accessories and relation to finish of adjacent construction, including specially fabricated items or components.
2. Fastenings and method of installation.
3. Location of service connections and access.

E. Samples:

1. Metal plate, 152 mm (6 inch) square, showing chemical resistant finish, in each color.

F. Manufacturer's warranty.

1.5 WARRANTY:

- A. Construction Warranty: Comply with FAR clause 52.246-21 "Warranty of Construction".
- B. Manufacturer Warranty: Manufacturer shall warranty their wood casework for a minimum of five (5) years from date of installation and final acceptance by the Government. Submit manufacturer warranty.

1.6 APPLICABLE PUBLICATIONS:

- A. Publications listed below form a part of this specification to extent referenced. Publications are referenced in the text by basic designation only.
- B. American Society for Testing and Materials (ASTM):
 - A36/A36M-14.....Carbon Structural Steel
 - A240/A240M-14.....Chromium and Chromium-Nickel Stainless Steel Plate, Sheet, and Strip for Pressure Vessels and for General Applications
 - A283/A283M-13.....Low and Intermediate Tensile Strength Carbon Steel Plates
 - A568/A568M-14.....Steel, Sheet, Carbon and High-Strength, Low-Alloy Hot-Rolled and Cold-Rolled, General Requirements
 - A794/A794M-12.....Standard Specification for Commercial Steel (CS), Sheet, Carbon (0.16% Maximum to 0.25% Maximum) Cold Rolled
 - B456-11.....Electrodeposited Coatings of Copper Plus Nickel Plus Chromium and Nickel Plus Chromium
 - C1036-11(R2012).....Flat Glass
 - C1036-12e1.....Heat-Strengthened and Fully Tempered Flat Glass

- C1172-14.....Laminated Architectural Flat Glass
- C. American National Standard Institute:
Z97.1-09(R2010).....Safety Glazing Material used In Buildings
- D. Builders Hardware Manufacturers Association (BHMA):
A156.1-13.....Butts and Hinges
A156.9-10.....Cabinet Hardware
A156.5-14.....Auxiliary Locks and Associated Products
A156.11-14.....Cabinet Locks
A156.16-13.....Auxiliary Hardware
- E. American Welding Society (AWS):
D1.1/D1.1M-10.....Structural Welding Code Steel
D1.3/D1.3M-05(R2008)....Structural Welding Code Sheet Steel
- F. National Association of Architectural Metal Manufacturers (NAAMM):
AMP 500 Series.....Metal Finishes Manual
- G. U.S. Department of Commerce, Product Standard (PS):
PS 1-09.....Construction and Industrial Plywood
- H. Underwriters Laboratories Inc. (UL):
325-06(R2013).....Door, Drapery, Gate, Louver, and Window
Operators and Systems
437-08(R2013).....Key Locks
- I. Federal Specifications (Fed. Spec.):
A-A-55615.....Shield, Expansion; Nail Expansion (Wood Screw
and Lag Bolt Self-Threading Anchors)
- J. Scientific Equipment and Furniture Association (SEFA):
2.3-10.....Installation of Scientific Laboratory Furniture
and Equipment

PART 2 - PRODUCTS

2.1 MATERIALS:

- C. Stainless Steel: ASTM A240/A240M, Type 302B.
- H. Fasteners:
1. Exposed to View: Chrome plated steel or stainless steel, or finished to match adjacent surface.
 2. Provide round head or countersunk fasteners where exposed in cabinets.
 3. Expansion Bolts: Fed Spec. A-A-55615. Do not provide lead or plastic shields.
 4. Nuts: Fed Spec FF-N-836. Type III, Style 15 where exposed.

5. Sex Bolts: Capable of supporting twice the load.

2.2 MANUFACTURED PRODUCTS:

- A. When two (2) or more units are required, use products of one (1) manufacturer.
- B. Manufacturer of casework assemblies is to assume complete responsibility for the final assembled unit.
- C. Provide products of a single manufacturer for parts which are alike.

2.3 CASEWORK FABRICATION:

A. General:

- 1. Welding: Comply with AWS Standards D1.1/D1.1M and D1.3/D1.3M.
- 2. Reinforce with angles, channels, and gussets to support intended loads, notch tightly, fit and weld joints.
- 3. Constructed of sheet steel, except where reinforcing required.

B. Minimum Steel Thickness:

0.89 mm (0.035 inch) (20 gage)	Drawer fronts, backs, bodies, closure plates or scribe and filler strips less than 75 mm (3 inches) wide, sloping top, shelf reinforcement channel and shelves. Toe space or casework soffits and ceilings under sloping tops.
1.20 mm (0.047 inch) (18 gage)	Base pedestals, casework top sides, back, and bottom panels, closure scribe and filler strips 75 mm (3 inches) or more. Reinforcement for drawers with locks. Tables legs, spreaders and stretchers, when fabricated of cold rolled tubing. Metal for desks; except legs and aprons. Door exterior and interior panels, flush or glazed. Cross rails of base units. Front bottom rails, back bottom rails; rails may be 1.49 mm (0.059 inch) (16 gage) thick. Uprights or posts. Top corner gussets.
1.49 mm (0.059 inch) (16 gage)	Aprons, apron division, reinforcing gussets, table legs, desk legs and aprons, spreaders and stretchers when formed without welding. Toe base gussets, drawer slides, and other metal work. Front top rails and back rails except top back rails may be 1.2 mm (0.047 inch) (18 gage) thick.
1.88 mm (0.074 inch) (14 gage)	Drawer runners door tracks.
2.64 mm (0.104 inch) (12 gage)	Base unit bottom corner gussets and leg sockets.

3 mm Reinforcement for hinge reinforcement inside doors
(0.12 inch) and cabinets.
(11 gage)

C. Shelves:

1. Capable of supporting an evenly distributed minimum load of 122 kg per square meter (25 pounds per square foot) without visible distortion.
2. Flange shelves down 19 mm (3/4 inch) on edges, with front and bearing edges flanged back 13 mm (1/2 inch).
3. For shelves over 1067 mm (42 inches) in length and over 305 mm (12 inches) in depth install 38 mm by 13 mm by 0.9 mm (1 1/2 x 1/2 x 0.0359 inch) thick sheet steel hat channel reinforcement welded to underside midway between front and back and extending full length of shelf.
4. Weld shelves to metal back and ends unless shown on construction documents as adjustable.
5. Provide means of positive locking shelf in position, and to permit adjustment without use of tools.
6. At pharmacy with sloping shelf, provide 13 mm (1/2 inch) wide clear acrylic plastic raised edge, 3 mm (1/8 inch) thick, secured to front edge of shelf.

I. Closures and Filler Strips at Pipe Spaces:

1. Flat steel strips or plates.
2. Openings less than 203 mm (8 inches) wide: 1.2 mm (0.047 inch) thick.
3. Openings more than 203 mm (8 inches wide 0.9 mm (0.359 inches) wide.

2.5 HARDWARE:

- A. Factory installed.
- B. Exposed hardware, except as specified otherwise, satin finished chromium plated brass or nickel plated brass or anodized aluminum.
 1. Shelf Supports:
 - a. Install in casework where adjustable shelves are noted on construction documents.
 - b. Adjustable Shelf Standards: B04061 with shelf rest B04081.
 - c. Vertical Slotted Shelf Standard: B04102 with shelf brackets B04112 sized for shelf depth.

2.6 METAL FINISHES:

- A. Comply with NAAMM AMP 500 series and as specified.
- B. Steel Cabinets including Closures and Filler Strips:
 - 1. Acid resisting finish except hardware and stainless steel.
 - 2. After fabrication of cabinet submerge in a degreasing bath, and thoroughly rinse to remove dirt and grease, and other foreign matter.
 - 3. Apply non-metallic phosphate coating, then finish with baked-on acid resisting enamel not less than 1 mil (0.001 inch) thick.
 - 4. Finish resistant to action of the following reagents when 0.5 cm³ (10 drops) are applied to the surface and left open to the atmosphere for period of one (1) hour.

Hydrochloric Acid 37 percent	Ethyl Alcohol
Phosphoric Acid 75 percent	Methylethyl Keytone
Sulfuric Acid 25 percent	Acetone
Glacial Acetic Acid	Ethyl Acetate
Sodium Hydroxide 10 percent	Ethyl Ether
Sodium Hydroxide (concentrated)	Carbon Tetrachloride
Hydrogen Peroxide 5 percent	Xylene
Formaldehyde 37 percent	Phenol 85 Percent

- E. Stainless Steel: Mechanical finish No. 4 on sheet except No. 7 on tubing.

2.8 PRODUCTS OF OTHER COMPONENTS DIRECTLY RELATED TO CASEWORK:

- A. Refer to Section 07 92 00, JOINT SEALANTS for work related to sealants used in conjunction with joints of countertops, casework systems, and adjacent materials.
- B. Refer to Section 09 22 16, NON-STRUCTURAL METAL FRAMING for backing plates used in conjunction with wall assemblies for the attachment of casework systems.

PART 3 - EXECUTION

3.1 COORDINATION:

- A. Begin only after work of other trades is complete, including wall and floor finish completed, ceilings installed, light fixtures and diffusers installed and connected, and area free of trash and debris.

- B. Verify location and size of mechanical and electrical services as required and perform cutting of components of work installed by other trades.
- C. Verify reinforcement of walls and partitions for support and anchorage of casework.
- D. Coordinate with other Divisions and Sections of the specification for work related to installation of casework systems to avoid interference and completion of service connections.

3.2 INSTALLATION:

- A. Install casework in accordance with manufacturer's written instructions
 - 1. Install in available space; arranged for safe and convenient operation and maintenance.
 - 2. Align cabinets for flush joints except where shown otherwise on construction documents.
 - 3. Install with bottom of wall cabinets in alignment and tops of base cabinets aligned level, plumb, true, and straight to a tolerance of 3.2 mm in 2438 mm (1/8 inch in 96 inches).
 - 4. Install corner cabinets with hinges on corner side with filler or spacers sufficient to allow opening of drawers.
- B. Support Rails:
 - 1. Install true to horizontal at heights shown on construction documents; maximum tolerance for uneven floors is plus or minus 13 mm (1/2 inch).
 - 2. Shim as necessary to accommodate variations in wall surface not exceeding 5 mm (3/16 inch) at fastener.
- C. Wall Strips:
 - 1. Install true to vertical and spaced as shown on construction documents.
 - 2. Align slots to assure that hanging units will be level.
- D. Plug Buttons:
 - 1. Install plug buttons in predrilled or prepunched perforations not used.
 - 2. Use chromium plate plug buttons or buttons finish to match adjacent surfaces.
- E. Seal junctures of casework systems with mildew-resistant silicone sealants as specified in Section 07 92 00, JOINT SEALANTS.

3.3. CLOSURES AND FILLER PLATES:

- A. Close openings larger than 6 mm (1/4 inch) wide between cabinets and adjacent walls with flat, steel closure strips, scribed to required contours, or machined formed steel fillers with returns, and secured with sheet metal screws to tubular or channel members of units, or bolts where exposed on inside.
- B. Where ceilings interfere with installation of sloping tops, omit sloping tops and provide flat steel filler plates.
- C. Secure filler plates to casework top members, unless shown otherwise on construction documents.
- D. Secure filler plates more than 152 mm (6 inches) in width top edge to a continuous 25 x 25 mm (1 x 1 inch) 0.889 mm (1/16 inch) thick steel formed steel angle with screws.
- E. Anchor angle to ceiling with toggle bolts.
- F. Install closure strips at exposed ends of pipe space and offset opening into concealed space.
- G. Finish closure strips and fillers with same finishes as cabinets.

3.4 FASTENINGS AND ANCHORAGE:

- A. Do not anchor to wood ground strips.
- B. Provide hat shape metal spacers where fasteners span gaps or spaces.
- C. Use 6 mm (1/4 inch) diameter toggle or expansion bolts, or other appropriate size and type fastening device for securing casework to walls or floor. Use expansion bolts shields having holding power beyond tensile and shear strength of bolt and breaking strength of bolt head.
- D. Use 6 mm (1/4 inch) diameter hex bolts for securing cabinets together.
- E. Use 6 mm (1/4 inch) by minimum 38 mm (1-1/2 inch) length lag bolt anchorage to wood blocking for concealed fasteners.
- F. Use not less than No. 12 or 14 wood screws with not less than 38 mm (1 1/2 inch) penetration into wood blocking.
- G. Space fastening devices 305 mm (12 inches) on center with minimum of three (3) fasteners in 915 or 1219 mm (3 or 4 foot) unit width.
- H. Anchor floor mounted cabinets with a minimum of four (4) bolts through corner gussets. Anchor bolts may be combined with or separate from leveling device.
- I. Secure cabinets in alignment with hex bolts or other internal fastener devices removable from interior of cabinets without special tools. Do not use fastener devices which require removal of tops for access.

- J. Where units abut end to end, anchor together at top and bottom of sides at front and back. Where units are back to back, anchor backs together at corners with hex bolts placed inconspicuously inside casework.
- K. Where type, size, or spacing of fastenings is not shown or specified on construction documents, show on shop drawings proposed fastenings and method of installation.

3.5 ADJUSTMENTS:

- A. Adjust equipment to insure proper alignment and operation.
- B. Replace or repair damaged or improperly operating materials, components or equipment.

3.6 CLEANING:

- A. Immediately following installation, clean each item, removing finger marks, soil and foreign matter resulting from work of this section.
- B. Remove from job site trash, debris and packing materials resulting from work of this section.
- C. Leave installed areas clean of dust and debris resulting from work of this section.

3.7 INSTRUCTIONS:

- A. Provide operational and cleaning manuals and verbal instructions in accordance with Article INSTRUCTIONS, SECTION 01 00 00, GENERAL REQUIREMENTS.
- B. Provide in service training both prior to and after facility opening. Coordinate in service activities with COR.
- C. Commencing at least seven (7) days prior to opening of facility, provide one (1) 4-hour day of on-site orientation and technical instruction on use and cleaning procedures application of products and systems specified herein.

- - - E N D - - -

**SECTION 22 40 00
PLUMBING FIXTURES**

PART 1 - GENERAL

1.1 DESCRIPTION

- A. Plumbing fixtures, associated trim and fittings necessary to make a complete installation from wall or floor connections to rough piping, and certain accessories.

1.2 RELATED WORK

- A. Sealing between fixtures and other finish surfaces: Section 07 92 00, JOINT SEALANTS.
- B. Flush panel access doors: Section 08 31 13, ACCESS DOORS AND FRAMES.
- C. Section 22 05 11, COMMON WORK RESULTS FOR PLUMBING.

1.3 SUBMITTALS

- A. Submit in accordance with Section 01 33 23, SHOP DRAWINGS, PRODUCT DATA, AND SAMPLES.
- B. Submit plumbing fixture information in an assembled brochure, showing cuts and full detailed description of each fixture.

1.4 APPLICABLE PUBLICATIONS

- A. The publications listed below form a part of this specification to the extent referenced. The publications are referenced in the text by the basic designation only.
- B. American National Standard Institute (ANSI):
The American Society of Mechanical Engineers (ASME):
A112.6.1M-1997(R2012)...Floor Affixed Supports for Off-the-Floor
Plumbing Fixtures for Public Use
A112.19.1M-2013Enameled Cast Iron Plumbing Fixtures
A112.19.2M-2013.....Vitreous China Plumbing Fixtures
A112.19.3-200).....Stainless Steel Plumbing Fixtures (Designed for
Residential Use)
- C. American Society for Testing and Materials (ASTM):
A276-2013aStainless and Heat-Resisting Steel Bars and
Shapes
WW-P-541-E/GENPlumbing Fixtures with Amendment 1
- D. National Association of Architectural Metal Manufacturers (NAAMM): NAAMM
AMP 500-505
Metal Finishes Manual (1988)
- E. American Society of Sanitary Engineers (ASSE):
1016-2011.....Performance Requirements for Individual
Thermostatic, Pressure Balancing and Combination
Pressure Balancing and Thermostatic Control
Valves for Individual Fixture Fittings

F. NSF International (NSF)

NSF/ANSI 14 (2013).....Plastics Piping System Components and Related
Materials

NSF/ANSI 61 (2013).....Drinking Water System Components - Health
Effects

NSF/ANSI 372 (2011).....Drinking Water System Components - Lead Content

G. American with Disabilities Act (A.D.A) Section 4-19.4 Exposed Pipes and
Surfaces

H. Environmental Protection Agency EPA PL 93-523 1974; A 1999) Safe
Drinking Water Act.

I. International Building Code, ICC IPC 2015.

PART 2 - PRODUCTS

2.1 MATERIALS

- A. Material or equipment containing a weighted average of greater than 0.25 percent lead shall not be used in any potable water system intended for human consumption, and shall be certified in accordance with NSF/ANSI 61 or NSF 372. Endpoint devices used to dispense water for drinking must meet the requirements of NSF/ANSI 61, Section 9.
- B. Plastic pipe, fittings, and solvent cement shall meet NSF/ANSI 14 and shall be NSF listed for the service intended.

2.2 STAINLESS STEEL

- A. Corrosion-resistant Steel (CRS):
 - 1. Plate, Sheet and Strip: CRS flat products shall conform to chemical composition requirements of any 300 series steel specified in ASTM A276.
 - 2. Finish: Exposed surfaces shall have standard polish (ground and polished) equal to NAAMM finish Number 4.
- B. Die-cast zinc alloy products are prohibited.

2.3 STOPS

- A. Provide lock-shield loose key or screw driver pattern angle stops, straight stops or stops integral with faucet, with each compression type faucet whether specifically called for or not, including sinks in wood and metal casework, laboratory furniture and pharmacy furniture. Locate stops centrally above or below fixture in accessible location.
- B. Furnish keys for lock shield stops to Resident Engineer.
- C. Supply from stops not integral with faucet shall be chrome plated copper flexible tubing or flexible stainless steel with inner core of non-toxic polymer.
- D. Supply pipe from wall to valve stop shall be rigid threaded IPS copper alloy pipe, i.e. red brass pipe nipple, chrome plated where exposed.
- E. Psychiatric Area: Provide stainless steel drain guard for all lavatories not installed in casework.

2.4 ESCUTCHEONS

Heavy type, chrome plated, with set screws. Provide for piping serving plumbing fixtures and at each wall, ceiling and floor penetrations in exposed finished locations and within cabinets and millwork.

2.5 LAMINAR FLOW CONTROL DEVICE

- A. Smooth, bright stainless steel or satin finish, chrome plated metal laminar flow device shall provide non-aeration, clear, coherent laminar flow that will not splash in basin. Device shall also have a flow control restrictor and have vandal resistant housing.
- B. Flow Control Restrictor:
 - 1. Capable of restricting flow from 1.5 gpm to 1.7 gpm for lavatories; 2.0 gpm to 2.2 gpm for sinks P-505 through P-520, P-524 and P-528; and 2.75 gpm to 3.0 gpm for dietary food preparation and rinse sinks or as specified.
 - 2. Compensates for pressure fluctuation maintaining flow rate specified above within 10 percent between 25 psi and 80 psi.
 - 3. Operates by expansion and contraction, eliminates mineral/sediment build-up with self-cleaning action, and is capable of easy manual cleaning.

2.6 CARRIERS

- A. ASME/ANSI A112.6.1M, lavatory, chair carrier for thin wall construction steel plate as detailed on drawing. All lavatory chair carriers shall be capable of supporting the lavatory with a 250-pound vertical load applied at the front of the fixture.
- B. Where lavatories or sinks are installed back-to-back and carriers are specified, provide one carrier to serve both fixtures in lieu of individual carriers. The drainage fitting of the back to back carrier shall be so constructed that it prevents the discharge from one fixture from flowing into the opposite fixture.

