

# PROJECT MANUAL

for



## **VA SAN DIEGO HEALTHCARE SYSTEM RENOVATE BUILDING 1 FIRST FLOOR FOR VOLUNTEER AND PATIENT SERVICES PHASE 2**

DEPARTMENT OF VETERANS AFFAIRS  
3350 La Jolla Village Drive  
San Diego, CA 92161

VA PROJECT NO. 664-09-103

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December 2, 2011

**DEPARTMENT OF VETERANS AFFAIRS  
PROJECT SPECIFICATIONS**

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VA SAN DIEGO  
HEALTHCARE SYSTEM

RENOVATE BUILDING 1 FIRST FLOOR FOR  
VOLUNTEER AND PATIENT SERVICES (PHASE 2)  
PROJECT NO. 664-09-103

|          |  |
|----------|--|
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**SECTION 06 20 00**

**FINISH CARPENTRY**

**PART 1 - GENERAL**

**1.1 DESCRIPTION**

- A. This section specifies exterior and interior millwork as indicated on the drawings and specified.

**1.2 RELATED WORK**

- A. Fabricated Metal brackets, bench supports and countertop legs: Section 05 50 00, METAL FABRICATIONS.
- B. Color and texture of finish: Section 09 06 00, SCHEDULE FOR FINISHES.
- C. Stock Casework: Section 12 32 00, MANUFACTURED WOOD CASEWORK.

**1.3 SUBMITTALS**

- A. Submit in accordance with Section 01 33 23, SHOP DRAWINGS, PRODUCT DATA, AND SAMPLES.
- B. Shop Drawings:
  - 1. Millwork items - Half full size scale for sections and details 1:50 (1/4-inch) for elevations and plans.
  - 2. Show construction and installation.
- C. Samples: Solid surface fabrications, and Plastic laminate finished plywood or particleboard, 150 mm by 300 mm (six by twelve inches).
- D. Certificates: provide Woodwork Institute (WI) certified Compliance Certificate attesting that finish carpentry complies with the specifications.

**1.4 DELIVERY, STORAGE AND HANDLING**

- A. Protect lumber and millwork from dampness, maintaining moisture content specified both during and after delivery at site.
- B. Store finishing lumber and millwork in weathertight well ventilated structures or in space in existing buildings designated by Project Engineer. Store at a minimum temperature of 21°C (70°F) for not less than 10 days before installation.
- C. Pile lumber in stacks in such manner as to provide air circulation around surfaces of each piece.

**1.5 APPLICABLE PUBLICATIONS**

- A. The publications listed below form a part of this specification to the extent referenced. The publications are referenced in the text by the basic designation only.

- B. American Society of Testing and Materials (ASTM):
- A36/A36M-08.... Structural Steel
  - A53-07..... Pipe, Steel, Black and Hot-Dipped Zinc Coated,  
Welded and Seamless
  - A167-99 (R2009) Stainless and Heat-Resisting Chromium-Nickel Steel  
Plate, Sheet, and Strip
  - B26/B26M-09.... Aluminum-Alloy Sand Castings
  - B221-08..... Aluminum and Aluminum-Alloy Extruded Bars, Rods,  
Wire, Profiles, and Tubes
  - E84-09..... Surface Burning Characteristics of Building  
Materials
- C. American Hardboard Association (AHA):
- A135.4-04..... Basic Hardboard
- D. Builders Hardware Manufacturers Association (BHMA):
- A156.9-03..... Cabinet Hardware
  - A156.11-04..... Cabinet Locks
  - A156.16-02..... Auxiliary Hardware
- E. Hardwood Plywood and Veneer Association (HPVA):
- HP1-09..... Hardwood and Decorative Plywood
- F. National Particleboard Association (NPA):
- A208.1-99..... Wood Particleboard
- G. American Wood-Preservers' Association (AWPA):
- AWPA C1-03..... All Timber Products - Preservative Treatment by  
Pressure Processes
- H. Architectural Woodwork Institute (AWI):
- AWI-99..... Architectural Woodwork Quality Standards and  
Quality Certification Program
- I. National Electrical Manufacturers Association (NEMA):
- LD 3-05..... High-Pressure Decorative Laminates
- J. U.S. Department of Commerce, Product Standard (PS):
- PS20-05..... American Softwood Lumber Standard
- K. Military Specification (Mil. Spec):
- MIL-L-19140E... Lumber and Plywood, Fire-Retardant Treated

