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SECTION 06600
PLASTIC SURFACING MATERIALS

PART 1 -- GENERAL

1.01 DESCRIPTION

Provide factory-finished Surface Materials and similar items where shown on the drawings, as specified herein, and as needed for a complete and proper installation. Work may include, but is not limited to:

1. Standard Decorative Laminates.
2. Solid Surfacing.
3. Marker Board Laminate.

1.02 REFERENCES

- A. ASTM D 638 - Standard Test Method for Tensile Properties of Plastics.
- B. ASTM G 21 - Standard Practice for Determining Resistance of Synthetic Polymeric Materials to Fungi.
- C. ISO 4586-2 - High Pressure Decorative Laminates; International Organization for Standardization.

1.03 SUBSTITUTIONS

Substitutions will be considered per Article 5.3 of the General Conditions.

1.04 SUBMITTALS

- A. Samples:
 1. Selection Samples: Submit actual samples of surfacing materials to illustrate full range of colors, patterns, and finishes available.
 2. Verification Samples: Submit two samples, each 12 inches square, illustrating each selected surfacing material in specified color, pattern, and finish.
- B. Manufacturer's Instructions:
 1. Submit manufacturer's printed installation instructions for each product.
 2. Submit manufacturer's Safety Data Sheets (M.S.D.S.) for each adhesive.

PART 2 -- PRODUCTS

2.01 MANUFACTURERS

Acceptable Products: Wilsonart International, Dupont Corian, Transolid, Inc.

2.02 STANDARD DECORATIVE LAMINATES

- A. Acceptable Products: Wilsonart Laminate, Formica.
- B. Product Description: Decorative surface papers, impregnated with melamine resins, bonded under heat and pressure to kraft papers impregnated with phenolic resins.
- C. Standard Decorative Laminate -- General Purpose Type: having the following physical characteristics:
 1. Sheet thickness: 0.048-inch (1.219 mm) plus/minus 0.005-inch (0.127 mm).
 2. Exceeding performance requirements of NEMA LD 3-1995 Grade HGS.

3. Surface burning characteristics in accordance with ASTM E 84; unbonded: Flame spread 55; Smoke developed 30.
4. Patterns and Finishes: Selected from manufacturer's full range of available selections, as selected and approved by Architect.

2.03 SOLID SURFACING MATERIAL

- A. Acceptable Product: Wilsonart Gibraltar Solid Surfacing, Type 051, or approved equal.
- B. Product Description: Homogenous sheet material composed of acrylic resins, fire-retardant filler materials, and coloring agents.
 1. Nominal sheet thickness: 0.50 inch (13 mm).
 2. Surface burning characteristics in accordance with ASTM E 84: Flame spread less than 25; Smoke developed less than 25.
 3. Liquid Absorption, ISO 4586-2, for 1/2-inch material thickness: 0.4 percent after 2 hours boiling water.
- C. Izod Impact, ASTM D 256, Method A: 0.2 foot pounds per inch.
 1. Tensile Modulus, ASTM D 638 Nominal: 1.7 million pounds per square inch.
 2. Thermal Expansion, ASTM D 696: 0.000019-inch per inch per degree F, maximum.
 3. Hardness, ASTM D 2583, Barcol Impressor: 59.
 4. Flexural Modulus, ASTM D 790: 1.6 million pounds per square inch.
 5. Deflection Temperature under load, ASTM D 648: 90 degrees C.
 6. Stain Resistance: ANSI Z124.6 modified, Method 3.4: No effect.
 7. Boiling Water Resistance, NEMA LD 3-1995, Method 3.5: No effect.
 8. High Temperature Resistance: NEMA LD 3-1995, Method 3.6: No effect.
 9. Radiant Heat Resistance: NEMA LD 3-1995, Method 3.10: No effect.
 10. Light Resistance: NEMA LD 3-1995, Method 3.3: No effect.
 11. Ball Impact Resistance, NEMA LD 3-1995, Method 3.8, one half pound ball, unsupported: 125 inches.
 12. Specific Gravity: 0.977 ounces per cubic inch (1.69 grams per cubic centimeter).
 13. Approximate weight: 4.2 pounds per square foot (20.5 kg/square m).
 14. Weatherability: ASTM D 2565: Pass.
 15. Fungus Resistance, ASTM G 21: Pass.
 16. Bacterial Resistance, ASTM G 22: Pass.
 17. Pittsburgh Protocol Toxicity: 66.9 grams.
 18. Patterns and Finishes: Selected from manufacturer's full range of available selections, selected and approved by Architect.
 19. Impact Resistance NEMA LD3-1995 (1/2 lb. Ball) SSV bonded to substrate*** Method 3.08 modified. 125" (No Failure)
 20. Tensile Toughness ASTM D 638. 21 (in. – lb./in. ³)
 21. Tensile Modulus ASTM D 638 Nominal. 1.7×10^{-5} lb./in.³
 22. Density 1.60 gram/cm³

- 23. Approximate weight 4.2 lbs./ft²
- 24. Pittsburgh Protocol Toxicity = 30 grams range

2.04 MARKER BOARD LAMINATES

- A. Acceptable Product: Wilsonart Marker Board Laminate.
- B. Product Description: Overlay saturated with melamine resins and decorative surface papers, impregnated with melamine resins, bonded under heat and pressure to kraft papers impregnated with phenolic resins.
- C. Marker Board Laminate - Horizontal Grade Type: Type 136.
 - 1. Sheet thickness: 0.050-inch plus/minus 0.005-inch (1.27 plus/minus 0.127 mm).
 - 2. Exceeding performance requirements of NEMA LD 3-1995 Grade HGS.
 - 3. Surface burning characteristics in accordance with ASTM E 84; unbonded: Flame spread 40; Smoke developed 115.
- D. Marker Board Laminate - Vertical Grade Type: Type 336.
 - 1. Sheet thickness: 0.030-inch plus/minus 0.003-inch (0.762 plus/minus 0.076 mm).
 - 2. Exceeding performance requirements of NEMA LD 3-1995 Grade VGP.
 - 3. Surface burning characteristics in accordance with ASTM E 84; unbonded: Flame spread 40; Smoke developed 70.
 - 4. Colors: Selected from manufacturer's full range of available selections, as selected and approved by Architect.
- E. Marker Board Laminate - Fire-Rated Type: Type 636.
 - 1. Sheet thickness: 0.050-inch plus/minus 0.005-inch (1.27 plus/minus 0.127 mm).
 - 2. Exceeding performance requirements of NEMA LD 3-1995 Grade HGF.
 - 3. Surface burning characteristics in accordance with ASTM E 84; unbonded: Flame spread 25; Smoke developed 110.
 - 4. Color: Selected from manufacturer's full range of available selections, as selected and approved by Architect.

PART 3 -- EXECUTION

3.01 EXAMINATION

- A. Examine the areas and conditions under which work of this Section will be performed
- B. Correct conditions detrimental to timely and proper completion of the Work.
- C. Do not proceed until unsatisfactory conditions are corrected.
- D. Beginning of installation means acceptance of conditions.

3.02 PREPARATION

Surface preparation: Precondition surfacing materials and surfaces to receive surfacing materials in accordance with manufacturer's printed installation instructions.

3.03 APPLICATION

Install materials in accordance with manufacturer's printed instructions.

***** END OF SECTION *****

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SECTION 07210
THERMAL INSULATION

PART 1 – GENERAL

1.01 SCOPE OF WORK

- A. Furnish and install Thermal Insulation indicated on the Drawings and as specified herein.
- B. The principal items of work include:
 - 1. Thermal Insulation within roof.
 - 2. Thermal Insulation within exterior walls.
 - 3. Thermal Insulation within interior walls.

1.02 QUALITY ASSURANCE

- A. Use adequate numbers of skilled workmen who are thoroughly trained and experienced in the necessary crafts and who are completely familiar with the specified requirements and the methods needed for proper performance of the work of this Section.
- B. Upon completion of this portion of the Work, complete and post a certificate of insulation compliance in accordance with pertinent requirements of governmental agencies having jurisdiction.

1.03 SUBSTITUTIONS

Substitutions will be considered per Article 5.3 of the General Conditions.

1.04 SUBMITTALS

Product data: Within 35 calendar days after the Contractor has received the Owner's Notice to Proceed, submit:

- 1. Materials list of items to be provided under this Section.
- 2. Manufacturer's specifications and other data needed to prove compliance with the specified requirements.
- 3. Manufacturer's recommended installation procedures which, when accepted by the Architect, will become the basis for accepting or rejecting actual installation procedures used on the work.

1.05 GUARANTEE

Contractor Guarantee: Contractor guarantees the work covered by this specification against all defects in material and workmanship for a period of not less than two (2) years from the date the Owner records Notice of Completion.

PART 2 – PRODUCTS

2.01 MATERIALS

- A. Provide thermal insulation as indicated on Drawings. All insulation shall be inorganic glass fiber insulation. Insulation shall comply with ASTM Testing Standards. Fire Hazard Classification, Flame Spread Index, Smoke Developed Index, Combustibility, and Fire Endurance Ratings as required by Code.
- B. Insulation shall be as manufactured by Certain-Teed, Johns-Manville, Owens-Corning, or Architect approved equal.

PART 3 -- EXECUTION

3.01 EXAMINATION

- A. Examine the areas and conditions under which work of this Section will be performed.
- B. Correct conditions detrimental to timely and proper completion of the Work.
- C. Do not proceed until unsatisfactory conditions are corrected.
- D. Beginning of installation means acceptance of conditions.

3.02 PREPARATION

- A. Verify adjacent materials are dry and ready to receive installation.
- B. Verify mechanical and electrical services within walls have been installed and tested.

3.03 INSPECTION

- A. Before any installation is started, determine that the other work is suitable to receive insulation.
- B. Examine the areas and conditions under which work of this Section will be performed. Correct conditions detrimental to timely and proper completion of the Work. Do not proceed until unsatisfactory conditions are corrected.
- C. Remove or protect against projections in construction framing that may damage or prevent proper insulation.

3.04 INSTALLATION

- A. All work shall be performed by licensed applicators, shall comply with the recommendations of the manufacturer and the National Association of Insulation Manufacturers.
- B. Install insulation with factory applied membrane facing warm side of building spaces. Lap ends and side flanges of membrane over and between framing members. Secure in place. Tape seal butt ends and lapped side flanges. Tape seal tears or cuts in membrane.
- C. Trim insulation neatly to fit spaces. Use batts free of damage. Install batt insulation, in wall spaces without gaps or voids.
- D. Install Insulation in all indicated walls from floor to underside of roof. Secure insulation with 19-gage wire or 1" wide, 20 gage steel strips. Architect shall approve all insulation details, including methods of fastening, before commencement of the work.

3.05 CLEAN UP AND DISPOSAL

At frequent intervals during and again upon completion of work, remove from building and working premises tools and equipment, surplus materials, all rubbish and debris of whatever nature not caused by other trades, and leave the work in a clean, orderly and acceptable condition approved by the Architect.

***** END OF SECTION *****

SECTION 07840
FIRE STOPPING

PART 1 -- GENERAL

1.01 DESCRIPTION

- A. Work included: Provide firestopping where indicated on the Drawings, as specified herein, and as needed for a complete and proper installation.
- B. It is the intent of this section of the specifications to establish a single, competent source to be responsible for providing all labor, materials, products, equipment and services, to supply and install the firestopping and smoke seal work for the entire project, at the following locations, as indicated on the drawings:
 - 1. Openings in fire rated walls, floors and roofs both empty and those containing penetrations such as cables, conduits, cable trays, pipes, ducts and similar penetrating items.
 - 2. Gaps between fire-rated floor slabs and exterior curtain walls.
 - 3. Gaps between fire-rated walls and exterior curtain walls.
 - 4. Gaps located within expansion joints.
 - 5. Gaps between the tops of fire rated walls and underside of fire rated floor or roof assemblies.
 - 6. Penetrations through smoke barriers and construction enclosing compartmentalized areas involving both empty openings and openings containing penetrating items.
 - 7. Openings at each floor level in fire rated shafts or stairwells.

1.02 RELATED WORK

- A. Openings through Floors and Walls:
 - 1. Fire Rated: Metal sleeves for fire rated openings through floors and walls shall be provided under applicable mechanical and electrical specification sections.
 - 2. Non-Rated: Non-rated openings through floors and walls shall be sealed under applicable mechanical and electrical specification sections.
- B. Firestopping and smoke seals within mechanical (i.e. inside ducts, dampers) and electrical assemblies shall be sealed under applicable mechanical and electrical specifications sections and only in accordance with the equipment or device manufacturers' installation instructions. Firestopping and smoke seals around outside of such mechanical and electrical assemblies, where they penetrate fire rated separations, are the responsibility of this section.

1.03 REFERENCE STANDARDS/DOCUMENTS

- A. ASTM E814 - Test Method of Fire tests of Through Penetration Firestops.
- B. ANSI/UL 1479 - Fire Tests Of Through-Penetration Firestops
- C. ANSI/UL 2079 - Standard for Tests for Fire Resistance of Building Joint Systems
- D. UL: Fire Resistance Directory, Volume 2.
- E. ITS: Directory of Listed Products.
- F. Factory Mutual, Approvals Guide

1.04 SYSTEM DESCRIPTION

- A. Firestopping Materials: Provide firestopping system(s) of sufficient thickness, width and density to provide and maintain a fire resistance rating, as indicated on drawings and in accordance with [UL], [WH], or [FM] design numbers.
- B. Provide a seal completely filling all annular spaces to prevent the passage of flame, smoke and gases through the opening in the fire separation in which it is installed.
- C. Material Compatibility: Provide materials which are compatible with all materials used in the system including materials used in or on penetrating items as well as all construction materials used in conjunction or contiguous with the system.
- D. Accessories: Provide components for each firestopping system that are needed to install fill materials. Use only components specified by the firestopping manufacturer and approved by the qualified testing and inspecting agency for the designated fire resistance rated systems. Accessories include but are not limited to the following items:
 - 1. Permanent forming/damming/backing materials
 - 2. Temporary forming materials
 - 3. Substrate primers
 - 4. Collars
 - 5. Steel sleeves

1.05 SUBSTITUTIONS

Substitutions will be considered per Article 5.3 of the General Conditions.

1.06 SUBMITTALS

- A. Manufacturer's Data: Submit manufacturer's specifications, installation instructions and product data for each material required. Include [UL], [WH], or [FM] tested systems or designs to show compliance with the Contract Documents.
- B. Shop Drawings: Submit shop drawings showing typical installation details including reinforcement, anchorage, fastenings and method of installation for each type of firestopping condition.
- C. Samples: If requested, submit samples of each type of firestopping systems, smoke seals and accessories. Indicate location where material/system shall be utilized.

1.07 QUALITY ASSURANCE

- A. Manufacturer: Company specializing in manufacturing products of this Section with minimum ten (10) years documented experience, and having a quality management system that is registered as conforming to the requirements of ISO9001.
- B. Applicator: Company having a minimum of three (3) years experience in the installation of materials specified herein on projects comparable to this project. The firm shall have the written authorization of the firestopping material manufacturer (s).

1.08 REGULATORY REQUIREMENTS

- A. Conform to applicable local Building Codes for fire resistance ratings.
- B. Provide materials, accessories and application procedures which have been listed by [UL], [WH], [FM] or [tested by a nationally recognized independent testing agency] in accordance with [ASTM E814], [ANSI/UL 1479], or [ANSI/UL 2079] to achieve the required fire protection rating(s).

1.09 ENVIRONMENTAL REQUIREMENTS

- A. Do not proceed with the installation of firestopping materials when temperatures or weather conditions exceed the manufacturer's recommended limitations for installation.

- B. Ventilate solvent based and moisture-cure firestopping per firestopping manufacturer's instructions by natural means or, where this is inadequate, by forced air circulation.

1.010 DELIVERY, STORAGE AND HANDLING

Deliver materials to Site in manufacturer's sealed and labelled containers intact. Handle and store materials in accordance with manufacturer's instructions.

1.011 PROJECT/SITE CONDITIONS

Comply with manufacturer's recommended requirements for temperature, relative humidity and substrate moisture content during application and curing of materials.

1.012 SEQUENCING AND SCHEDULING

Do not install firestopping system(s) until Work within opening has been completed. Coordinate with other applicable Sections. Schedule work of other trades so that firestopping applications can be inspected prior to being covered by subsequent construction.

PART 2 -- PRODUCTS

2.01 ACCEPTABLE MANUFACTURERS

Provide firestopping silicone sealants, water-based sealants, intumescent sealant, mortars, or firestop devices from the following manufacturer:

A/D Fire Protection Systems Inc. or Architect approved equal.

2.02 MATERIALS

- A. Provide a complete system of asbestos-free firestop systems capable of maintaining an effective barrier against flame, smoke and gases in compliance with requirements of [ASTM E814], [ANSI/UL 1479], or [ANSI/UL 2079] and listed by [UL], [WH], or [FM] and in addition are approved by jurisdictional authorities and the Consultant.
- B. A/D FIRE BARRIER Silicone Sealants: For use in: openings with penetrating items subject to high movement; multiple penetration systems; for combustible pipes up to 2-in. diameter; in control joints; in curtain wall joints; expansion joints; floor/wall joints; wall/wall joints; head of wall joints; and as a sealant for smoke barrier construction.
- C. A/D FIRE BARRIER Intumescent Caulk: For general use as a firestop sealant with: insulated pipes; pipes; electrical cables and conduit; ducts.
- D. A/D FIRE BARRIER Seal and Seal NS: Water based firestop sealants for use with: control joints; head of wall joints; floor/wall joints; wall/wall joints; multiple penetration systems; plumbing; mechanical; electrical; and where sprayed sealant application is required or desired.
- E. A/D FIRE BARRIER Mortar: For use in: large openings; static non-moving penetrations such as cable trays; for multiple penetration systems; electrical and communication bundles; conduits; non-combustible sleeves; and insulated pipes.
- F. A/D FIRE BARRIER Collars: For use in openings with single combustible pipe penetrations greater than 2-in. diameter.
- G. A/D FIRE BARRIER Pillows: For use in openings with: cable tray; multiple cable penetrations; where retrofitting of penetrating items is anticipated, and as a temporary fire stop system.
- H. Fire stop system ratings: Comply with applicable Building Code requirements for locations and ratings.

2.03 ACCESSORIES

- A. Damming and backup materials, supports and anchoring devices: Non-combustible, to manufacturer's recommendations and in accordance with the tested system being installed as acceptable to jurisdictional authorities.
- B. Primers: As required by firestopping manufacturer and compatible with selected system and contiguous materials.
- C. Water: Potable.
- D. Firestopping for vertical (wall) applications: Non-sag caulk or spray grade sealants, Mortar, Collars or Pillows.
- E. Firestopping for horizontal (floor) applications: Non-sag caulk or self-levelling or spray grade sealants, Mortar, Collars or Pillows.
- F. Firestopping for overhead applications: Non-sag caulk or spray grade sealants or Mortar.
- G. Tape: Pressure sensitive masking tape as recommended by the firestopping manufacturer.

PART 3 – EXECUTION

3.01 EXAMINATION

- A. Examine the areas and conditions under which work of this Section will be performed.
- B. Examine substrates, openings, voids, adjoining construction and conditions under which the Work is to be installed. Confirm compatibility of surfaces scheduled to receive firestopping.
- C. Correct conditions detrimental to timely and proper completion of the Work.
- D. Verify that penetrating elements are securely fixed and properly located with the proper space allowance between penetrations and surfaces of openings.
- E. Do not proceed with Work until unsatisfactory conditions are corrected.
- F. Beginning of installation means acceptance of conditions.

3.02 PREPARATION

- A. Surfaces to receive firestopping shall be free of dirt, dust, grease, oil, rust, loose materials, form release agents, frost, moisture or any other matter which would impair the bond of firestopping material to the substrate of penetrating item(s).
- B. Prime substrates in accordance with manufacturer's written instructions or recommendations. Confine primers to areas of bond; do not allow spillage or migration onto exposed surfaces.
- C. Do not apply firestopping and smoke seals to surfaces previously painted or treated with sealers, curing compounds, water repellent or other coatings unless tests have been performed to ensure compatibility of materials. Remove coatings as required.
- D. Ensure that anchoring devices, back-up materials, clips, sleeves, supports and other related materials used in the actual fire tests are provided.
- E. Mask where necessary to prevent firestopping materials from contacting adjoining surfaces that will remain exposed upon completion of Work. Remove tape as soon as it is possible to do so without disturbing firestopping seal with substrates.
- F. Installation is not to proceed until submittals have been completed.

3.03 INSTALLATION

- A. Manufacturer's Instructions: Comply with [UL], [WH] or [FM] Listings and manufacturer's instructions for the type of material and condition of opening in each case. Consult with

the manufacturer's technical representative to determine proper procedure for conditions not fully covered by printed instructions. Record in writing any oral instructions received, with copy to manufacturer.

- B. Install firestopping with sufficient pressure to properly fill and seal openings to ensure an effective smoke seal. Tool or trowel exposed surfaces. Remove excess firestopping material promptly as the Work progresses and upon completion.
- C. Damming: Provide leak-proof dams as required to seal openings and contain liquid sealants, putty or mortar until cured. Install damming in accordance with manufacturer's instructions.
- D. Damming Boards: Install forming/damming materials and other accessories of type required to support fill materials during their application and in the position needed to produce the shapes and depths required to achieve fire ratings of through-penetration fire stop systems.
 - 1. Combustible Type: For temporary dams only. Remove after firestopping material has cured.
 - 2. Non-Combustible Type: For temporary or permanent dams. Provide non-combustible type wherever damming material cannot be removed after applying firestopping materials.
- E. Void Filler: Use materials recommended by the firestopping manufacturer to seal gaps created by non-combustible type damming boards and to seal around cables, conduits, pipes and where void filler material becomes part of the fire rated assembly.
- F. Sealant: Install damming material or mineral wool as required. Apply sealant so air voids are not present and sealant is in full contact with penetrating items. Tool sealant to ensure substrate contact. Remove excess sealant in accordance with manufacturer's recommendations.
- G. Mortar: Install damming material as required. Mix mortar in strict accordance with manufacturers instructions. Pump, trowel or hand pack mortar through openings to minimum thickness as recommended by manufacturer and as listed by [UL], [WH] or [FM], to achieve required fire rating.
- H. Firestopping Mineral Wool: Install firestopping by compressing material to the minimum required by [UL], [WH] or [FM] listing. Apply firestopping in sufficient thickness, depth and density so as to achieve the required fire resistance rating. Use impaling clips to support and secure firestopping where required by tested system.

3.04 FIELD QUALITY CONTROL

- A. Notify Consultant when completed installations are ready for inspection prior to concealing or enclosing an area containing firestopping materials.
- B. Arrange for inspections by the Owners independent inspection and testing company, appointed and paid for by Owner.
- C. Following field inspections, provide all repair as required to ensure compliance with the Contract Documents.

3.05 CLEANING AND PROTECTION

- A. Upon completion of this work, remove all materials, equipment and debris from the site.
- B. Leave work area and adjacent surfaces in a condition acceptable to the Consultant.
- C. Leave installed work with sufficient protection to enable it to remain untouched until project turnover.

END OF SECTION

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SECTION 07900
CAULKING AND SEALANTS

PART 1 -- GENERAL

1.01 DESCRIPTION

Work included: Throughout the work, seal and caulk joints where shown on the Drawings and elsewhere as required to provide a positive barrier against passage of moisture and passage of air.

1.02 QUALITY ASSURANCE

- A. Conform to Sealant and Waterproofers Institute requirements for materials and installation.
- B. Maintain temperature and humidity recommended by the sealant manufacturer during and after installation.
- C. Use adequate numbers of skilled workmen who are thoroughly trained and experienced in the necessary crafts and who are completely familiar with the specified requirements and the methods needed for proper performance of the work of this Section.
- D. Warranty: Provide written warranty for all caulking and sealants against all defects of material or application for a period of five (5) years after date of acceptance. All failures that may occur within this period due to defective application or materials shall, upon written notification of such failures, be repaired or replaced with proper materials and labor as accepted by the Architect, at no additional cost to the Owner.

1.03 SUBSTITUTIONS

Substitutions will be considered per Article 5.3 of the General Conditions.

1.04 SUBMITTALS

Product data: Within 35 calendar days after the Contractor has received the Owner's Notice to Proceed, submit:

- 1. List of items that will be provided under this Section.
- 2. Manufacturer's Data: catalog cuts, dimensioned drawings, and other data needed to prove compliance with the specified requirements.
- 3. Manufacturer's recommended installation procedures which, when accepted by the Architect, will become the basis for accepting or rejecting actual installation procedures used on the Work.

1.05 WARRANTY

- A. The guarantee specified herein shall include warranties against leakage, hardening, cracking, crumbling, melting, running, shrinking or staining adjacent surfaces.
- B. Contractor Guarantee: Contractor guarantees the work covered by this specification against all defects in material and workmanship for a period of not less than five (5) years from the date the Owner records Notice of Completion.