2.7 WATER CLOSETS

- A. (P-101) Water Closet (Floor Mounted, ANSI 112.19.2M, Figure 6)-office and industrial, elongated bowl, siphon jet 6 L (1.6 gallons) per flush, floor outlet. Top of rim shall be 435 mm to 438 mm (17 1/8 inches to 17 1/4 inches) above finished floor.
 - 1. Seat: Institutional/Industrial, extra heavy duty, chemical resistant, solid plastic, open front less cover for elongated bowls, integrally molded bumpers, concealed check hinge with stainless steel post. Seat shall be posture contoured body design. Color shall be white.
 - 2. Fittings and Accessories: Floor flange fittings-cast iron; Gasket-wax; bolts with chromium plated cap nuts and washers.

3. Flush valve: Large chloramines resistant diaphragm, semi-red brass valve body, exposed chrome plated, battery powered active infra-red sensor for automatic operation with courtesy flush button for manual operation, water saver design 6 L (1.6 gallons) per flush with maximum 10 percent variance, top spud connection, adjustable tailpiece, one-inch IPS screwdriver back check angle stop with vandal resistant cap, high back pressure vacuum breaker, and sweat solder adapter with cover tube and cast set screw wall flange. Set centerline of inlet 292 mm (11 1/2 inches) above rim. Seat bumpers shall be integral part of flush valve. Valve body, cover, tailpiece and control stop shall be in conformance with ASTM Alloy classification for semi-red brass.
- B. (P-102) Water Closet (Floor Mounted With Bedpan Washer ASME/ANSI A112.19.2M, Figure 6) floor outlet, with bed pan lugs-bedpan washer, flush valve operated, 6 L (1.6 gallons) per flush. Top of rim shall be 457 mm (18 inches) above finished floor. Provide standoff bracket support between studs for bedpan washer at height as recommended by manufacturer.
1. Seat: Institutional/Industrial, extra heavy duty, chemical resistant, solid plastic, open front less cover for elongated bowls, integrally molded bumpers, concealed check hinge with stainless steel post. Seat shall be posture contoured body design. Color shall be white.
 2. Fittings and Accessories: Floor Flange fittings-cast iron; gaskets-wax; bolts with chromium plated cap nuts and washers.
 3. Flush valve: Large chloramines resistant diaphragm, semi-red brass valve body, exposed chrome plated, battery powered active infra-red sensor for automatic operation with courtesy flush button for flush with maximum 10 percent variance, offset top spud connection, adjustable tailpiece, one-inch IPS screwdriver back check angle stop with vandal resistant cap, sweat solder adapter with cover tube and cast set screw wall flange, and high back pressure vacuum breaker. Valve body, cover, tailpiece and control stop shall be in conformance with ASTM Alloy classification for semi-red brass. Set centerline of inlet 673 mm (26 1/2 inches) above rim. Seat bumpers shall be set in wall behind fixture at proper contact height.
- C. (P-114) Bariatric Floor Mounted Water Closet ANSI 112.19.2M, Fully enclosed floor mounted with integral seat , siphon jet, 14 gage type 304 stainless steel construction with white enviro-glaze coating and hinged seat with cover, flush valve operated, top of rim 457 mm (18 inches) above floor. Rated for bariatric use.

1. Fittings and Accessories: Gaskets-neoprene, bolts with chromium plated cap nuts and washers.
2. Flush Valve: exposed chrome plated diaphragm type with low force ADA compliant dual flush oscillating bio-guard handle, 1.1 gallon/1.6 gallon per flush, seat bumper, integral screwdriver stop and vacuum breaker, escutcheon.

2.8 LAVATORIES

- A. Dimensions for lavatories are specified, Length by width (distance from wall) and depth.
- B. Brass components in contact with water shall contain no more than 3 percent lead content by dry weight.
- C. (P-415) Lavatory (Single Lever Handle, ASME/ANSI A112.19.2M, Figure 16) straight back, approximately 508 mm by 457 mm (20 inches by 18 inches) and a 102 mm (4 inches) minimum apron, first quality vitreous china. Punching for faucet on four-inch centers. Set rim 864 mm (34 inches) above finished floor.
 1. Faucet: Solid cast brass construction, vandal resistant, heavy duty, single lever handle, center set. Control shall be washerless ceramic disc mixing cartridge type. Provide laminar flow control device, adjustable hot water limit stop, and vandal proof screws.
 2. Drain: Cast or wrought brass with flat grid strainer, offset tailpiece, brass, chrome plated.
 3. Stops: Angle type. See paragraph 2.2. Stops
 4. Trap: Cast copper alloy, 38 mm by 32 mm (1 1/2 inches by 1 1/4 inches) P-trap. Adjustable with connected elbow and 1.4 mm thick (17 gauge) tubing extension to wall. Exposed metal trap surface and connection hardware shall be chrome plated with a smooth bright finish. Set trap parallel to the wall. Set trap parallel to wall.
 5. Provide cover for drain, stops and trap per A.D.A 4-19.4.
- D. (P-417) Lavatory (Counter Mounted ASME/ANSI A112.19.2M, Figure 25) vitreous china, self-rimming, approximately 483 mm (19 inches) in diameter with punching for faucet on 102 mm (4 inches) centers. Mount unit in countertop.
 1. Faucet: Solid cast brass construction, Single handle deck type, 203 mm (8 inches) maximum center, gooseneck spout with outlet 127 to 178 mm (5 to 7 inches) above rim, 152 mm (6 inches) lever handle. Control shall be washerless ceramic disc mixing cartridge type. Provide laminar flow control device, high temperature limit stop and vandal proof screws.
 2. Drain: Cast or wrought brass with flat grid strainer, offset tailpiece, chrome plated.

3. Stops: Angle type. See paragraph 2.2. Stops
4. Trap: Cast copper alloy, 38 mm by 32 mm (1 1/2 inches by 1 1/4 inches) P-trap, adjustable with connected elbow and 1.4 mm thick (17 gauge) tubing extension to wall. Set trap parallel to the wall. Exposed metal trap surface and connection hardware shall be chrome plated with a smooth bright finish.
5. Provide cover for drain, stops and trap per A.D.A 4-19.4.

2.9 SINKS AND LAUNDRY TUBS

- A. Dimensions for sinks and laundry tubs are specified, length by width (distance from wall) and depth.
- B. (P-502) Service Sink (Corner, Floor Mounted) stain resistant terrazzo, 711 mm by 711 mm by 305 mm (28 inches by 28 inches by 12 inches) with 152 mm (6 inches) drop front. Terrazzo, composed of marble chips and white Portland cement, shall develop compressive strength of 20684 kPa (3000 psi) seven days after casting. Provide extruded aluminum cap on front side.
 1. Faucet: Solid brass construction, combination faucet with replaceable monel seat, removable replacement unit containing all parts subject to wear, integral stops, mounted on wall above sink. Spout shall have a pail hook, 19 mm (3/4 inch) hose coupling threads, vacuum breaker, and top or bottom brace to wall. Four-arm handles on faucets shall be cast, formed, or drop forged copper alloy. Escutcheons shall be either forged copper alloy or CRS. Exposed metal parts, including exposed part under valve handle when in open position, shall have a smooth bright finish. Provide 914 mm (36 inches) hose with wall hook. Centerline of rough in is 1219 mm (48 inches) above finished floor.
 2. Drain: Seventy six millimeter (3 inches) cast brass drain with nickel bronze strainer.
 3. Trap: P-trap, drain through floor.
- C. (P-505) Clinic Service Sink (Flushing Rim, Wall Hung) approximately 508 mm by 635 mm (20 inches by 25 inches) by 203 mm (8 inches) deep. Support with ASME/ANSI A112. 6.1M chair carrier and secure with 10 mm (3/8 inch) bracket studs and nuts. Set sink with rim 762 mm (30 inches) above finished floor. Provide 762 mm (30 inches) CRS drainboard where required, without corrugations and with heavy duty CRS brackets.
 1. Faucet: Elbow control, wall hung, integral stops, single spout with 19 mm (3/4 inch) hose threaded outlet and pail hook, vacuum breaker and brace to wall. Outlet 356 mm to 381 mm (14 inches to 15 inches) from wall. Exposed metal parts shall be chromium plated with a smooth bright finish. Provide laminar flow control device.

2. Flush valve: Large diaphragm, semi-red brass body, Foot pedal operated, exposed chromium plated flush valve with screwdriver back check straight stop with cap, union outlet, street ells, elevated high pressure vacuum breaker, casing cover, 32 mm (1 1/4 inches) elbow flush connection from finished wall to 38 mm (1 1/2 inches) top spud. Spud coupling, wall and spud flanges.
 3. Bed Pan Washer: Mechanical pedal mixing valve, wall hung, with double self-closing pedal valve with loose key stops, renewable seats and supply from valve to nozzle with wall hook hose connection; 1219 mm (48 inches) of heavy duty rubber hose, with extended spray outlet elevated vacuum breaker, indexed lift up pedals having clearance of not more than 13 mm (1/2 inch) above the floor and not less than 356 mm (14 inches) from wall when in operation. Supply pipe from wall to valve stop shall be rigid, threaded, IPS copper alloy pipe. Exposed metal parts shall be chromium plated with a smooth bright finish. Provide valve plate for foot control. Provide inline laminar flow control device.
- D. (P-521) Laundry Tub (Plastic, Single Compartment with Legs) fiber reinforced plastic, single bowl with raised back, approximately 635 mm by 559 mm (25 inches by 22 inches) by 356 mm (14 inches) deep, with base and legs.
1. Faucets: Solid brass construction, combination faucet with replacement monel seat, removable replacement unit containing all parts subject to wear, vacuum breaker, integral stops, mounted on splash back. Lever handles on faucet shall be cast, formed or drop forged copper alloy or CRS. Exposed metal parts, including exposed part under valve handle when in open position, shall have a smooth bright finish.
 2. Drain: Stopper.
 3. Trap: Cast copper alloy, 38 mm (1 1/2 inches) P-trap. Adjustable with connected elbow, and nipple to wall and escutcheon.
- E. (P-524) Sink, (CRS, Double Compartment, Counter Top, ASME A112.19.3, Kitchen Sinks) self-rimming, approximately 838 mm by 559 mm (33 inches by 22 inches) with two compartments inside dimensions approximately 343 mm by 406 mm by 191 mm (13 1/2 inches by 16 inches by 7 1/2 inches), minimum 20 gage CRS. Corners and edges shall be well rounded.
1. Faucet: Kitchen sink, solid brass construction, 8.3 L/m (2.2 gpm) swing spout, chrome plated copper alloy with spray and hose.
 2. Drain: Drain plug with cup strainer, stainless steel.

3. Trap: Cast copper alloy, 38 mm (1 1/2 inches) P-trap with cleanout plug, continuous drain with wall connection and escutcheon.
 4. Provide cover for exposed piping, drain, stops and trap per A.D.A.
- F. (P-528) Sink (CRS, Single Compartment, Counter Top ASME A112.19.2, Kitchen Sinks) self-rimming, back faucet ledge, approximately 533 mm by 559 mm (21 inches by 22 inches) with single compartment inside dimensions approximately 406 mm by 483 mm by 191 mm (16 inches by 19 inches by 7 1/2 inches) deep. Shall be minimum of 1.3 mm thick (18 gauge) CRS. Corners and edges shall be well rounded:
1. Faucet: Solid brass construction, 8.3 L/m (2.2 gpm) deck mounted combination faucet with Monel or ceramic seats, removable replacement unit containing all parts subject to wear, swivel gooseneck spout with approximately 203 mm (8 inches) reach with spout outlet 152 mm (6 inches above deck and // 102 mm (4 inches) wrist blades // single lever // with hose spray. Faucet shall be polished chrome plated.
 2. Drain: Drain plug with cup strainer, stainless steel.
 3. Trap: Cast copper alloy 38 mm (1 1/2 inches) P-trap with cleanout plug. Provide wall connection and escutcheon.
 4. Provide cover for exposed piping, drain, stops and trap per A.D.A
- G. (P-531) Shampoo Bowl (wall mounted) solid surface bowl resistant to stains, impact and burns, approximately 457 mm by 495 mm (18 inches by 19 1/2 inches) by 229 mm (9 inches) deep, with wall mounting bracket.
1. Faucets: Single handle multi-temperature faucet1 with removable hand-held sprayer and vacuum breaker.
 2. Drain: Stainless steel 3 1/2 inch basket strainer and drain.
 3. Trap: Cast copper alloy, 38 mm (1 1/2 inches) P-trap. Adjustable with connected elbow, and nipple to wall and escutcheon.

2.10 SHOWER BATH FIXTURE

- A. (P-704) Shower Bath Fixture (Wall Mounted, Concealed Supplies, Hose Spray):
1. Shower Installation: Wall mounted showerhead connected to shower arm.
 2. Shower Heads: Chrome plated metal head, adjustable ball joint, self cleaning head with automatic flow control device to limit discharge to not more than three gpm. Body, internal parts of shower head and flow control fittings shall be copper alloy or CRS. Install showerhead 1829 mm (72 inches) above finished floor.
 3. Valves: Type T/P combination temperature and pressure balancing, with chrome plated metal lever type operating with adjustment for rough-in variations handle and chrome plated metal or CRS face plate. Install diverter selector valve and elevated vacuum breaker to provide tempered water to shower head and hose spray. Valve body shall be any

- suitable copper alloy. Internal parts shall be copper nickel alloy, CRS or thermoplastic material. Valve inlet and outlet shall be 13 mm (1/2 inch) IPS. Provide external screwdriver check stops, and temperature limit stops. Set stops for a maximum temperature of 105 degrees F. All exposed fasteners shall be vandal resistant. Valve shall provide a minimum of 160 ml/s at 310 kPa (2.5 gpm at 45 psi) pressure drop.
4. Spray Assembly: Shall consist of a 1524 mm (60 inches) length of rubber lined CRS, chrome plated metal flexible, or white vinyl reinforced hose with coupling for connection to 13 mm (1/2 inch) hose supply elbow protruding through wall. Spray shall consist of a self-closing, lever-handle, faucet with thumb control having open-shut positions and intermediate positions for regulating water flow and elevated pressure type vacuum breaker. Provide wall hook for faucet.

2.11 EMERGENCY FIXTURES

- A. (P-709) Emergency Eye and Face Wash (Pedestal Mounted): CRS receptor, pedestal mounted, hand operated. Mount eye and face wash spray heads 1067 (42 inches) above finished floor through floor waste connection and P-trap. Paint pedestal same color as room interior. Provide with thermostatic mixing valve to provide tepid water from 30 to 35 degrees C (85 to 95 degrees F). Flow rate shall be 11.4 L/m (3 gpm).

2.12 HYDRANT, HOSE BIBB AND MISCELLANEOUS DEVICES

- A. (P-801) Wall Hydrant: Cast bronze non-freeze hydrant with detachable T-handle. Brass operating rod within casing of bronze pipe of sufficient length to extend through wall and place valve inside building. Brass valve with coupling and union elbow having metal-to-metal seat. Valve rod and seat washer removable through face of hydrant; 19 mm (3/4 inch) hose thread on spout; 19 mm (3/4 inch) pipe thread on inlet. Finish may be rough; exposed surfaces shall be chrome plated. Set not less than 457 mm (18 inches) nor more than 914 mm (36 inches) above grade. On porches and platforms, set approximately 762 mm (30 inches) above finished floor. Provide integral vacuum breaker which automatically drains when shut off.
- B. (P-804) Hose Bibb (Single Faucet, Wall Mounted to Concealed Supply Pipe): Cast or wrought copper alloy, single faucet with replaceable monel seat, removable replacement unit containing all parts subject to wear, mounted on wall 914 mm (36 inches) above floor to concealed supply pipe. Provide faucet with 19 mm (3/4 inch) hose coupling thread on spout and vacuum breaker. Four-arm handle on faucet shall be cast, formed or drop forged copper alloy. Escutcheons shall be either forged copper

alloy or CRS. Exposed metal parts, including exposed part under valve handle when in open position, shall have a bright finish.

- C. (P-808) Washing Machine Supply and Drain Units: Fabricate of 16-gage steel with highly corrosion resistant epoxy finish. Unit to have 51 mm (2 inches) drain connection, 13 mm (1/2 inch) combination MPT brass sweat connection, ball type shut-off valve, 51 mm (2 inches) cast brass P-trap, duplex electric grounding receptacle and dryer outlet. Size 229 mm by 375 mm (9 inches by 14 3/4 inches) rough wall opening 203 mm by 330 mm by 92 mm (8 inches by 13 inches by 3 5/8 inches). Centerline of box shall be 1118 mm (44 inches) above finished floor.

PART 3 - EXECUTION

3.1 INSTALLATION

- A. Fixture Setting: Opening between fixture and floor and wall finish shall be sealed as specified under Section 07 92 00, JOINT SEALANTS.
- B. Supports and Fastening: Secure all fixtures, equipment and trimmings to partitions, walls and related finish surfaces. Exposed heads of bolts and nuts in finished rooms shall be hexagonal, polished chrome plated brass with rounded tops.
- C. Through Bolts: For free standing marble and metal stud partitions refer to Section 10 21 13, TOILET COMPARTMENTS.
- D. Toggle Bolts: For hollow masonry units, finished or unfinished.
- E. Expansion Bolts: For brick or concrete or other solid masonry. Shall be 6 mm (1/4 inch) diameter bolts, and to extend at least 76 mm (3 inches) into masonry and be fitted with loose tubing or sleeves extending into masonry. Wood plugs, fiber plugs, lead or other soft metal shields are prohibited.
- F. Power Set Fasteners: May be used for concrete walls, shall be 6 mm (1/4 inch) threaded studs, and shall extend at least 32 mm (1 1/4 inches) into wall.
- G. Tightly cover and protect fixtures and equipment against dirt, water and chemical or mechanical injury.
- H. Where water closet waste pipe has to be offset due to beam interference, provide correct and additional piping necessary to eliminate relocation of water closet.
- I. Do not use aerators on lavatories and sinks.

3.2 CLEANING

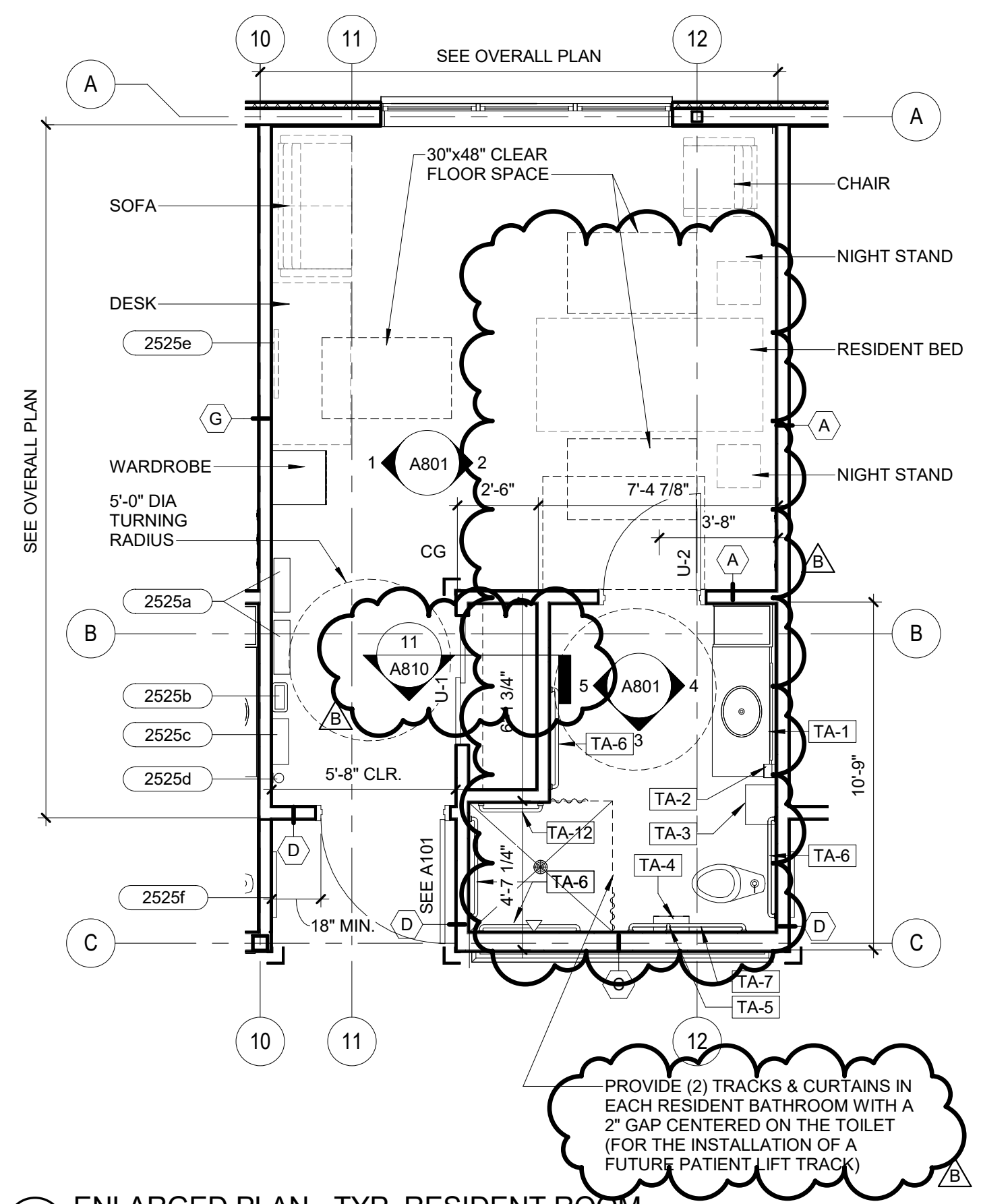
At completion of all work, fixtures, exposed materials and equipment shall be thoroughly cleaned.