- L. Federal Specifications (Fed. Spec.):
  - A-A-1922A..... Shield Expansion
  - A-A-1936..... Contact Adhesive
  - FF-N-836D..... Nut, Square, Hexagon Cap, Slotted, Castle
  - FF-S-111D(1)... Screw, Wood
  - MM-L-736(C).... Lumber, Hardwood

## **PART 2 - PRODUCTS**

### **2.1 LUMBER**

- A. Grading and Marking:
  - 1. Lumber shall bear the grade mark, stamp, or other identifying marks indicating grades of material.
  - 2. Such identifying marks on a material shall be in accordance with the rule or standard under which the material is produced, including requirements for qualifications and authority of the inspection organization, usage of authorized identification, and information included in the identification.
  - 3. The inspection agency for lumber shall be approved by the Board of Review, American Lumber Standards Committee, to grade species used.
- B. Sizes:
  - 1. Lumber Size references, unless otherwise specified, are nominal sizes, and actual sizes shall be within manufacturing tolerances allowed by the standard under which product is produced.
  - 2. Millwork, standing and running trim, and rails: Actual size as shown or specified.
- C. Hardwood: MM-L-736, species as specified for each item.
- D. Softwood: PS-20, exposed to view appearance grades:
  - 1. Use C select or D select, vertical grain for transparent finish including stain transparent finish.
  - 2. Use Prime for painted or opaque finish.
- E. Use edge grain Wood members exposed to weather.

### **2.2 PLYWOOD**

- A. Softwood Plywood:
  - 1. Prod. Std.



2. Grading and Marking:
    - a. Each sheet of plywood shall bear the mark of a recognized association or independent inspection agency that maintains continuing control over the quality of the plywood.
    - b. The mark shall identify the plywood by species group or identification index, and shall show glue type, grade, and compliance with PS1.
  3. Plywood, 13 mm (1/2 inch) and thicker; not less than five ply construction, except 32 mm (1-1/4 inch) thick plywood not less than seven ply.
  4. Plastic Laminate Plywood Cores:
    - a. Exterior Type, and species group.
    - b. Veneer Grade: A-C.
  5. Shelving Plywood:
    - a. Interior Type, any species group.
    - b. Veneer Grade: A-B or B-C.
  6. Other: As specified for item.
- B. Hardwood Plywood:
1. HPVA: HP.1
  2. Species of face veneer shall be as shown or as specified in connection with each particular item.
  3. Inside of Building:
    - a. Use Type II (interior) A grade veneer for transparent finish.
    - b. Use Type II (interior) Sound Grade veneer for paint finish.
  4. On Outside of Building:
    - a. Use Type I, (exterior) A Grade veneer for natural or stained and varnish finish.
    - b. Use Type I, (exterior) Sound Grade veneer for paint finish.
  5. Use plain sliced red oak or rotary cut white birch, unless indicated otherwise.

## 2.3 PARTICLEBOARD

- A. NPA A208.1
- B. Plastic Laminate Particleboard Cores:

1. Use Type 1, Grade 1-M-3, or Type 2, Grade 2-M-2, unless otherwise specified.
  2. Use Type 2, Grade 2-M-2, exterior bond, for tops with sinks.
- C. General Use: Type 1, Grade 1-M-3 or Type 2, Grade 2-M-2.

#### **2.4 PLASTIC LAMINATE**

- A. Plastic laminate shall be Wilsonart as indicated or as selected by the Architect from products by one of the following:
1. Formica
  2. Laminart
  3. Westinghouse
  4. Pionite
- B. NEMA LD-3.
- C. Exposed decorative surfaces including countertops, both sides of cabinet doors, and for items having plastic laminate finish. General Purpose, Type HGL.
- D. Cabinet Interiors including Shelving: Both of following options to comply with NEMA, CLS as a minimum.
1. Plastic laminate clad plywood or particle board.
  2. Resin impregnated decorative paper thermally fused to particle board.
- E. Backing sheet on bottom of plastic laminate covered wood tops: Backer, Type HGP.
- F. Post Forming Fabrication, Decorative Surfaces: Post forming, Type HGP.

#### **2.5 SOLID SURFACING MATERIALS**

- A. Subject to compliance with specified requirements, solid surfacing materials shall be Formica and Avonite Solid Surface, or an "or equal" product of E. I. du Pont de Nemours & Co., Inc., and of the dimensions and profiles indicated on the drawings. Other manufacturers offering "or equal" products are Wilsonart, and Nevamar.
- B. Joint adhesive: Provide the manufacturer's recommended adhesive for inconspicuous non-porous joints.
- C. Sealant: Provide the manufacturer's recommended silicone adhesive in colors closely matching the solid surfacing.
- D. Polishing cream: compatible polishing cream to achieve specified sheen.
- E. Core framing: Softwood lumber, clear and free of knots
- F. hardware: Provide stainless steel inserts, screws, flat washers, wing nuts, and clips required to make the installation complete.