PART 2 -- PRODUCTS

2.01 SEALANTS

- A. Except as specifically otherwise accepted by the Architect, use only the types of sealants described as follows:

1. One component polyurethane sealant, moisture curing, low modulus, FS TT-S-0023OC, Type II, Class A, ASTM-C-920, Class 25, for vertical and horizontal joints in connection with all building materials. Do not use in traffic areas. Minimum $\frac{1}{4}$ " joint; maximum $1\frac{1}{4}$ " x $\frac{3}{8}$ "d.
 - a. Dymonic by Tremco
 - b. Sonolastic NP1 by Sonneborn
2. One-part silicone sealant, moisture curing, low modulus, FS TT-S-0023OC, Type II, Class A, FS TT-S-001543A, Class A, for vertical and horizontal joints in connection with aluminum, glass and concrete materials which require greater movement capabilities. Do not use in traffic areas. Minimum joint $\frac{1}{4}$ " x $\frac{3}{16}$ "d; maximum 1 " x $\frac{1}{2}$ "d.
 - a. Spectrum 1 by Tremco
 - b. Omniseal by Sonneborn
 - c. Dow Corning 790
3. One-part silicone sealant, medium modulus, neutral cure, FS S-0023OC, Type II, Class A, FS TT-S-001543A, Type II, Class A, ASTM C920, Class 25, for vertical and horizontal joints in connection with non-porous surfaces such as aluminum, glass, tile, laminated plastic and concrete. Do not use in traffic areas.
 - a. Spectrum 2 by Tremco
 - b. Omni Plus by Sonneborn
 - c. Dow Corning 795
 - d. Construction 1200 by GE
4. Multi-Component polyurethane sealant, FS TT-S-00227E, Type I, Class A, ASTM C920 for horizontal joints in traffic areas. Minimum $\frac{3}{8}$ " wide, depth to be $\frac{3}{8}$ " to $\frac{1}{2}$ " - use primer.
 - a. THC-900/901 by Tremco
 - b. Chem. Caulk 950 by Bostick
5. One-part translucent silicone sealant, low modulus, moisture curing, FS TT-S-0023OC, Type II, Class A, FS TT-S-001543A, Type II, Class A, for vertical joints in connection with butt glazing.
 - a. 895 Silicone by Pecora
 - b. Silglaze N by GE
6. One-part mildew resistant silicone sealant meeting requirements of FDA Regulation 21 CFR 177.2600, for vertical and horizontal joints in connection with non-porous applications as sealing around bathroom fixtures, shower-tub enclosures, sinks and urinals.
 - a. Dow Corning 786
 - b. Sanitary 1700 by GE
7. One-part siliconized acrylic latex polymer caulk, ASTM C834-76, for interior horizontal and vertical joints in connection with window and door buck perimeters, interior wall surfaces, etc.
 - a. AC-20 by Pecora
 - b. Acrylic Latex by Tremco

8. Roof Penetrations: Use asphalt mastic conforming to ASTM D491.
9. For other services, provide products especially formulated for the proposed use and accepted in advance by the Architect.

B. Colors:

1. The Architect will select Colors for each sealant installation to match adjacent finishes from a standard color list normally available from the specified manufacturers.
2. Should a matching standard color not be available from the accepted manufacturer except at additional charge, the Contractor shall provide such colors at no additional cost to the Owner.
3. In concealed installations, and in partially or fully exposed installations where so accepted by the Architect, use standard gray or black sealant.

2.02 PRIMERS

Use only those primers that are: non-staining, have been tested for durability on the surfaces to be sealed, and are specifically recommended for this installation by the manufacturer of the sealant used.

2.03 BACKUP MATERIALS

- A.** Use only those backup materials that are specifically recommended for this installation by the manufacturer of the sealant used, which are non-absorbent, and which are non-staining.
- B.** Acceptable types include:
1. Closed-cell resilient urethane or polyvinyl chloride foam;
 2. Closed-cell polyethylene foam;
 3. Closed-cell sponge of vinyl or rubber;
 4. Polychloroprene tubes or beads;
 5. Polyisobutylene extrusions;
 6. Oil-less dry jute.
- C.** Preformed support strips for ceramic tile control joint and expansion joint work: Use polyisobutylene or polychloroprene rubber.

2.04 BOND-PREVENTATIVE MATERIALS

Use only one of the following as best suited for the application, and as recommended by the manufacturer of the sealant used:

1. Polyethylene tape, pressure-sensitive adhesive, with the adhesive required only to hold tape to the construction materials as indicated;
2. Aluminum foil complying with MIL-A-148E;
3. Wax paper complying with Fed. Spec. UU-P-270.

2.05 JOINT PACKING

Shall be installed in all joints to receive sealant. Material shall be a resilient type such as closed cell PVC foam or as recommended by the manufacturer. Oakum or other types of absorptive materials shall not be used as packing material.

2.06 OTHER MATERIALS

- A.** For masking around joints, provide masking tape complying with Fed. Spec. UU-T-106c.

- B. Provide other materials, not specifically described but required for a complete and proper installation, as selected by the Contractor subject to the acceptance of the Architect.

PART 3 -- EXECUTION

3.01 EXAMINATION

- A. Examine the areas and conditions under which work of this Section will be performed.
- B. Correct conditions detrimental to timely and proper completion of the Work.
- C. Do not proceed until unsatisfactory conditions are corrected.
- D. Beginning of installation means acceptance of conditions.

3.02 PREPARATION

- A. Concrete and ceramic tile surfaces:
 - 1. Install only on surfaces that are dry, sound, and well brushed, wiping free from dust.
 - 2. At open joints, remove dust by mechanically blown compressed air if so required.
 - 3. Use solvent to remove oil and grease, wiping the surfaces with clean rags.
 - 4. Where surfaces have been treated, remove the surface treatment by sandblasting or wire brushing.
 - 5. Remove laitance and mortar from joint cavities.
 - 6. Where backstop is required, insert the approved backup material into the joint cavity to the depth needed.
- B. Steel surfaces:
 - 1. Steel surfaces in contact with sealant:
 - a. Sandblast as required to achieve acceptable surface for bonding.
 - b. If sandblasting is not practical, or would damage adjacent finish, scrape the metal or wire brush to remove mill scale.
 - c. Use solvent to remove oil and grease, wiping the surfaces with clean rags.
 - 2. Remove protective coatings on steel by sandblasting or by using a solvent that leaves no residue.
- C. Aluminum surfaces:
 - 1. Remove temporary protective coatings, dirt, oil, and grease.
 - 2. When masking tape is used for protective cover, remove the tape just prior to applying the sealant.
 - 3. Use only such solvents to remove protective coatings as are recommended for that purpose by the manufacturer of the aluminum work, and which are non-staining.

3.03 INSTALLATION OF BACKUP MATERIAL

- A. Use only the backup material recommended by the manufacturer of the sealant used, and accepted by the Architect for the particular installation, compressing the backup material 25% to 50% to achieve a positive and secure fit.
- B. When using backup of tub or rod stock, avoid lengthwise stretching of the material. Do not twist or braid hose or rod backup stock.
- C. Interior and exterior joints where no backing has been provided or which is in excess of

3/4" deep shall be packed by this subcontractor with fiberglass or a suitable joint filler to reduce the depth to 1/2" maximum. Maximum movement: the width of the joint shall be at least four times its maximum movement.

3.04 PRIMING

- A. Use only the primer recommended by the manufacturer of the sealant, and accepted by the Architect for the particular installation, applying in strict accordance with the manufacturer's recommendations as accepted by the Architect.
- B. The priming of joints shall be by brush to reach all surfaces to which compound will be applied. Primer shall be provided on masonry, concrete and wood surfaces as recommended by sealant manufacturer. Primer shall not be applied to surfaces that will be exposed after caulking is completed.

3.05 BOND-BREAKER INSTALLATION

Provide an approved bond-breaker where recommended by the manufacturer of the sealant, and where directed by the Architect, adhering strictly to the installation recommendations as accepted by the Architect.

3.06 INSTALLATION OF SEALANTS

- A. Prior to start of installation in each joint, verify the joint type according to details on the Drawings, or as otherwise directed by the Architect, and verify that the required proportion of width of joint to depth of joint has been secured.
- B. Equipment:
 - 1. Apply sealant under pressure with power-actuated or hand gun, or by other appropriate means.
 - 2. Use guns with nozzle of proper size, and providing sufficient pressure to completely fill the joints as designed.
- C. Thoroughly and complete mask joints where the appearance of sealant on adjacent surfaces would be objectionable.
- D. Install the sealant in strict accordance with the manufacturer's recommendations as accepted by the Architect, thoroughly filling joints to the recommended depth.
- E. Tool joints to the profile shown on the Drawings, or as otherwise required if such profiles are not shown on the Drawings.
- F. Cleaning up:
 - 1. Remove masking tape immediately after joints have been tooled.
 - 2. Clean adjacent surfaces free from sealant as the installation progresses, using solvent or cleaning agent recommended by the manufacturer of the sealant used.
 - 3. The excess material shall be cleaned from the surfaces adjacent to the joint, following the caulking operation and the top of the compound deposit shall be left with a smooth even finish. No material is permitted on the exposed face of aluminum sections.

*** END OF SECTION ***

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SECTION 08100
METAL DOORS AND FRAMES

PART 1 -- GENERAL

1.01 DESCRIPTION

Work included: Provide metal doors and metal door frames which are not specifically described in other Sections of these Specifications, where shown on the Drawings, as specified herein, and as needed for a complete and proper installation. All the requirements of the Contract Documents apply to this Section.

1.02 QUALITY ASSURANCE

- A. Use adequate numbers of skilled workmen who are thoroughly trained and experienced in the necessary crafts and who are completely familiar with the specified requirements and the methods needed for proper performance of the work of this Section.
- B. Unless specifically otherwise accepted by the Architect, provide all products of this Section from a single manufacturer.
- C. In addition to complying with pertinent codes and regulations of governmental agencies having jurisdiction, comply with:
 - 1. SDI Grade II for Heavy Duty metal doors (Steel Door Institute).
 - 2. HMMA Standard CHM-1-74 (Hollow Metal Manufacturers Association).

1.03 SUBSTITUTIONS

Substitutions will be considered per Article 5.3 of the General Conditions.

1.04 SUBMITTALS

Product data: Within 35 calendar days after the Contractor has received the Owner's Notice to Proceed, submit:

- 1. List of items that will be provided under this Section.
- 2. Manufacturer's specifications and other data needed to prove compliance with the specified requirements.
- 3. Shop Drawings showing details of each frame type, elevations of door designs, details of openings, and details of construction, installation, and anchorage.
- 4. Manufacturer's recommended installation procedures which, when accepted by the Architect, will become the basis for accepting or rejecting actual installation procedures used on the Work.

PART 2 -- PRODUCTS

2.01 MATERIALS

Doors and Frames shall be made of commercial quality, level cold rolled steel conforming to ASTM A-366, Latest Edition, and free of scale, pitting, or other surface defects. Face sheets and frames of exterior doors shall be zinc coated.

2.02 METAL DOORS

- A. Type and design: Provide full-flush polystyrene insulated design, in dimensions and types shown on the Drawings, labeled or non-labeled as indicated on the Door Schedule in the

Drawings, in 16 gage for interior doors and 16 gage for exterior doors, properly reinforced. SDI-111A shall be used as the standard for all frame details.

- B. Finish: Pre-clean and shop prime each door with rust inhibitive primer for finish painting which will be performed at the job site under Section 09900 of these Specifications. Cleaning shall include a phosphate treatment for paint adhesion and all exposed surfaces shall have a rust inhibiting primer.
- C. Acceptable products:
 - 1. Steel Craft Type L Series typically. Type B where security door called out on Drawings, gage of door to be increased to 14.
 - 2. Republic, DB Series typically. Security doors called out on plans to be increased to 14-gauge.
 - 3. Equal products of other manufacturers when accepted in advance by the Architect.
- D. Clearances: Provide single swing doors with not more than 1/8" clearance at jambs and heads, not more than 1/4" clearance at meeting edges of pairs of doors (1/8" on fire doors) and not more than 3/4" clearance at the bottom. Provide door bottom per hardware specifications. All clearance dimensions are nominal and subject to a tolerance of + 1/32". Lock edges of the door shall be designed to provide proper operating clearance conforming to dimensions noted above.

2.03 METAL FRAMES

- A. Type and design: Provide frames of the types and dimensions shown on the Drawings, labeled or non-labeled as indicated on the Schedule and Types in the Drawings, in 16 gage for interior and exterior frames, properly reinforced. SDI-111A shall be used as the standard for all frame details.
- B. Finish: Pre-clean and shop prime each door with rust inhibitive primer for finish painting which will be performed at the job site under Section 09900 of these Specifications. Cleaning shall include a phosphate treatment for paint adhesion and all exposed surfaces shall have a rust inhibiting primer.
- C. Acceptable manufacturers: See Paragraph 2.02-C above.
- D. Welded Frames. Secure headers and jambs at the corners either by internal welding of faces or by welded splice plates. Also secure joints at jambs and headers at the rabbet either by tack welding on the inside of the profile or by mechanical interlock. Form neat line joints at faces of frames at junction of head and jamb.
- E. Frame Anchors:
 - 1. Wall Conditions. Provide frames with a minimum of three anchors per jamb as required for the adjoining wall construction. Provide anchors of not less than 18 gage steel or 3/16" diameter wire adjustable.
 - 2. Floor Anchors. Provide all frames with minimum 18 gage anchors for attachment to the floor.

2.04 DOOR LOUVERS

- A. Fire-Rated Louver: Each fire-rated louver shall have the listing mark of Underwriter's Laboratories Inc. affixed to louver assembly.

All louvers in fire-rated doors shall be Model FLDL-UL, 16 gage cold rolled steel with stainless steel operating springs, as manufactured by Anemostat Products, Carson, California, or equal products of other manufacturers when accepted in advance by the Architect. Louvers shall be sight-proof per SDI-111C.
- B. Fixed-Blade Louver

1. All fixed blade louvers shall be Model FDLS, 18 gage cold rolled steel with mitered and welded frames and countersunk mounting holes, as manufactured by Anemostat Products, or equal products of other manufacturers when accepted in advance by the Architect. Louvers shall be sight-proof per SDI-111C.
2. Provide insect screen where louver occurs in exterior door.

C. Finish

Finish shall be factory painted in color selected by the Architect.

2.05 FINISH HARDWARE

Secure templates from the finish hardware supplier, and accurately install, or make provision for, all finish hardware at the factory.

2.06 INSULATION

Provide polystyrene foam insulation core typically and at all 12" high horizontal mullions and sills. Insulation shall have a minimum R factor of 7.7.

2.07 GLAZING

Non-removable glazing stops shall occur on the outside of exterior doors and the secure side of interior doors. Glazing beads on the inside of glass and louver panels shall be removable. Miter of butt joint beads at corners. Glazing beads may be either screw-on or snap-on type. Glazing systems shall be a minimum of 20-gage steel or .040" aluminum.

PART 3 -- EXECUTION

3.01 EXAMINATION

- A. Examine the areas and conditions under which work of this Section will be performed.
- B. Correct conditions detrimental to timely and proper completion of the Work.
- C. Do not proceed until unsatisfactory conditions are corrected.
- D. Beginning of installation means acceptance of conditions.

3.02 FABRICATION

A. Doors:

1. All doors shall be of types and sizes on the drawings, and shall be fully welded seamless construction with no visible seams or joints on their faces or vertical edges. Doors shall be strong, rigid and neat in appearance, free from warpage or buckle. Corner bends shall be true and straight and of minimum radius for the gauge of metal used.
2. Door faces shall be joined at their vertical edges by a continuous weld extending the full height of the door. All such welds shall be ground, filled and dressed smooth to make them invisible and provide a smooth flush surface.
3. Top and bottom edges shall be closed with a continuous recessed 16 gauge steel channel extending the full width and spot welded to both faces. Exterior doors shall have an additional flush closing channel at the top edge. Opening shall be provided in the bottom closer for escape of entrapped moisture.
4. Vertical edges of single acting swing doors shall be beveled 1/8" in 2".
5. Doors shall be mortised, reinforced, drilled and tapped at the factory for fully template hardware only. Where surface mounted hardware is to be applied, doors shall have reinforcing plates only, with drilling and tapping to be done in the field. Minimum gauge of hardware reinforcing shall be as follows:

- a. Hinge: 7-gauge
 - b. Lock, flush bolts, concealed holders, and for all surface-mounted hardware: 12-gauge.
6. Allow 1/8" clearance between doors and frame at top rail and at lock and hinge stiles. At floors allow 1/2" clearance. At thresholds and curbs allow 1/4" clearance unless otherwise detailed.
 7. The Face sheets of Exterior and Security doors shall be stiffened by continuous vertical formed steel sections occupying the full thickness of the interior space between door faces. These stiffeners shall be not less than 20 gauge, spaced not more than 6" apart and securely attached to both face sheets by spot welds not more than 4" o.c. Spaces between stiffeners shall be sound deadened and insulated the full height of the door with an inorganic non-combustible batt-type material.
- B. Frames:
1. All door and louver frames shall be strong and rigid, neat in appearance, square, true and free of defects, warp and buckle. Molded members shall be clean cut, straight and of uniform profile and back-bends shall be as detailed.
 2. Corner joints shall have all contact edges closed tight, with trim faces and stops mitered and continuously welded. All welds shall be ground, filled and dressed smooth to make them invisible and provide a smooth flush surface.
 3. Hardware reinforcement shall be same as specified for door, with hinge and pivot reinforcement 1-1/2" x 10" minimum size.
 4. Unit frames for installation in stud partitions shall be provided with steel anchors of suitable design for welding to steel studs. Anchors shall be not less than 16-gauge and shall be securely welded inside each jamb. Anchors are to be spaced at 24" on center.
 5. Provide floor anchor of 14-gauge steel securely welded inside each jamb with two holes provided for floor anchorage.
 6. Dust cover boxes of not less than 26-gauge shall be provided at all hardware mortises on frames to be set in masonry or drywall partitions. All frames shall be provided with a steel spreader attached to the feet of both jambs to serve as a brace during shipping and handling.
- C. Finish: Finish shall consist of the following items:
1. Thoroughly clean all metal of rust, oil, and grease after fabrication.
 2. Bonderize all metal with bonderite solution.
 3. Baked-on coat of primer after bonderizing.
 4. Additional coat of primer prior to shipping.
- D. Labeled Doors and Frames: Labeled doors and frames shall be provided for those openings requiring fire protection ratings, as scheduled on the drawings. Such doors and frames shall be constructed as tested by the Underwriter's Laboratories, Inc., and shall bear their label for the required rating. Provide additional frame accessories as required to maintain the fire protection ratings once the frames are installed in the openings.

3.03 FIELD MEASUREMENTS

Verify all opening dimensions in the field prior to fabrication and assembly of frames.

3.04 INSTALLATION

Placing frames:

1. Where practicable, place frames prior to construction of enclosing walls and ceilings.
2. Set frames accurately into position, plumbed, aligned and braced securely until permanent anchors are set.
3. After wall construction is completed, remove temporary braces and spreaders, leaving surfaces smooth and undamaged.
4. At in-place wood stud construction, set frames and secure to adjacent construction with #12 self-tapping flathead wood screws and zee clips.
5. At in-place metal stud construction, set frames and weld anchorage devices to adjacent construction.
6. When installed in prepared openings in concrete construction, provide sealant between frame and concrete in accordance with provisions of Section 07900 of these Specifications.

3.05 ADJUST AND CLEAN

- A. Final adjustments:
 1. Check and readjust operating finish hardware items in hollow metal work just prior to final inspection.
 2. Leave work in complete and proper operating condition.
 3. Remove defective work and replace with work complying with the specified requirements.
- B. Immediately after erection, sand smooth all rusted and damaged areas of prime coat, and apply touch-up of compatible air-drying primer.

*** END OF SECTION ***

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SECTION 08200
WOOD DOORS & FRAMES

PART 1 -- GENERAL

1.01 SCOPE OF WORK

All of the requirements of the Contract Document apply to this Section. Furnish materials and perform labor required to execute this work as indicated on the drawings, as specified and as necessary to comply with the Contract Documents, as follows:

1. Solid and Hollow Core wood doors: fire-rated and non-rated per schedule.
2. Shop Drawings.
3. Samples.

1.02 QUALITY ASSURANCE

- A. Provide a written guarantee in approved form that all defective materials or workmanship reported within a period of two (2) years after final acceptance will be promptly repaired or replaced to the Owner's satisfaction. Cover the following items specifically.
 1. Delamination in any degree.
 2. Warp or twist of 1/4" or more.
 3. Telegraphing of core unit through face veneer to cause surface variation of 1/100" in any 3" span.
 4. Any defect that may affect performance or appearance.
- B. Provide materials and workmanship conforming to the Wood Work Institute of California. Provide "Certified Compliance" grade stamp on every doors - Premium grade. Shop Drawings shall bear the WIC Certified Compliance Label on the first page of each set of Drawings.

1.03 SUBSTITUTIONS

Substitutions will be considered per Article 5.3 of the General Conditions.

1.04 SUBMITTALS

Product data: Within 35 calendar days after the Contractor has received the Owner's Notice to Proceed, submit:

1. List of items that will be provided under this Section;
2. Manufacturer's specifications and other data needed to prove compliance with the specified requirements.
3. Shop Drawings showing details of each frame type, elevations of door designs, details of openings, and details of construction, installation, and anchorage.
4. Manufacturer's recommended installation procedures which, when accepted by the Architect, will become the basis for accepting or rejecting actual installation procedures used on the Work.
5. Samples, approximately 4" x 4" in size, of each of the proposed door face materials.

1.05 PRODUCT HANDLING

- A. Delivery:
 1. Deliver doors to site after plaster and cement are dry, and after the building has reached average prevailing relative humidity for its locality.

2. Deliver doors in manufacturer's original containers, clearly marked with manufacturer's name, brand name, size, thickness, and identifying symbol on its cover.
- B. Storage:
1. Stack flat on 2" x 4" lumber, laid 12" from ends and across center.
 2. Under bottom door and over top of stack, provide plywood or corrugated cardboard to protect door surfaces.
 3. Store doors in area where there will be no great variations in heat, dryness, and humidity.
- C. Lift and carry doors into position. Do not drag doors across one another.

PART 2 -- PRODUCTS

2.01 DOORS:

- A. See Door Schedule for Types
- B. Solid Core Doors:
1. 1-3/4" thick stave lumber core. Mineral core for 60 to 90 minute rated doors. Core complied with commercial std. LS-236.
 2. Top and edge bands: Match face veneer.
 3. BTM band: Hard or soft wood.
 4. Glue: Use CS 35 Type II for bonding core, use Type 1 (fully waterproof) for all other work. Exterior doors to have only Type 1 adhesives used.
 5. Finish:
 - a. Stain Finish: plain-sliced veneer with book-matched grain for transparent finish for interior doors only. See drawings for veneer and stain type. Use red oak veneer with a transparent finish if none is indicated on the drawings.
 - b. Paint Finish: medium density hardboard overlay for smooth paint finish. See Drawing for paint type or types.
- C. Hollow Core Doors:
1. Cellular core include lock blocks, top and bottom rails.
 2. Edge bands: match face veneer.
 3. Face veneer: rotary cut red oak veneer matched grain for transparent finish.
 4. Glue: Use CS35 Type II for bonding core, use Type I for all other work.
- D. Solid Wood Stile and Rail Doors:
1. Top rail and stiles shall be minimum of 4-1/2" thickness with 9-1/2" minimum bottom rail on interior doors: exterior doors shall have 5-3/8" overall width with an 11-3/8" minimum bottom rail.
 2. Doors shall be assembled with mortise and tenon or doweled joints. All adhesives shall be Type I exterior glue.
 3. Glazing shall be safety glazing bedded in sealant squeezed out on both sides and secured in place with wood glazing beads or gasket.
 4. Hardwood doors shall be veneered with rotary cut red oak and shall have all exposed edges veneered with matched grain.

E. Plastic Laminated Wood Doors:

1. Interior construction shall be the same as for Solid Core Wood Door.
2. On both faces except for Solid Wood Stile and Rail Doors, provide 1/8" thick "Dor-Surf", No. 117, manufactured by Wilsonart Division of Ralph Wilson Plastics, or an Architect approved equal:
 - a. See Drawings for colors and patterns.
 - b. If none are indicated, Architect will select from standard colors and patterns of the accepted manufacturer as a part of the Submittals.
3. On both vertical edges, provide matching laminated plastic.
4. On tops and bottoms of doors, provide a positive sealer applied after completion of machining and fitting.
5. Where transoms occur above doors, provide same type, design thickness, construction and label as door. Bottom edge of transom shall also receive matching laminated plastic finish.

F. Manufacturers:

1. Solid Core and Hollow Core Doors:
 - a. Weyerhaeuser (800) 869-3667
 - b. Or Architect approved equal.
2. Solid Wood doors
 - a. Sun-Dor-Co (316) 284-0044
 - b. Or Architect approved equal.
3. Fire-Rated Doors and Frames
 - a. Shall be a U. L. rated assembly.

2.02 DOOR LOUVER

A. Fire Rated Louver

1. All louvers in fire rated doors shall be Model FLDL-UL, 16 gage cold rolled steel with stainless steel operating springs, as manufactured by Anemostat Products, Carson, California. (213) 775-7441.
2. Each fire rated louver shall have the listing mark of Underwriter's Laboratories Inc. affixed to louver assembly.

B. Fixed Blade Louver

1. All fixed blade louvers shall be: Model CHDL-2F, 18-gauge cold rolled steel with mitered and welded frames and countersunk mounting holes, as manufactured by Anemostat Products.
2. Provide insect screen where louver occurs in exterior door.

C. Finish

1. Finish shall be factory painted in color selected by the Architect.

2.03 VISION FRAME

A. Fire Rated Doors:

1. Vision frames for fire rated doors shall be FGS-75 with veneer to match door finish and 3/16" clear Firelite as manufactured by Anemostat Products, Carson, California in accordance with the standards set forth by NFPA-80 and bear the listing mark of Underwriter's Laboratories, Inc. or approved equal.