3.3 COMMISSIONING

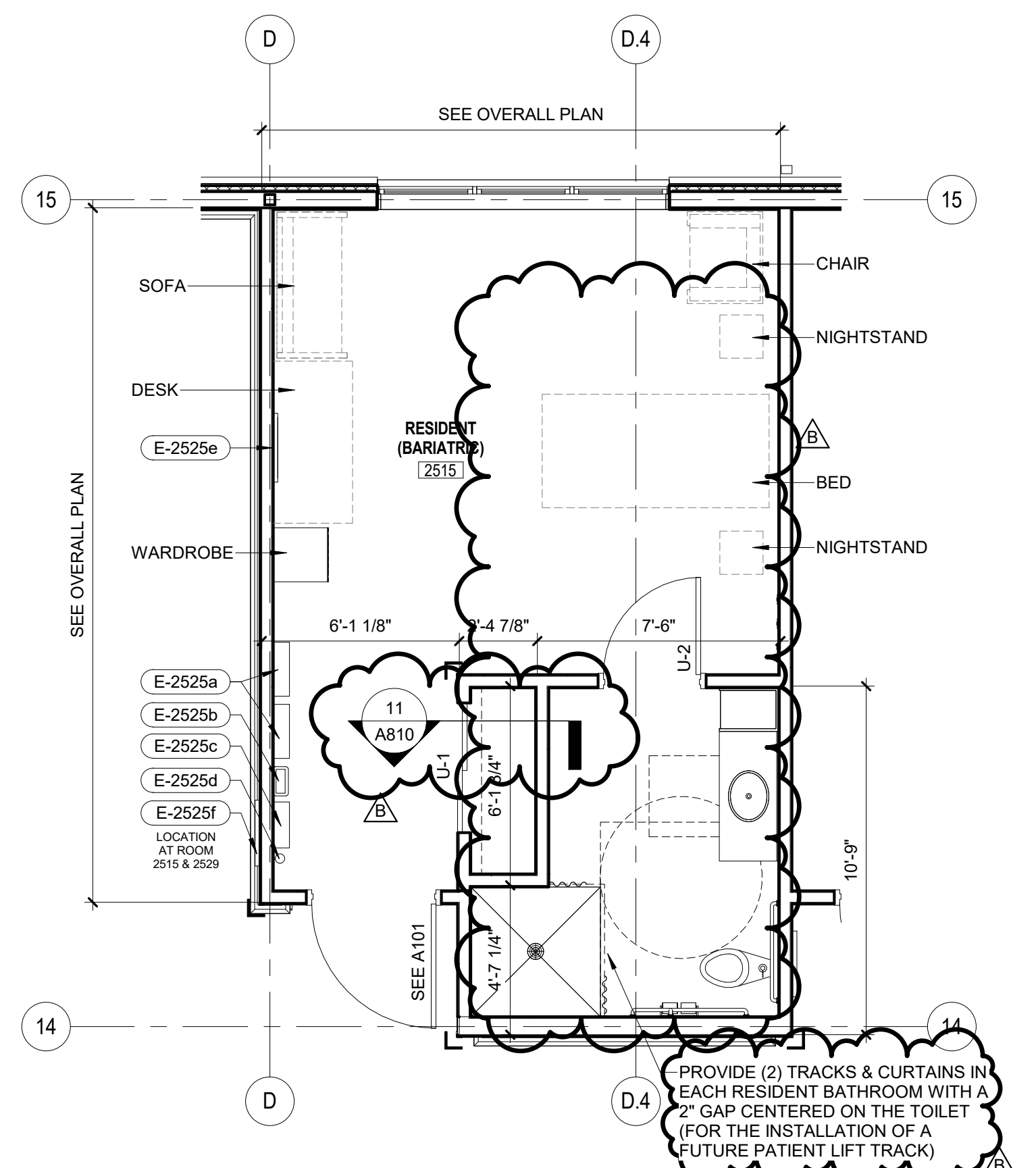
- A. Provide commissioning documentation in accordance with the requirements of Section 22 08 00, COMMISSIONING OF PLUMBING SYSTEMS for all inspection, startup, and contractor testing required above and required by the System Readiness Checklist provided by the Commissioning Agent.
- B. Components provided under this section of the specification will be tested as part of a larger system. Refer to Section 22 08 00, COMMISSIONING OF PLUMBING SYSTEMS and related sections for contractor responsibilities for system commissioning.

- - - E N D - - -

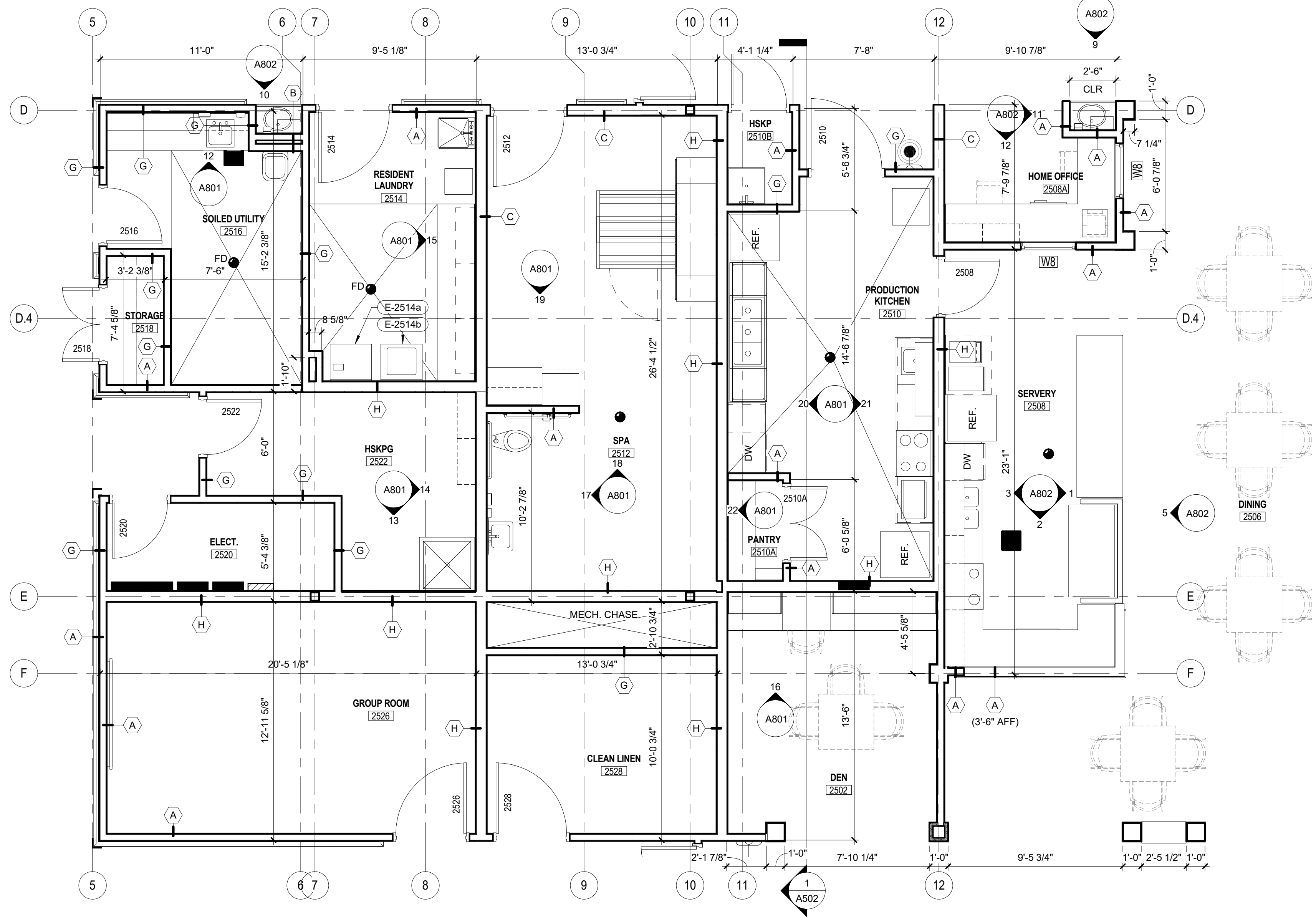
three eighths inch = one foot
one half inch = one foot
one quarter inch = one foot
one eighth inch = one foot



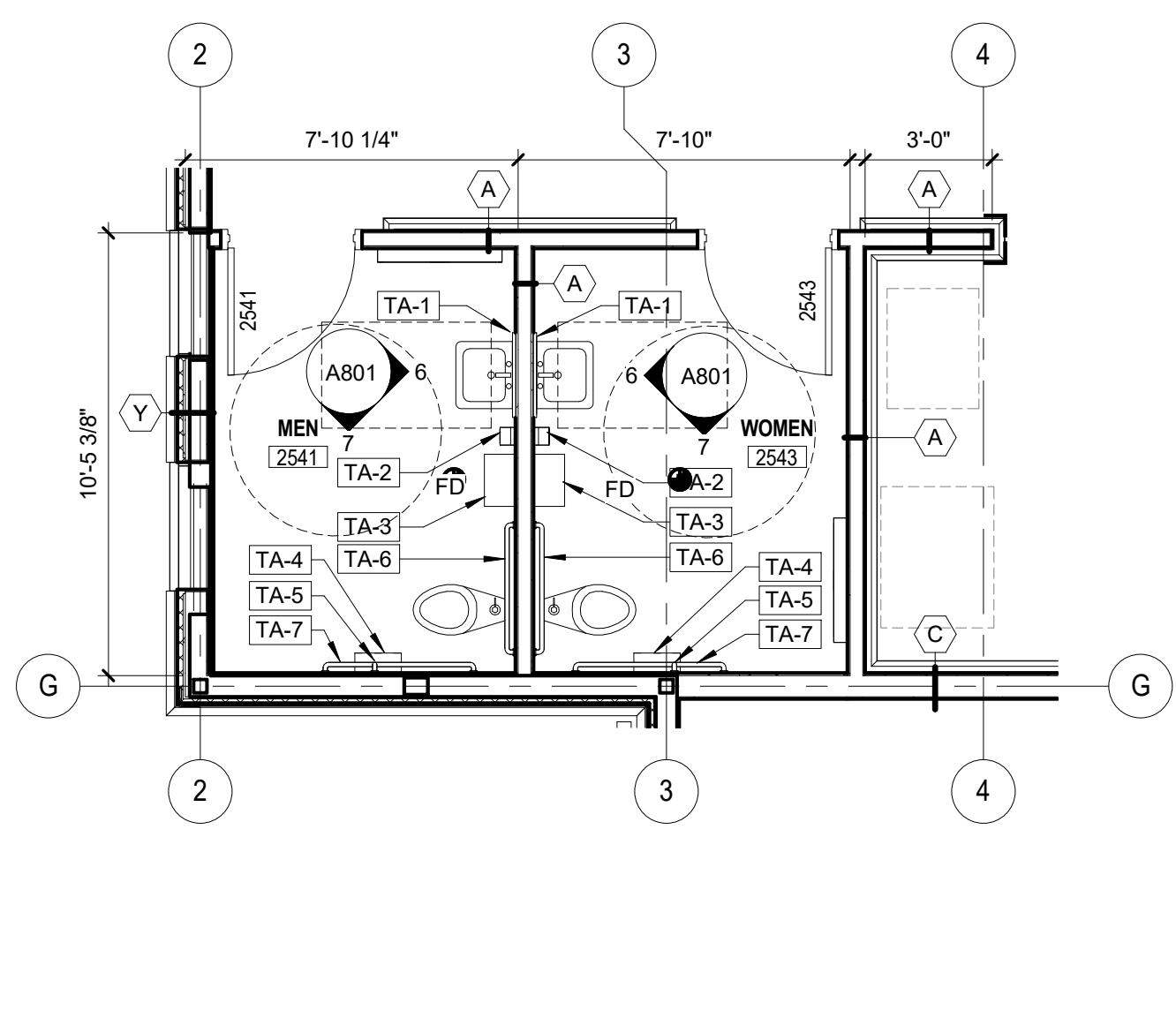
1 ENLARGED PLAN - TYP. RESIDENT ROOM
SCALE: 1/4" = 1'-0"



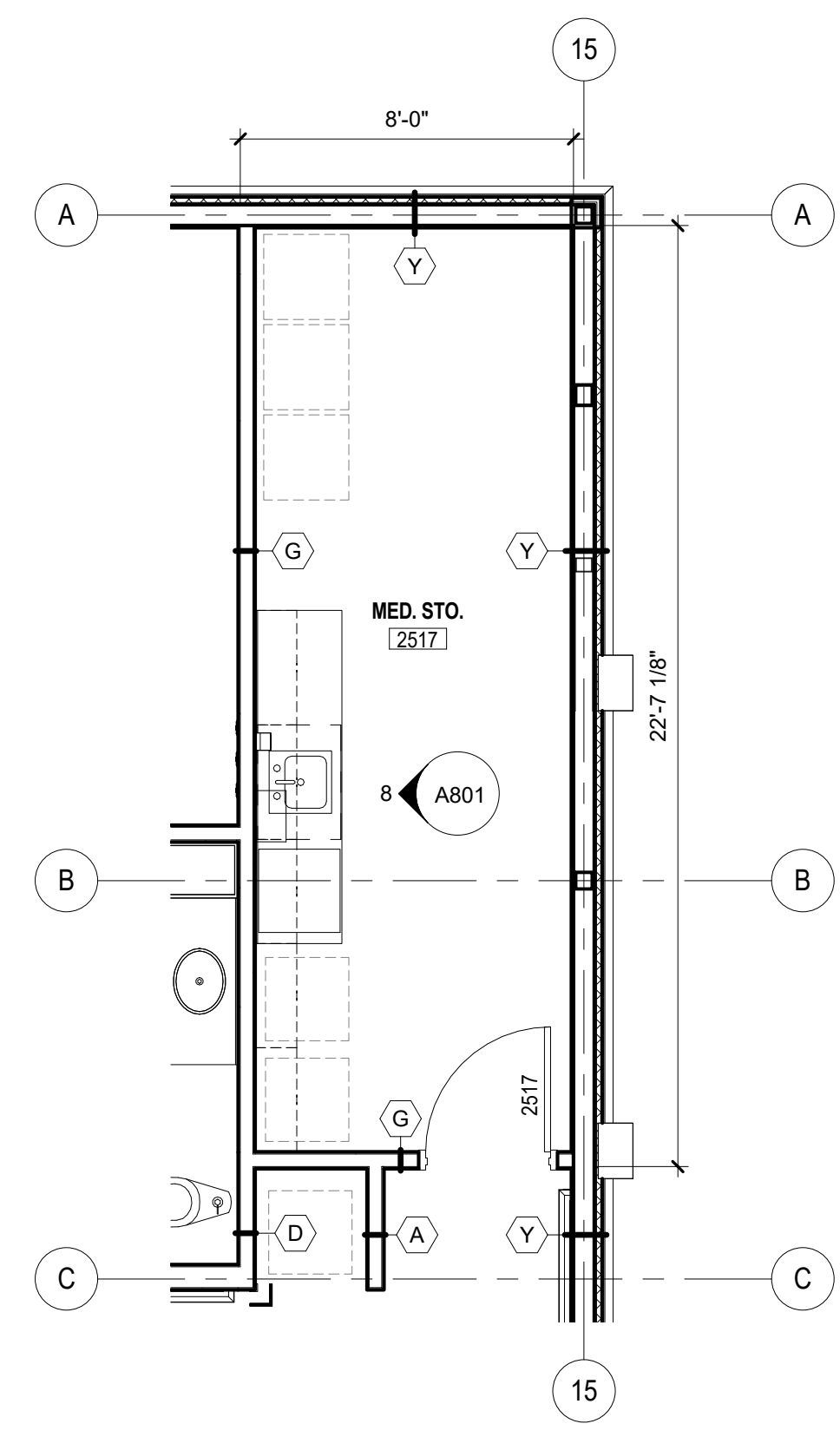
4 ENLARGED PLAN - TYP. BARIATRIC RESIDENT ROOM
SCALE: 1/4" = 1'-0"



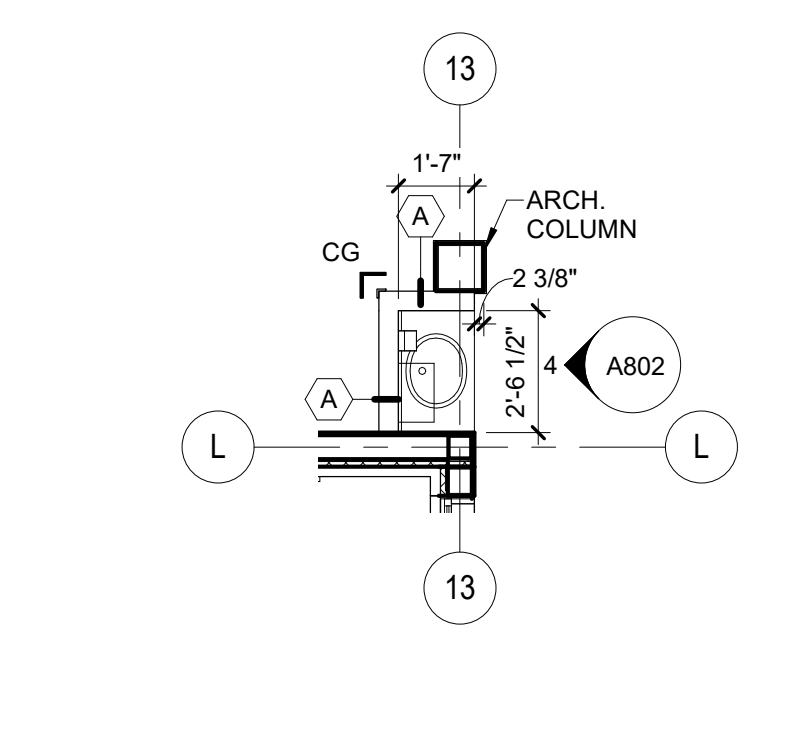
2 ENLARGED PLAN - CENTRAL CORE
SCALE: 1/4" = 1'-0"



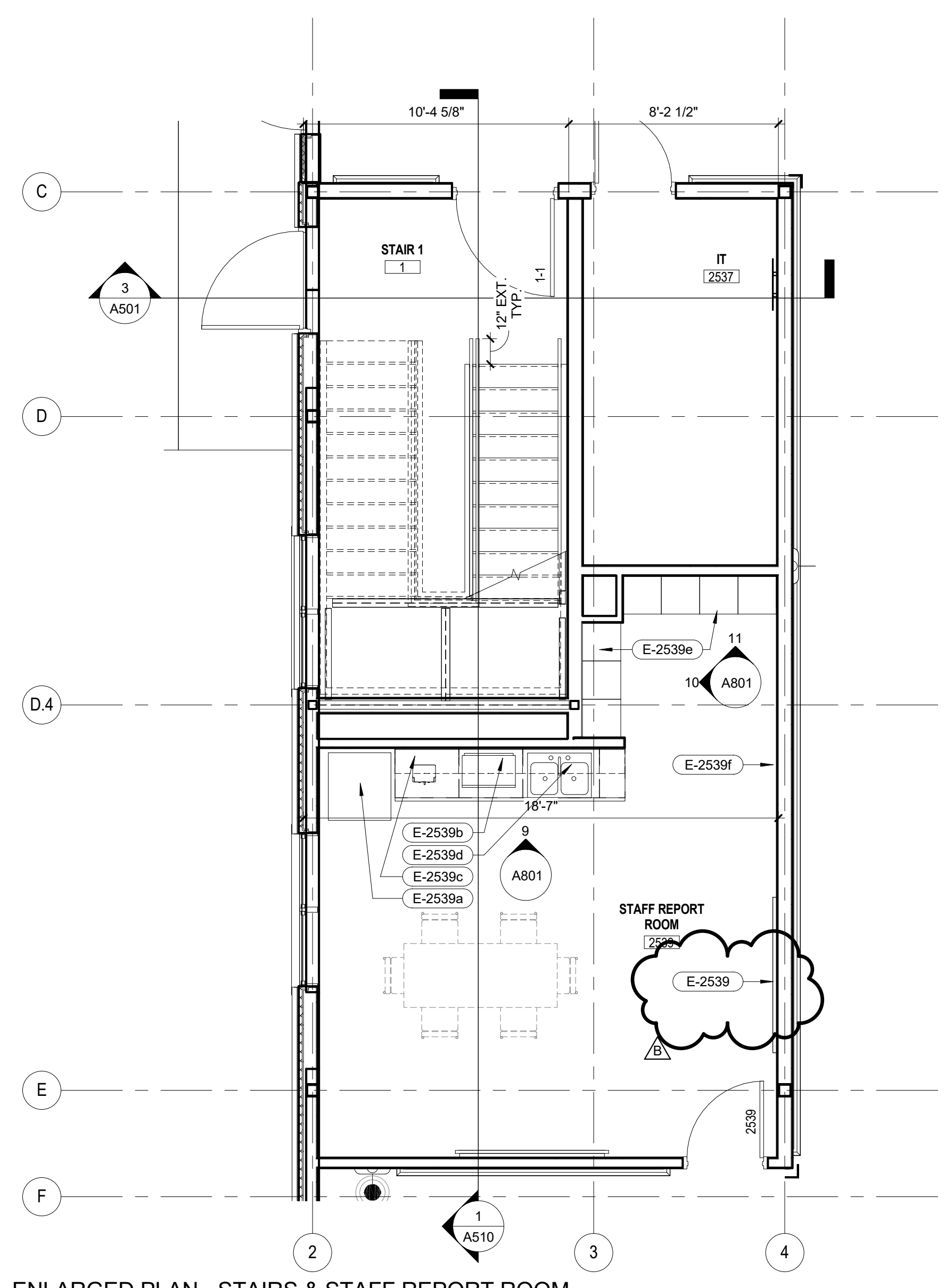
5 ENLARGED PLAN - MEN & WOMEN
SCALE: 1/4" = 1'-0"




6 ENLARGED PLAN - MED. STO.
SCALE: 1/4" = 1'-0"

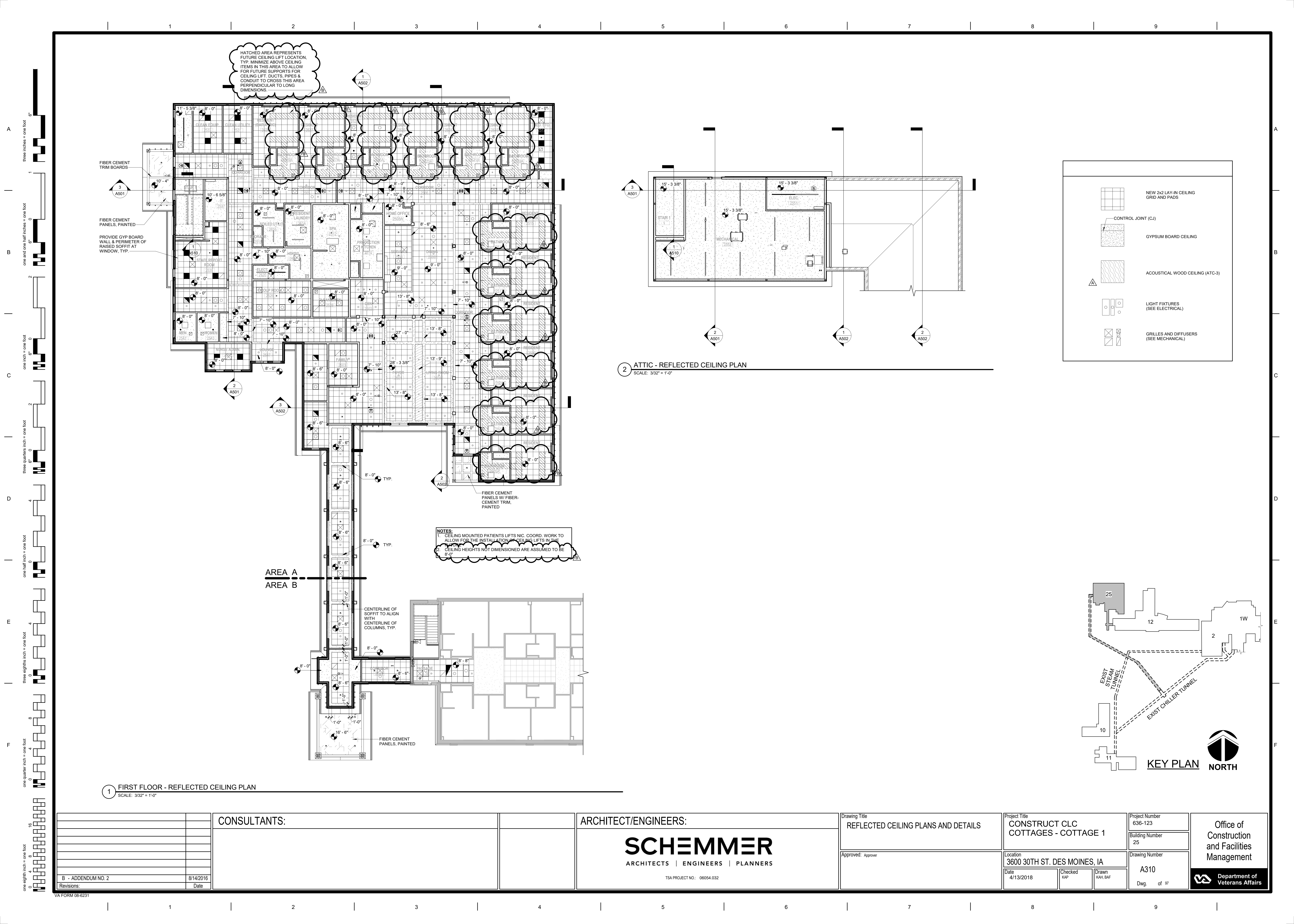


7 ENLARGED PLAN - SINK BY LIVING ROOM
SCALE: 1/4" = 1'-0"



3 ENLARGED PLAN - STAIRS & STAFF REPORT ROOM
SCALE: 1/4" = 1'-0"

		CONSULTANTS:		ARCHITECT/ENGINEERS:	<div>SCHEMMER</div> <div>ARCHITECTS ENGINEERS PLANNERS</div> <div>TSA PROJECT NO.: 06054.032</div>	Drawing Title	Project Title	Project Number	Office of Construction and Facilities Management
						ENLARGED FLOOR PLANS	CONSTRUCT CLC COTTAGES - COTTAGE 1	636-123	
						Approved: Approver	Location 3600 30TH ST. DES MOINES, IA	Building Number 25	
								Drawing Number A201	
								Dwg. of 97	
B - ADDENDUM NO. 2	8/14/2016					Date 4/13/2018	Checked KAP	Drawn KAH, BAF	 Department of Veterans Affairs
Revisions:	Date								



HATCHED AREA REPRESENTS
FUTURE CEILING LIFT LOCATION.
TYP. MINIMIZE ABOVE CEILING
ITEMS IN THIS AREA TO ALLOW
FOR FUTURE SUPPORTS FOR
CEILING LIFT. DUCTS, PIPES &
CONDUIT TO CROSS THIS AREA
PERPENDICULAR TO LONG
DIMENSIONS.

NOTES:
1. CEILING MOUNTED PATIENTS LIFTS NIC. COORD. WORK TO
ALLOW FOR THE INSTALLATION OF CEILING LIFTS IN THE
2. CEILING HEIGHTS NOT DIMENSIONED ARE ASSUMED TO BE
8'-0"

NEW 2x2 LAY-IN CEILING
GRID AND PADS

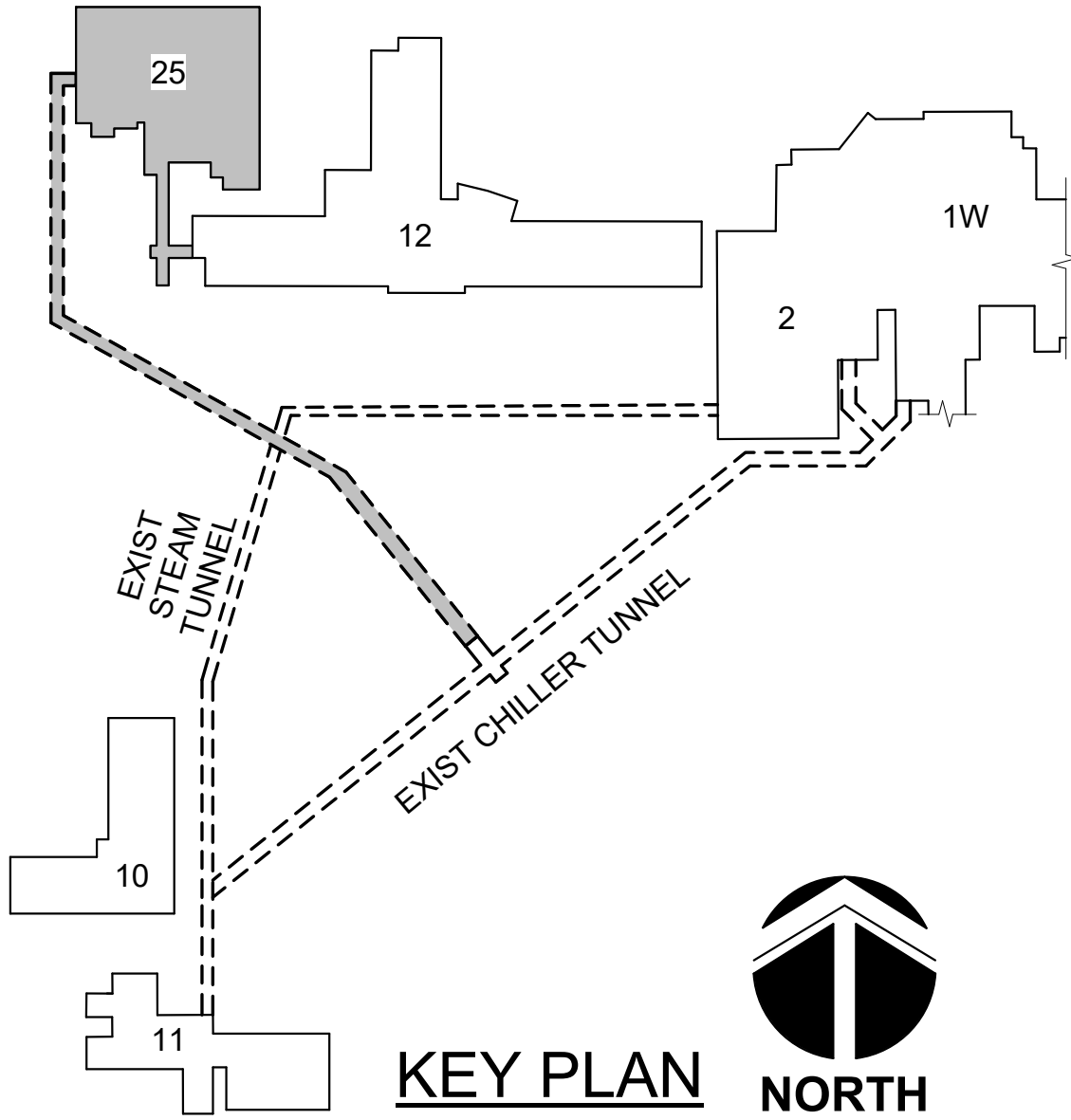
CONTROL JOINT (CJ)

GYPSUM BOARD CEILING

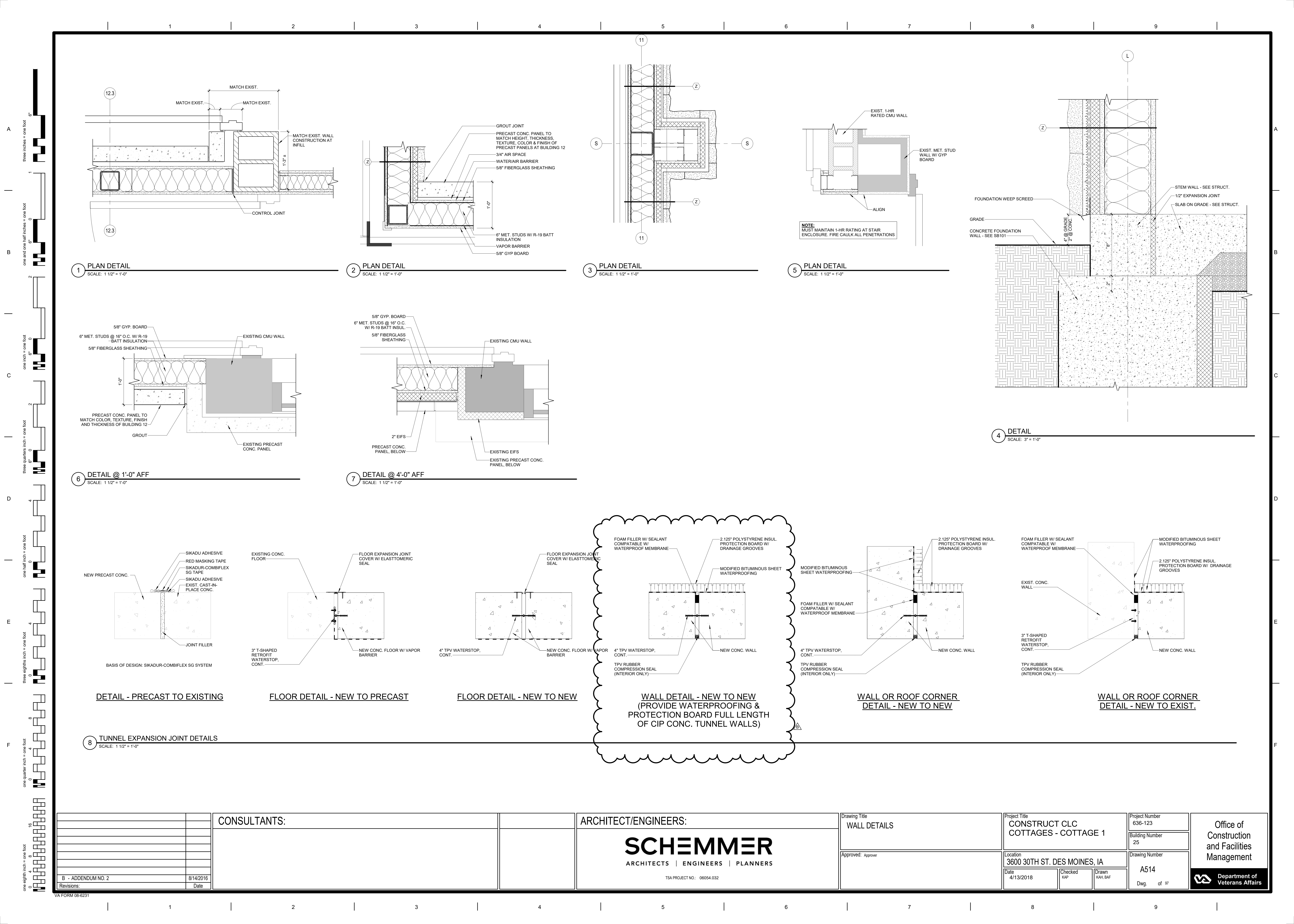
ACOUSTICAL WOOD CEILING (ATC-3)

LIGHT FIXTURES
(SEE ELECTRICAL)

GRILLES AND DIFFUSERS
(SEE MECHANICAL)



		CONSULTANTS:				ARCHITECT/ENGINEERS:		Drawing Title REFLECTED CEILING PLANS AND DETAILS		Project Title CONSTRUCT CLC COTTAGES - COTTAGE 1		Project Number 636-123		Office of Construction and Facilities Management					
						<div>SCHEMMER</div> <div>ARCHITECTS ENGINEERS PLANNERS</div> <div>TSA PROJECT NO.: 06054.032</div>				Building Number 25		Drawing Number A310							
								Approved: Approver		Location 3600 30TH ST. DES MOINES, IA		Date 4/13/2018				Checked KAP		Drawn KAH, BAF	
B - ADDENDUM NO. 2		8/14/2016																Dwg. of 97	
Revisions:		Date														Department of Veterans Affairs			



1 PLAN DETAIL
SCALE: 1 1/2" = 1'-0"

2 PLAN DETAIL
SCALE: 1 1/2" = 1'-0"

3 PLAN DETAIL
SCALE: 1 1/2" = 1'-0"

5 PLAN DETAIL
SCALE: 1 1/2" = 1'-0"

4 DETAIL
SCALE: 3" = 1'-0"

6 DETAIL @ 1'-0" AFF
SCALE: 1 1/2" = 1'-0"

7 DETAIL @ 4'-0" AFF
SCALE: 1 1/2" = 1'-0"

DETAIL - PRECAST TO EXISTING

FLOOR DETAIL - NEW TO PRECAST

FLOOR DETAIL - NEW TO NEW

WALL DETAIL - NEW TO NEW
(PROVIDE WATERPROOFING & PROTECTION BOARD FULL LENGTH OF CIP CONC. TUNNEL WALLS)

WALL OR ROOF CORNER
DETAIL - NEW TO NEW

WALL OR ROOF CORNER
DETAIL - NEW TO EXIST.