2. Provide sizes and designs shown on the Drawings.
- B. Unlabeled Doors: Provide Model FGS-75 or 38, as applicable, as manufactured by Anemostat Products in sizes and designs shown on the Drawings.
- C. All vision frames shall be constructed of 18-gage cold rolled steel and shall have mitered and welded corners with countersunk mounting holes.
- D. Finish: Finish shall be factory painted in color selected by the Architect.

PART 3 -- EXECUTION

3.01 EXAMINATION

- A. Examine the areas and conditions under which work of this Section will be performed.
- B. Correct conditions detrimental to timely and proper completion of the Work.
- C. Do not proceed until unsatisfactory conditions are corrected.
- D. Beginning of installation means acceptance of conditions.

3.02 PREPARATION

- A. Verify dimensions and surfaces are ready to receive work of this Section.
- B. Beginning of work signifies acceptance of surface by installer.

3.03 INSTALLATION

- A. Fitting and machining doors:
 1. Using measurements obtained in the field from installed frames, machine the doors at the factory to fit the prescribed frames with proper clearance at top, bottom, and vertical edges.
 2. Adjust for smooth and balanced door movement. Replace or re-hang doors which are hinge-bound and do not swing or operate freely.
 3. Install in accordance with ANSI/AWMA requirements.
- B. Install frames level and plumb - shim as required.
- C. Receive and retain custody of finish hardware furnished under Section 08700, if included, of these Specifications for the work of this Section and in accordance with ANSI/AWMA requirements.

3.04 ADJUST AND CLEAN

Upon completion of the installation, inspect each component.

1. Verify that each item has been fabricated and installed in accordance with the specified requirements.
2. Make necessary adjustments.
3. Touch-up as necessary to make surface blemishes permanently invisible to the unaided eye.

***** END OF SECTION *****

SECTION 087100

FINISH HARDWARE

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Door Hardware, including electric hardware.
2. Wall or floor-mounted electromagnetic hold-open devices.
3. Power supplies for electric hardware.
- 4.

B. Related Sections:

1. Section 06 20 00 - Finish Carpentry: Finish Hardware Installation
2. Section 07 92 00 - Joint Sealers – exterior thresholds
3. Section 08 11 00 - Metal Doors and Frames
4. Section 08 14 00 - Wood and Plastic Doors
5. Section 08 74 00 - Integrated Security Systems
6. Section 08 30 00 - Special Doors
7. Section 10 22 26 - Operable Partitions
8. Section 21 09 00 - Fire/Life-Safety System
9. Section 28 13 00 - Security Access Systems

C. Specific Omissions: Hardware for the following is specified or indicated elsewhere.

1. Windows.
2. Cabinets, including open wall shelving and locks.
3. Signs, except where scheduled.
4. Toilet accessories, including grab bars.
5. Installation.
6. Rough hardware.
7. Conduit, junction boxes & wiring.

1.2 REFERENCES:

Use date of standard in effect as of Bid date.

- A. American National Standards Institute – ANSI 156.18 – Materials and Finishes.
- B. ICC/ANSI A117.1 - 1998 – Specifications for making buildings and facilities usable by physically handicapped people.
- C. ADA – Americans with Disabilities Act of 1990

- D. BHMA – Builders Hardware Manufacturers Association
- E. DHI – Door and Hardware Institute
- F. NFPA – National Fire Protection Association
 - 1. NFPA 80 – Fire Doors and Windows
 - 2. NFPA 105 – Smoke and Draft Control Door Assemblies
 - 3. NFPA 252 – Fire Tests of Door Assemblies
- G. UL – Underwriters Laboratories
 - 1. UL10C – Positive Pressure Fire Tests of Door Assemblies.
 - 2. UL 305 – Panic Hardware
- H. WHI – Warnock Hersey Incorporated State of California Building Code
- I. Local applicable codes
- J. SDI – Steel Door Institute
- K. WI – Woodwork Institute
- L. AWI – Architectural Woodwork Institute
- M. NAAMM – National Association of Architectural Metal Manufacturers

1.3 SUBMITTALS & SUBSTITUTIONS

- A. **SUBMITTALS:** Submit six copies of schedule per Section 01330. Only submittals printed one sided will be accepted and reviewed. Organize vertically formatted schedule into "Hardware Sets" with index of doors and headings, indicating complete designations of every item required for each door or opening. Include following information:
 - 1. Type, style, function, size, quantity and finish of hardware items.
 - 2. Use BHMA Finish codes per ANSI A156.18.
 - 3. Name, part number and manufacturer of each item.
 - 4. Fastenings and other pertinent information.
 - 5. Location of hardware set coordinated with floor plans and door schedule.
 - 6. Explanation of abbreviations, symbols, and codes contained in schedule.
 - 7. Mounting locations for hardware.
 - 8. Door and frame sizes, materials and degrees of swing.
 - 9. List of manufacturers used and their nearest representative with address and phone number.
 - 10. Catalog cuts.
 - 11. Wiring Diagrams.
 - 12. Manufacturer's technical data and installation instructions for electronic hardware.
- B. Bid and submit manufacturer's updated/improved item if scheduled item is discontinued.

- C. Deviations: Highlight, encircle or otherwise identify deviations from "Schedule of Finish Hardware" on submittal with notations clearly designating those portions as deviating from this section.
- D. If discrepancy between drawings and scheduled material in this section, bid the more expensive of the two choices, not the discrepancy in the submittal and request direction from Architect for resolution.
- E. Substitutions per Division 1. Include product data and indicate benefit to the Project. Furnish operating samples on request.
- F. Items listed with no substitute manufacturers have been requested by Owner to meet existing standard.
- G. Furnish as-built/as-installed schedule with closeout documents, including keying schedule, wiring diagrams, manufacturers' installation, adjustment and maintenance information, and supplier's final inspection report.

1.4 QUALITY ASSURANCE:

- A. Qualifications:
 - 1. Hardware supplier: direct factory contract supplier who employs a certified architectural hardware consultant (AHC), available at reasonable times during course of work for project hardware consultation to Owner, Architect and Contractor.
 - a) Responsible for detailing, scheduling and ordering of finish hardware. Detailing implies that the submitted schedule of hardware is correct and complete for the intended function and performance of the openings.
- B. Hardware: Free of defects, blemishes and excessive play. Obtain each kind of hardware (latch and locksets, exit devices, hinges and closers) from one manufacturer.
- C. Exit Doors: Operable from inside with single motion without the use of a key or special knowledge or effort.
- D. Fire-Rated Openings: NFPA 80 compliant. Hardware UL10C / UBC Standard 7-2 (positive pressure) compliant for given type/size opening and degree of label. Provide proper latching hardware, non-flaming door closers, approved-bearing hinges, and resilient seals. Coordinate with wood door section for required intumescent seals. Furnish openings complete.
- E. Note: scheduled resilient seals may exceed selected door manufacturer's requirements.
- F. See 2.6.E for added information regarding resilient and intumescent seals.
- G. Furnish hardware items required to complete the work in accordance with specified performance level and design intent, complying with manufacturers' instructions.

1.5 DELIVERY, STORAGE AND HANDLING:

- A. Delivery: coordinate delivery to appropriate locations (shop or field).
 - 1. Permanent keys and cores: secured delivery direct to Owner's representative.
- B. Acceptance at Site: Items individually packaged in manufacturers' original containers, complete with proper fasteners and related pieces. Clearly mark packages to indicate contents, locations in hardware schedule and door numbers.

- C. Storage: Provide securely locked storage area for hardware, protect from moisture, sunlight, paint, chemicals, dust, excessive heat and cold, etc.

1.6 PROJECT CONDITIONS AND COORDINATION:

- A. Where exact types of hardware specified are not adaptable to finished shape or size of members requiring hardware, provide suitable types having as nearly as practical the same operation and quality as type specified, subject to Architect's approval.
- B. Coordination: Coordinate hardware with other work. Furnish hardware items of proper design for use on doors and frames of the thickness, profile, swing, security and similar requirements indicated, as necessary for proper installation and function, regardless of omissions or conflicts in the information on the Contract Documents. Furnish related trades with the following information:
1. Location of embedded and attached items to concrete.
 2. Location of wall-mounted hardware, including wall stops.
 3. Location of finish floor materials and floor-mounted hardware.
 4. Locations for conduit and raceways as needed for electrical, electronic and electro-pneumatic hardware items. Fire/life-safety system interfacing. Point-to-point wiring diagrams plus riser diagrams to related trades.
 5. Manufacturer templates to door and frame fabricators.
- C. Check Shop Drawings for doors and entrances to confirm that adequate provisions will be made for proper hardware installation.
- D. Prior to submittal, carefully inspect existing conditions to verify finish hardware required to complete Work, including sizes, quantities, existing hardware scheduled for re-use, and sill condition material. If conflict between the specified/scheduled hardware and existing conditions, submit request for direction from Architect. Include date of jobsite visit in the submittal.
1. Submittals prepared without thorough jobsite visit by qualified hardware expert will be rejected as non-compliant.

1.7 WARRANTY:

- A. Part of respective manufacturers' regular terms of sale. Provide manufacturers' written warranties:
- | | |
|---------------------------------------|---|
| 1. Locksets: | Three years |
| 2. Extra Heavy Duty Cylindrical Lock: | Seven Years |
| 3. Exit Devices: | Three years mechanical
One year electrical |
| 4. Closers: | Ten years mechanical
Two years electrical |
| 5. Hinges: | One year |
| 6. Other Hardware | Two years |

1.8 COMMISSIONING:

- A. Conduct these tests prior to request for certificate of substantial completion:

1. With installer present, test door hardware operation with climate control system and stairwell pressurization system both at rest and while in full operation.
2. With installer, access control contractor and electrical contractor present, test electrical, electronic and electro-pneumatic hardware systems for satisfactory operation.
3. With installer and electrical contractor present, test hardware interfaced with fire/life-safety system for proper operation and release.

1.9 REGULATORY REQUIREMENTS:

- A. Locate latching hardware between 30" to 44" above the finished floor, per California Building Code, Section 1133B.2.5.1.
- B. Adjust doors to open with not more than 5.0 lbs pressure to open at exterior doors and 5.0 lbs at interior doors. As allowed per California Building Code, Section 1133B.2.5, local authority may increase the allowable pressure for fire doors to achieve positive latching, but not to exceed 15 lbs.
- C. Adjust door closer sweep periods so that from an open position of 70 degrees, the door will take at least 3 seconds to move to a point 3 inches from the latch, measured to the landing side of the door, per California Building Code Section 1133B.2.5.1
- D. All hardware to meet California Building Code Sections 1133B.2.1, 1133B.2.5.1 and 1003.3.1.8l.
- E. Thresholds: Comply with California Building Code Section 1133B.2.4.1.
- F. Floor stops: Do not locate in path of travel. Locate no more than 4" from walls.

PART 2 PRODUCTS

2.1 MANUFACTURERS:

- A. Manufacturers and their abbreviations used in this schedule:

ABH	ABH Manufacturing
BOB	Bobrick
IVE	Ives
KAB	Kabba
LCN	LCN Closers
MED	Medico
NGP	National Guard Products
SCE	Schlage Electronics
SCH	Schlage Lock Company
ULE	Door Spy
VON	Von Duprin

2.2 HINGING METHODS:

- A. Drawings typically depict doors at 90 degrees, doors will actually swing to maximum allowable. Use wide-throw conventional or continuous hinges as needed up to 8 inches in width to allow door to stand parallel to wall for true 180-degree opening. Advise architect if 8-inch width is insufficient.

- B. Conform to manufacturer's published hinge selection standard for door dimensions, weight and frequency, and to hinge selection as scheduled. Where manufacturer's standard exceeds the scheduled product, furnish the heavier of the two choices, notify Architect of deviation from scheduled hardware.
- C. Conventional Hinges: Steel or stainless steel pins and concealed bearings. Hinge open widths minimum, but of sufficient throw to permit maximum door swing.
 - 1. Non-ferrous material exteriors and at doors subject to corrosive atmospheric conditions.
- D. Continuous Hinges:
 - 1. Geared-type aluminum.
 - a) Use wide-throw units where needed for maximum degree of swing, advise architect if commonly available hinges are insufficient.

2.3 LOCKSETS, LATCHSETS, DEADBOLTS:

- A. Mortise Locksets and Latchsets: as scheduled.
 - 1. Chassis: cold-rolled steel, handing field-changeable without disassembly.
 - 2. Latchbolts: 3/4 inch throw stainless steel anti-friction type.
 - 3. Lever Trim: through-bolted, accessible design, cast lever or solid extruded bar type levers as scheduled. Filled hollow tube design unacceptable.
 - a) Spindles: security design independent breakaway. Breakage of outside lever does not allow access to inside lever's hubworks to gain wrongful entry.
 - 4. Furnish solid cylinder collars with wave springs. Wall of collar to cover rim of mortise cylinder.
 - 5. Thumbturns: accessible design not requiring pinching or twisting motions to operate.
 - 6. Deadbolts: stainless steel 1-inch throw.
 - 7. Electric operation: Manufacturer-installed continuous duty solenoid.
 - 8. Strikes: 16 gage curved steel, bronze or brass with 1 inch deep box construction, lips of sufficient length to clear trim and protect clothing.
 - 9. Scheduled Lock Series and Design: as scheduled
 - 10. Certifications:
 - a) ANSI A156.13, 1994, Grade 1 Operational, Grade 1 Security.
 - b) ANSI/ASTM F476-84 Grade 31 UL Listed.

2.4 EXIT DEVICES / PANIC HARDWARE

- A. General features:
 - 1. Independent lab-tested 1,000,000 cycles.

2. Push-through push-pad design. No exposed push-pad fasteners, no exposed cavities when operated. Return stroke fluid dampeners 0.75-inch throw deadlocking latchbolts.
3. End caps: impact-resistant, flush-mounted. No raised edges or lips to catch carts or other equipment.
4. No exposed screws to show through glass doors.
5. Non-handed basic device design with center case interchangeable with all functions, no extra parts required to effect change of function.
6. Releasable in normal operation with 15-lb. maximum operating force per UBC Standard 10-4, and with 32 lb. maximum pressure under 250-lb. load to the door.
7. Exterior doors scheduled with XP-series devices: Static load force resistance of at least 2000 pounds.
8. Flush end cap design as opposed to typical "bottle-cap" design end cap.
9. Comply with CBC Section 1003.3.1.9.

2.5 CLOSERS

A. Surface Closers:

1. Full rack-and-pinion type cylinder with removable non-ferrous cover and cast iron body. Double heat-treated pinion shaft, single piece forged piston, chrome-silicon steel spring.
2. ISO 2000 certified. Units stamped with date-of-manufacture code.
3. Independent lab-tested 10,000,000 cycles.
4. Non-sized, non-handed, and adjustable. Place closer inside building, stairs, and rooms.
5. Plates, brackets and special templating when needed for interface with particular header, door and wall conditions and neighboring hardware.
6. Adjustable to open with not more than 5.0lbs pressure to open at exterior doors and 5.0lbs at interior doors. As allowed per California Building Code, Section 1133B.2.5, local authority may increase the allowable pressure for fire doors to achieve positive latching, but not to exceed 15lbs.
7. Separate adjusting valves for closing speed, latching speed and backcheck, fourth valve for delayed action where scheduled.
8. Non-flaming fluid, will not fuel door or floor covering fires.
9. Pressure Relief Valves (PRV) not permitted.

2.6 OTHER HARDWARE

- A. Kick Plates: Four beveled edges, .050 inches minimum thickness, height and width as scheduled. Sheet-metal screws of bronze or stainless steel to match other hardware.
- B. Door Stops: Provide stops to protect walls, casework or other hardware.

1. Unless otherwise noted in Hardware Sets, provide floor type with appropriate fasteners. Where floor type cannot be used, provide wall type. If neither can be used, provide overhead type.
 2. Locate overhead stops for maximum possible opening. Consult with Owner for furniture locations. Minimum: 90deg stop / 95deg deadstop. Note degree of opening in submittal.
- C. Seals: Finished to match adjacent frame color. Resilient seal material: polyurethane, polypropylene, nylon brush, silicone rubber or solid high-grade neoprene as scheduled. Do not furnish vinyl seal material. UL label applied to seals on rated doors. Substitute products: certify that the products equal or exceed specified material's thickness and durability.
1. Proposed substitutions: submit for approval.
 2. Solid neoprene: MIL Spec. R6855-CL III, Grade 40.
 3. Non-corroding fasteners at in-swinging exterior doors.
 4. Sound control openings: Use components tested as a system using nationally accepted standards by independent laboratories. Ensure that the door leafs have the necessary sealed-in-place STC ratings. Fasten applied seals over bead of sealant.
 5. Fire-rated Doors, Resilient Seals: UL10C / UBC Standard 7-2 compliant. Coordinate with selected door manufacturers' and selected frame manufacturers' requirements. Where rigid housed resilient seals are scheduled in this section and the selected door manufacturer only requires an adhesive-mounted resilient seal, furnish rigid housed seal at minimum, or both the rigid housed seal plus the adhesive applied seal. Adhesive applied seals alone are deemed insufficient for this project where rigid housed seals are scheduled.
 6. Fire-rated Doors, Intumescent Seals: Furnished by selected door manufacturer. Furnish fire-labeled opening assembly complete and in full compliance with UL10C / UBC Standard 7-2. Where required, intumescent seals vary in requirement by door type and door manufacture -- careful coordination required
- D. Automatic door bottoms: low operating force units. Doors with automatic door bottoms plus head and jamb seals cannot require more than two pounds operating force to open when closer is disconnected.
- E. Thresholds: As scheduled and per details. Comply with CBC Section 1133B.2.4.1. Substitute products: certify that the products equal or exceed specified material's thickness. Proposed substitutions: submit for approval.
- F. Silencers: Interior hollow metal frames, 3 for single doors, 4 for pairs of doors. Omit where adhesive mounted seal occurs. Leave no unfilled/uncovered pre-punched silencer holes.

2.7 FINISH:

- A. Generally BHMA 626 Satin Chromium
 1. Areas using BHMA 626 to have push-plates, pulls and protection plates of BHMA 630, Satin Stainless Steel, unless otherwise noted.
- B. Door closers: factory powder coated to match other hardware, unless otherwise noted.

- C. Aluminum items: match predominant adjacent material. Seals to coordinate with frame color.

2.8 KEYING REQUIREMENTS:

- A. Key System: Where indicated use Medico Biaxial keyway. Owner will authorize purchase of cylinders after the keying meeting. Permanent cylinders will be delivered to the owners representative only, signature required and Contractor will install the permanent cylinders in the Owners presence.
- B. Keys
 - 1. Existing factory registered master key system.
 - 2. Construction keying: furnish temporary keyed-alike cylinders. Remove at substantial completion and install permanent cylinders in Owner's presence. Demonstrate that construction key no longer operates.
 - 3. Furnish 10 construction keys.
- C. Cylinder cores: furnish keyed at factory of lock manufacturer where permanent records are maintained. Locks and cylinders same manufacturer.
- D. Permanent keys: use secured shipment direct from point of origination to Owner.
- E. For estimate: 3 keys per change combination, 5 master keys per group, 5 grand-master keys, 3 control keys.
 - 1. Bitting List: use secured shipment direct from point of origination to Owner upon completion.

2.8 KEYING REQUIREMENTS: Standard security locks

- A. Key System: Schlage Everest utility-patented keyway, conventional cylinders with the exception of interchangeable core type operating cylinders for panic hardware. Utility patent protection to extend at least until 2014. Key blanks available only from factory-direct sources, not available from after-market key blank manufacturers. For estimate use factory GMK charge. Initiate and conduct meetings(s) with Owner. Furnish Owner's written approval of the system. Owner will order permanent cylinders. Contractor will install permanent cylinders.
- B. Keys
 - 1. Existing factory registered master key system
 - 2. Non-I.C. construction keying: furnish inserted type partial key. At substantial completion, remove inserts in Owner's presence; demonstrate consequent non-operability of construction key. Give all removed inserts and all construction keys to Owner, provide accounting for all the pieces.
 - 3. Temporary cylinders/cores remain supplier's property.
 - 4. Furnish 10 construction keys.
 - 5. Furnish 2 construction insert extractor tool 35-057.
- C. Key Cylinders: furnish utility patented, 6-pin solid brass construction.

- D. Cylinders: furnish keyed at factory of lock manufacturer where permanent records are maintained. Locks and cylinders same manufacturer.
- E. Permanent keys: furnish secured shipment direct from point of origination to Owner.
- F. For estimate: 3 keys per change combination, 5 master keys per group, 5 grand-master keys, 3 control keys.
- G. Bitting List: furnish secured shipment direct from point of origination to Owner upon completion.

PART 3 - EXECUTION

3.1 ACCEPTABLE INSTALLERS:

- A. Can read and understand manufacturers' templates, suppliers hardware schedule and printed installation instructions. Can readily distinguish drywall screws from manufacturers furnished fasteners. Available to meet with manufacturers' representatives and related trades to discuss installation of hardware.

3.2 PREPARATION:

- A. Ensure that walls and frames are square and plumb before hardware installation. Make corrections before commencing hardware installation.
- B. Locate hardware per SDI-100 and applicable building, fire, life-safety, accessibility, and security codes.
 - 1. Notify Architect of code conflicts before ordering material.
 - 2. Locate levers, key cylinders, t-turn pieces, touchbars and other operable portions of latching hardware between 30 inches to 44 inches above the finished floor, per CBC Section 1133B.2.5.1.
 - 3. Where new hardware is to be installed near existing doors/hardware scheduled to remain, match locations of existing hardware.
- C. Overhead stops: before installing, determine proposed locations of furniture items, fixtures, and other items to be protected by the overhead stop's action.

3.3 INSTALLATION

- A. Install hardware per manufacturer's instructions and recommendations. Do not install surface-mounted items until finishes have been completed on substrate. Set units level, plumb and true to line and location. Adjust and reinforce attachment substrate for proper installation and operation. Remove and reinstall or replace work deemed defective by Architect.
 - 1. Gaskets: install jamb-applied gaskets before closers, overhead stops, rim strikes, etc; fasten hardware over and through these seals. Install sweeps across bottoms of doors before astragals, cope sweeps around bottom pivots, trim astragals to tops of sweeps.
 - 2. When hardware is to be attached to existing metal surface and insufficient reinforcement exists, use RivNuts, NutSerts or similar anchoring device for screws.

3. Use manufacturers' fasteners furnished with hardware items, or submit Request for Substitution with Architect.
 4. Replace fasteners damaged by power-driven tools.
- B. Locate floor stops no more than 4 inches from walls and not within paths of travel. See paragraph 2.2 regarding hinge widths, door should be well clear of point of wall reveal. Point of door contact no closer to the hinge edge than half the door width. Where situation is questionable or difficult, contact Architect for direction.
 - C. Core concrete for exterior door stop anchors. Set anchors in approved non-shrink grout.
 - D. Locate overhead stops for minimum 90 degrees and maximum allowable degree of swing.
 - E. Drill pilot holes for fasteners in wood doors and/or frames.
 - F. Lubricate and adjust existing hardware scheduled to remain. Carefully remove and give to Owner items not scheduled for reuse.

3.4. ADJUSTING

- A. Adjust and check for proper operation and function. Replace units, which cannot be adjusted to operate freely and smoothly.
 1. Hardware damaged by improper installation or adjustment methods: repair or replace to Owner's satisfaction.
 2. Adjust doors to fully latch with no more than 1 pound of pressure.
 3. Adjust delayed-action closers on fire-rated doors to fully close from fully-opened position in no more than 10 seconds.
 4. Adjust door closers per 1.9 this section.
- B. Inspection: Use hardware supplier's consultant or consultant's agent. Include supplier's report with closeout documents.
- C. Final inspection: Installer to provide letter to Owner 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 Owner's personnel.
 3. Identify items that have deteriorated or failed.
 4. Submit written report identifying problems

3.5 DEMONSTRATION:

- A. Demonstrate mechanical hardware and electrical, electronic and pneumatic hardware systems, including adjustment and maintenance procedures.

3.6 PROTECTION/CLEANING:

- A. Cover installed hardware, protect from paint, cleaning agents, weathering, carts/barrows, etc. Remove covering materials and clean hardware just prior to substantial completion.

- B. Clean adjacent wall, frame and door surfaces soiled from installation/reinstallation process.

3.7 SCHEDULE OF FINISH HARDWARE

- A. See door schedule in drawings for hardware set assignments.
B. Miscellaneous Material:

SPECWORKS # 107187

HW SET: 01

4	EA	HINGE	3CB1 4.5 X 4.5	652	IVE
1	EA	OFFICE LOCK	L9050P 06A L583-363	626	SCH
1	EA	CLOSER	4041	689	LCN
1	EA	KICK PLATE	8400 10" X 2" LDW	630	IVE
1	EA	DOME STOP	FS436/438 AS REQ'D	626	IVE
1	SET	PERIMETER SEALS	5050N HEAD AND JAMBS	BRN	NGP

HW SET: 02

4	EA	HINGE	3CB1 4.5 X 4.5	652	IVE
1	EA	ELECTRONIC LOCK	AD-200-CY-70-KP-RHO-PD	626	SCE
1	EA	CLOSER	4041	689	LCN
1	EA	KICK PLATE	8400 10" X 2" LDW	630	IVE
1	EA	DOME STOP	FS436/438 AS REQ'D	626	IVE
1	SET	PERIMETER SEALS	5050N HEAD AND JAMBS	BRN	NGP

HW SET: D-01

1	EA	CONT HINGE	A110HDC-TW8R	628	ABH
1	EA	PANIC HARDWARE	RX-XP99L X E996L X 909 STRIKE	626	VON
1	EA	RIM CYLINDER	32W0400B	626	MED
1	EA	CLOSER	4041	689	LCN
1	EA	DOME STOP	FS436/438 AS REQ'D	626	IVE
3	EA	SILENCER	SR64	GRY	IVE

DOOR CONTACTS AND HIRSH MB8 READER AND BACK BOX BY OTHERS WIRING BY OTHERS

HW SET: D-02

3	EA	HINGE	3CB1 4.5 X 4.5 NRP SEC STUD	652	IVE
1	EA	OFFICE LOCK	L9050P 06A L583-363	626	SCH
1	EA	AUX LOCK	11-W-C-3-1-4	626	MED
1	EA	CLOSER	4041	689	LCN
1	EA	DOME STOP	FS436/438 AS REQ'D	626	IVE
1	SET	PERIMETER SEALS	5050N HEAD AND JAMBS	BRN	NGP

MEDICO LOCK ONLY TO BE ENGAGED WHEN MORTISE LOCK IS NOT

HW SET: D-04

1	EA	CONT HINGE	A110HDC-TW8R	628	ABH
1	EA	PANIC HARDWARE	RX-XP99L-F X E996L X 909 STRIKE	626	VON
1	EA	RIM CYLINDER	32W0400B	626	MED
1	EA	CLOSER	4041	689	LCN
1	EA	DOMESTOP	FS436/438 AS REQ'D	626	IVE
1	SET	PERIMETER SEALS	5050N HEAD AND JAMBS	BRN	NGP
1	EA	DOOR SPY VIEWER	DS-6	GRY	ULE

HW SET: D-04.1

1	EA	CONT HINGE	A110HDC-TW8R	628	ABH
1	EA	PANIC HARDWARE	RX-XP99L X E996L X 909 STRIKE	626	VON
1	EA	RIM CYLINDER	32W0400B	626	MED
1	EA	CLOSER	4041	689	LCN
1	EA	DOMESTOP	FS436/438 AS REQ'D	626	IVE
1	EA	DOOR SPY VIEWER	DS-6	GRY	ULE
3	EA	SILENCER	SR64	GRY	IVE

HW SET: D-04B

1	EA	CONT HINGE	A110HDC-TW8R	628	ABH
1	EA	ELECTRIC MORT LOCK	Z 7850-RX X CC3-5	626	SDC
1	EA	MORTISE CYLINDER	32W0200	626	MED
1	EA	CLOSER	4041	689	LCN
1	EA	DOMESTOP	FS436/438 AS REQ'D	626	IVE
1	EA	DOOR SPY VIEWER	DS-6	GRY	ULE
3	EA	SILENCER	SR64	GRY	IVE

DOOR CONTACTS AND HIRSH MB8 READER AND BACK BOX BY OTHERS

HW SET: D-05

1	EA	PUSH BUTTON LOCK	L1021 M 26D	626	SIM
1	EA	CYLINDER	AS REQUIRED FOR LOCK	626	MED
1	EA	COMBINATION LOCK	CDX-09		KAB
1	EA	CLOSER	4041	689	LCN
1	EA	DOMESTOP	FS436/438 AS REQ'D	626	IVE

HINGES, SEALS, SWEEPS AND THRESHOLDS BY SOUND DOOR SUPPLIER DOOR CONTACTS AND HIRSH MB8 READER AND BACK BOX BY OTHERS

HW SET: D-06

3	EA	HINGE	3CB1 4.5 X 4.5	652	IVE
1	EA	OFFICE LOCK	L9050P 06A L583-363	626	SCH
1	EA	DOMESTOP	FS436/438 AS REQ'D	626	IVE
1	EA	COAT HOOK	B-76727 AT OFFICE DOORS	630	BOB
3	EA	SILENCER	SR64	GRY	IVE

HW SET: D-07

3	EA	HINGE	3CB1 4.5 X 4.5	652	IVE
1	EA	OFFICE LOCK	L9050P 06A L583-363	626	SCH
1	EA	DOMESTOP	FS436/438 AS REQ'D	626	IVE
1	EA	COAT HOOK	B-76727 AT OFFICE DOORS	630	BOB
3	EA	SILENCER	SR64	GRY	IVE

HW SET: D-07P

6	EA	HINGE	3CB1 4.5 X 4.5	652	IVE
1	SET	MANUAL FLUSH BOLT	FB258/358 AS REQ'D	626	IVE
1	EA	DUST PROOF STRIKE	DP1/2 AS REQ'D	626	IVE
1	EA	OFFICE LOCK	L9050P 06A L583-363	626	SCH
2	EA	DOMESTOP	FS436/438 AS REQ'D	626	IVE
2	EA	SILENCER	SR64	GRY	IVE

HW SET: D-11

3	EA	HINGE	3CB1 4.5 X 4.5	652	IVE
1	EA	PUSH BUTTON LOCK	L1021 M 26D	626	SIM
2	EA	CYLINDER	AS REQUIRED FOR LOCK	626	MED
1	EA	CLOSER	4041	689	LCN
1	EA	DOMESTOP	FS436/438 AS REQ'D	626	IVE
3	EA	SILENCER	SR64	GRY	IVE

HW SET: EXI

COUNTY DOOR	HARDWARE TO REMAIN	EXI
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"END OF SECTION"

SECTION 09250
GYPSUM BOARD SYSTEMS

PART 1 -- GENERAL

1.01 SCOPE OF WORK

All of the requirements of the Contract Documents apply to this Section.

1.02 SUBSTITUTIONS

Substitutions will be considered per Article 5.3 of the General Conditions.

1.03 SUBMITTALS

A. Product data: Within 35 calendar days after the Contractor has received the Owner's Notice to Proceed, submit:

1. List of items to be provided under this Section.
2. Manufacturer's Specifications and other data needed to prove compliance with the specified requirements.
3. Manufacturer's recommended installation procedures which, when accepted by the Architect, will become the basis for accepting or rejecting actual installation procedures used on the Work.

B. Mock-ups:

1. At an area on the site where accepted by the Architect, provide mock-up panels as follows:
 - a. Make each mock-up panel approximately 4'-0" high and 4'-0" long.
 - b. Provide one mock-up panel for each variation of panels.
 - c. The mock-up panels may be part of the Work, and may be incorporated into the finished Work, when so accepted in advance by the Architect.
2. If the mock-up panels are not permitted to be part of the finished Work, completely demolish and remove them from the job site upon completion and acceptance of the other work of this Section.

1.04 DELIVERY AND STORAGE

Deliver all manufactured materials in original packages bearing manufacturer's name and brand. Use only one brand of each material throughout job. Store materials off ground and cover against weather. Remove any damaged materials from the site.

1.05 QUALITY ASSURANCE

- A. Comply with all applicable requirements of "American Standard Specifications for the Application and Finishing of Gypsum Wallboard", by the America Standards Association, except where more stringent requirements are called for herein, in local Codes or by manufacturer of wallboard. Do all cutting and patching required to accommodate work of other trades.
- B. Maintain temperature of drywalled spaces in range of 55 to 90 degrees F until building is entirely closed and ventilated to eliminate excessive moisture.
- C. All work herein requires coordination with trades who's Work connects with, is affected or concealed by drywall. Before proceeding with drywall Work, make certain all required inspections have been made.

- D. Inspect surfaces to receive drywall before starting Work and do not start until surfaces are acceptable. Starting Work under this Section implies acceptance of surfaces.

PART 2 -- PRODUCTS

2.01 WALLBOARD MATERIALS

- A. Gypsum Board: Conforming to ASTM C-36: 5/8" thick, maximum permissible length, ends square cut, tapered and beveled edges.
- B. Fire resistive gypsum board: Type X at all interior conditions: 5/8 inch thick x 4 feet wide. Use moisture resistant type X where used in interior wet conditions (ASTM C79).
- C. Moisture-resistant Gypsum Board, conform to ASTM C630, 5/8" thick, maximum permissible length.
- D. Exterior Cement Board: Concrete glass-fiber reinforced, 1/2" thick prefabricated panel, consisting of aggregate and Portland cement reinforced with vinyl coated woven glass fiber mesh embedded in both surfaces. Durock Tile Backer Board by USG or approved equal.

2.02 WALLBOARD ACCESSORIES

- A. Trim and Edging: 26 gauge, electro-galvanized steel, with knurled surfaces for bedding cement. Provide angle corner pieces with 1-1/4 inch legs at all external corners and channel type metal trim pieces as detailed at all gypsum board edges meeting dissimilar materials. 136#/1000 l.f.
- B. Screws: KW self-tapping sheet metal screws, blued steel, counter sunk Phillips heads, of lengths as required to accommodate thickness of drywall construction, for metal framing attachments.
- C. Expansion joints: Conspec Systems, Inc. model FWF and FWFC as applicable in field locations. Extruded clear aluminum with continuous gasket.
- D. Adhesive: Manufacturer's recommended adhesive for drywall/masonry condition.

2.03 FINISHES

- A. Typical walls and/or ceilings to be painted are to receive a medium stipple (orange peel) textured finish as approved by the Architect. Texture to be applied mechanically by this subcontractor.
- B. Sand textured walls shall have white play or plaster sand added into the mud prior to application. The application shall be troweled to simulate a smooth plaster finish.
- C. A sample of 4' x 4' is to be prepared of each texture for the Architect's approval prior to application.

PART 3 -- EXECUTION

3.01 EXAMINATION

- A. Examine the areas and conditions under which work of this Section will be performed.
- B. Correct conditions detrimental to timely and proper completion of the Work.
- C. Do not proceed until unsatisfactory conditions are corrected.
- D. Beginning of installation means acceptance of conditions.

3.02 INSTALLATION

- A. If framing members are out to alignment, bowed or warped, correct to make true surfaces before application of gypsum board. Make finish walls or ceilings plumb and level without ridges, bows or warps.
- B. Apply boards with long dimension perpendicular to framing members with all abutting ends and edges over supports. Neatly fit and stagger all end joints. Make joints occur on different studs at opposite sides of partition. Cut and fit neatly around all outlets and switches. Space fasteners 8 inches o.c. along vertical edges, and 12 inches o.c. of midpoints, 3/8 inch from edge of board. Fasten boards to backings specified (unless noted as shear walls).
- C. Erection technique shall result in plumb and straight surfaces with no waves or buckles, free of unevenness at joints.
- D. Joints wider than 1/8 inch will be cause for rejection of board surface by Architect.
- E. Provide all backing, furring, stripping, or blocking indicated or required for installation and attachment of Work of all other trades. Cut and frame all openings required by other trades. Structural members shall not be cut, notched or drilled except as shown or noted on Drawings.

3.03 TAPING AND FINISHING

- A. Mix joint and finishing compounds per manufacturer's directions.
- B. Center tape over joint and embed in uniform layer of joint compound of sufficient width and depth to provide firm and complete bond. Apply skim coat while embedding tape.
- C. Treat angles with reinforcing tape folded to conform to adjacent surfaces and straight true angles.
- D. Allow compound to thoroughly dry for at least 24 hours.
- E. Over joint compound and tape, apply coat of finishing compound. Spread evenly and feather out beyond edge of board. After first finishing coat is thoroughly dry (at least 24 hours), cover with second coat with edges feathered out slightly beyond preceding coat.
- F. Give all dimples at fastener heads and all marred spots on surface of board one coat joint compound and two coats finishing compound, applied as each coat is applied to joints.
- G. Install metal corner reinforcement at all external corners. Conceal flanges of metal reinforcement with at least two coats compound. When completed, compound shall extend approximately 8 inches to 10 inches on each side of metal nosing.
- H. After each application of joint or finishing compound has dried, lightly sand all joints. Leave all board and treated areas uniformly smooth and ready for texturing and painting.

3.04 SCHEDULE

- A. Provide fire-rated gypsum board at all firewalls and shafts as indicated on Drawings and required by code.
- B. Provide water resistant gypsum board at all bermed walls, plumbing walls - full height, and walls to receive tile finish.

3.05 CLEAN UP

- A. In addition to other requirements for cleaning, use necessary care to prevent scattering gypsum wallboard scraps and dust and to prevent tracking gypsum and joint finishing compound onto floor surfaces.
- B. At completion of each segment of installation in a room or space, promptly pick up and remove from the working area all scrap, debris and surplus material of the Section.

*** END OF SECTION ***

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SECTION 09300

TILEWORK

PART 1 – GENERAL

1.01 DESCRIPTION

Furnish materials and perform labor required to execute this work as indicated on the drawings, as specified and as necessary to comply with the Contract Documents, including, but not limited to ceramic floor, base and wall tile and installation of stone tiles for floor. All the requirements of the Contract Documents apply to this Section.

1.02 QUALITY ASSURANCE

- A. Use adequate numbers of skilled workmen who are thoroughly trained and experienced in the necessary crafts and who are completely familiar with the specified requirements and the methods for proper performance of the work of this Section.
- B. Comply with recommendations of the Ceramic Tile Institute and the Tile Council of America.
- C. Field Conditions: Verify drawing dimensions with actual field conditions. Inspect related work and adjacent surfaces. Meet with Owner and Architect prior to start of installation to review all requirements. Report to the Architect all conditions, which prevent proper execution of this work.
- D. Environmental Conditions:
 - 1. Maintain temperature at 50 degrees F. minimum during tilework and for seven (7) days after completion. Do not apply to frozen surfaces.
 - 2. Vent temporary heaters to outside to avoid carbon dioxide damage to new tilework.
 - 3. Provide adequate lighting for work and walking on newly tiled floors.
 - 4. Use kneeling boards for work and walking on newly tiled floors.
 - 5. Provide shade for all tile, materials and work area on exterior applications as required to prevent rapid evaporation caused by excessive heat.

1.03 SUBSTITUTIONS

Substitutions will be considered per Article 5.3 of the General Conditions.

1.04 SUBMITTALS

Product data: Within 35 calendar days after the Contractor has received the Owner's Notice to Proceed, submit:

- 1. List of items to be provided under this Section.
- 2. Manufacturer's Specifications, catalog cuts, and other data needed to prove compliance with the specified requirements of tile, sealants, grout, trim, fasteners, adhesives and sealers.
- 3. Samples of each type, class, and color of ceramic tile required, not less than 12" square, mounted on plywood or hardboard backing, and grouted as specified. Sample shall include border pattern.

1.05 PRODUCT HANDLING

Blend all tile at factory and again on site to achieve an even color throughout to the Architect's

approval.

1.06 CLOSE-OUT

- A. Provide maintenance instructions and product for one cleaning of project subsequent to closeout.
- B. Furnish written guarantee covering workmanship and materials for one (1) year after acceptance of the buildings.

PART 2 – PRODUCTS

2.01 CERAMIC TILE

- A. Provide ceramic tile and accessories complying with Tile Council of America Specifications 137.1, in colors and patterns selected by the Architect from standard colors and patterns of the accepted manufacturers.
- B. Material:
 - 1. Furnish: size(s), color(s), pattern(s) and shape(s) as indicated on the drawings.
 - 2. Provide standard accessory shapes as required and as accepted by Architect.
 - 3. Use appropriate trim shapes to conform to drawings.
 - 4. Metal trims shall have a clear anodized finish – protected as to resist discoloration from adhesives and grouts.
- C. Floor Tile: Provide coefficient of friction not less than 0.60 when tested in accordance with ASTM F489, ASTM F609, and the National Bureau of Standards Technical Note 895 at floor tile.
- D. Extra Stock: Supply 2% of each type of tile used in clean marked cartons for Owner.

2.02 SETTING MATERIALS

- A. Comply with pertinent recommendations contained in the Tile Council of America "Handbook for Ceramic Tile Installation".
- B. Dry set mortar:
 - 1. Provide a commercially prepared mixture of Portland Cement, sand, and additives imparting water retentivity, for use as a leveling / bond coat for setting interior tile floors and all exterior mortar beds.
 - 2. Comply with ANSI A118.1, except where specifically indicated on the Drawings or directed in advance by the Architect, provide conductive dry-set mortar complying with ANSI A118.2.
 - 3. Provide acrylic latex additive formulated for use with dry set mortar.
 - 4. Acceptable products:
 - a. S-759 Thin Set Mortar for floors, S-763 Thin Set for Walls and S-800 Setting Acrylic Latex Additive, as manufactured by Summitville Tiles, Inc., Summitville, Ohio 43962.
 - b. Equal products of other manufacturers when accepted in advance by the Architect.

- C. Organic Adhesive: TCA A136.1 Type 1, AO 1700 or approved equal; thin set bond for walls.
- D. Epoxy Adhesive: TCA AO 4000 AAR-11, ANSI 118.3 Epoxy resin and epoxy hardener
- E. Special tile setting mortars will be considered by the Architect when complete technical data is submitted in advance.
- F. Mortar system for thin set bond type for interior floors. Typical in all potentially wet areas such as restrooms.

2.03 GROUT

- A. Comply with pertinent recommendations contained in the Tile Council of America "Handbook for Ceramic Tile Installation" in colors selected by the Architect from standard colors available from the accepted manufacturers.
- B. Latex Portland Cement Grout:
 - 1. Provide a commercially prepared mixture of Portland cement and latex additives producing water-retentivity, and suitable for grouting all walls and floors subject to ordinary use.
 - 2. Provide a product licensed by the Tile Council of America, and bearing that license symbol.
 - 3. Acceptable products:
 - a. "S-700 Sanded Joint Filler" with "S-775 Grouting Acrylic Latex Additive", as manufactured by Summitville Tiles, Inc.
 - b. Equal products of other manufacturers when accepted in advance by the Architect.
- C. Expansion Joint: Colors to be selected by Architect.
 - 1. Provide expansion joint backing material as closed cell polyethylene foam weighing not less than 2.7 lbs. Per cubic foot and in dimension approximately 20% thicker than the width of the expansion joint in which used.
 - 2. Expansion joints in floors shall be a two component polyurethane sealant with Shore-A hardness between 35-45. Use at perimeter of all stone flooring especially when adjoining other tilework.
- D. At joints between floors and walls and at perimeter of metal doorframes, provide one-part silicone material.

2.04 PROTECTIVE MATERIALS

- A. Neutral cleaner such as Hillyard Super Shine-All.
- B. Grout release agents such as Klein Company Standard Grout Guard.
- C. Sealer: Overall the finished work of this Section, provide a sealer, cleaner or water repellent coating and apply in strict accordance with the Manufacturer's recommendations.
- D. Heavy-duty non-staining construction paper with compatible tape for securing it.

2.05 FLOORING TRANSITIONS

Manufacturer(s), Type(s), Location(s), Finishes(s), as indicated on drawings.

2.06 OTHER MATERIALS

Provide other materials, not specifically described but required for a complete and proper installation, as selected by the Contractor subject to the acceptance of the Architect.

PART 3 -- EXECUTION

3.01 EXAMINATION

- A. Examine the areas and conditions under which work of this Section will be performed.
- B. Correct conditions detrimental to timely and proper completion of the Work.
- C. Do not proceed until unsatisfactory conditions are corrected.
- D. Beginning of installation means acceptance of conditions.

3.02 PREPARATION

- A. Coordinate work with other trades as needed to assure that proper substrate are provided to receive work of this Section.
- B. Acceptability of Surfaces:
 - 1. Before tiling, confirm variations of surface to be tiled fall within maximum variations shown below:

	Walls	Floors
1. Cement Mortar Bed	1/4" in 8'	1/4" in 10'
2. Epoxy Adhesive	1/8" in 8'	1/8" in 10"
3. Organic Adhesive	1/8" in 8'	1/8" in 8"
 - 2. Report all unacceptable surfaces to the Architect and do not tile such surfaces until they are leveled enough to meet above requirements. Leveling cost is included in this section.
 - 3. Remove all adhesives for substrate for clean floor. Before tiling, be certain surfaces to be tiled are free from coating, curing membranes, oil, grease, wax, and dust. Scarify concrete substrate, which is hard steel trowel finished or pores filled with curing compound or other adhesive.
 - 4. Verify that grounds anchors, plugs, recess frames, bucks, electrical work, mechanical work and similar items in or behind the tile have been installed before proceeding with the installation of the mortar bed or tile.

3.03 INSTALLATION

- A. General:
 - 1. Comply with ANSI A108.1, A108.5, A108.6 and A108.10 and the "Handbook for Ceramic Tile installation" of the Tile Council of America, except as otherwise directed by the Architect or specified herein.
 - 2. Maintain minimum temperature limits and installation practices recommended by materials manufacturers.
- B. Layout:
 - 1. Determine locations of all movement joints before starting tilework.
 - 2. Layout tile work and center tile fields both direction in each space or on each wall area.
 - 3. Lay out all tilework so as to minimize cuts less than one-half tile in size.
 - 4. Locate cuts in both walls and floors so as to be least conspicuous.
 - 5. Provide uniform joint width.

6. Align all floor joints to give straight uniform grout lines, parallel with walls, base and trim.
 7. Lay tile in grid pattern unless otherwise indicated on the Drawings or directed by the Architect.
 8. Align the joints when adjoining tiles on floor, base, trim, and walls are the same size.
- C. Install the work of this Section in accordance with the following Handbook procedure:
1. Floors interior -- No. F115 at porcelain / stone floors.
 2. Floors exterior -- No. F101.
 3. Walls -- No. W242.
- D. Limits of tile:
1. Extend tile into recesses and under equipment and fixtures to form a complete covering without interruptions. Omit behind full width mirrors above counter lavatories to allow smooth setting of mirror.
 2. Terminate tile neatly at obstructions, edges, and corners, without disruption of pattern or joint alignment.
- E. Provide expansion and control joints where shown on the Drawings, and where otherwise recommended by the "Handbook for Ceramic Tile Installation" of the Tile Council of America, sealing in accordance with Section 07900 of these Specifications, but not less than:
1. 24'-0" to 36'-0" in each direction on interior.
 2. 12'-0" to 16'-0" in each direction on exterior.
 3. At all perimeter walls, building expansion joints and where tile abuts restraining surfaces such as walls, curbs, dissimilar floors, pipes, columns or where changes in backing materials occur.
 4. Extend joints completely through the tile, mortar, mortar bed and reinforcing.
- F. Install metal edge strips at all openings where floor tile abuts dissimilar materials and a threshold has not been called out. Grout solid all thresholds indicated adjacent to tilework.
- G. Workmanship:
1. Supply first class workmanship in all tilework.
 2. Use all products in strict accordance with recommendations and directions of manufacturer.
 3. Proportion all mixes in accordance with latest ANSI Standard Specifications.
 4. Be sure all tilework is free of grout film upon completion, conforming to ANSI A 108.5 sub-section A-4.3.4.7.
- H. Provide tile surfaces clean and free from cracked, broken, chipped, unbonded, and otherwise defective units.
- I. Provide required protection of tile surfaces to prevent damage and wear prior to acceptance of the Work by the Owner.

3.04 GROUTING

- A. Allow tile to set for a minimum of 48 hours prior to grouting. Remove all spacers, ropes, glue and foreign material prior to grouting.

- B. Follow grout manufacturer's recommendations as to grouting procedures and precautions.
 - 1. Force maximum amount of grout into joints in accordance with pertinent recommendations in ANSI 108.10.
 - 2. Fill-in joints of cushion edged tile to depth of cushion; fill square edged tile flush with surface.
 - 3. Provide hard finished grout which is smooth and without voids, pinholes or low spots.
- C. Remove all grout haze, observing grout manufacturer's recommendations as to use of acid and chemical cleaners.
- D. Use recommended sealant for perimeter grouting of stone tile to allow for movement of field.
- E. Cleaning:
 - 1. Upon completion of placing and grouting, clean the work of this Section in accordance with recommendations of the manufacturers of the materials used.
 - 2. Protect metal surfaces, cast iron, and vitreous items from effects of acid cleaning.
 - 3. Flush surfaces with clean water before and after cleaning.
 - 4. Cure the joints by keeping damp until hardened, during which time all traffic is kept off newly tiled floor areas.
 - 5. Protect grouted floors from drying out for at least three days with a layer of bituminous building paper lapped 4" and sealed against escape of moisture. Keep traffic off floor during this curing period.

3.05 PROTECTION

- A. Apply sealer over all finished surfaces of work of this Section. Use in strict accordance with manufacturer's printed instructions.
- B. Protection from Construction Dirt:
 - 1. Apply to all clean, completed tile walls and floors a protective coat of neutral cleaner solution, 1 part cleaner to 1 part water.
 - 2. In addition, cover all tile floors with heavy-duty, non-staining construction paper, masked in place.
 - 3. Just before final acceptance of tilework, remove paper and rinse protective coat of neutral cleaner from all tile surfaces.
- C. Protection from Traffic:
 - 1. Prohibit all foot and wheel traffic from using newly tiled floors for at least 3 days, preferably 7 days.
 - 2. Place large flat boards in walkways and wheel-ways for 7 days where use of newly tiled floors with cement type grout is unavoidable.

*** END OF SECTION ***

SECTION 09510
ACOUSTICAL CEILING SYSTEMS

PART 1 -- GENERAL

1.01 SCOPE OF WORK

Supply and install all Acoustical Ceiling Work as shown on Drawings and as specified herein. All the requirements of the Contract Documents apply to this Section.

1.02 SUBSTITUTIONS

Substitutions will be considered per Article 5.3 of the General Conditions.

1.03 SUBMITTALS

- A. Submit complete layout of all systems including attachments, intersections of members and edge conditions.
- B. Samples: submit 2 samples of each type of unit specified herein.

1.04 QUALITY ASSURANCE

- A. Have applicators approved by manufacturer of material or system being installed.
- B. Work hereunder requires coordination with trades who's Work connects with, is affected, or concealed by acoustical units. Before proceeding with Work, make certain all required inspections have been made.
- C. Examine sub-surfaces to receive Work. Commencement of Work will be construed as acceptance of all sub-surfaces.
- D. Comply with all applicable requirements of Acoustical Materials Association, Bulletin "Architectural Acoustical Materials".