8 TUNNEL EXPANSION JOINT DETAILS
SCALE: 1 1/2" = 1'-0"

CONSULTANTS:

ARCHITECT/ENGINEERS:

SCHEMMER
ARCHITECTS | ENGINEERS | PLANNERS

TSA PROJECT NO.: 06054.032

Drawing Title
WALL DETAILS

Approved: Approver

Project Title
CONSTRUCT CLC
COTTAGES - COTTAGE 1

Location
3800 30TH ST. DES MOINES, IA

Date
4/13/2018

Checked
KAP

Drawn
KAH, BAF

Project Number
636-123

Building Number
25

Drawing Number

A514

Dwg. of 97

Office of
Construction
and Facilities
Management

Department of
Veterans Affairs

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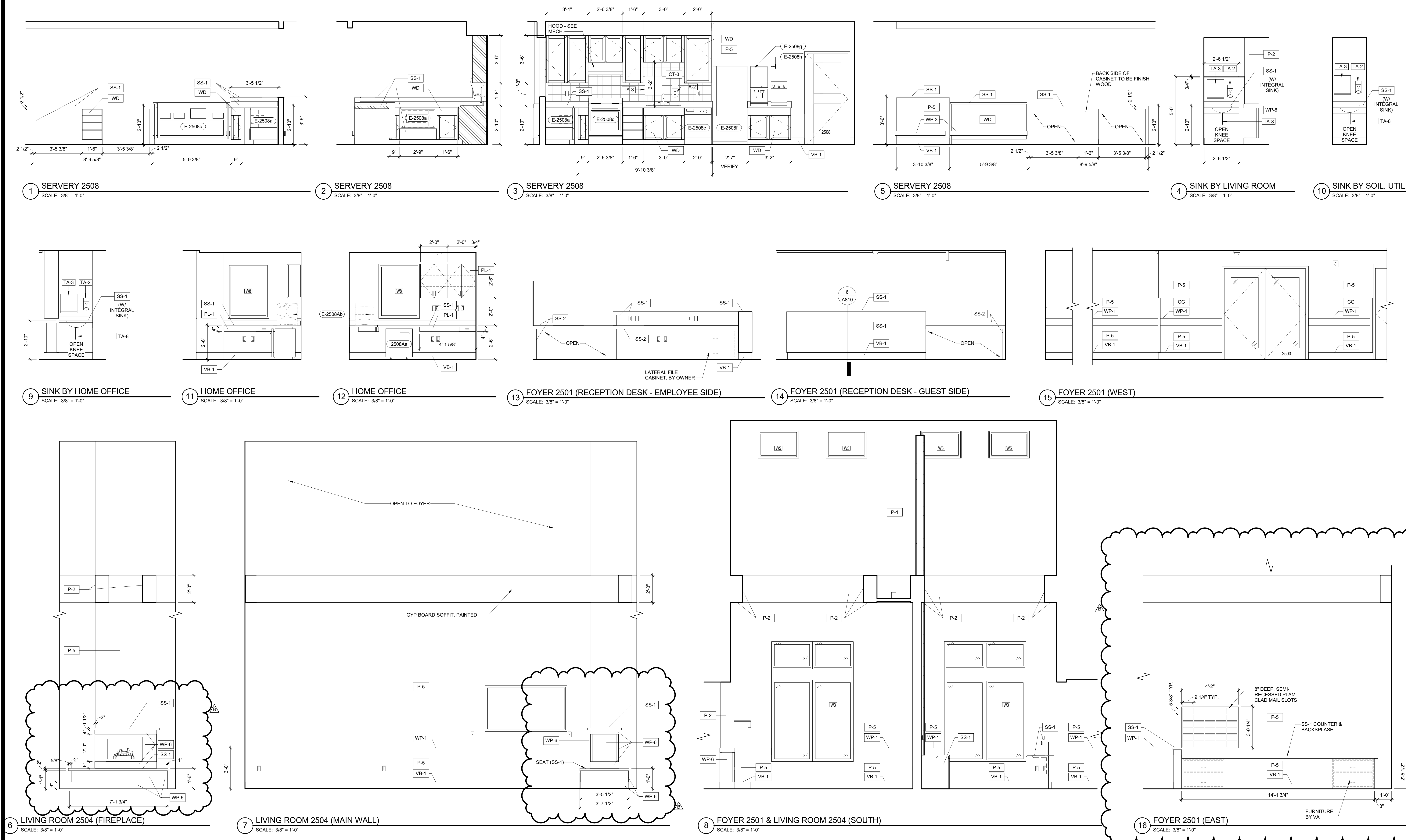
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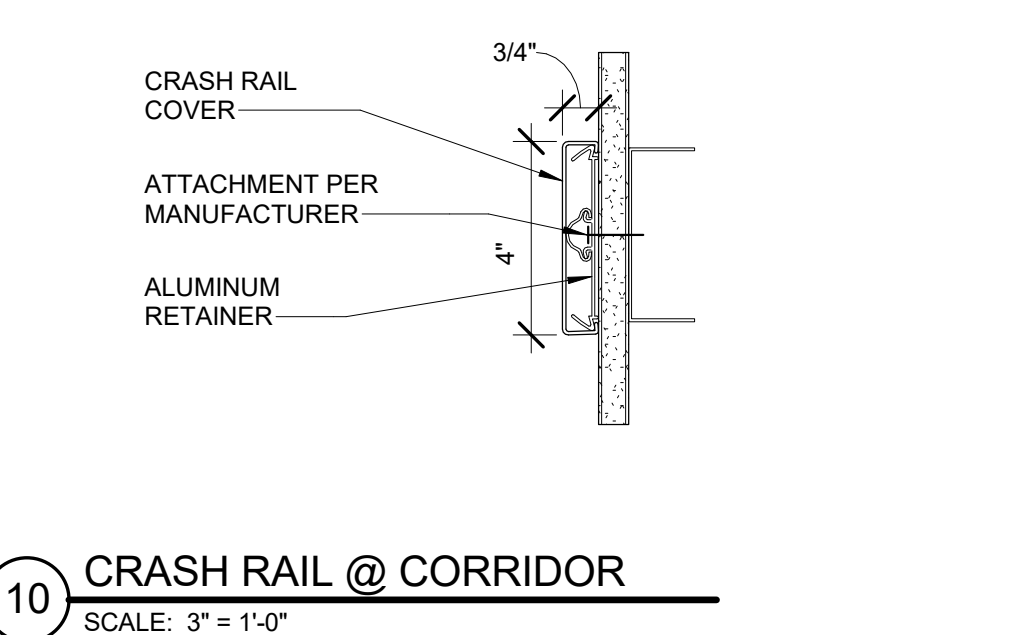
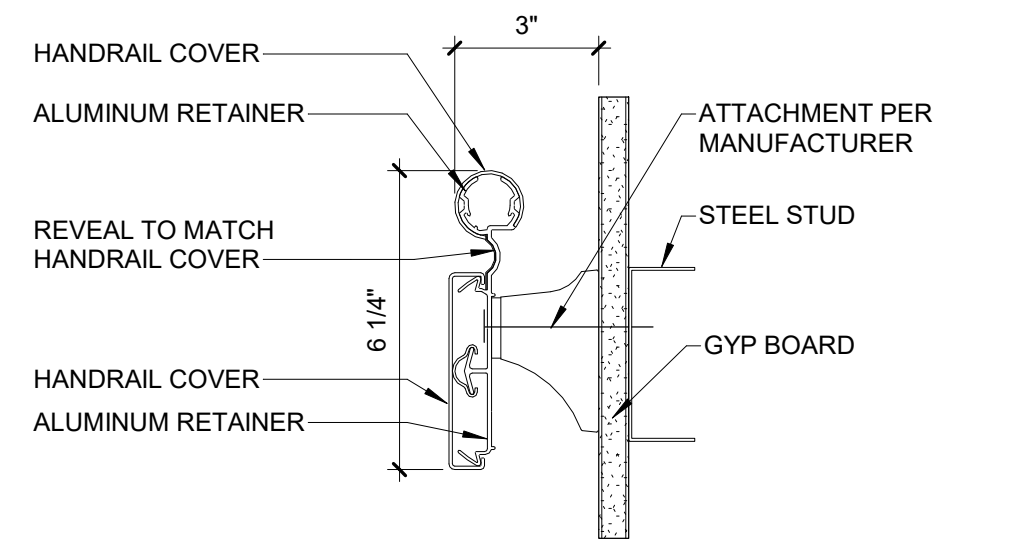
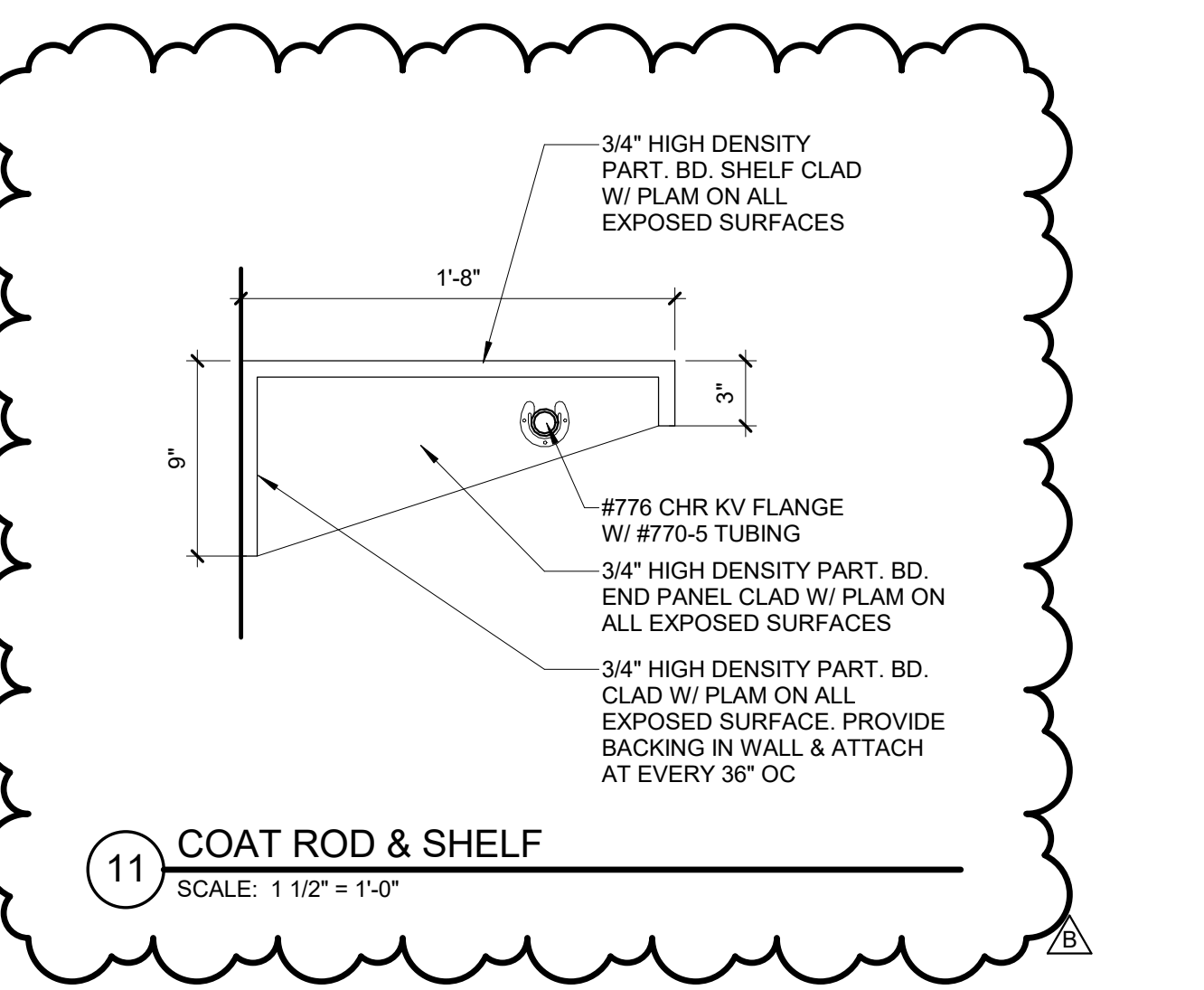
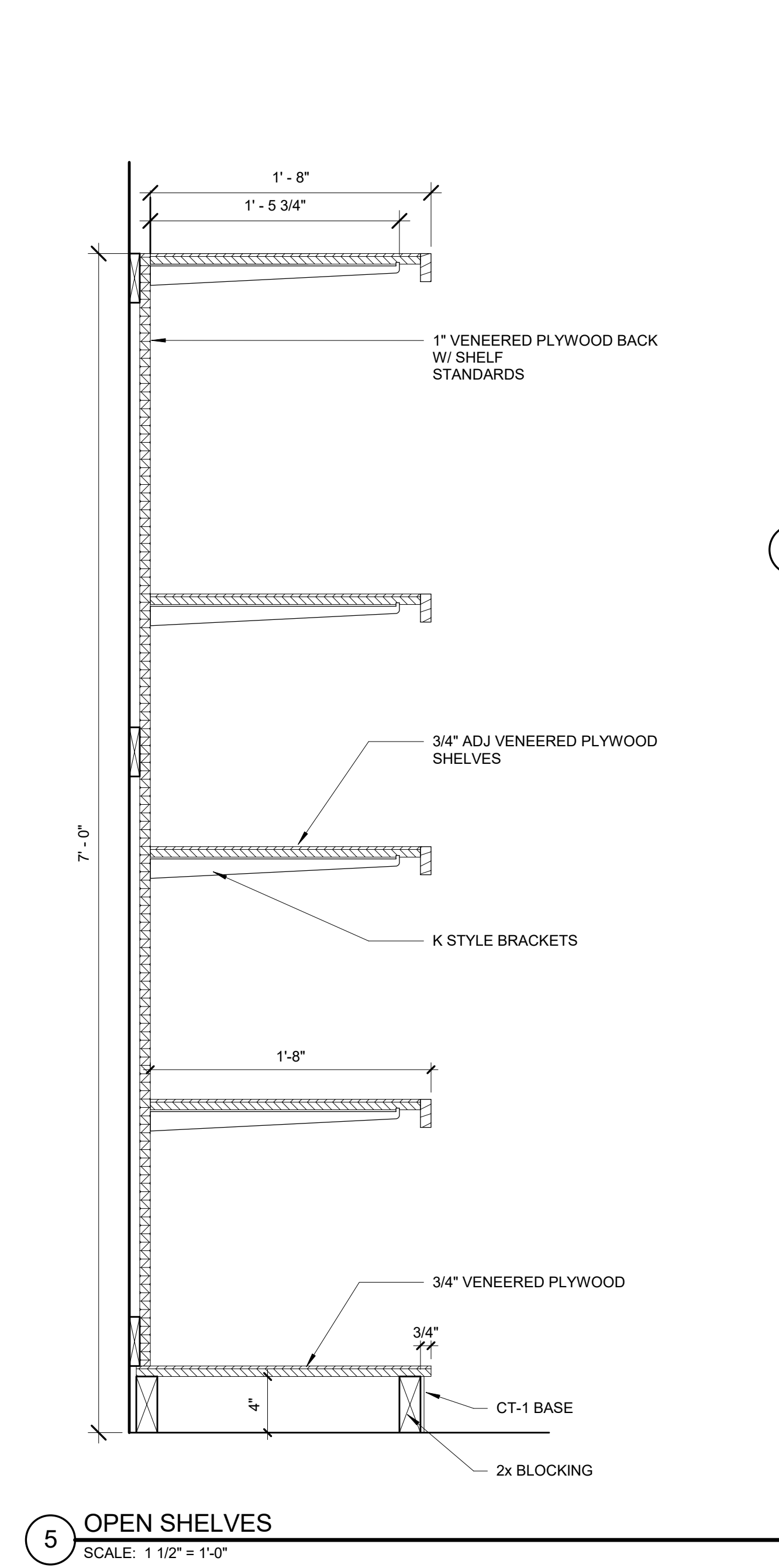
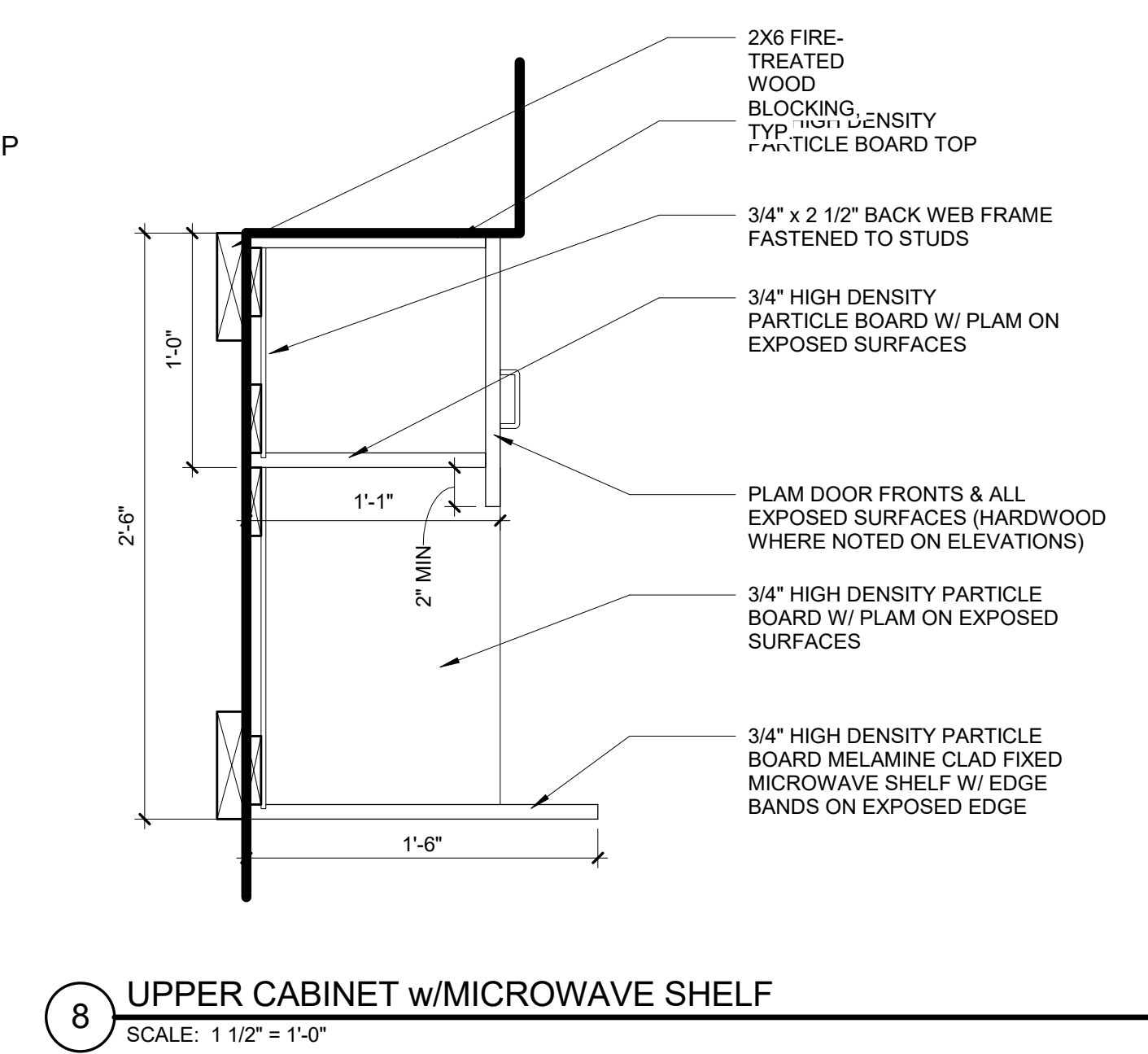
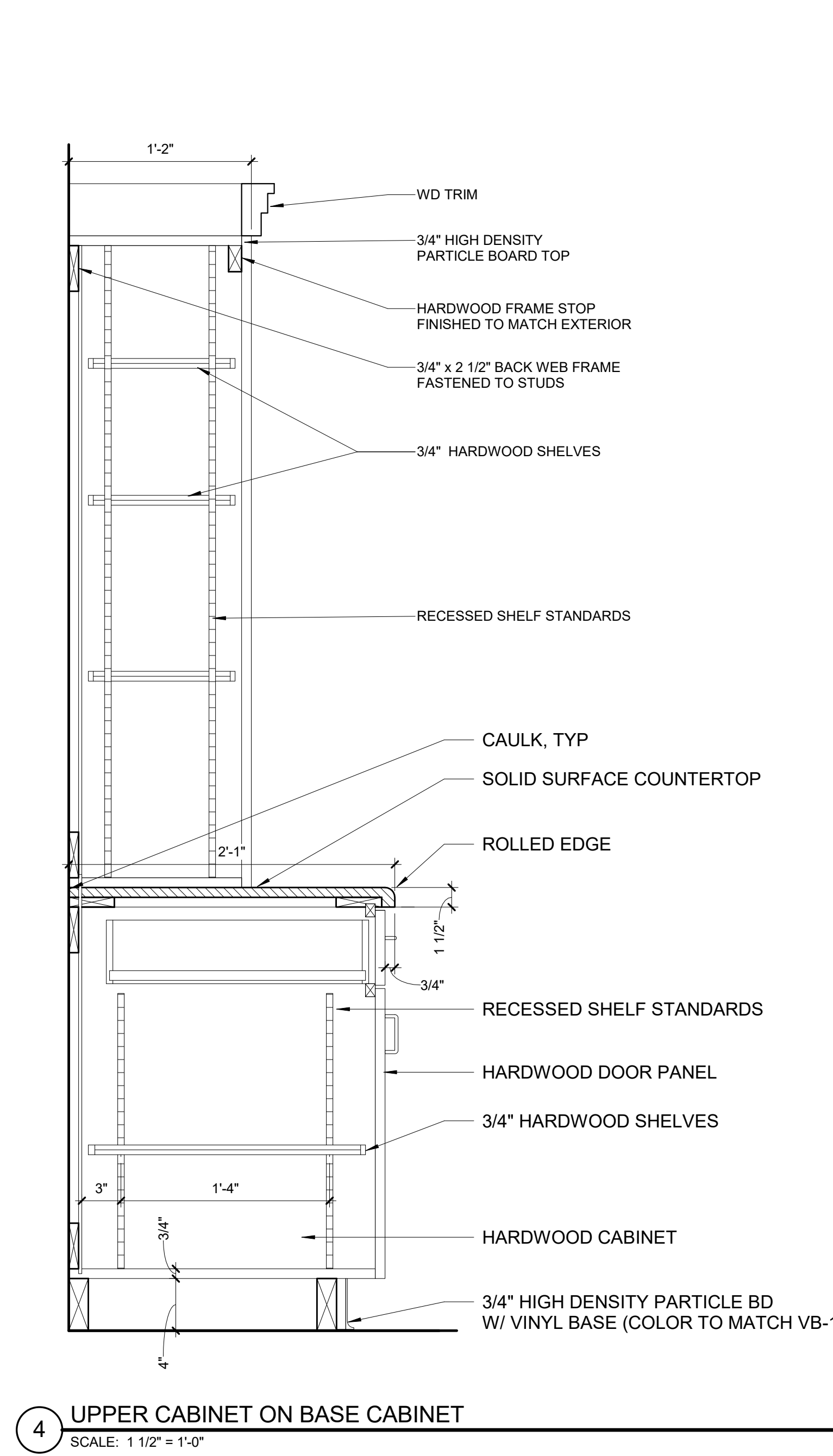
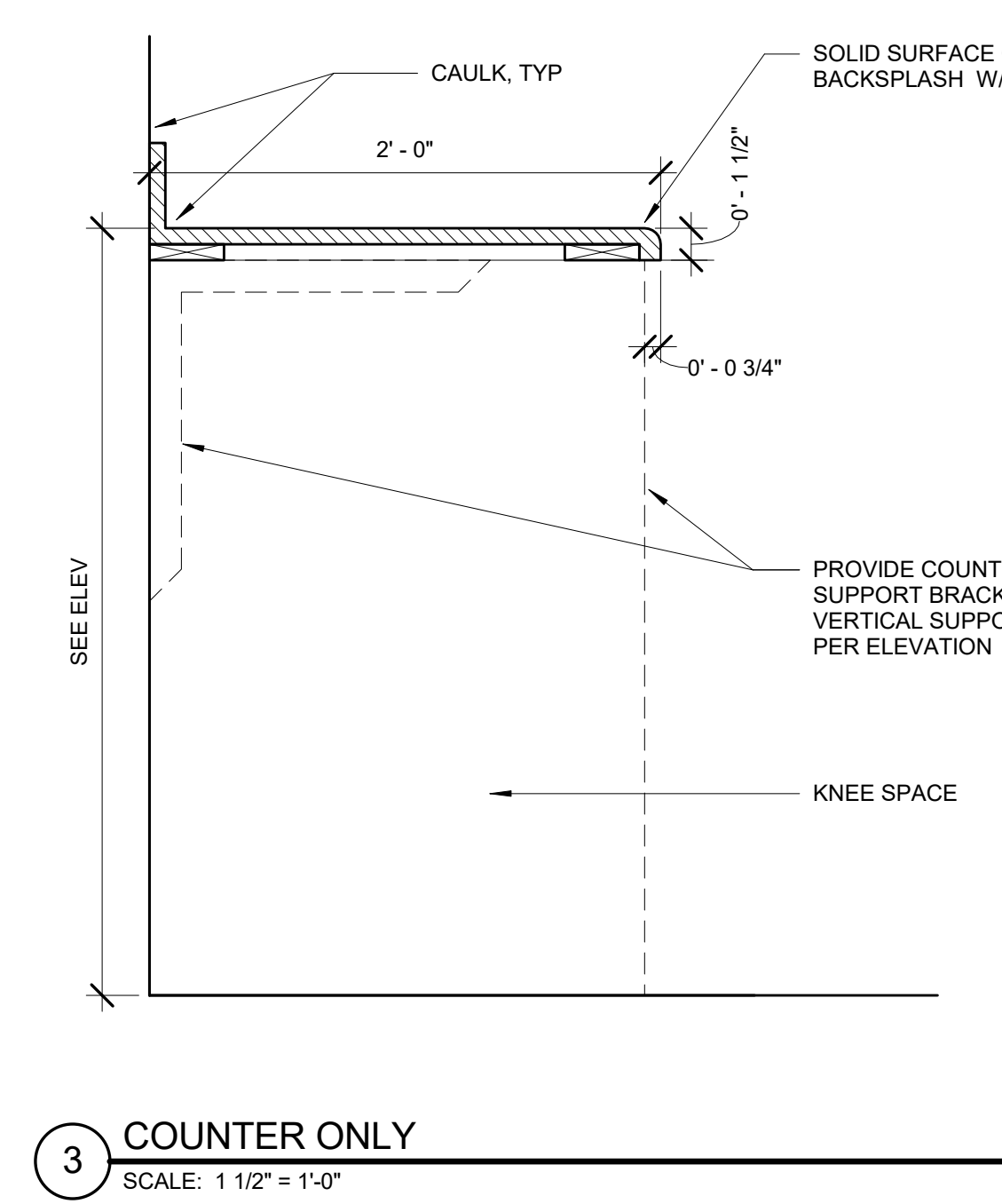
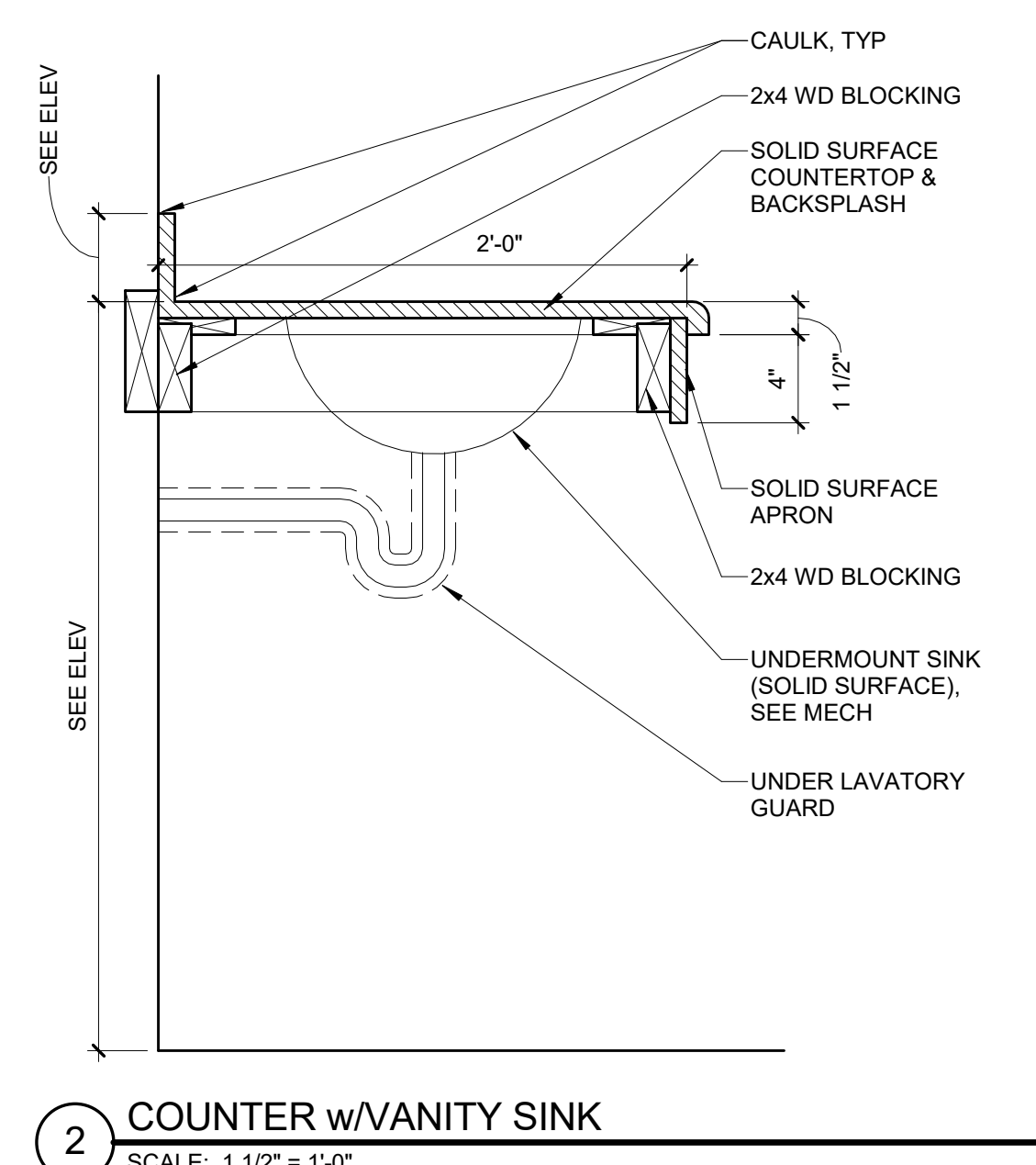
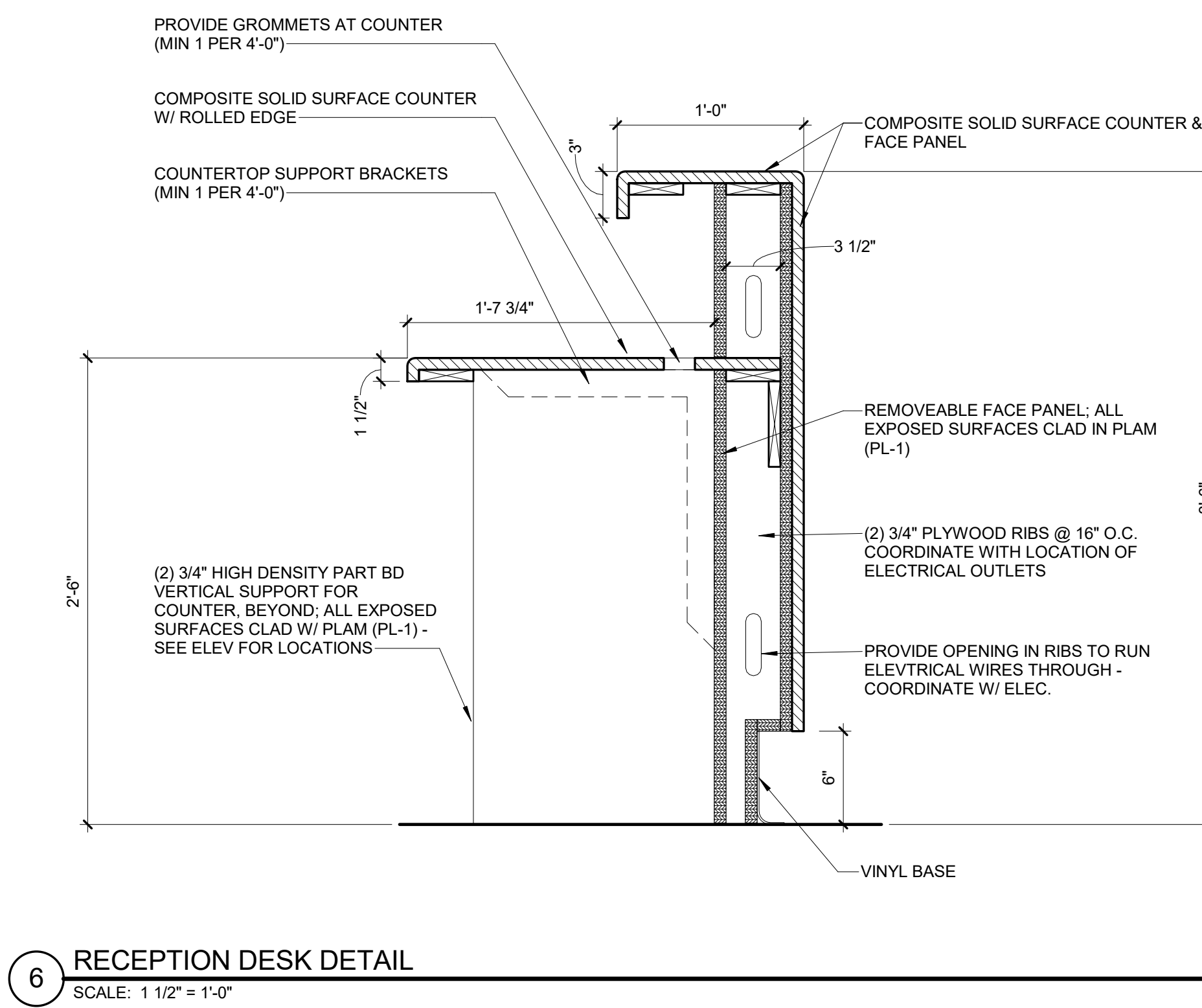
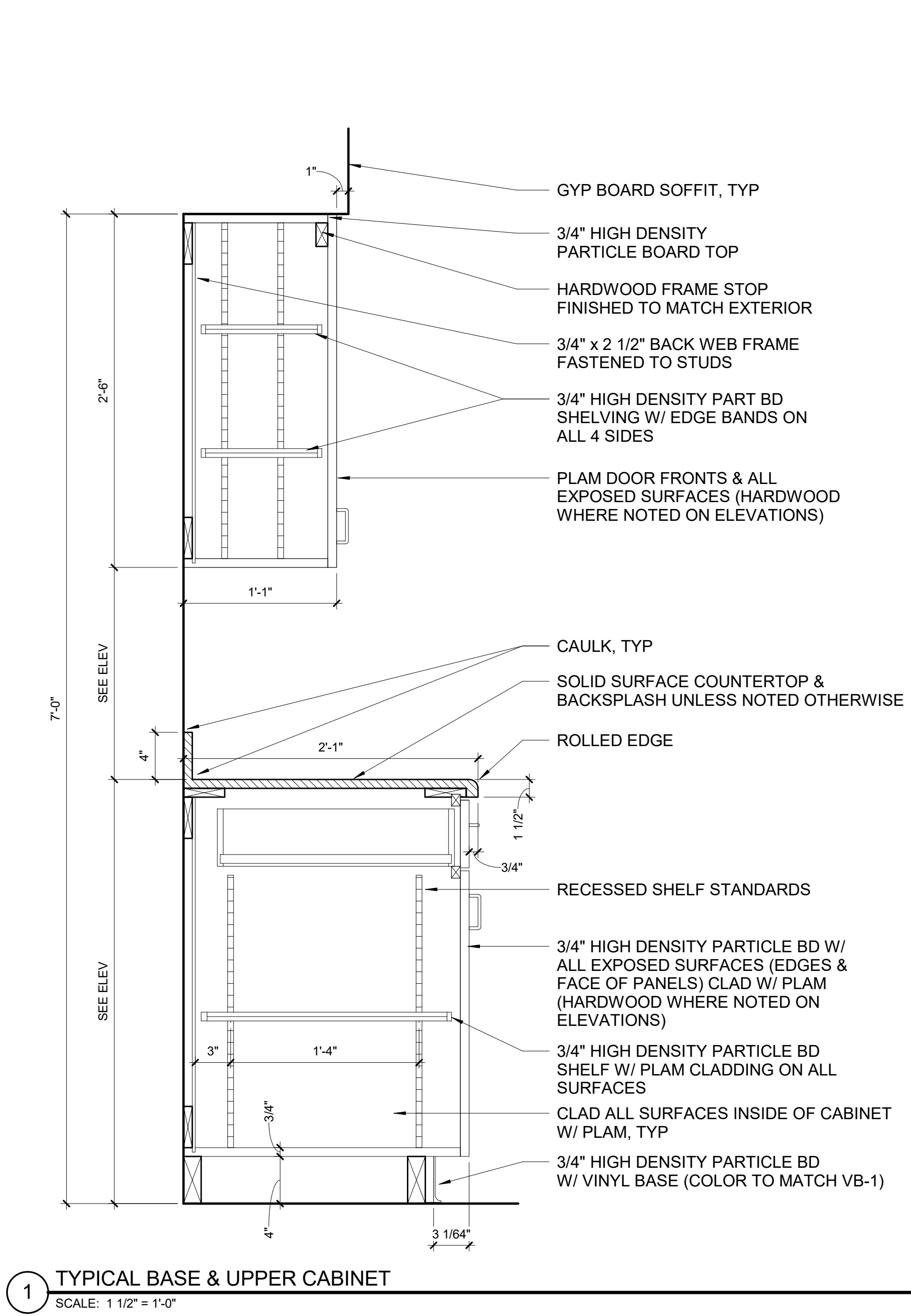
K

three inches = one foot
one and one half inches = one foot
one inch = one foot
three quarters inch = one foot
one half inch = one foot
three eighths inch = one foot
one quarter inch = one foot
one eighth inch = one foot



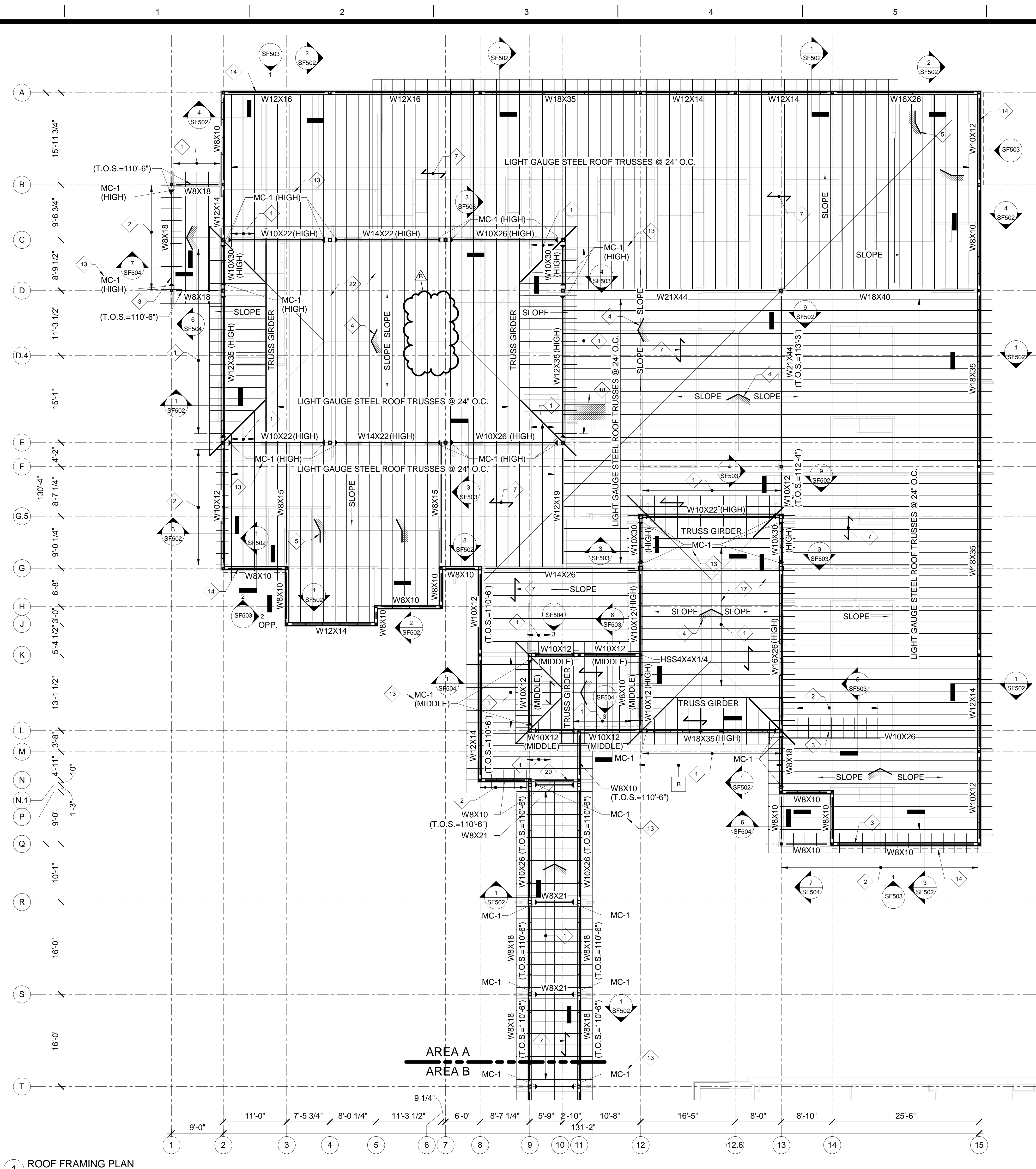
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								Building Number 25					
								Drawing Number A802					
								Dwg. of 97					
B - ADDENDUM NO. 2		8/14/2016		Location 3600 30TH ST. DES MOINES, IA		Date 4/13/2018		Checked KAP		Drawn KAH, BAF			
Revisions:		Date		Approved: Approver									

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CONSULTANTS:		ARCHITECT/ENGINEERS:		Drawing Title	Project Title	Project Number	Office of Construction and Facilities Management Department of Veterans Affairs	
				INTERIOR DETAILS	CONSTRUCT CLC COTTAGES - COTTAGE 1	636-123		
				Approved: Approver	Location 3800 30TH ST. DES MOINES, IA	Building Number 25		
					Date 4/13/2018	Drawing Number A810		
B - ADDENDUM NO. 2					Checked KAP	Drawn KAH, BAF	Dwg. of 97	
Revisions:								
8/14/2016								
Date								

VA FORM 08-6231



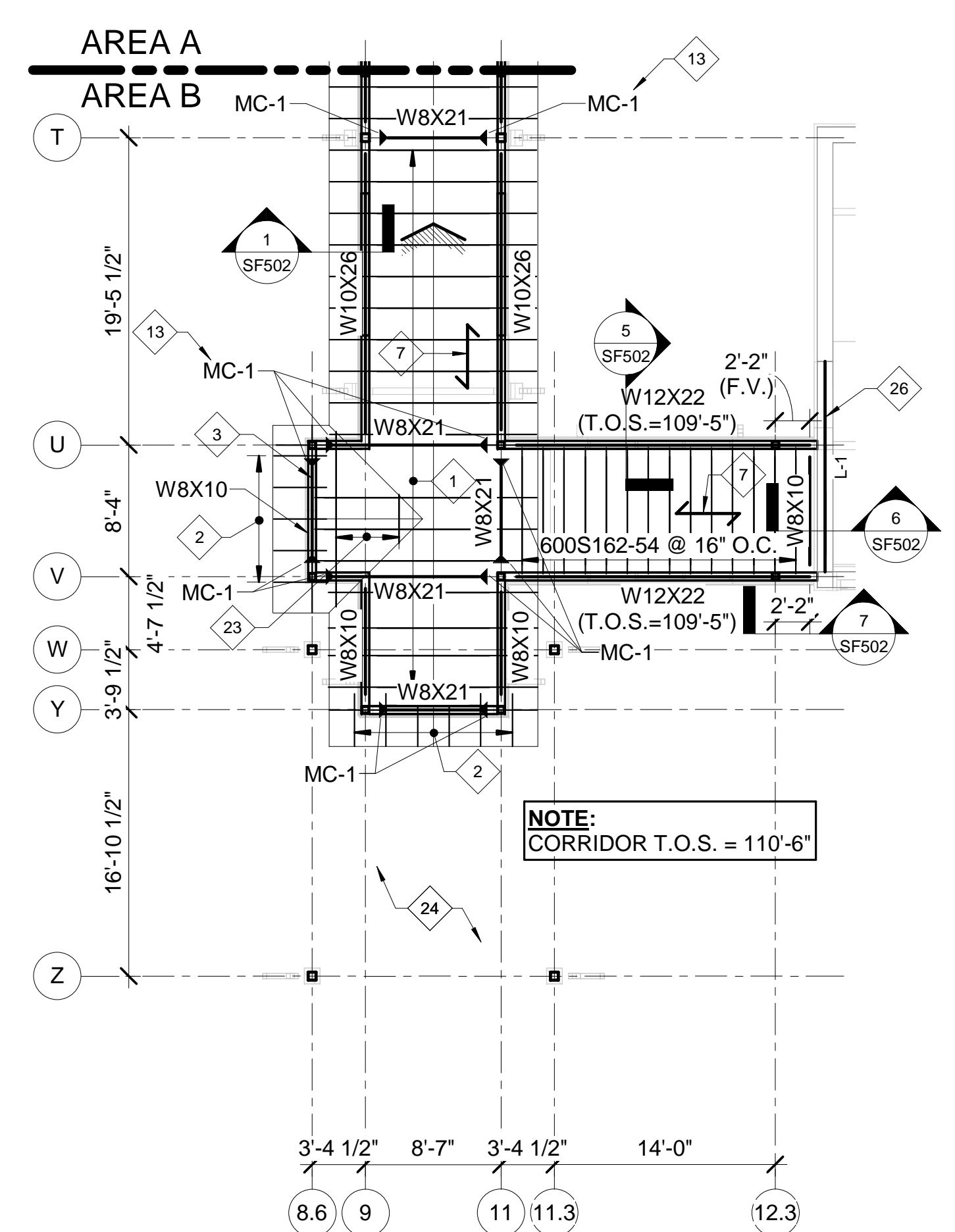
1 ROOF FRAMING PLAN
SCALE: 1/8" = 1'-0"

REF. FRAMING NOTES (◆):

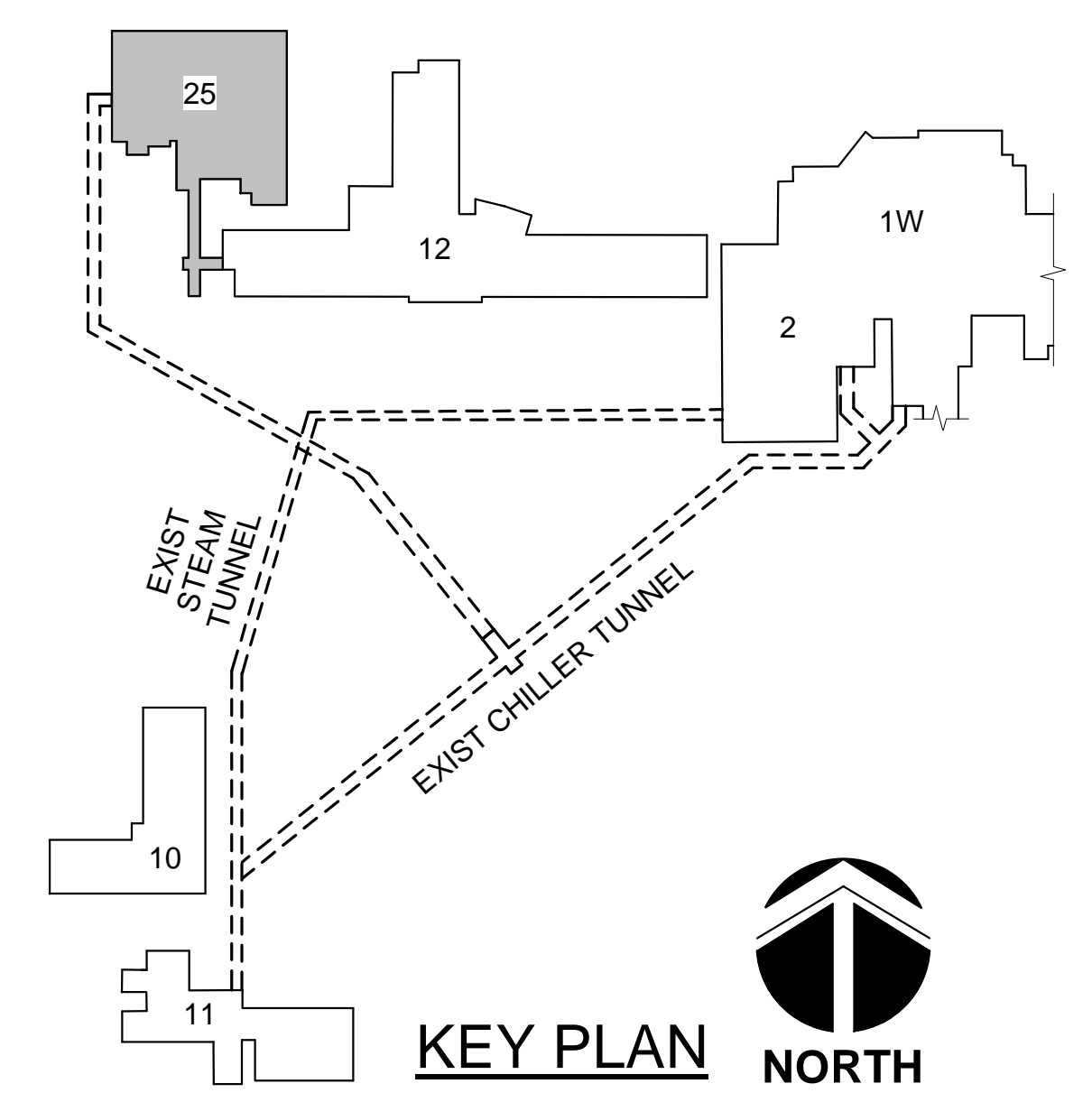
- 1 LIGHT GAUGE STEEL ROOF TRUSSES @ 24" O.C.
- 2 LIGHT GAUGE CEE OUTRIGGERS @ 24" O.C.
- 3 LIGHT GAUGE CEE-STUD GABLE FRAME ABOVE STEEL BEAM. AT INTERIOR FRAMES COORDINATE WITH MECHANICAL DUCT ROUTING IN ATTIC SPACE. PROVIDE DUCT CHASES IN FRAMES WHERE REQUIRED.
- 4 INDICATES ROOF RIDGE - TYPICAL
- 5 INDICATES TRANSITION TO FLAT ROOF - TYPICAL
- 7 1 1/2" B' 22 GAUGE METAL ROOF DECK, TYPICAL - SEE METAL DECK SCHEDULE ON SHEET SB002 FOR MORE INFORMATION
- 13 INDICATES MOMENT CONNECTION - TYPICAL. REFERENCE DETAIL 5/SF501 FOR MORE INFORMATION.
- 14 PROVIDE TUBE STEEL BRACING THIS BAY. REFERENCE DETAIL INDICATED ON PLAN.
- 17 SEE 2/SF102 FOR FRAMING AT CLERESTORY CEILING.
- 18 ROOF MOUNTED SERVICE PLATFORM AT KITCHEN HOOD. CONTRACTOR COORDINATE PLATFORM WEIGHT AND SUPPORT CONFIGURATION WITH TRUSS MANUFACTURER.
- 20 PROVIDE BUILDING SEPARATION JOINT (SEE ARCH.) & PROVIDE 1/2" EXPANSION JOINT AT CONC. SLAB.
- 22 SEE 1/SF102 FOR ATTIC FLOOR FRAMING
- 23 OVERFRAME LIGHT GAUGE STEEL ROOF TRUSSES @ 24" O.C.
- 24 SEE 3/SF102 FOR PORTE COCHERE FRAMING
- 26 PROVIDE W8X35 STEEL LINTEL IN EXISTING CMU WALL. LINTEL SHALL SPAN ACROSS BOTH DOOR OPENINGS. SEE DETAIL 4/SF102.

GENERAL NOTES

- A REFERENCE SHEET SB001 FOR STRUCTURAL NOTES AND SHEET SB002 FOR SCHEDULES.
- B REFERENCE SHEET SF501 FOR TYPICAL FRAMING DETAILS NOT NECESSARILY INDICATED ON PLANS.
- C DEFLECTION CLIPS ARE REQUIRED FOR ALL NON-LOADBEARING METAL STUD WALLS CONNECTED TO STRUCTURE ABOVE.
- D VERIFY ALL DIMENSIONS WITH ARCHITECTURAL DRAWINGS.
- E LIGHT GAUGE STEEL TRUSSES SHALL BE DESIGNED TO SUPPORT CEILING LIFTS IN ALL RESIDENT ROOMS (1,000 # CONCENTRATED LIVE LOAD). REFERENCE ARCH. REFLECTED CEILING PLAN (A310) FOR FUTURE LIFT LOCATIONS. LIFTS, TRACKS, AND SUPPORTS NIC.
- F TOP OF STEEL (T.O.S.) ELEVATION VARIES AT ROOF. TYPICAL TOP OF STEEL ELEVATIONS ARE AS LISTED BELOW. BEAMS ARE AT LOW ELEVATION UNLESS NOTED OTHERWISE.
- (HIGH) = 128'-4"
- (MIDDLE) = 117'-4"
- (LOW) = 111'-6"
- G REFERENCE DETAIL 1/SF501 FOR ROOF DECK OPENINGS.
- H TRUSS MANUFACTURER SHALL COORDINATE WITH MECHANICAL DUCT ROUTING IN ATTIC SPACE. CONFIGURE TRUSS WEB MEMBERS TO ALLOW CLEAR PATH FOR DUCT WORK.



2 CORRIDOR ROOF FRAMING PLAN
SCALE: 1/8" = 1'-0"



KEY PLAN
NORTH

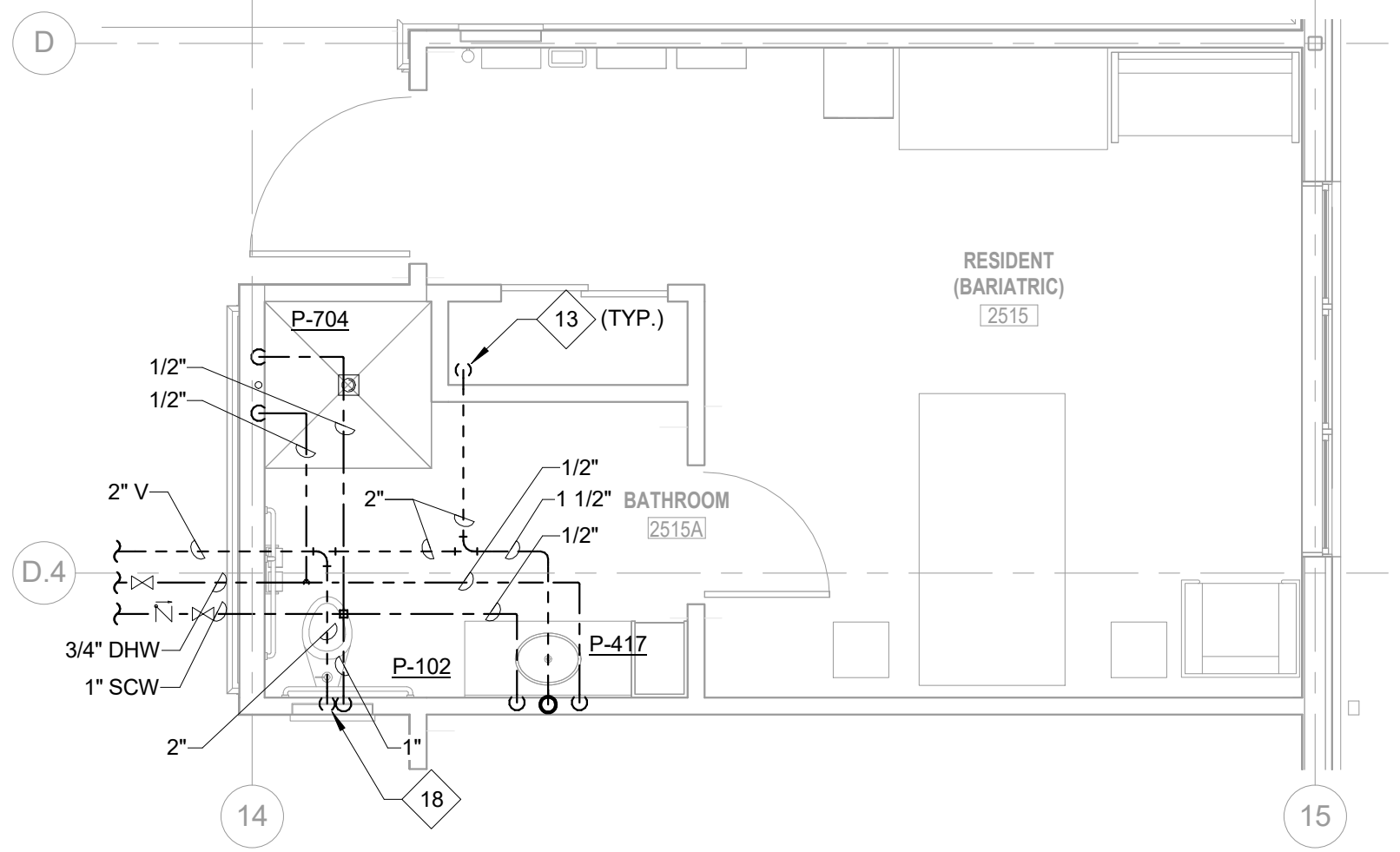
		CONSULTANTS:		ARCHITECT/ENGINEERS:	<div>SCHEMMER</div> <div>ARCHITECTS ENGINEERS PLANNERS</div> <div>TSA PROJECT NO.: 06054.032</div>	Drawing Title	Project Title		Project Number		Office of Construction and Facilities Management	
						ROOF FRAMING PLAN		CONSTRUCT CLC COTTAGES - COTTAGE 1		636-123		
						Approved:		Location		Building Number		
								3600 30TH ST. DES MOINES, IA		25		
								Drawing Number				
B - ADDENDUM NO. 2	8/14/18			Date		4/13/2018	Checked	Drawn	SF101			
Revisions:	Date					KMW	MUN	Dwg. 50 of 97				
										Department of Veterans Affairs		

GENERAL PLUMBING NOTES:

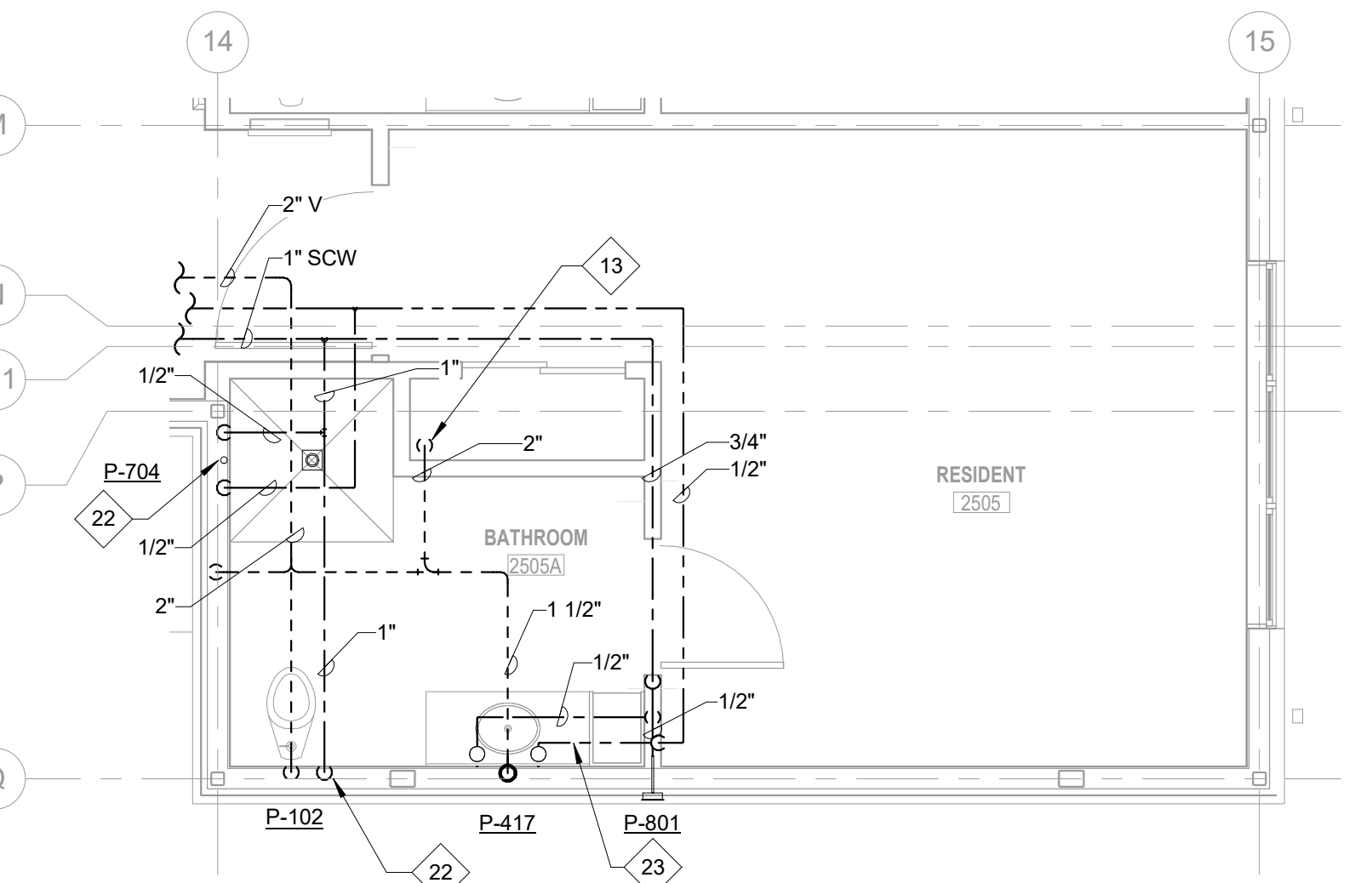
- ALL CONTRACTORS ARE RESPONSIBLE FOR REVIEWING ENTIRE SET OF DOCUMENTS TO DETERMINE THEIR FULL SCOPE OF WORK. CONTRACTOR SHALL NOT BE ALLOWED EXTRA COSTS DUE TO FAILURE TO REVIEW ENTIRE SET OF DOCUMENTS.
- CONTRACTOR SHALL TAKE ALL MEASUREMENTS FOR WORK AND BE RESPONSIBLE FOR SAME. CONTRACTOR SHALL ADJUST FOR ACTUAL FIELD CONDITIONS AT NO ADDITIONAL EXPENSE TO OWNER. COORDINATE THE WORK AND SHOP DRAWINGS WITH ALL OTHER TRADES AFFECTED.
- IN VIEWING THESE DRAWINGS, THE CONTRACTOR SHALL PAY CLOSE ATTENTION TO THE MATCH LINES. SOME WORK AND NOTE REFERENCES MAY BE REPEATED, BUT DO NOT ALWAYS SHOW ON BOTH SIDES OF THE MATCHLINE.
- ALL PLUMBING INSTALLATION SHALL BE IN ACCORDANCE WITH THE REQUIREMENTS OF THE LOCAL AUTHORITY HAVING JURISDICTION.

REF. NOTES (X):

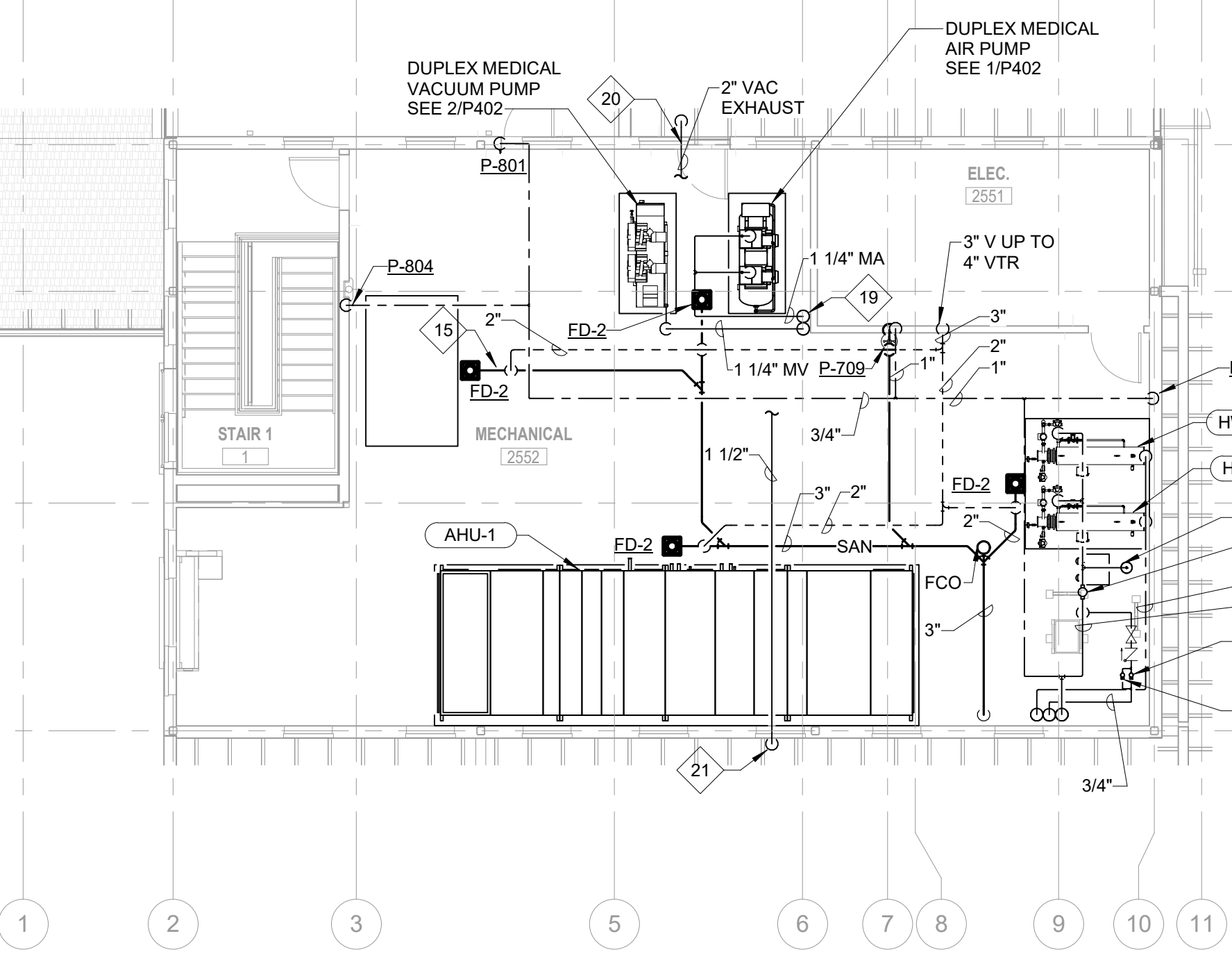
- PROVIDE 1/4" DOMESTIC COLD WATER LINE TO OWNER PROVIDED AND CONTRACTOR INSTALLED REFRIGERATOR AND COFFEE MAKER. SEE ARCHITECTURAL SHEET A-000 FOR ADDITIONAL FIXTURE INFORMATION.
- SEE ARCHITECTURAL SHEET A-000 FOR ADDITIONAL FIXTURE INFORMATION.
- DOWN TO EXISTING OXYGEN PIPE CONNECTION IN BASEMENT.
- INSTALL FLOOR SINK IN BASE OF CASEWORK.
- ROUTE 2" SCW, 1 1/2" DHW, 3/4" DHWR UP IN CHASE TO INTERSTITIAL SPACE ABOVE. SEE VIEW 5/P102 FOR CONTINUATION OF PIPING. PROVIDE ISOLATION VALVE FOR SCW, DHW, DHWR AT THE BASE OF THE RISER.
- SEE CIVIL SHEET CU101 FOR CONTINUATION OF PIPING.
- DOMESTIC WATER ENTRANCE. SEE DETAIL 6/P401 FOR ADDITIONAL INFORMATION.
- PROVIDE 3/4" VALVED DOMESTIC HOT AND DOMESTIC COLD WATER CONNECTIONS, AND 2" DRAIN CONNECTION TO OWNER PROVIDED, CONTRACTOR INSTALLED. SPA TUB. SEE ARCHITECTURAL SHEET A-000 FOR FIXTURE SPECIFICATIONS.
- PROVIDE 1/4" VALVED DOMESTIC COLD WATER CONNECTION TO REFRIGERATOR/ICE MACHINE. SEE ARCHITECTURAL SHEET A-000 FOR FIXTURE INFORMATION.
- PROVIDE 1/2" VALVED DOMESTIC HOT WATER CONNECTION AND 1 1/2" STANDPIPE TO UNDER-COUNTER DISHWASHING MACHINE. REFER TO ARCHITECTURAL SHEET A-000 FOR ADDITIONAL EQUIPMENT INFORMATION.
- ROUTE 1/2" CAPPED AND VALVED DCW LINE DOWN TO DRINK DISPENSER.
- ROUTE 3/4" DOMESTIC COLD WATER DOWN TO PRECISION PLUMBING PRODUCTS MODEL PTF-6 ELECTRONICALLY ACTIVATED TRAP PRIMER. SEE DETAIL 3/P402 FOR ADDITIONAL INFORMATION.
- VENT PIPING DOWN THROUGH FLOOR. SEE SHEET P101 FOR CONTINUATION OF PIPING. SLOPE VENT PIPING BACK TO SANITARY TO ALLOW FOR ADEQUATE DRAINAGE IN ACCORDANCE WITH LOCAL PLUMBING CODE (TYP.)
- 2" VENT UNDER FLOOR.
- DRAIN PIPING SHOWN ON THE ATTIC FLOOR PLAN FOR CLARITY IS ACTUALLY LOCATED IN THE CEILING BELOW.
- PROVIDE OXIDANT RESIDUAL LEVEL MONITOR AT COLD WATER SERVICE ENTRANCE PER THE VA PLUMBING DESIGN MANUAL.
- PROVIDE HOT WATER, HOT WATER RECIRCULATION, AND COLD WATER TEMPERATURE MONITORING IN THIS LOCATION PER THE VA PLUMBING DESIGN MANUAL.
- VTR LOCATED ABOVE RESIDENT ROOMS 2509 AND 2529. CONNECT VTR TO VERTICAL RISE IN WALL. SEE SANITARY RISER 1/P202 FOR MORE DETAILS.
- PROVIDE ISOLATION VALVES ABOVE FLOOR PENETRATION ON MEDICAL VACUUM AND MEDICAL AIR.
- MEDICAL VACUUM DISCHARGE WITH ISOLATION VALVE FROM EACH CIRCUIT AND DRIP LEG WITH LOW POINT DRAIN. SLOPE HORIZONTAL PIPE TO WALL TO DRAIN WITH NO LOW POINTS.
- MEDICAL AIR INTAKE MINIMUM 20 FT. ABOVE GRADE.
- INSTALL DCW AND DHW PIPING IN THIS AREA ON INTERIOR OF WALL INSULATION.
- ROUTE P-417 DCW AND DHW THROUGH VANITY AND SHELVING BASE AT FLOOR AND UP TO LAVATORY.



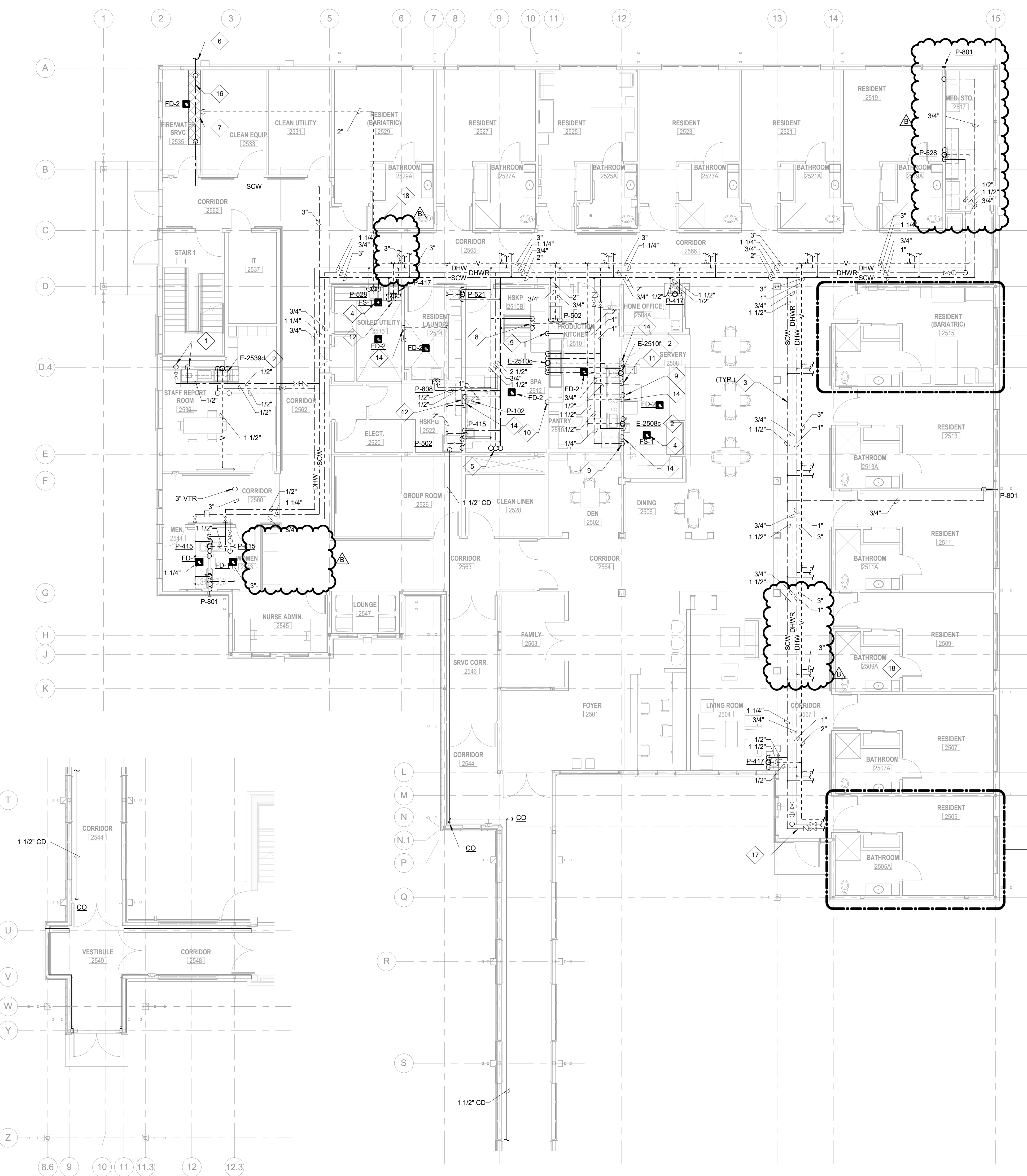
3 ENLARGED PLAN - RESIDENT ROOM (TYP.) - PLUMBING
SCALE: 1/4" = 1'-0"



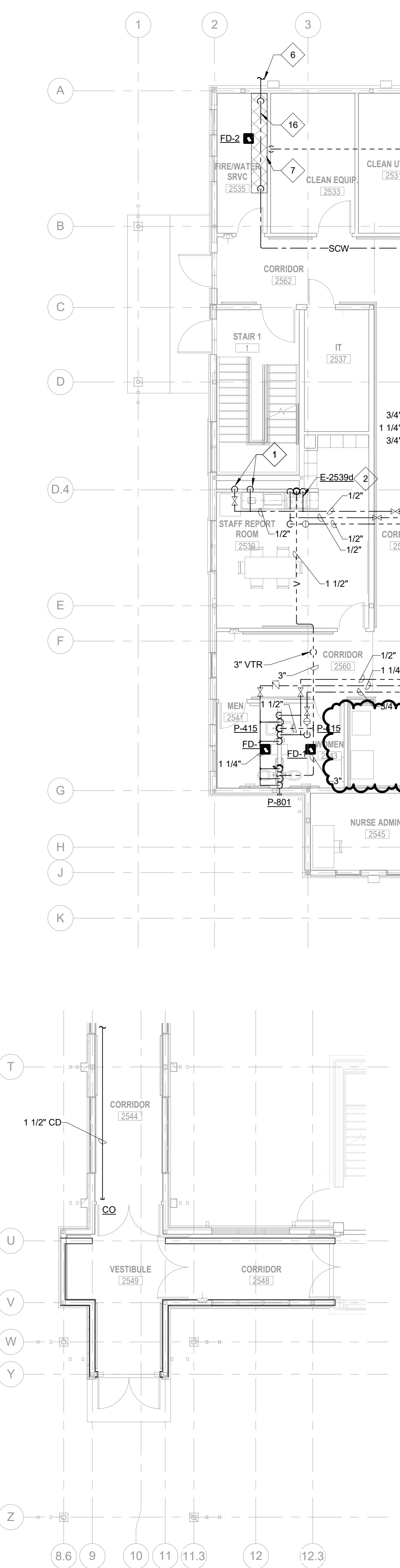
4 ENLARGED PLAN - RESIDENT ROOM 2505 - PLUMBING
SCALE: 1/4" = 1'-0"



5 ATTIC FLOOR PLAN - PLUMBING
SCALE: 1/8" = 1'-0"



1 FIRST FLOOR PLAN - AREA A - PLUMBING
SCALE: 1/8" = 1'-0"



2 FIRST FLOOR PLAN - AREA B - PLUMBING
SCALE: 1/8" = 1'-0"

CONSULTANTS:

ARCHITECT/ENGINEERS:

SCHEMMER
ARCHITECTS | ENGINEERS | PLANNERS

TSA PROJECT NO.: 06054.032

Drawing Title

FLOOR PLANS - PLUMBING

Approved: J.E.K.

Project Title

CONSTRUCT CLC
COTTAGES - COTTAGE 1

Location

3600 30TH ST. DES MOINES, IA

Date

4/13/2018

Checked

T.M.J.

Drawn

S.R.G.

Project Number

636-123

Building Number

25

Drawing Number

P102

Dwg. 73 of 97

Office of
Construction
and Facilities
Management





1 RISER DIAGRAM
SCALE: NOT TO SCALE

VA FORM 08-6231