1.05 DELIVERY AND STORAGE

Deliver all manufactured materials in original containers bearing manufacturer's name and brand. Use only one brand for each type of unit throughout job. Store materials within building in locations directed.

PART 2 -- PRODUCTS

2.01 GRID

- A. Ceiling Suspension Materials: Comply with ASTM C635, as applicable to the type of suspension system required for the type of ceiling units indicated. Coordinate with other work supported by or penetrating through the ceilings.
- B. Manufacturer, Type, Location, and Pattern: as indicated on the drawings.
- C. Edge Mouldings: Manufacturer's standard channel moulding for edges and penetrations of ceiling, with a single flange of moulding exposed, white baked enamel finish, unless otherwise indicated.

2.02 ACOUSTICAL TILE

Manufacturer, Type, Location, and Pattern: as indicated on the drawings.

2.03 EXTRA STOCK

Order additional 3% of each type of acoustical unit specified, for maintenance use, at no additional cost to Owner. (One box minimum.)

PART 3 -- EXECUTION

3.01 EXAMINATION

- A. Examine the areas and conditions under which work of this Section will be performed.
- B. Correct conditions detrimental to timely and proper completion of the Work.
- C. Do not proceed until unsatisfactory conditions are corrected.
- D. Beginning of installation means acceptance of conditions.

3.02 INSTALLATION

- A. Provide all materials and accessories for complete installation per Drawings and manufacturer's printed instructions and recommendations.
- B. Install units to sub-surfaces from setout points and to pattern shown on Drawings. Verify location of Work of other trades so their items occur within a whole unit or at joints as shown.
- C. Install units in place fitting snugly. Provide spacers or hold-down clips where shown or required.
- D. After installation, clean any soiled surfaces. Replace any damaged units at no additional cost to the Owner.
- E. Arrange acoustical units in the manner shown by reflected ceiling plans. Consult with Architect pertaining to any adjustments.

3.03 SUPPORT SYSTEMS FOR SUSPENDED CEILING

- A. General: Ceilings shall not support material or building components other than grills, insulation batts or light fixtures. Duct work, plumbing and like work shall have its own support system and shall not use the ceiling system or suspension wires.
- B. Vertical Support System: Suspension wires shall be a minimum of 12-gauge galvanized wire attached to the main runner at 4 ft. maximum spacing in both directions. Each wire shall be anchored to the structure above with a device capable of supporting a minimum of 75 pounds. Wires supporting fixtures shall be capable of supporting four times the fixture weight. Suspension wires shall not hang more than 1 in 6 out of plumb unless counter sloping wires are provided. Wires shall not attach to or bond around interfering material such as ductwork. Trapeze or equivalent devices shall be used where obstructions interfere with direct suspension.
- C. Horizontal Support System: The lateral support system for ceilings shall be shown in detail shop Drawings. Provisions shall be made for possible differential movement between ceilings and sidewalls. Terminal ends of each main and each cross runner shall be wire supported; wall trim angles shall not provide primary support for runners. Lateral support of ceilings shall not be provided by the angle trim and runner shall not be riveted to wall trim.
- D. Light Fixture Support: All recessed or drop-in light fixtures shall be supported directly from the fixture housing to the structure above with a minimum of two 12 gauge wires; leveling and positioning of fixture may be provided by the ceiling grid. Fixture support wires may be slightly loose to allow fixture to seat in heavy-duty grid system only.
- E. Secure wire hangers by looping and wire tying either directly to structures or to inserts, eye-screws or other devices which are secure and appropriate for the substrate, and which will

not deteriorate or fail with age or elevated temperatures.

3.04 CLEANING AND PROTECTION

- A. Clean exposed surfaces of acoustical ceilings, including trim, edge mouldings and suspension members; comply with manufacturer's instructions for cleaning and touch-up of minor finish damage. Remove and replace work that cannot be successfully cleaned and repaired to permanently eliminate evidence of damage.
- B. The installer shall advise the Contractor of required protection for the acoustical ceilings, including temperature and humidity limitations and dust control, so that the Work will be without damage and deterioration at the time of acceptance by the Owner.

***** END OF SECTION *****

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SECTION 09650
RESILIENT FLOORING

PART 1 – GENERAL

1.01 SCOPE OF WORK

Furnish all materials and perform labor required to execute this work as indicated on the drawings, as specified and as necessary to comply with the Contract Documents, including, but not limited to these major items:

1. Resilient tile flooring.
2. Floor substrate surface.
3. Rubber base.

1.02 REGULATORY REQUIREMENTS

Conform to applicable code for flame rating requirements of 75 or less in accordance with ASTM E84.

1.03 SUBSTITUTIONS

Substitutions will be considered per Article 5.3 of the General Conditions.

1.04 SUBMITTALS

- A. Provide product data on specified products, describing physical and performance characteristics.
- B. Submit two samples, illustrating color and pattern for each floor material or base, substituted for those indicated in the Drawings.
- C. Submit manufacturer's installation instructions. When approved by the Architect, will become the basis for accepting or rejecting actual installation procedure used on the Work.

1.05 OPERATION AND MAINTENANCE DATA

Submit cleaning and maintenance data maintenance procedures, recommended maintenance materials, and suggested schedule for cleaning, stripping, and re-waxing.

1.06 ENVIRONMENTAL REQUIREMENTS

- A. Store materials for three days prior to installation in area of installation to achieve temperature stability.
- B. Maintain ambient temperature required by adhesive manufacturer three days prior to, during, and 24 hours after installation of materials.

1.07 EXTRA MATERIALS

Provide 5% of each pattern and color of flooring and of base specified.

PART 2 – PRODUCTS

2.01 VINYL COMPOSITION TILE

Manufacturer(s), Type(s), Location(s), Color(s), and Pattern(s) as indicated on drawings.

2.02 SHEET VINYL

Manufacturer(s), Type(s), Location(s), Color(s), and Pattern(s) as indicated on drawings.

2.03 BASE MATERIALS

Manufacturer(s), Type(s), Location(s), Color(s), and Pattern(s) as indicated on drawings.

2.04 ACCESSORIES

- A. Subfloor Filler: Latex cement underlayment as recommended by flooring material manufacturer.
- B. Primers and Adhesives: Waterproof; types recommended by flooring manufacturer.
- C. Sealer and Wax: Types recommended by flooring manufacturer.
- D. Welding rod: Use same manufacturer as flooring manufacturer and install per manufacturer's instructions. Colors to be selected from standard colors. All flooring in medical procedure rooms and in restrooms shall be heat welded.
- E. Provide other materials, not specifically described but required for a complete and proper installation as selected by the Contractor subject to the approval of the Architect.

2.05 FLOORING TRANSITIONS

Manufacturer(s), Type(s), Location(s), Finishes(s), as indicated on drawings.

PART 3 -- EXECUTION

3.01 EXAMINATION

- A. Examine the areas and conditions under which work of this Section will be performed.
- B. Correct conditions detrimental to timely and proper completion of the Work.
- C. Do not proceed until unsatisfactory conditions are corrected.
- D. Verify that surfaces are smooth and flat with maximum variation of 1/8 inch in 10 ft. and are ready to receive work.
- E. Verify concrete floors are dry to the maximum moisture content of 2.5% (two and one half percent); and exhibit negative alkalinity, carbonization, or dusting. Provide test results to indicate that the substrate meets moisture requirements prior to starting work. Higher moisture content will be as accepted by manufacturer in their written warranty.
- F. Beginning of installation means acceptance of conditions.

3.02 PREPARATION

- A. Remove sub-floor ridges and bumps. Fill low spots, cracks, joints, holes, and other defects with sub-floor filler.
- B. Apply, trowel, and float filler to leave smooth, flat, hard surface.
- C. Prohibit traffic from area until filler is cured.
- D. Vacuum clean substrate.
- E. Maintain the temperature of the space to receive the flooring and the materials to be installed at a minimum of 65 degrees F and maximum of 100 degrees F for at least 48 hours prior to, during, and 48 hours after installation. Maintain a minimum temperature of 55 degrees F thereafter.
- F. Install flooring after all other trades, including painting, have been completed.

3.03 INSTALLATION

- A. Install in accordance with manufacturer's instructions, conventional full-spread system.
- B. Spread only enough adhesive to permit installation of materials before initial set.
- C. Set flooring in place; press with heavy roller to attain full adhesion.
- D. Terminate flooring at centerline of door openings where adjacent floor finish is dissimilar.
- E. Install edge strips at unprotected or exposed edges, and where flooring terminates.
- F. Scribe flooring to walls, columns, permanent cabinets, floor outlets, and other appurtenances to produce tight joints.

3.04 INSTALLATION – BASE MATERIAL

- A. Fit joints tight and vertical. Maintain minimum measurement of 18 inches between joints.
- B. Miter internal corners. At external corners, "V" cut back of base strip to 2/3 of thickness and fold.
- C. Install base on solid backing. Bond tight to wall and floor surfaces.
- D. Scribe and fit to doorframes and other interruptions.

3.05 PROTECTION

Prohibit traffic on floor finish for 48 hours after installation.

3.06 CLEANING

- A. Remove excess adhesive from floor, base, and wall surfaces without damage.
- B. Clean, seal, and wax floor and base surfaces in accordance with manufacturer's instructions.

***** END OF SECTION *****

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SECTION 09680

CARPET

PART 1 -- GENERAL

1.01 SCOPE OF WORK

Furnish all Materials and perform labor required to execute this work as indicated on the drawings, as specified and as necessary to comply with the Contract Documents, including, but not limited to, these major items:

1. Direct glue down carpet with backing.
2. Metal edge trim and backing for carpet coved wall base if indicated on the drawings.

1.02 SUBSTITUTIONS

Substitutions will be considered per Article 5.3 of the General Conditions.

1.03 SUBMITTALS

- A. Provide product data on specified products, describing physical and performance characteristics: sizes, patterns, colors available, and method of installation.
- B. Submit two samples illustrating color and pattern for each carpet material specified if substituting from color board.
- C. Submit manufacturer's installation instructions. When approved by the Architect, will become the basis for accepting or rejecting actual installation procedures used on this Work.

1.04 OPERATION AND MAINTENANCE DATA

Submit operation and maintenance data maintenance procedures, recommended maintenance materials, and suggested schedule for cleaning and shampooing.

1.05 ENVIRONMENTAL REQUIREMENTS

- A. Store materials for three days prior to installation in area of installation to achieve temperature stability.
- B. Maintain minimum 72 degrees F ambient temperature plus/minus 5 degrees with relative humidity not exceeding 65% three days prior to, during, and 72 hours after installation of materials.

1.06 EXTRA MATERIALS

Provide 5% of carpeting of each color specified.

PART 2 -- PRODUCTS

2.01 CARPET

Manufacturer(s), Type(s), Location(s), Color(s), and Pattern(s) as indicated on drawings.

2.02 FLOOR BASE

Manufacturer(s), Type(s), Location(s), Finishes(s), as indicated on drawings.

2.03 FLOORING TRANSITIONS

Manufacturer(s), Type(s), Location(s), Finishes(s), as indicated on drawings.

2.04 OTHER ACCESSORIES

- A. Sub-Floor Filler: White premix latex; type recommended by carpet manufacturer.
- B. Primers and Adhesives: Waterproof; of types recommended by carpet manufacturer.

PART 3 – EXECUTION

3.01 EXAMINATION

- A. Examine the areas and conditions under which work of this Section will be performed.
- B. Correct conditions detrimental to timely and proper completion of the Work.
- C. Verify that substrate surfaces are smooth and flat with maximum variation of 1/8 inch in 10 ft. and are ready to receive work. Have all previous adhesives removed.
- D. Verify concrete floors are dry to a maximum moisture content of 7 percent; and exhibit negative alkalinity, carbonization, or dusting. Provide test results to prove compliance prior to initiating installation.
- E. Do not proceed until unsatisfactory conditions are corrected.
- F. Beginning of installation means acceptance of conditions.

3.02 PREPARATION

- A. Remove sub-floor ridges and bumps. Fill low spots, cracks, joints, holes, and other defects with sub-floor filler.
- B. Apply, trowel, and float filler to leave smooth, flat, hard surface.
- C. Prohibit traffic until filler is cured.
- D. Vacuum floor surface.

3.03 INSTALLATION

- A. Apply carpet and adhesive in accordance with manufacturers' instructions. Direct glue-down.
- B. Lay out rolls of carpet.
- C. Verify carpet match before cutting to ensure minimal variation between dye lots.
- D. Locate seams in area of least traffic. Carpet shall be installed in full lengths wherever possible.
- E. Fit seams straight, not crowded or peaked, free of gaps.
- F. Lay carpet on floors with run of pile in same direction as anticipated traffic. Lay carpet so that seams perpendicular to a wall do not occur at door openings in that wall.
- G. Do not change run of pile in any room where carpet is continuous through a wall opening into another room. Locate change of color or pattern between rooms under door centerline.
- H. Cut and fit carpet around interruptions.
- I. Fit carpet tight to intersection with vertical surfaces without gaps.
- J. All seams shall be beaded and sealed with "seam sealer". The seam sealer shall be applied to the cut edge of the carpet at the level of the carpet backing.
- K. No stretching will be permitted.

- L. Unroll carpet face up and cut the lengths required with pile-lay runs in the same direction. Check starting wall for squareness and allow for off-square walls. Strike chalk line the entire length of area where seam falls.
- M. Place two lengths in proper position for installing; trim salvage, and line up seam edge with chalk line. Lay carpet perfectly flat and tension free.
- N. Roll both widths back 3' from seam area the entire length of carpet.
- O. Spread adhesive from approximate center towards each end.
- P. When sufficient floor area has been covered with adhesive, drop or roll first width into place. Apply coating of edge sealer to seam edge of first width. Follow this procedure on each succeeding width at seam. Drop or roll second width into position and fit the seam in tightly using knee-kicker if necessary. Brush or roll looseness and air bubbles away from seam.
- Q. Fold or roll the remaining portion of the first width from the wall. Apply adhesive to the floor and drop or roll carpet into place.
- R. Roll or fold back dry portion of second width towards seam; spread adhesive and place carpet 3' from where next seam will fall.
- S. Brush or roll out looseness and air bubbles as carpet is put into place. Repeat above procedure on continuing widths. Trim carpet at wall using razor blade knife or suitable wall trimmer.

3.04 CLEANING

- A. Remove excess adhesive from floor, base, and wall surfaces without damage.
- B. Clean and vacuum carpet surfaces.

3.05 PROTECTION

- A. Prohibit traffic from carpet areas for 24 hours after installation.
- B. Cover with non-staining building paper, firmly fastened down to protect floor surfaces.
- C. Near completion of the project, remove paper, clean and vacuum carpet.

***** END OF SECTION *****

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SECTION 09900

PAINTING

PARTS 1 -- GENERAL

1.01 SUMMARY:

- A. Section Includes: Painting and finishing of all interior and exterior items and surfaces, unless otherwise indicated or listed under exclusions below:
 - 1. Paint all exposed surfaces, except as otherwise indicated, whether or not colors are designated.
 - 2. Include field painting of exposed exterior and interior structural steel, plumbing, mechanical and electrical work, except as indicated below.
 - 3. Paint exterior plaster where indicated on Drawings.
- B. Work Included:
 - 1. The intent and requirements of this section is that all work, items and surfaces which are normally painted and finished in a building of this type and quality, shall be so included in this contract, whether or not said work, item or surface is specifically called out and included in the schedules and notes on the drawings, or is, or is not, specifically mentioned in these specifications.
 - 2. All the requirements of Division Zero and Division One apply to this Section.
- C. The following general categories of work and items that are included under other sections, shall not be a part of this section:
 - 1. Shop prime painting of structural and miscellaneous iron or steel.
 - 2. Shop prime painting of hollow metal work.
 - 3. Shop finished work and items.
 - 4. Any drywall or plaster permanently concealed from view.
 - 5. Any factory finished equipment and other materials with a complete factory applied finish.
 - 6. Finish hardware except where primed for paint finish.
 - 7. Any glass, plastics, floor tiles and sheet vinyl coved or vinyl top set bases.
 - 8. Plumbing fixtures: Toilet room accessories.
 - 9. Lighting fixtures except as noted on drawings or specified.
 - 10. Any acoustical surfaces; unless otherwise specified.
- D. The Room Finish Schedules indicated on the drawings, indicates the location of interior room surfaces to be painted or finished. The schedule indications are general and do not necessarily define the detail requirements. Include all detailed refinements and further instructions as may be given for the required complete finishing of all spaces and rooms.

1.02 SUBSTITUTIONS

Substitutions will be considered per Article 5.3 of the General Conditions.

1.03 SUBMITTALS:

- A. Product Data: Submit complete manufacturer's descriptive literature and specifications in compliance with pertinent provisions of Article 5 of the General Conditions.

1. Materials List: Submit complete lists of materials proposed for use, giving the manufacturer's name, catalog number, and catalog cut for each item when applicable. When required, provide a list of paint and coating materials proposed for use, which equates such materials with the design-basis products specified.
- B. Samples: In accordance with provisions of Article 5 of the General Conditions, submit, on 8-1/2 inch by 11 inch hardboard, samples of each color, gloss, texture and material selected by the Architect from standard colors available for the coatings required.
 1. For natural and stained finishes, provide sample on each type and quality of wood used on the project.
- C. Manufacturer's Instructions: Submit the manufacturer's current recommended methods of installation, including relevant limitations, safety and environmental cautions, application rates, and composition analysis.

1.04 QUALITY ASSURANCE:

- A. Regulatory Requirements: Comply with applicable codes and regulations of governmental agencies having jurisdiction including those having jurisdiction over airborne emissions and industrial waste disposal. Where those requirements conflict with this Specification, comply with the more stringent provisions.

Regulatory changes may affect the formulation, availability, or use of specified coatings. Confirm availability of coatings to be used prior to job going out to bid and before start of painting project.

 1. Comply with the current applicable regulations of the California Air Resources Board (CARB) and the Environmental Protection Agency (EPA).
- B. Field Sample: When and as directed by the Architect, apply one complete coating system for each color, gloss and texture required. When approved, the sample panel areas will be deemed incorporated into the Work and will serve as the standards by which the subsequent Work of this Section will be judged.

1.05 DELIVERY, STORAGE, AND HANDLING:

- A. Storage and Protection: Use all means necessary to protect the materials of this Section before, during, and after installation.
- B. Deliver materials to job site in new, original, and unopened containers bearing manufacturer's name and trade name. Store where directed in accordance with manufacturer's instructions.

1.06 PROJECT CONDITIONS:

Do not apply exterior materials during fog, rain or mist, or when inclement weather is expected within the dry time specified by the manufacturer. No exterior or interior painting shall be done until the surfaces are thoroughly dry and cured. Do not apply paint when temperature is below 50° F. Avoid painting surfaces when exposed to direct sunlight.

PART 2 -- PRODUCTS

2.01 MANUFACTURERS:

Manufacturer's catalog names and number of paint types in this Section herein are based on products of Dunn-Edwards Corporation and is the standard of quality against which the Architect will judge equivalency. The quantity of titanium dioxide, the use of clays, aluminum silicate, talc and the purity of acrylic materials are a few of the criteria which will be used by the Architect in determining equivalency of materials.

2.02 ACCEPTABLE ALTERNATES

The following is a list of acceptable alternate manufacturers:

1. ICI Paints
2. Sherwin Williams
3. Vista Paint
4. Frazee Paints

2.03 MATERIALS:

- A. Paints: Provide Ready-Mixed, except field catalyzed coatings. Pigments shall be fully ground maintaining soft paste consistency, capable of being readily and uniformly dispersed to complete homogeneous mixture. Paints shall have good flowing and brushing properties and be capable of drying or curing free of streaks and sags.
- B. Accessory Materials: Linseed oil, shellac, solvents, and other materials not specified but required to achieve required finishes shall be of high quality and approved by manufacturer.
- C. Colors shall be selected from color chip samples provided by manufacturer of paint system approved for use. Match approved samples for color, texture and coverage.

2.04 MIXES:

Mix, prepare, and store painting and finishing materials in accordance with manufacturer's directions.

PART 3 -- EXECUTION

3.01 EXAMINATION:

- A. Examine the areas and conditions under which work of this Section will be performed.
- B. Examine surfaces to be painted before beginning painting work. Work of other trades that has been left or installed in a condition not suitable to receive paint, stain, other specified finish shall be repaired or corrected by the applicable trade before painting. Painting of defective or unsuitable surface implies acceptance of the surfaces.
- C. Beware of a condition known as "critical lighting". This condition causes shadows that accentuate even the slightest surface variations. A pigmented sealer will provide tooth for succeeding decorative coating, but "does not" equalize smoothness or surface texture. Any corrective action to gypsum board/drywall must be done by the drywall contractor prior to decorating.
- D. Correct conditions detrimental to timely and proper completion of the Work.
- E. Do not proceed until unsatisfactory conditions are corrected.
- F. Beginning of installation means acceptance of conditions.

3.02 PROTECTION:

- A. Protect previously installed work and materials, which may be affected by Work of this Section.
 - a. Protect prefinished surfaces, lawns, shrubbery and adjacent surfaces against paint and damage.
 - b. Furnish sufficient drop cloths, shields, and protective equipment to prevent spray or splatter from fouling surfaces not being painted.
 - c. Protect surfaces, equipment, and fixtures from damage resulting from use of fixed, movable and hanging scaffolding, planking, and staging.

- B. Provide WET PAINT signs, barricades, and other devices required to protect newly finished surfaces. Remove temporary protective wrappings provided by others for protection of their work after completion of painting operations.

3.03 PREPARATION:

- A. Perform preparation and cleaning procedures in strict accordance with coating manufacturer's instructions for each substrate condition.
- B. Concrete and masonry surfaces shall be dry, clean, and free of dirt, efflorescence, encrustation, and other foreign matter. Glazed surfaces on concrete shall be roughened or etched to uniform texture.
- C. Ferrous metal shall be cleaned of oil, grease, and foreign matter with solvent. Prime within 3 hours after preparation.
- D. Sand and scrape metal to remove loose primer and rust.
- E. Galvanized metal shall be chemically or solvent cleaned and then retreated with an etching-type solution if recommended by the finish manufacturer. Cleaned and retreated galvanized metal shall be primed the same day that cleaning has been performed.
- F. Remove dust, grit and foreign matter from wood surfaces. Sand surfaces and dust clean. Spot coat knots, pitch streaks, and sappy section with pigmented stain sealer when surfaces are to be painted. Fill nail holes, cracks and other defects after priming and spot prime repairs when fully cured.
- G. Remove hardware and accessories, machined surfaces, plates, lighting fixtures and similar items in place and not-to-be-finish painted, or provide surface-applied protection. Reinstall removed items upon completion of work in each area.
- H. Existing surfaces to be recoated shall be thoroughly cleaned and deglossed by sanding or other means prior to painting. Patched and bare areas shall be spot primed with same primer as specified for new work.
- I. Thoroughly backpaint all surfaces of exterior and interior finish lumber and millwork, including doors and window frames, trim, cabinetwork, etc., which will be concealed after installation. Backpaint items to be painted or enameled with the priming coat. Use a clear sealer for backpriming where transparent finish is required.
- J. Bar and covered pipes, ducts, hangers, exposed steel and ironwork, and primed metal surfaces of equipment installed under mechanical and electrical work shall be cleaned prior to priming.
- K. Preparation of other surfaces shall be performed following specific recommendations of the coatings manufacturer.
- L. Bond breakers and curing agents must be removed and the surface cleaned before primers, sealers or finish paints can be applied.
- M. All drywall surfaces must be completely dry and dust free before painting. Skim coated drywall must be sealed with an alkyd based sealer or a waterborne sealer recommended by the paint manufacturer for this surface. Use the appropriate light or medium tack masking tape.

3.04 APPLICATION:

- A. Apply painting and finishing materials in accordance with the manufacturer's submittals, as approved. Use applicators and techniques best suited for the material and surfaces to which applied.
 - 1. The number of coats specified is the minimum that shall be applied. Apply additional coats when undercoats, stains or other conditions show through final paint coat, until paint film is of uniform finish, color and appearance.

2. All undercoats shall be tinted slightly to approximate the color of the finish coat.
- B. Apply each material at not less than the manufacturer's recommended spreading rate:
 1. Provide a total dry film thickness of not less than 1.2 mils for each required coat.
- C. Apply prime coat to surface, which is required to be painted or finished.
- D. Finish exterior doors on tops, bottoms, and edges same as exterior faces, after fitting.
- E. Sand lightly and dust clean between succeeding coats.

3.05 CLEANING, TOUCH-UP AND REFINISHING:

- A. Carefully remove all spattering, spots and blemishes caused by work under this section from surfaces throughout the project.
- B. Upon completion of painting work remove all rubbish, paint cans, and accumulated materials resulting from work in each space or room. All areas shall be left in a clean, orderly condition.
- C. Runs, sags, misses, holidays, stains and other defects in the painted surfaces, including inadequate coverage and mil thickness shall be satisfactorily touched up, or refinished, or repainted as necessary.

3.06 FINISH SCHEDULE

- A. Apply the following finishes to the surfaces specified and/or as on the finish schedule on the Drawings. Apply all materials in accordance with manufacturer's instructions on properly prepared surfaces and foundation coats. All intermediate undercoats must be tinted to approximate the final color.
 1. Architect will issue a color schedule prior to start of painting to designate the various colors and locations required for the work.

B. Exterior Systems:

1. Stucco & Plaster

Flat – 100% Acrylic

First Coat	EFF-STOP, Acrylic Masonry Primer (W 709) OR SUPER-LOC Two Component Waterborne Epoxy
Masonry Sealer (W 718)	
Second Coat	EVERSHIELD, 100% Acrylic Exterior Masonry Finish (W 701V)
Third Coat	EVERSHIELD, 100% Acrylic Exterior Masonry Finish (W 701V)
OR	
Second Coat	ACRI-FLAT, Exterior 100% Acrylic Flat Finish (W 704V)
Third Coat	ACRI-FLAT, Exterior 100% Acrylic Flat Finish (W 704V)

2. Concrete Tilt-Up

Flat – 100% Acrylic

First Coat	EFF-STOP, Acrylic Masonry Primer/Sealer (W 709) OR SUPER-LOC Two Component Waterborne Epoxy Masonry Sealer (W 718)
Second Coat	EVERSHIELD, 100% Acrylic Exterior Masonry Finish (W 701V)
Third Coat	EVERSHIELD, 100% Acrylic Exterior Masonry Finish (W 701V)
OR	
Second Coat	ACRI-FLAT, Exterior 100% Acrylic Flat Finish (W 704V)
Third Coat	ACRI-FLAT, Exterior 100% Acrylic Flat Finish (W 704V)

3. Brick Masonry

Flat – 100% Acrylic

First Coat	EFF-STOP, Acrylic Masonry Primer/Sealer (W 709) OR SUPER-LOC, Two Component Waterborne Epoxy Masonry Sealer (W 718)
Second Coat	EVERSHIELD, 100% Acrylic Exterior Masonry Finish (W 701V)
Third Coat	EVERSHIELD, 100% Acrylic Exterior Masonry Finish (W 701V)
OR	
Second Coat	ACRI-FLAT, Exterior 100% Acrylic Flat Finish (W 704V)
Third Coat	ACRI-FLAT, Exterior 100% Acrylic Flat Finish (W 704V)

B. Exterior Systems: (Continued)

4. Concrete Block

a. Flat – 100% Acrylic

First Coat	BLOCFIL, Concrete Block Filler, Smooth (W 305)
Second Coat	EVERSHIELD, 100% Acrylic Exterior Masonry Finish (W 701V)
Third Coat	EVERSHIELD, 100% Acrylic Exterior Masonry Finish (W 701V)
OR	
Second Coat	ACRI-FLAT, Exterior 100% Acrylic Flat Finish (W 704V)
Third Coat	ACRI-FLAT, Exterior 100% Acrylic Flat Finish (W 704V)

b. Semi-Gloss – 100% Acrylic

First Coat	BLOCFIL, Concrete Block Filler, Smooth (W 305)
Second Coat	PERMASHEEN, 100% Acrylic Semi-Gloss Enamel (W 901V)
Third Coat	PERMASHEEN, 100% Acrylic Semi-Gloss Enamel (W 901V)

c. Gloss – 100% Acrylic

First Coat	BLOCFIL, Concrete Block Filler, Smooth (W 305)
Second Coat	PERMAGLOSS, 100% Acrylic Gloss Enamel (W 960V)
Third Coat	PERMAGLOSS, 100% Acrylic Gloss Enamel (W 960V)

d. High Gloss, High Performance – Acrylic/Urethane

First Coat	RUST-OLEUM SIERRA GRIPTEC S30 Primer
Second Coat	RUST-OLEUM SIERRA BEYOND Multi-Purpose Acrylic Enamel
Third Coat	RUST-OLEUM SIERRA BEYOND Multi-Purpose Acrylic Enamel

5. Ferrous Metal

a. Flat – Alkyd/Acrylic

First Coat	BLOC-RUST, Red Oxide Alkyd Rust Preventative Primer (43-4)
OR	CORROBAR, White Alkyd Rust Preventative Primer (43-5)
Second Coat	EVERSHIELD, 100% Acrylic Exterior Masonry Finish (W 701V)
Third Coat	EVERSHIELD, 100% Acrylic Exterior Masonry Finish (W 701V)

b. Semi-Gloss – Alkyd/Acrylic

First Coat	BLOC-RUST, Red Oxide Alkyd Rust Preventative Primer (43-4)
OR	CORROBAR, White Alkyd Rust Preventative Primer (43-5)
Second Coat	PERMASHEEN, Int/Ext. 100% Acrylic Semi-Gloss Enamel (W901V)
Third Coat	PERMASHEEN, Int/Ext. 100% Acrylic Semi-Gloss Enamel (W 901V)

B. Exterior Systems: (continued)

5. Ferrous Metal (continued)

c. Gloss – Alkyd/Acrylic

First Coat	BLOC-RUST, Red Oxide Alkyd Rust Preventative Primer (43-4)
OR	CORROBAR, White Alkyd Rust Preventative Primer (43-5)
Second Coat	PERMAGLOSS, 100% Acrylic Gloss Enamel (W960V)
Third Coat	PERMAGLOSS, 100% Acrylic Gloss Enamel (W960V)

d. Gloss – Rust Preventative Alkyd

First Coat	SYN-LUSTRO Rust-Preventative Acrylic Primer (W8)
Second Coat	SYN-LUSTRO Rust-Preventative Acrylic Gloss (W10)
Third Coat	SYN-LUSTRO Rust-Preventative Acrylic Gloss (W10)

e. Matte, Industrial High Performance – Inorganic Zinc/Epoxy/Acrylic

First Coat	CARBOLINE CARBOZINC 859 VOC
Second Coat	CARBOLINE CARBOGUARD 890 VOC
Third Coat	CARBOLINE CARBOCRYLIC 3359 MC

f. Matte, Industrial High Performance – Epoxy Primer/Epoxy/Acrylic

First Coat	CARBOLINE CARBOGUARD 890 VOC
Second Coat	CARBOLINE CARBOGUARD 890 VOC
Third Coat	CARBOLINE CARBOCRYLIC 3359 MC

g. High Gloss, Industrial High Performance – Inorganic Zinc/Epoxy/Urethane

First Coat	CARBOLINE CARBOZINC 859 VOC
Second Coat	CARBOLINE CARBOGUARD 890 VOC
Third Coat	CARBOLINE CARBOTHANE 134 VOC

h. High Gloss, Industrial High Performance – Epoxy Primer/Epoxy/Urethane

First Coat	CARBOLINE CARBOGUARD 890 VOC
Second Coat	CARBOLINE CARBOGUARD 890 VOC
Third Coat	CARBOLINE CARBOTHANE 134 VOC

B. Exterior Systems: (continued)

6. Galvanized Metal

a. Flat – Alkyd/Acrylic

Pretreatment	GALVA-ETCH, Etching Liquid (GE 123)
First Coat	GALV-ALUM Epoxy Galvanized/Aluminum Metal Primer (43-7)
Second Coat	EVERSHIELD, 100% Acrylic Exterior Masonry Finish (W 701V)
Third Coat	EVERSHIELD, 100% Acrylic Exterior Masonry Finish (W 701V)

b. Semi-Gloss – Alkyd/Acrylic

Pretreatment	GALVA-ETCH, Etching Liquid (GE 123)
First Coat	GALV-ALUM Epoxy Galvanized/Aluminum Metal Primer (43-7)
Second Coat	PERMASHEEN, 100% Acrylic Semi-Gloss Enamel (W 901V)
Third Coat	PERMASHEEN, 100% Acrylic Semi-Gloss Enamel (W 901V)

c. Gloss – Alkyd/Acrylic

Pretreatment	GALVA-ETCH, Etching Liquid (GE 123)
First Coat	GALV-ALUM Epoxy Galvanized/Aluminum Metal Primer (43-7)
Second Coat	PERMAGLOSS, 100% Acrylic Gloss Enamel (W 960V)
Third Coat	PERMAGLOSS, 100% Acrylic Gloss Enamel (W 960V)

d. Gloss – Rust Preventative Alkyd

Pretreatment	GALVA-ETCH, Etching Liquid (GE 123)
First Coat	SYN-LUSTRO Rust-Preventative Acrylic Primer (W8)
Second Coat	SYN-LUSTRO Rust-Preventative Acrylic Gloss (W10)
Third Coat	SYN-LUSTRO Rust-Preventative Acrylic Gloss (W10)

e. Matte, Industrial High Performance – Epoxy Primer/Acrylic

First Coat	CARBOLINE CARBOGUIDE 890 VOC
Second Coat	CARBOLINE CARBOCRYLIC 3359 MC
Third Coat	CARBOLINE CARBOCRYLIC 3359 MC

f. High Gloss, Industrial High Performance – Epoxy Primer/Urethane

First Coat	CARBOLINE CRABOGUARD 890 VOC
Second Coat	CARBOLINE CARBOTHANE 134 VOC
Third Coat	CARBOLINE CARBOTHANE 134 VOC

B. Exterior Systems: (continued)

1. Wood – Paint Finish

a. Semi-Gloss – Acrylic

First Coat	E-Z PRIME, Ext. 100% Acrylic Wood Primer (W 708)
Second Coat	PERMASHEEN, 100% Acrylic Semi-Gloss Enamel (W 901V)
Third Coat	PERMASHEEN, 100% Acrylic Semi-Gloss Enamel (W 901V)

b. Gloss – Acrylic

First Coat	E-Z PRIME, Ext. 100% Acrylic Wood Primer (W 708)
Second Coat	PERMAGLOSS, 100% Acrylic Gloss Enamel (W 960V)
Third Coat	PERMAGLOSS, 100% Acrylic Gloss Enamel (W 960V)

2. Wood – Stain Finish – Opaque:

Two Coats ACRI-FLAT, Exterior 100% Acrylic Flat Finish (W 704V)

3. Wood – Stain Finish – Semi-Transparent:

One Coat OKON Weather Pro Tinted (WPT-3)

C. Interior Systems:

1. Gypsum Board

a. Flat - Acrylic

First Coat VINYLASTIC, Interior Pigmented Sealer (W 101V)*
Second Coat DECOVEL, Interior Velvet Flat Wall Finish (W 401V)
Third Coat DECOVEL, Interior Velvet Flat Wall Finish (W 401V)

b. Low Sheen – Acrylic

First Coat VINYLASTIC, Interior Pigmented Sealer (W 101V)*
Second Coat SUPREMA, Latex Low Sheen Enamel (W411V)
Third Coat SUPREMA, Latex Low Sheen Enamel (W411V)

c. Eggshell – Acrylic

First Coat VINYLASTIC, Interior Pigmented Sealer (W 101V)*
Second Coat DECOSHEEN, Acrylic Eggshell Enamel ((W 440V)
Third Coat DECOSHEEN, Acrylic Eggshell Enamel ((W 440V)

C. Interior Systems: (continued)

1. Gypsum Board (continued)

d. Semi-Gloss - Acrylic

First Coat VINYLASTIC, Interior Pigmented Sealer (W 101V)*
Second Coat PERMASHEEN, Acrylic, Int. Semi-Gloss Enamel (W901V)
Third Coat PERMASHEEN, Acrylic, Int. Semi-Gloss Enamel (W901V)

e. Gloss – Acrylic

First Coat VINYLASTIC, Interior Pigmented Sealer (W 101V)*
Second Coat PERMAGLOSS, Acrylic, Int. Gloss Enamel (W901V)
Third Coat PERMAGLOSS, Acrylic, Int. Gloss Enamel (W901V)

f. Gloss– Industrial High Performance – Waterborne Epoxy

First Coat **RUST-OLEUM SIERRA S70 Industrial Epoxy Primer**
Second Coat **RUST-OLEUM SIERRA S50 Industrial Epoxy Gloss Enamel**
Third Coat **RUST-OLEUM SIERRA S50 Industrial Epoxy Gloss Enamel**

g. High Gloss – Industrial High Performance – Waterborne Epoxy/Urethane

First Coat **CARBOLINE CARBOGUARD 890 VOC**
Second Coat **CARBOLINE CARBOTHANE 134 VOC**

Third Coat **CARBOLINE CARBOTHANE 134 VOC**
2. Concrete & Plaster:

a. Flat – Acrylic Copolymer

First Coat SUPER-LOC, Two Component Waterborne Epoxy Sealer (W718)
OR EFF-STOP, Acrylic Masonry Primer (W 709)
Second Coat DECOVEL, Interior Velvet Flat Wall Finish (W 401V)
Third Coat DECOVEL, Interior Velvet Flat Wall Finish (W 401V)

b. Low Sheen – Acrylic Copolymer

First Coat SUPER-LOC, Two Component Waterborne Epoxy Sealer (W718)
OR EFF-STOP, Acrylic Masonry Primer (W 709)
Second Coat SUPREMA, Latex Low Sheen Enamel (W411V)
Third Coat SUPREMA, Latex Low Gloss Enamel (W 411V)

C. Interior Systems: (continued)

2. Concrete & Plaster:

c. Eggshell – 100% Acrylic

First Coat SUPER-LOC, Two Component Waterborne Epoxy Sealer (W718)
OR EFF-STOP, Acrylic Masonry Primer (W 709)
Second Coat DECOSHEEN, Acrylic Eggshell Enamel ((W 440V)
Third Coat DECOSHEEN, Acrylic Eggshell Enamel ((W 440V)

d. Semi-Gloss – 100% Acrylic

First Coat SUPER-LOC, Two Component Waterborne Epoxy Sealer (W718)
OR EFF-STOP, Acrylic Masonry Primer (W 709)
Second Coat PERMASHEEN, Acrylic, Int. Semi-Gloss Enamel (W901V)
Third Coat PERMASHEEN, Acrylic, Int. Semi-Gloss Enamel (W901V)

e. Gloss – 100% Acrylic

First Coat SUPER-LOC, Two Component Waterborne Epoxy Sealer (W718)
OR EFF-STOP, Acrylic Masonry Primer (W 709)
Second Coat PERMAGLOSS, Acrylic, Int. Gloss Enamel (W960V)
Third Coat PERMAGLOSS, Acrylic, Int. Gloss Enamel (W960V)

f. Gloss – Industrial High Performance - Waterborne Epoxy

First Coat **RUST-OLEUM SIERRA S70 Industrial Epoxy Primer**
Second Coat **RUST-OLEUM SIERRA S50 Industrial Gloss Enamel**
Third Coat **RUST-OLEUM SIERRA S50 Industrial Gloss Enamel**

g. High Gloss- Industrial High Performance - Epoxy/Urethane

First Coat **CARBOLINE CARBOGUARD 890 VOC**
Second Coat **CARBOLINE CARBOTHANE 134 VOC**
Third Coat **CARBOLINE CARBOTHANE 134 VOC**

3. Brick

a. Flat – Acrylic Copolymer

First Coat	EFF-STOP, Acrylic Masonry Primer (W 709)
Second Coat	DECOVEL, Interior Velvet Flat Wall Finish (W 401V)
Third Coat	DECOVEL, Interior Velvet Flat Wall Finish (W 401V)

C. Interior Systems: (continued)

3. Brick

b. Low Sheen – Acrylic Copolymer

First Coat	EFF-STOP, Acrylic Masonry Primer (W 709)
Second Coat	SUPREMA, Latex Low Sheen Enamel (W411V)
Third Coat	SUPREMA, Latex Low Sheen Enamel (W411V)

c. Eggshell – 100% Acrylic

First Coat	EFF-STOP, Acrylic Masonry Primer (W 709)
Second Coat	DECOSHEEN, Acrylic Eggshell Enamel ((W 440V)
Third Coat	DECOSHEEN, Acrylic Eggshell Enamel ((W 440V)

d. Semi-Gloss – 100% Acrylic

First Coat	EFF-STOP, Acrylic Masonry Primer (W 709)
Second Coat	PERMASHEEN, Acrylic, Int. Semi-Gloss Enamel (W901V)
Third Coat	PERMASHEEN, Acrylic, Int. Semi-Gloss Enamel (W901V)

e. Gloss – 100% Acrylic

First Coat	EFF-STOP, Acrylic Masonry Primer (W 709)
Second Coat	PERMAGLOSS, Acrylic, Int. Gloss Enamel (W960V)
Third Coat	PERMAGLOSS, Acrylic, Int. Gloss Enamel (W960V)

f. Gloss – Industrial High Performance - Waterborne Epoxy

First Coat	RUST-OLEUM SIERRA S70 Industrial Epoxy Primer
Second Coat	RUST-OLEUM SIERRA S50 Industrial Gloss Enamel
Third Coat	RUST-OLEUM SIERRA S50 Industrial Gloss Enamel

g. Gloss – Industrial High Performance - Waterborne Epoxy

First Coat	RUST-OLEUM SIERRA S70 Industrial Epoxy Primer
Second Coat	RUST-OLEUM SIERRA S50 Industrial Gloss Enamel
Third Coat	RUST-OLEUM SIERRA S50 Industrial Gloss Enamel

h. High Gloss- Industrial High Performance - Epoxy/Urethane

First Coat	CARBOLINE CARBOGUARD 890 VOC
Second Coat	CARBOLINE CARBOTHANE 134 VOC
Third Coat	CARBOLINE CARBOTHANE 134 VOC

C. Interior Systems:(continued)

4. Concrete Block

a. Flat – Acrylic Copolymer

First Coat	BLOCFIL, Concrete Block Filler, Smooth (W 305)
Second Coat	DECOVEL, Interior Velvet Flat Wall Finish (W 401V)
Third Coat	DECOVEL, Interior Velvet Flat Wall Finish (W 401V)

b. Low Sheen – Acrylic Copolymer

First Coat	BLOCFIL, Concrete Block Filler, Smooth (W 305)
Second Coat	SUPREMA, Latex Low Sheen Enamel (W411V)
Third Coat	SUPREMA, Latex Low Sheen Enamel (W411V)

c. Eggshell – 100% Acrylic

First Coat	BLOCFIL, Concrete Block Filler, Smooth (W 305)
Second Coat	DECOSHEEN, Acrylic Eggshell Enamel ((W 440V)
Third Coat	DECOSHEEN, Acrylic Eggshell Enamel ((W 440V)

d. Semi-Gloss – 100% Acrylic

First Coat	BLOCFIL, Concrete Block Filler, Smooth (W 305)
Second Coat	PERMASHEEN, Acrylic, Int. Semi-Gloss Enamel (W901V)
Third Coat	PERMASHEEN, Acrylic, Int. Semi-Gloss Enamel (W901V)

e. Gloss – 100% Acrylic

First Coat	BLOCFIL, Concrete Block Filler, Smooth (W 305)
Second Coat	PERMAGLOSS, Acrylic Int. Gloss Enamel (W960V)
Third Coat	PERMAGLOSS, Acrylic Int. Gloss Enamel (W960V)

f. Gloss – Industrial High Performance - Waterborne Epoxy

First Coat	BLOCFIL, Concrete Block Filler, Smooth (W 305)
Second Coat	RUST-OLEUM SIERRA S50 Industrial Epoxy Gloss Enamel
Third Coat	RUST-OLEUM SIERRA S50 Industrial Epoxy Gloss Enamel

g. High Gloss- Industrial High Performance – Acrylic/Urethane

First Coat	CARBOLINE SANITILE 100
Second Coat	CARBOLINE CARBOTHANE 134 VOC
Third Coat	CARBOLINE CARBOTHANE 134 VOC

C. Interior Systems:(continued)

5. Ferrous Metal

c. Flat – Acrylic Copolymer

First Coat	CORROBAR, White Alkyd Rust Preventative Primer (43-5)
Second Coat	DECOVEL, Interior Velvet Flat Wall Finish (W 401V)
Third Coat	DECOVEL, Interior Velvet Flat Wall Finish (W 401V)

d. Low Sheen – Alkyd/Acrylic Copolymer

First Coat	CORROBAR, White Alkyd Rust Preventative Primer (43-5)
Second Coat	SUPREMA, Int. Latex Low Sheen Enamel (W411V)
Third Coat	SUPREMA, Int. Latex Low Sheen Enamel (W411V)

e. Eggshell – Alkyd/100% Acrylic

First Coat	CORROBAR, White Alkyd Rust Preventative Primer (43-5)
Second Coat	DECOSHEEN, Int. Acrylic Eggshell Enamel ((W 440V)
Third Coat	DECOSHEEN, Int. Acrylic Eggshell Enamel ((W 440V)

f. Semi-Gloss – Alkyd/100% Acrylic

First Coat	CORROBAR, White Alkyd Rust Preventative Primer (43-5)
Second Coat	PERMASHEEN, Acrylic Semi-Gloss Enamel (W901V)
Third Coat	PERMASHEEN, Acrylic Semi-Gloss Enamel (W901V)

g. Semi-Gloss –Rust Preventative Alkyd

First Coat	SYN-LUSTRO W8 Rust-Preventative Acrylic Primer
Second Coat	SYN-LUSTRO, W9 Rust-Preventative Acrylic Semi-Gloss Enamel
Third Coat	SYN-LUSTRO, W9 Rust-Preventative Acrylic Semi-Gloss Enamel

h. Gloss – Alkyd/100% Acrylic

First Coat	CORROBAR, White Alkyd Rust Preventative Primer (43-5)
Second Coat	PERMAGLOSS, Acrylic Gloss Enamel (W960V)
Third Coat	PERMAGLOSS, Acrylic Gloss Enamel (W960V)

i. Gloss –Rust Preventative Alkyd

First Coat	SYN-LUSTRO W8 Rust-Preventative Acrylic Primer
Second Coat	SYN-LUSTRO, W10 Rust-Preventative Acrylic Gloss Enamel
Third Coat	SYN-LUSTRO, W10 Rust-Preventative Acrylic Gloss Enamel

C. Interior Systems: (continued)

5. Ferrous Metal

c. Gloss – Industrial High Performance - Waterborne Epoxy

First Coat	RUST-OLEUM SIERRA S70 Industrial Epoxy Primer
Second Coat	RUST-OLEUM SIERRA S50 Industrial Epoxy Gloss Enamel
Third Coat	RUST-OLEUM SIERRA S50 Industrial Epoxy Gloss Enamel

d. High Gloss – Industrial High Performance - Epoxy/Urethane

First Coat	CARBOLINE CARBOGUARD 890 VOC
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Second Coat	CRABOLINE CARBOTHANE 134 VOC
Third Coat	CRABOLINE CARBOTHANE 134 VOC

6. Wood – Paint Finish

c. Flat – Acrylic Copolymer

First Coat	UNIKOTE, Int. Acrylic Enamel Undercoater (W707)
Second Coat	DECOVEL, Interior Velvet Flat Wall Finish (W 401V)
Third Coat	DECOVEL, Interior Velvet Flat Wall Finish (W 401V)

d. Low Sheen – Alkyd/Acrylic Copolymer

First Coat	UNIKOTE, Int. Acrylic Enamel Undercoater (W707)
Second Coat	SUPREMA, Int. Latex Low Sheen Enamel (W411V)
Third Coat	SUPREMA, Int. Latex Low Sheen Enamel (W411V)

e. Eggshell – Alkyd/100% Acrylic

First Coat	UNIKOTE, Int. Acrylic Enamel Undercoater (W707)
Second Coat	DECOSHEEN, Int. Acrylic Eggshell Enamel ((W 440V)
Third Coat	DECOSHEEN, Int. Acrylic Eggshell Enamel ((W 440V)

f. Semi-Gloss – 100% Acrylic

First Coat	UNIKOTE, Int. Acrylic Enamel Undercoater (W707)
Second Coat	PERMASHEEN, Acrylic Semi-Gloss Enamel (W901V)
Third Coat	PERMASHEEN, Acrylic Semi-Gloss Enamel (W901V)

g. Semi-Gloss – Alkyd – Class A Fire Retardant

First Coat	SUPER U-365, Int. Alkyd Enamel Undercoater (E22-1V)
Second Coat	ARISTOGLO, Int. Alkyd Semi-Gloss Fire Retardant Enamel (74)**
Third Coat	ARISTOGLO, Int. Alkyd Semi-Gloss Fire Retardant Enamel (74)**

C. Interior Systems: (continued)

6. Wood – Paint Finish

f. Gloss – 100% Acrylic

First Coat	UNIKOTE, Int. Acrylic Enamel Undercoater (W707)
Second Coat	PERMAGLOSS, Acrylic Gloss Enamel (W960V)
Third Coat	PERMAGLOSS, Acrylic Gloss Enamel (W960V)

7. Wood – Stain & Lacquer

a. Flat

First Coat	STAINSEAL, Interior Wiping Oil Stain V-YBQ
Filler	PASTE WOOD FILLER (PWF 2703)
Second Coat	550 CONTRACTORS EDGE High Solids Lacquer Sanding Sealer, Clear CE550PRO-SS

Third Coat DECOLAC, High Solid Flat Lacquer, Clear **N/A**
Fourth Coat DECOLAC, High Solid Flat Lacquer, Clear **N/A**

b. Semi-Gloss

First Coat STAINSEAL, Interior Wiping Oil Stain **V-YBQ**
Filler PASTE WOOD FILLER (PWF 2703)
Second Coat 550 **CONTRACTORS EDGE** High Solids Lacquer Sanding
 Sealer, Clear **CE550PRO-SS**
Third Coat 550 **CONTRACTORS EDGE**, High Solids Semi-Gloss Lacquer,
 Clear **CE550PRO60**
Fourth Coat 550 **CONTRACTORS EDGE**, High Solids Semi-Gloss Lacquer,
 Clear **CE550PRO60**

c. Gloss

First Coat STAINSEAL, Interior Wiping Oil Stain **V-YQB**
OR
Filler PASTE WOOD FILLER (PWF 2703)
Second Coat 550 DECOLAC, High Solids Lacquer Sanding Sealer, Clear
 CE550PRO-SS
Third Coat 550 DECOLAC, High Solids Gloss Lacquer, Clear **CE550PRO90**
Fourth Coat 550 DECOLAC, High Solids Gloss Lacquer, Clear **CE550PRO90**

* Dunn-Edwards does not recommend VINYLASTIC, Interior Pigmented Sealer (W 101) on drywall where "Prep Coat", "First Coat", or other skim coat type materials have been applied. For enamel finishes, use WALLTONE, Flat Wall Finish (W 420) for the first coat. For flat finishes, use two coats of the flat finish material only.

**Yellowing of white and off-white alkyd enamels may occur because of government regulatory limits on solvent content. Substitution of latex enamels would avoid this problem, but may not provide comparable performance.

END OF SECTION

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SECTION 10200

LOUVERS

PART 1 -- GENERAL

1.01 DESCRIPTION

Work included: Provide metal louvers and vents as required by the Drawings, as specified herein, and as needed for a complete and proper installation. All of the requirements of the Contract Documents apply to this Section.

1.02 QUALITY ASSURANCE

Use adequate numbers of skilled workmen who are thoroughly trained and experienced in the necessary crafts and who are completely familiar with the specified requirements and the methods for proper performance of the work of this Section.

1.03 SUBSTITUTIONS

Substitutions will be considered per Article 5.3 of the General Conditions.

1.04 SUBMITTALS

Product data: Within 35 calendar days after the Contractor has received the Owner's Notice to Proceed, submit:

1. Materials list of items that will be provided under this Section.
2. Manufacturer's Specifications and other data needed to prove compliance with the specified requirements.
3. Shop Drawings in sufficient detail to show fabrication, installation, anchorage, and interface of the work of this Section with the work of adjacent trades.
4. Samples of the proposed products, showing profiles, joining, and finish.
5. Manufacturer's recommended installation procedures which, when accepted by the Architect, will become the basis for accepting or rejecting actual installation procedures for the Work.

PART 2 -- PRODUCTS

2.01 METAL LOUVERS

A. Provide metal louvers in the arrangements and dimensions shown on the Drawings, and with the following attributes:

1. High Performance Fixed Drainage Louver, 4" deep. Frames and blades to be 6063-T5 alloy 0.081" (2.06mm) thick. Mullions to be sliding interlock type with integral internal drain. Jamb and mullion drains to be open on front face in order to direct water away from inside of louver. Blades to be one-piece extrusions with gutters designed to catch and direct water to jamb and mullion drains. Fasteners to be aluminum or stainless steel. Louvers to have framed mesh removable mill finish aluminum insect screens.
2. Thin line Louver, 2" deep. Frames and blades to be 6063-T5 alloy 0.050" (1.27mm) thick. Fasteners to be aluminum or stainless steel. Louvers to have framed 18 x 14 aluminum 0.0123" (0.312mm) diameter mesh mill finish aluminum insect screens. All frames to be mitered at corners and reinforced with corner brackets.

3. Finish - Kynar. 500 coating in color selected by the Architect from the manufacturer's color selections.
- B. Acceptable products:
 1. High Performance Fixed Drainable Louver, Model 4097 & Thinline Louver, Model 2322A, as manufactured by Construction Specialties, Inc.
 2. Equal products of other manufacturers when accepted in advance by the Architect.

PART 3 -- EXECUTION

3.01 EXAMINATION

- A. Examine the areas and conditions under which work of this Section will be performed.
- B. Correct conditions detrimental to timely and proper completion of the Work.
- C. Do not proceed until unsatisfactory conditions are corrected.
- D. Verify all opening dimensions in field prior to fabrication and installation of louvers.
- E. Beginning of installation means acceptance of conditions.

3.02 INSTALLATION

- A. Coordinate as required with other trades to assure proper and adequate provision in the work of those trades for interface with the work of this Section.
- B. Install the work of this Section in strict accordance with the original design, the accepted Shop Drawings, and the manufacturer's recommended installation procedures as accepted by the Architect, anchoring all components firmly into position in true alignment within a tolerance of one in 1000 vertically and horizontally.
- C. Dissimilar Materials:
 1. Where aluminum surfaces come in contact with metals other than stainless steel, zinc, or white bronze of small area, isolate the aluminum by one of the following methods:
 - a. Paint the dissimilar metal with a prime coat of zinc-chromate primer, followed by two coats of aluminum metal-and-masonry paint.
 - b. Paint the dissimilar metal with a coating of heavy-bodied bituminous paint.
 - c. Apply a good quality sealant material between the aluminum and the dissimilar metal.
 - d. Isolate the dissimilar metals with non-absorptive tape or gaskets.

3.03 CLEANING

Prior to completion of the Work, Contractor shall thoroughly clean all exposed surfaces of louvers.

1. Use only the cleaning materials and techniques recommended by the manufacturer of the material being cleaned.
2. Do not scratch or otherwise damage the finish.

***** END OF SECTION *****

SECTION 10400
IDENTIFYING DEVICES

PART 1 -- GENERAL

1.01 SCOPE OF WORK

- A. Molded plastic signs.
- B. Aluminum free-standing signs.
- C. Aluminum channel letters.

1.02 RELATED WORK

- A. Documents affecting this Work include: General Conditions, Special Conditions, and Sections of Division 1 of these Specifications.
- B. Reinforced masonry systems: Monument signs.
- C. Wood doors.

1.03 SUBSTITUTIONS

Substitutions will be considered per Article 5.3 of the General Conditions.

1.04 SUBMITTALS

- A. Submit two samples illustrating full size sample sign, of type, style and color specified including method of attachment.
- B. Submit manufacturer's installation instructions.
- C. Include installation template and hardware.

1.05 DELIVERY, STORAGE, AND HANDLING

- A. Package signs, labeled in name groups.
- B. Store adhesive tape at ambient room temperatures.

1.06 ENVIRONMENTAL REQUIREMENTS

Do not install signs when ambient temperature is below 70 degrees F. Maintain this minimum during and after installation of signs.

PART 2 -- PRODUCTS

2.01 MANUFACTURERS

- A. Mohawk Sign Systems: Aluminum & Plastic Signs.
- B. A.R.K. Ramos Architectural Signage Systems; Aluminum Channel Letter.
- C. Substitutions: Under provisions of Section 01000.

2.02 MATERIALS -- ALUMINUM CHANNEL LETTERS

- A. Aluminum letters: 8", 7" and 2", Helvetica Medium.
- B. Brackets: PPM-1 bracket sleeved stud.
 - 1. Set in adhesive in masonry.
 - 2. Attach to support in framed wall.

2.03 MATERIALS -- MOLDED PLASTIC SIGNING SYSTEM

- A. 1/8" thick ES Plastic. Color to be selected by Architect.
- B. Graphics to be vinyl die-cut. 3/4" Helvetica Medium caps.
- C. Adhesive mounting.
- D. All signs to have 1/2" Radius corners.
- E. See Schedule for types.

2.04 MATERIALS -- ALUMINUM FREE-STANDING SIGN

- A. Provide 1/8" thick aluminum sign, on 1-3/4" x 1-3/4" x 1/8" x 7' post; black duranodic aluminum tubing and sign.
- B. Signs are to be 22" x 17" and 9" x 18" as shown on the Drawings.
- C. Letters are to be vinyl die-cut. Test shall conform to access requirements of the CBC.
- D. Color to be black anodized with white lettering.
- E. Signs are to be sleeve mounted in concrete footings.
- F. Signs shall be located per Drawing for Handicap Parking.

2.05 ACCESSORIES

- A. Mounting Hardware: Chrome screws; base sleeve and studs per manufacturer's recommendations.
- B. Tape Mount: Double sided tape, permanent adhesive.
- C. Adhesive: Silastic adhesive as recommended by manufacturer.

PART 3 -- EXECUTION

3.01 EXAMINATION

- A. Examine the areas and conditions under which work of this Section will be performed.
- B. Verify adequate support for Building Signs. Coordinate footings with other trades.
- C. Correct conditions detrimental to timely and proper completion of the Work.
- D. Do not proceed until unsatisfactory conditions are corrected.
- E. Beginning of installation means acceptance of conditions.

3.02 INSTALLATION

- A. Install in accordance with manufacturer's instructions.
- B. Install signs after doors and surfaces are finished, in locations indicated.
 - 1. Furnish and install all anchorage devices required to install the item and its appurtenances complete. Provide anchorage in ample time when required to be built in by other trades.
 - 2. All wall-mounted items shall be securely fastened to solid backing or blocking.
- C. Center plastic signs on doors, level.
- D. Anchor all components firmly into position for long life under hard use.
- E. Clean and polish.

3.03 SCHEDULES

A. Exterior building signs:

1. Handicap signs per CBC requirements and as shown on Drawings.
2. Monument sign: 2" and 7" letters as detailed on both sides of the sign.

B. Interior signs:

1. Handicap restrooms 12" triangle for men and 12" circle for women per Title 24 - mounted on each restroom door.
2. Office and restrooms ES Plastic: 4" x length required -- 7 doors. Text to be determined by Owner. Mount beside each door with the code required Braille designations on the sign. Copy to be in two lines as possible.

*****END OF SECTION*****

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SECTION 10520
FIRE PROTECTION SPECIALTIES

PART 1 -- GENERAL

1.01 SCOPE OF WORK

- A. Provide and install all Fire extinguishers and Cabinets as shown on the documents and as required by the local Fire Marshall.
- B. Accessories as required for a complete and proper project.

1.02 RELATED WORK

- A. Documents affecting this Work include: Sections of Division 1 of these Specifications.
- B. Gypsum Systems: Roughed-in wall openings.
- C. Painting: Field paint finish.

1.03 QUALITY ASSURANCE

- A. Conform to NFPA 10 requirements for extinguishers.
- B. Provide fire extinguishers, cabinets, and accessories by single manufacturer.

1.04 SUBSTITUTIONS

Substitutions will be considered per Article 5.3 of the General Conditions.

1.05 SUBMITTALS

- A. Include physical dimensions, operational features, color and finish, wall-mounting brackets with mounted measurements, anchorage details, rough-in measurements, location, and details.
- B. Submit manufacturer's installation instructions.
- C. Submit manufacturer's operation and maintenance data.
- D. Include test, refill or recharge schedules, procedure, and re-certification requirements.

1.06 ENVIRONMENTAL REQUIREMENTS

Do not install extinguishers when ambient temperatures may cause freezing.

PART 2 -- PRODUCTS

2.01 ACCEPTABLE MANUFACTURERS

Larsen's Manufacturing Company.

2.02 EXTINGUISHERS

Multi-Purpose Chemical Type: Larsen's Steel tank, Model MP 5, with pressure gage, and UL Rating 2A-10B:C or approved equal.

2.03 CABINETS

Typical Extinguisher Cabinet:

- 1. Provide Larsen's 2409-5R Vertical Duo Panel cabinet.
- 2. Primer finish.

2.04 ACCESSORIES

- A. Mounting Hardware: Appropriate to cabinet - see manufacturer's installation instructions.
- B. Provide other materials, not specifically described but required for a complete and proper installation, as selected by the Contractor subject to the approval of the Architect.

2.05 FABRICATION

- A. Form body of cabinet with tight inside corners and seams.
- B. Pre-drill holes for anchorage.
- C. Form perimeter trim and door stiles by welding, filling, and grinding smooth.
- D. Hinge doors for 180 degree opening.
- E. Glaze doors with resilient channel gasket glazing.

2.06 FINISHES

- A. Extinguisher: Red enamel.
- B. Cabinet Trim and Door: Primed to be painted to match adjacent surface.
- C. Cabinet Interior: Enamel white.

PART 3 -- EXECUTION

3.01 INSPECTION

- A. Examine the areas and conditions under which work of this Section will be performed.
- B. Verify that rough openings for cabinet are correctly sized and located.
- C. Correct conditions detrimental to timely and proper completion of the Work.
- D. Do not proceed until unsatisfactory conditions are corrected.
- E. Beginning of installation means acceptance of conditions.

3.02 INSTALLATION

- A. Install cabinets plumb and level in wall openings so that there is 54 inches from finished floor to door handle.
- B. Secure rigidly in place in accordance with manufacturer's instructions.

*** END OF SECTION ***

SECTION 10800
TOILET AND BATH ACCESSORIES

PART 1 -- GENERAL

1.01 SCOPE OF WORK

All of the requirements of the Contract Documents apply to this Section.

1.02 SUBSTITUTIONS

Substitutions will be considered per Article 5.3 of the General Conditions.

1.03 SUBMITTALS

- A. Provide, within 35 days of Notice to Proceed, product data on accessories describing size, finish, details of function, attachment methods.
- B. Submit shop drawings, manufacturer's literature and brochures, and catalog cuts, showing complete details of all manufactured and fabricated items. Do not purchase items until the shop drawings have been approved. See Section "Samples and Shop Drawings" for number and manner of submittals.

1.04 KEYING

Supply two (2) keys for each accessory to Owner. Master Key all accessories.

1.05 REGULATORY REQUIREMENTS

Conform to Title 24 and City codes for installing work in conformance with ANSI A117.1.

1.06 SEQUENCING AND SCHEDULING

Coordinate the work of this Section with the placement of internal wall reinforcement and reinforcement of toilet partitions to receive anchor attachments.

PART 2 -- PRODUCTS

2.01 ACCEPTABLE MANUFACTURERS

Bobrick Washroom Equipment Company.

2.02 MATERIALS

- A. Stainless Steel Sheet: ASTM A167, Type 304.
- B. Tubing: ASTM A269, stainless steel.
- C. Fasteners, Screws, and Bolts: Hot dip galvanized as recommended by manufacturer.
- D. Expansion Shields: Fiber, lead, or rubber as recommended by accessory manufacturer for component and substrate.

2.03 PRODUCTS

As indicated on the Drawings.

2.04 FACTORY FINISHING

Stainless Steel: No. 4 satin luster finish.

PART 3 -- EXECUTION

3.01 EXAMINATION

- A. Examine the areas and conditions under which work of this Section will be performed.
- B. Verify that site conditions are ready to receive work and dimensions are as instructed by the manufacturer.
- C. Correct conditions detrimental to timely and proper completion of the Work.
- D. Do not proceed until unsatisfactory conditions are corrected.
- E. Beginning of installation means acceptance of conditions.

3.02 PREPARATION

- A. Deliver inserts and rough-in frames to site at appropriate time for building-in.
- B. Provide complete information, diagrams, templates, and instructions for the installation of all items, in sufficient time so that all backing, blocking, framing and formwork can be properly installed, and so that the work of other trades will not be delayed.
- C. Verify exact location of accessories for installation.

3.03 INSTALLATION

- A. Install the work of this Section in strict accordance with the manufacturer's recommended installation procedures as approved by the Architect, anchoring all components firmly into position for long life under hard use.
 - 1. Furnish and install all anchorage devices required to install the item and its appurtenances complete. Provide anchorage in ample time when required to be built in by other trades.
 - 2. All wall-mounted items shall be securely fastened to solid backing or blocking.
- B. Install fixtures, accessories and items in accordance with manufacturer's instructions.
- C. Install plumb and level, securely and rigidly anchored to substrate.

***** END OF SECTION *****

SECTION 12500
WINDOW TREATMENT

PART 1 – GENERAL

1.01 SCOPE

- A. Furnish and install Manual Roller Shades (Premium Quality)
- B. Related Work:
 - 1. Section 06100: Rough Carpentry
 - 2. Section 08520: Aluminum Windows

1.02 REFERENCES

- A. FLAME-RESISTANT MATERIALS SHALL PASS OR EXCEED ONE OR MORE OF THE FOLLOWING TESTS:
 - National Fire Protection Association (NFPA) 701 (small scale for horizontal applications)
 - Department of Transportation Motor Vehicle Safety Standard 302 Flammability of Interior Materials
 - California Administrative Code Title 19
 - Federal Standard 191 Method 5903 (used by Port Authority of New York and New Jersey for drapery, curtain, and upholstery material)
 - Boston Fire Department Teat BFD IX-1
 - New York State Uniform Fire Prevention and Building Code

1.03 SUBMITTALS

- A. Product Data: Manufacturer's descriptive literature shall be submitted indicating materials, finishes, construction and installation instructions and verifying that product meets requirements specified. Manufacturer's recommendations for maintenance and cleaning shall be included.
- B. Drawings and Diagrams: Wiring diagrams of any motorized components or units, working and assembly drawings shall be supplied as requested.
- C. Samples: Responsible contracting officer or agent shall supply one sample shade of each type specified in this contract for approval. Supplied units shall be furnished complete with all required components, mounting and associated hardware, instructions and warranty.

1.04 QUALITY ASSURANCE:

- A. Manufacturer, subsidiary or licensed agent shall be approved to supply the products specified, and to honor any claims against product presented in accordance with warranty.
- B. Installer or agent shall be qualified to install specified products by prior experience, demonstrated performance and acceptance of requirements of manufacturer, subsidiary, or licensed agent. Installer shall be responsible for an acceptable installation.
- C. Provide Manual Roller Shades of only one manufacturer for entire project.

1.05 DELIVERY, STORAGE AND HANDLING:

- A. Product shall be delivered to site in manufacturer's original packaging.

- B. Product shall be handled and stored to prevent damage to materials, finishes and operating mechanisms.
- 1.06 JOB CONDITIONS:
 - A. Prior to shade installation, building shall be enclosed.
 - B. Interior temperature shall be maintained between 60° F. and 90° F. during and after installation; relative humidity shall not exceed 80%. Wet work shall be complete and dry.
- 1.07 WARRANTY:
 - A. Lifetime Limited Warranty. Fabrics warranted for 5 years. Specific product warranties available from manufacturer or its authorized agent.

PART 2 – PRODUCTS

2.01 ACCEPTABLE MANUFACTURER

- A. Hunter Douglas Contract: 12250 Parkway Centre Dr., Poway, CA 92064. Phone: 800-727-8953

Fax: 800-205-9819/ Website: www.hunterdouglascontract.com, or architect approved equivalent.

Contact the following for project assistance and dealer referral @ 800-964-2580: David Cover ext. #827313

- B. Product substitutions must be approved by architect minimum of 30 days prior to close of bid.

2.02 MANUAL ROLLER SHADES

- A. PRODUCT: Hunter Douglas "Manual Roller Shades"
- B. MATERIALS:

1. Fabrics: Inherently anti-static, flame retardant, fade and stain resistant, light filtering, room darkening, & blackout fabrics providing 0% - 15% openness factors. Fabric weights to range between 6.00 oz/sq.yd. – 20.70 oz/sq.yd. containing fiberglass, PVC, polyester, acrylic, vinyl laminates, cotton, & vinyl coatings. Finish selected by architect from manufacturer's available contract colors.
2. Control Systems: Adjustment-free continuous qualified #10 stainless steel ball chain ((90-lb. test)) and pulley clutch operating system allows precise control and ensures a uniform look. Clutch will develop no more than ½ pound drag for ease of lifting. Glass reinforced polyester thermopolymer (PBT) plastic components conform to military specification MIL M-24519 and designed for smooth, trouble-free operation.
3. Roller: Circular-shaped painted extruded aluminum tubes with thicker wall & ribs provide additional strength while locking into place the clutch & end plug. 3" outside diameter extruded tube to have a .090 wall thickness. 2" outside diameter extruded tube to have a .072" wall thickness (1 ½" & 1 1/8" tubes have .055" wall thickness) providing strength & durability.
4. End Plug: Heat stabilized fiber reinforced plastic outside sleeve and center shaft provide bearing surfaces on which the roller rides ensuring smooth, wear resistant operation.
5. Bottom Rod: Extruded aluminum weight in a Sealed Pocket Hem Bar (excluding thicker fabric) for tracking adjustments and provides uniform look.

6. Mounting Hardware: Manufacturer's standard .07" nickel-plated, C1008/1010 cold rolled steel universal brackets including end plug bracket with lock down retainer device.
7. Additional Available Options: Fascia, Top & Bottom Covers, Blockout Systems, Motorization, 3 Clutch Sizes, Fabric Wrapped Hembar, Dual Shades, Coupled Shades, Banded Shades, Extruded Pockets, Reverse Roll.

2.03 FABRICATION

- A. Shade measurements shall be accurate to within $\pm 1/8"$ or as recommended in writing by manufacturer.

2.04 FABRICS

- A. Fabric selection by Architect.

PART 3 - EXECUTION

3.01 INSPECTION:

- A. Subcontractor shall be responsible for inspection on site, approval of mounting surfaces, installation conditions and field measurement for this work.
- B. Other interacting trades shall receive drawings of shade systems, dimensions, assembly and installation methods from subcontractor upon request.

3.02 INSTALLATION:

- A. Installation shall comply with manufacturer's specifications, standards and procedures as detailed on contract drawings.
- B. Adequate clearance shall be provided to permit unencumbered operation of shade and hardware.
- C. Clean finish installation of dirt and finger marks. Leave work area clean and free of debris.

3.03 DEMONSTRATION:

- A. Demonstrate operation method and instruct owner's personnel in the proper operation and maintenance of the blinds.

** **END OF SECTION** **

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SECTION 15010

BASIC MECHANICAL REQUIREMENTS

PART 1. GENERAL

1.1 SECTION INCLUDES

- A. Basic Mechanical Requirements specifically applicable to Division 15 Sections, in addition to Division 1 - General Requirements.

1.2 DESCRIPTION

- A. Furnish materials and perform labor required to execute this work as indicated on the drawings, as specified and as required to complete the work of this section, except as otherwise herein specifically excluded.

1.3 WORK INCLUDED

- A. The complete Heating, Ventilating and Air Conditioning (HVAC) and Plumbing systems, including but not limited to these major items.
 - 1. Coordinate work of this Section with related trades.
 - 2. Verify applicable dimensions at the jobsite.
 - 3. Duct systems; supply, return and exhaust complete with fire dampers, combination fire-smoke dampers, and manual dampers.
 - 4. Diffusers and registers.
 - 5. Exhaust supply, return fans and air curtains.
 - 6. Furnishing and installation of miscellaneous hangers, supports, sleeves, inserts, anchors and other auxiliary equipment for systems under this Division.
 - 7. Duct lining and insulation.
 - 8. Soil waste and vent system inside the building including connections to fixtures, equipment, sewer connections, clean-outs.
 - 9. Water piping systems inside the building, including connections to fixtures, and equipment.
 - 10. Plumbing fixtures, carriers, fittings, trim, and accessories.
 - 11. Installation and connection of Owner furnished equipment.
 - 12. Water heating systems, including water heating equipment, circulating pumps, connections.
 - 13. Shop drawings.
 - 14. Equipment identification.
 - 15. Equipment and systems adjustments and balancing.
 - 16. Air, water and gas systems testing, adjusting and balancing.
 - 17. Written operating and maintenance instructions.
 - 18. Record drawings.
 - 19. Guarantee

1.4 WORK SPECIFIED ELSEWHERE

- A. Concrete, Architectural Sheet Metal, Door and Exterior Wall Louvers, Painting and Electrical.

1.5 SITE INSPECTION

- A. Contractor shall familiarize himself with the conditions at the site. No allowance will be made subsequently for any error through negligence in observing the site conditions. Contractor shall observe and make cost allowance for any mechanical and/or electrical items that must be relocated to accommodate the installation or servicing of any item covered under this contract.

1.6 ORDINANCES, REGULATIONS AND CODES

- A. References to Technical Societies, Trade Organizations, Governmental Agencies is made in Division 15 in accordance with the following abbreviations.

1. AFI - Air Filter Institute
 2. AMCA - Air Moving & Conditioning Association
 3. ARI - Air Conditioning & Refrigeration Institute
 4. ASHRAE - American Society of Heating, Refrigerating and Air Conditioning Engineers
 5. ASME - American Society of Mechanical Engineers
 6. ASTM - American Society of Testing Materials
 7. AWS - American Welding Society Code
 8. ANSI - American National Standards Institute
 9. CBC - California Building Code
 10. CCR - California Code of Regulations
 11. CEC - California Electrical Code
 12. CFC - California Fire Codes
 13. CMC - California Mechanical Code
 14. CPC - California Plumbing Code
 15. FIA - Factory Insurance Association
 16. NAFM - National Association of Fan Manufacturers
 17. NEMA - National Electrical Manufacturer's Association
 18. NFPA - National Fire Protection Association
 19. ORS - Office of Regulatory Services
 20. SCAQMD - South Coast Air Quality Management District
 21. SMACNA - Sheet Metal and Air Conditioning Contractors National Association
 22. UFC - Uniform Fire Code
 23. UL - Underwriter's Laboratories
 24. UPC - Uniform Plumbing Code
- B. Requirements of Regulatory Agencies: Materials and installation shall comply with applicable local, state, and national codes and ordinances. Rulings and interpretations of the enforcing agencies shall be considered as part of the local codes. No extras will be permitted for furnishing items required by the local codes but not specified or shown on the drawings.
- C. Codes and Standards:
1. UBC and California Amendments (California Building Code - Part 2, Title 24, CCR).
 2. UMC and California Amendments (California Mechanical Code - Part 4, Title 24 CCR).
 3. UPC and California Amendments (California Plumbing Code - Part 5, Title 24 CCR).
 4. Uniform Fire Code with State Amendments (California Fire Code - Part 9, Title 24 CCR).
 5. National Fire Protection Associations - National Fire Code.
- D. Nothing in these drawings and specifications is to be construed to permit work in violation thereof. Ordinances, regulations and codes are to be construed as minimum requirements.
- E. The responsibility of the Architect to conduct construction reviews of the Contractor's performance is not intended to include the adequacy of the Contractor's safety measures in, on, or near the construction site.
- F. Ventilating, refrigeration and electrical equipment and appliances are required to be approved by the Underwriters' Laboratories, Inc., or other nationally recognized testing agency and installed per the testing agency's specifications.

1.7 PERMITS, FEES AND INSPECTIONS

- A. Obtain and pay for all necessary permits, fees, assessments, complimentary drawings, required by any legally constituted public authorities having jurisdiction.

1.8 DRAWINGS AND SPECIFICATIONS

- A. The Architect's decision will be final on interpretation of the Drawings and Specifications.

- B. The Drawings and Specifications are complimentary. Any work called for on the Drawings and not mentioned in the Specifications, or vice versa, shall be performed as though fully set forth in both.
- C. Piping, ductwork and other equipment shown as existing has been taken from the Owner's drawings. Contractor shall verify exact location in field before proceeding with the work.
- D. Where codes, standards, drawings or specifications conflict, the most stringent shall prevail, unless prior approval for variance is obtained. Specific details on the drawings shall supercede the specification in the event of a conflict.
- E. Alternate support or seismic detail shall have prior approval by the Architect; and the Contractor shall obtain agency approval without any additional cost or time to the contract and without any time penalty on the work schedule.

1.9 SUBMITTALS

- A. Before starting work, the Contractor shall furnish for the approval of the Architect, Shop Drawings and Submittals with Itemized Equipment Lists, complete in all details that they proposes to install. All items shall be submitted at the same time.
- B. Submittals must be specific to this project with respect to model number, capacities, performance, etc., generic submittals will not be accepted.
- C. Variations or deviations on submitted items from that specified must be clearly tagged and / or identified
- D. Submittals shall include, but not necessarily be limited to the following which are mandatory:
 - 1. Draw Equipment Layouts to 1/4" scale, including equipment, piping accessories, and showing clearances for operating and servicing.
 - 2. Schedule of pipe, fittings, valves, with manufacturer and catalog number.
 - 3. Specialties, valves, gauges and thermometers of all types.
 - 4. Earthquake supports and calculations.
 - 5. Expansion loops, expansion joints, guides, and anchors.
 - 6. Insulation.
 - 7. Ventilation and air conditioning equipment, specialties and the air control systems.
 - 8. Fans, fan characteristic curves, fan tests.
 - 9. Dampers, louvers, grilles, registers, diffusers.
 - 10. Shop fabrication drawings and installation drawings of ductwork and piping layouts. Submit for approval prior to fabrication. Drawings shall indicate dimensions from bottom of piping and ductwork to finish floor level.
 - 11. Wiring diagrams, control panel board, motor starters and controls for electrically operated equipment furnished by mechanical trades.
 - 12. Automatic control system diagrams.
 - 13. Exhaust, supply and return fans.
 - 14. Access panels.
 - 15. Clean-outs
 - 16. Hangers, inserts, supports, anchors.
 - 17. Pipe, fittings and specialties.
 - 18. Pipe isolators.
 - 19. Plumbing fixtures, fittings, trim, drains and receptors.
 - 20. Fire protection system shop drawings.
 - 21. Sleeves, escutcheons, caulking, waterproofing, fireproofing.
 - 22. Water heating equipment.
 - 23. Expansion joints, guides and anchors.
 - 24. Shop fabrications drawings and calculations.
 - 25. Special and miscellaneous products furnished under this section and not listed herein.

1.10 RECORD DRAWINGS AND MANUALS

- A. Record Set During the Work: At site, maintain at least one set of Drawings as a Field Record Set. Also maintain at least one copy of all Addenda, Modifications, approved submittals, correspondence, and transmittals at site. Keep Drawings and data in good order and readily available to Architect and Owner.
- B. Changes: Clearly and correctly mark Record Drawings to show changes made during the construction process at the time the changed work is installed. No such changes shall be made in the work unless authorized by the Architect.
- C. Final Record Drawings: Conform to Division 1 requirements.
- D. Preparation of Final Record Drawings: Contractor shall transfer recorded changes in the work indicated on the Field Record Set to the record set. Changes shall be neatly and clearly drawn and noted by skilled draftsmen, and shown technically correct.
- E. Approval: Prior to Architect's inspection for Substantial Completion, submit the Final Record Drawings to the Architect for review, and make such revisions as may be necessary for Final Record Drawings to be a true, complete, and accurate record of the work.
- F. Manuals: Obtain data from the various manufacturers and submit instruction, operation, and maintenance manuals as required and to the extent required under other Sections.
- G. Contents: Each manual shall have an index listing the contents. Information in the manuals shall include not less than:
 - 1. General introductions and overall equipment description, purpose, functions and simplified theory of operation.
 - 2. Specifications
 - 3. Installation instructions, procedures, sequences, and precautions, including tolerances for level, horizontal and vertical alignment.
 - 4. Grouting requirements.
 - 5. List showing lubricants for each item of mechanical equipment and recommended lubrication intervals.
 - 6. Start-up and beginning operation procedures.
 - 7. Operational procedures.
 - 8. Shutdown procedures.
 - 9. Maintenance and calibration procedures
 - 10. Parts lists
 - 11. Name, address and telephone number of each manufacturer's local representative.
- H. Manual Submittals: Unless otherwise specified, each submittal shall include two copies of each manual, one of which will be returned to the Contractor, marked to show the required review. When approved, deliver four copies to Architect unless otherwise specified.
- I. "As-Built" drawings of ductwork and piping, including all elbows, transitions, damper and valve locations shall be provided prior to commencement of air and water balance.

1.11 QUALITY OF EQUIPMENT, MATERIALS AND WORKMANSHIP

- A. Unless otherwise specified, equipment and materials used in the installation shall be new and in perfect condition when installed. Articles provided for the same general purpose or use shall be of the same make. Workmanship shall be of the best quality and none but competent mechanics skilled in their trades shall be employed. Furnish the services of an experienced superintendent, who shall be constantly in charge of the work, together with all necessary journeymen, helpers and laborers required.

1.12 SEISMIC DESIGN

- A. Contractor shall be responsible for anchors and connections of mechanical work to the building structure including calculations for approval by structural engineer or for approval by inspector

of record, as applies, for items or work, where approval is deferred or where alternate support or anchorage detail is proposed to prevent damage as a result of an earthquake, including manufactured equipment, the connection and integrity of shop fabricated and field fabricated materials and equipment. The anchorage of all pipes, ducts, conduits, fixtures, equipment, etc. shall withstand the lateral forces and shall accommodate calculated building displacement as required by the California Building Code, and local city/county codes. (Building equipment and connections therefore shall be designed to resist lateral seismic forces equal to 1.0 of equipment weight to working allowable stress. Cantilever posts supporting equipment shall be designed to resist lateral seismic forces equal to 0.5 of equipment weight to allowable working stress. Conform to the following:

1. In accordance with Title 24, 2007 CBC Section 1613, details shall be provided for the seismic anchorage of all mechanical and electrical equipment, anchorage details shall be based upon appropriate design calculations.
2. For equipment weighing 400 pounds or more anchorage details and appropriate design calculations shall be submitted as part of the mechanical and electrical drawings. "Deferred Approval" items will not be permitted unless specifically approved by the plan check supervisor.
 - a. Exception: Attachments of equipment weighing less than 400 pounds and supported directly on the floor or roof structure, furniture, or temporary or movable equipment and equipment weighing less than 20 pounds that is supported by vibration isolation devices suspended from the roof, wall or floor, need not be detailed on the plans provided the following notes are included on the mechanical and electrical plans.
3. The seismic anchorage of mechanical and electrical equipment shall conform to C.C.R. Title 24, 2007 CBC Section 1613. Anchorage details for roof/floor-mounted equipment shall be shown on plans.

1.13 SUBSTITUTIONS AND CHANGES

- A. The design has been based on data from certain manufacturers, suitable for each application. Recommendations for alternative manufacturers are made for each product, except when "no substitutions permitted" is indicated.
- B. It is the intent of the Owner to have this project constructed with materials, products and system originally designed and specified into the project.
- C. Alternatives that may require the modification, realignment and/or adjustment of other associated components, including impact on other trades, shall be accomplished at no additional cost or time to the contract and shall have the approval of the Architect.
- D. Substitutions shall be submitted addressing all features listed in the specifications. Features that deviate from the plans and specifications shall be clearly identified including justification for deviations. Design West Engineers will review initial submittal on substitutes only. Subsequent submittals made to correct deficiencies in original submittals will be reviewed at Contractor's expense based on Design West Engineer's hourly rate for engineering services.
- E. Should the Contractor elect to propose substitutions for the Owner's interest, the substitutions shall be in compliance with Section 01600.

1.14 APPROVALS

- A. The Architect will have the right to accept or reject equipment, materials, workmanship, tests and determine when the Contractor has complied with the requirements herein specified.

1.15 SELECTION AND ORDERING OF EQUIPMENT AND MATERIALS

- A. Immediately after award of the Contract and after the approval of submittals by the Architect, the Contractor shall arrange for the purchase and delivery of equipment and materials required, in ample quantities and at the proper time. He shall deliver to the Architect a complete list of equipment and materials ordered, giving descriptions, plate numbers, brochures, name of the wholesalers, date of the orders and approximate delivery dates.

1.16 LOCATIONS AND ACCESSIBILITY

- A. Drawings show pipe and ductwork diagrammatically. Conform to Drawings as closely as possible in layout work. Vary run of piping, run and shape of ductwork and make offsets during progress of work as required to meet structural and other interferences as approved by Architect. Install piping and ductwork to best suit field conditions after coordinating with other trades. Run exposed piping and ductwork parallel to, or at right angle to, building walls. Keep horizontal lines as close to bottom of structures as possible. Conform to ceiling heights established on Drawings.
- B. Install equipment in such a manner as to be readily accessible for maintenance and repairs. Install piping, ducts and conduit in such a manner as to preserve headroom, avoid obstructions and keep openings and passageways clear.
- C. Installation at valves, thermometers, gauges, cleanouts, dampers, controls, steam and water specialties, duct access doors or any other indicating equipment or specialties requiring reading, adjustment, inspection, maintenance shall be conveniently and accessible located with reference to the finished building.
- D. Where wall and ceiling access doors are required but not shown, such doors shall be furnished under other sections and as directed by the Architect. Coordinate this requirement with appropriate trade.
- E. If changes in the indicated locations or arrangements are required, they shall be made without additional charges.
- F. In an existing area, where required, remove, reinstall, reconnect or replace, etc., any existing work to accommodate new work without any additional cost to the Owner. Material shall match existing, unless otherwise specified or approved in writing by the Architect.
- G. Provide sheaves and belts if required, to Test, Adjust and Balance Agency, to allow air moving equipment to meet flow requirements specified at no additional cost to the Owner.

1.17 COORDINATION OF TRADES

- A. Contractor shall coordinate all trades in the interest of obtaining the most practical overall arrangement of equipment, piping, conduit, and ducts and to maintain maximum headroom and accessibility.
- B. No extras will be allowed for changes made necessary by interference between trades.
- C. Submit Composite Drawings in accordance with Special Conditions. Include dimensioned plans, elevations, sections and details and give complete information particularly as to the kinds and types of materials and equipment, size and location of sleeves, inserts, attachments, chases, openings, conduits, ducts, boxes, lighting, structural interferences. Coordinate these Composite Drawings and field layouts in the field for proper relationship to work of applicable trades based on field conditions. Contractor shall have competent personnel readily available for coordinating, checking, and supervision of field layouts. The procedures for submittals and resubmittals, and final distribution shall be as specified in Section 01300. Do not start installation of work involved under Composite Drawings until the Architect reviews applicable submittal. Discrepancies between the Drawings and Composite Drawings shall be specifically

noted and identified on the Composite Drawings. Drawings for the various trades involved shall be submitted as required and reviewed prior to preparation of Composite Drawings.

1. Equipment Foundations and Bases: Furnish certified details and drawings for approval before fabrication. Furnish parts necessary for each foundation sub base and support.
2. Pipe Sleeves and Inserts: Furnish and install pipe sleeves and pipe support inserts before concrete is poured.
3. Roof, Wall and Floor Openings: Furnish Shop Drawings showing exact locations and sizes of openings through roofs, walls and floors.
4. Concrete: Conform to Concrete Section of the Specifications.

1.18 GUARANTEES

- A. Contractor shall guarantee workmanship, equipment and materials installed under his contract for a period of not less than one (1) year from the date of Substantial Completion. Should any defects occur during this period, the Contractor shall promptly repair or replace the defective item and any other damage caused to the building free of charge to the Owner, including cost of labor and materials.
- B. Guarantee included in this section to cover:
 1. Faulty or inadequate design of equipment or material installed
 2. Improper assembly or erection
 3. Defective workmanship or material
 4. Incorrect or inadequate operation or other failure
- C. He shall guarantee the complete and perfect operation of the entire system and that equipment will be supported in such a way as to be free of objectionable vibration and noise
- D. Furnish the parts and labor to replace any items found to be defective in the refrigeration equipment with the guarantee period
- E. In addition to other guarantees, furnish free maintenance for the refrigeration equipment, including replacement of refrigerant and oil, for a period of one (1) year. This shall include regular monthly maintenance and "On Call" service if required.
- F. For equipment bearing a manufacturer's warranty in excess of one year, furnish a copy of the warranty to the Owner, who shall be named as beneficiary.

1.19 PROTECTION OF EQUIPMENT AND MATERIALS

- A. Provide adequate storage facilities for equipment and materials on the site and shall make provisions to protect such materials and equipment from damage.

1.20 CLOSING-IN OF UNINSPECTED WORK

- A. Contractor shall not allow or cause any of the work, specifically ductwork and piping, to be covered up or enclosed until it has been inspected, tested, and approved by the Architect. Should any of work be covered up or enclosed before such inspection and test, he shall at his own expense, uncover the work and after it has been inspected, tested, and approved, make repairs with such materials as may be necessary to restore work to its original and proper condition.

1.21 DAMAGE BY LEAKS

- A. Contractor shall be responsible for all damage to any part of the premises caused by rain leaks through or around ducts or pipes, leaks or breaks in piping, equipment or fixtures furnished or installed by him for a period of one (1) year from the date of Substantial Completion.

1.22 EQUIPMENT LABELS

- A. Equipment provided under this Section shall be provided with the manufacturer's metal identification labels attached to each individual piece of equipment showing complete performance characteristics, size, model and serial number.

1.23 PRELIMINARY OPERATION

- A. Should the Owner request that any portion of the plant, apparatus, or equipment be operated for the Owner's beneficial use prior to the final completion and acceptance of the work, the Contractor shall conform to Beneficial Occupancy Provisions of the General Conditions. Such operation shall be under the supervision and direction of the Contractor. Such preliminary operation shall not be construed as an acceptance of any of the work.

1.24 MAINTAINING EXISTING SERVICES

- A. The premises and existing building at the site will be in use at the time the work of this Section is in progress. Contractor shall conduct his work so as to cause no inconvenience or danger to the personnel on the premises.
- B. He shall maintain continuity of service to the existing mechanical systems, except for designated intervals during which connections can be made. The scheduling of the shut down period shall be at a time directed by the Architect.
- C. In some instances, it may be necessary to defer work in certain areas and locations until such time as existing facilities can be relocated or rearranged by the Owner. Therefore, whenever it becomes necessary for the Contractor to perform work under this contract in areas in which the Owner's work is being performed. This contractor shall advise the Architect relative to this requirement and shall follow closely the directive issued by the Architect insofar as time and procedure are concerned. Allow Owner 72 hours prior notice.
- D. This contractor shall include in his bid all premium time to which he may be subjected for performing work in such procedure and at such time as may be necessary to cause the least interference with the function of the Owner.

1.25 ELECTRICAL WORK

- A. Coordinate with Division 16 in making the line and low voltage electrical connections and be responsible for the operation of the equipment furnished under this section.
- B. Voltage for electrical work will be included in Division 16. However, any control wiring which is required that is not shown on the control diagram shall be as described under this Section. In the event that the Contractor chooses to provide equipment that requires extra expense in the power or control wiring, he shall pay additional electrical costs.
- C. Safety switches, starters, circuit breakers, unless provided as a portion of package equipment, and the electrical connections of mechanical equipment to the electrical power service shall be provided under Division 16.
- D. Interconnecting wiring, safety switches, relays, controllers and motor starters which are integral components of packaged equipment shall be provided as an integral part of that equipment.
- E. All interconnecting power wiring and conduits shall be provided by Division 16.
- F. Control wiring shall be provided by Division 15, unless otherwise indicated on the drawings.
- G. Conduit for control wiring shall be provided by Division 16.

*****END OF SECTION*****

SECTION 15072

VIBRATION ISOLATION

PART 1 GENERAL

1.1 SECTION INCLUDES

- A. Inertia bases.
- B. Vibration isolators.
- C. Seismic restraints.

1.2 SUBMITTALS

- A. See Section 01350 - Administrative Requirements, for submittal procedures.
- B. Product Data: Provide schedule of vibration isolator type with location and load on each.
- C. Shop Drawings: Indicate inertia bases and locate vibration isolators, with static and dynamic load on each. Indicate seismic control measures.
- D. Manufacturer's Instructions: Indicate installation instructions with special procedures and setting dimensions.

PART 2 PRODUCTS

2.1 MANUFACTURERS

- A. Isolation Technology, Inc: www.isolationtech.com.
- B. California Dynamics Corp: www.caldyn.com.
- C. Mason Industries: www.mason-ind.com.

2.2 INERTIA BASES

- A. Structural Bases:
 - 1. Construction: Welded structural steel with gusseted brackets, to support equipment and motor, with motor slide rails.
 - 2. Design: Sufficiently rigid to prevent misalignment or undue stress on machine, and to transmit design loads to isolators and snubbers.

2.3 VIBRATION ISOLATORS

- A. Restrained Open Spring Isolators:
 - 1. Springs: Minimum horizontal stiffness equal to 75 percent vertical stiffness, with working deflection between 0.3 and 0.6 of maximum deflection. Color code springs for load carrying capacity.
 - 2. Spring Mounts: Provide with leveling devices, minimum 0.25 inch thick neoprene sound pads, and zinc chromate plated hardware.
 - 3. Sound Pads: Size for minimum deflection of 0.05 inch; meet requirements for neoprene pad isolators.
 - 4. Restraint: Provide heavy mounting frame and limit stops.
- B. Spring Hanger:
 - 1. Springs: Minimum horizontal stiffness equal to 75 percent vertical stiffness, with working deflection between 0.3 and 0.6 of maximum deflection. Color code springs for load carrying capacity.
 - 2. Housings: Incorporate neoprene isolation pad meeting requirements for neoprene pad isolators.
 - 3. Misalignment: Capable of 20 degree hanger rod misalignment.

- C. Neoprene Pad Isolators:

1. Rubber or neoprene waffle pads.
 - a. Thickness: Minimum 1/2 inch.
 - b. Maximum Loading: 50 psi.
 2. Configuration: Single layer.
- D. Seismic Snubbers:
1. Type: Non-directional and double acting unit consisting of interlocking steel members restrained by neoprene elements.
 2. Elements: Replaceable neoprene, minimum of 0.75 inch thick with minimum 1/8 inch air gap.
 3. Capacity: 4 times load assigned to mount groupings at 0.4 inch deflection.
 4. Attachment Points and Fasteners: Capable of withstanding 3 times rated load capacity of seismic snubber.

PART 3 EXECUTION

3.1 INSTALLATION

- A. Install in accordance with manufacturer's instructions.
- B. On closed spring isolators, adjust so side stabilizers are clear under normal operating conditions.
- C. Prior to making piping connections to equipment with operating weights substantially different from installed weights, block up equipment with temporary shims to final height. When full load is applied, adjust isolators to load to allow shim removal.
- D. Provide seismic snubbers for all equipment, piping, and ductwork mounted on isolators. Each inertia base shall have minimum of four seismic snubbers located close to isolators. Snub equipment designated for post-disaster use to 0.05 inch maximum clearance. Other snubbers shall have clearance between 0.15 inch and 0.25 inch.

3.2 FIELD QUALITY CONTROL

- A. Inspect isolated equipment after installation and submit report. Include static deflections.

3.3 SCHEDULES

- A. Pipe Isolation Schedule.
 1. 1 Inch Pipe Size: Isolate 120 diameters from equipment.
 2. 2 Inch Pipe Size: Isolate 90 diameters from equipment.
 3. 3 Inch Pipe Size: Isolate 80 diameters from equipment.
 4. 4 Inch Pipe Size: Isolate 75 diameters from equipment.
 5. 6 Inch Pipe Size: Isolate 60 diameters from equipment.
 6. 8 Inch Pipe Size: Isolate 60 diameters from equipment.
 7. 10 Inch Pipe Size: Isolate 54 diameters from equipment.
 8. 12 Inch Pipe Size: Isolate 50 diameters from equipment.
 9. 16 Inch Pipe Size: Isolate 45 diameters from equipment.
 10. 24 Inch Pipe Size: Isolate 38 diameters from equipment.
 11. Over 24 Inch Pipe Size: As indicated.

END OF SECTION

SECTION 15075

MECHANICAL IDENTIFICATION

PART 1 GENERAL

1.1 SECTION INCLUDES

- A. Nameplates.
- B. Tags.
- C. Stencils.
- D. Pipe Markers.

1.2 REFERENCE STANDARDS

- A. ASME A13.1 - Scheme for the Identification of Piping Systems; The American Society of Mechanical Engineers; 2007.

1.3 SUBMITTALS

- A. List: Submit list of wording, symbols, letter size, and color coding for mechanical identification.
- B. Chart and Schedule: Submit valve chart and schedule, including valve tag number, location, function, and valve manufacturer's name and model number.
- C. Product Data: Provide manufacturers catalog literature for each product required.

PART 2 PRODUCTS

2.1 IDENTIFICATION APPLICATIONS

- A. Air Terminal Units: Tags.
- B. Automatic Controls: Tags. Key to control schematic.
- C. Dampers: Ceiling tacks, where located above lay-in ceiling.
- D. Instrumentation: Tags.
- E. Major Control Components: Nameplates.
- F. Piping: Tags.
- G. Thermostats: Nameplates.
- H. Valves: Tags and ceiling tacks where located above lay-in ceiling.

2.2 MANUFACTURERS

- A. Brady Corporation: www.bradycorp.com.
- B. Champion America, Inc: www.Champion-America.com.
- C. Seton Identification Products: www.seton.com/aec.

2.3 NAMEPLATES

- A. Description: Laminated three-layer plastic with engraved letters.
 - 1. Letter Color: White.
 - 2. Letter Height: 1/4 inch.
 - 3. Background Color: Black.

2.4 TAGS

- A. Metal Tags: Brass with stamped letters; tag size minimum 1-1/2 inch diameter with smooth

edges.

2.5 STENCILS

- A. Stencils: With clean cut symbols and letters of following size:
 - 1. 3/4 to 1-1/4 inch Outside Diameter of Insulation or Pipe: 8 inch long color field, 1/2 inch high letters.
 - 2. 1-1/2 to 2 inch Outside Diameter of Insulation or Pipe: 8 inch long color field, 3/4 inch high letters.
 - 3. 2-1/2 to 6 inch Outside Diameter of Insulation or Pipe: 12 inch long color field, 1-1/4 inch high letters.
 - 4. 8 to 10 inch Outside Diameter of Insulation or Pipe: 24 inch long color field, 2-1/2 inch high letters.
 - 5. Over 10 inch Outside Diameter of Insulation or Pipe: 32 inch long color field, 3-1/2 inch high letters.
 - 6. Ductwork and Equipment: 2-1/2 inch high letters.
- B. Stencils shall be identified as indicated below including direction of flow
 - 1. Refrigerant Suction Line - R.S.L.
 - 2. Refrigerant Liquid Line - R.L.L.
 - 3. Control Compressed Air - C.C.A.
 - 4. Gravity Condensate - G.C.
 - 5. Domestic Cold Water - D.C.W.
 - 6. Domestic Hot Water - D.H.W.
 - 7. Domestic Hot Water Return - D.H.W.R.
 - 8. Fire Protection - F.S.
- C. Stencil Paint: Semi-gloss enamel, colors conforming to ASME A13.1.

2.6 PIPE MARKERS

- A. Comply with ASME A13.1.
- B. Underground Plastic Pipe Markers: Bright colored continuously printed plastic ribbon tape, minimum 6 inches wide by 4 mil thick, manufactured for direct burial service.

2.7 CEILING TACKS

- A. Description: Steel with 3/4 inch diameter color coded head.

PART 3 EXECUTION

3.1 PREPARATION

- A. Degrease and clean surfaces to receive adhesive for identification materials.

3.2 INSTALLATION

- A. Install plastic nameplates with corrosive-resistant mechanical fasteners, or adhesive. Apply with sufficient adhesive to ensure permanent adhesion and seal with clear lacquer.
- B. Install plastic pipe markers in accordance with manufacturer's instructions.
- C. Install plastic tape pipe markers complete around pipe in accordance with manufacturer's instructions.
- D. Install underground plastic pipe markers 6 to 8 inches below finished grade, directly above buried pipe.

- E. Identify air handling units, pumps, heat transfer equipment, tanks, and water treatment devices with plastic nameplates. Small devices, such as in-line pumps, may be identified with tags.
- F. Identify control panels and major control components outside panels with plastic nameplates.
- G. Identify thermostats relating to terminal boxes or valves with nameplates.
- H. Identify valves in main and branch piping with tags.
- I. Identify air terminal units and radiator valves with numbered tags.
- J. Tag automatic controls, instruments, and relays. Key to control schematic.
- K. Identify piping, concealed or exposed, with plastic pipe markers. Use tags on piping 3/4 inch diameter and smaller. Identify service, flow direction, and pressure. Install in clear view and align with axis of piping. Locate identification not to exceed 20 feet on straight runs including risers and drops, adjacent to each valve and Tee, at each side of penetration of structure or enclosure, and at each obstruction.

END OF SECTION