G. Adhesive for Plastic Laminate: Fed. Spec. A-A-1936.

H. For Interior Millwork: Unextended urea resin, unextended melamine resin, phenol resin, or resorcinol resin.

## **2.6 STAINLESS STEEL**

ASTM A167, Type 302 or 304.

## **2.7 ALUMINUM CAST**

ASTM B26

## **2.8 ALUMINUM EXTRUDED**

ASTM B221

## **2.9. HARDWARE**

A. Finish Hardware: match the existing as closely as practicable.

1. Cabinet Hardware: ANSI A156.9.

a. Door/Drawer Pulls: B02011. Door in seismic zones: B03182.

b. Drawer Slides: B05051 for drawers over 150 mm (6 inches) deep, B05052 for drawers 75 mm to 150 mm 3 to 6 inches) deep, and B05053 for drawers less than 75 mm (3 inches) deep.

c. Sliding Door Tracks: B07063.

d. Adjustable Shelf Standards: B4061 with shelf rest B04083.

e. Concealed Hinges: B1601, minimum 110 degree opening.

f. Butt Hinges: B01361, for flush doors, B01381 for inset lipped doors, and B01521 for overlay doors.

g. Cabinet Door Catch: B0371 or B03172.

h. Vertical Slotted Shelf Standard: B04103 with shelf brackets B04113, sized for shelf depth.

2. Cabinet Locks: ANSI A156.11.

a. Drawers and Hinged Door: E07262.

b. Sliding Door: E07162.

3. Auxiliary Hardware: ANSI A156.16.

a. Shelf Bracket: B04041, japanned or enameled finish.

b. Combination Garment rod and Shelf Support: B04051 japanned or enamel finish.

- c. Closet Bar: L03131 chrome finish of required length.
- d. Handrail Brackets: L03081 or L03101.
  - 1) Cast Aluminum, satin polished finish.
  - 2) Cast Malleable Iron, japanned or enamel finish.

## **2.10 MOISTURE CONTENT**

- A. Moisture content of lumber and millwork at time of delivery to site.
  - 1. Interior finish lumber, trim, and millwork 32 mm (1-1/4 inches) or less in nominal thickness: 12 percent on 85 percent of the pieces and 15 percent on the remainder.
  - 2. Moisture content of other materials shall be in accordance with the standards under which the products are produced.

## **2.11 FABRICATION**

- A. General:
  - 1. Except as otherwise specified, use WI Custom Grade for architectural woodwork and interior millwork.
  - 2. Finish woodwork shall be free from pitch pockets.
  - 3. Except where special profiles are shown, trim shall be standard stock molding and members of the same species.
  - 4. Plywood shall be not less than 13 mm (1/2 inch), unless otherwise shown or specified.
  - 5. Edges of members in contact with concrete or masonry shall have a square corner caulking rebate.
  - 6. Fabricate members less than 4 m (14 feet) in length from one piece of lumber, back channeled and molded as shown.
  - 7. Interior trim and items of millwork to be painted may be fabricated from jointed, built-up, or laminated members, unless otherwise shown on drawings or specified.
  - 8. Plastic Laminate Work:
    - a. Factory glued to either a plywood or a particle board core, thickness as shown or specified.
    - b. Cover exposed edges with plastic laminate, except where aluminum, stainless steel, or plastic molded edge strips are shown or specified. Use plastic molded edge strips on 19 mm (3/4-inch) molded thick or thinner core material.
    - c. Provide plastic backing sheet on underside of countertops, vanity tops, thru-wall counter including back splashes and end splashes of countertops.

- d. Use backing sheet on concealed large panel surface when decorative face does not occur.

### **PART 3 - EXECUTION**

#### **3.1 ENVIRONMENTAL REQUIREMENTS**

- A. Maintain work areas and storage areas to a minimum temperature of 21°C (70°F) for not less than 10 days before and during installation of interior millwork.
- B. Do not install finish lumber or millwork in any room or space where wet process systems such as concrete, masonry, or plaster work is not complete and dry.

#### **3.2 INSTALLATION**

- A. General:
  - 1. Millwork receiving transparent finish shall be primed and back-painted on concealed surfaces. Set no millwork until primed and back-painted.
  - 2. Secure trim with fine finishing nails, screws, or glue as required.
  - 3. Set nails for putty stopping. Use washers under bolt heads where no other bearing plate occurs.
  - 4. Seal cut edges of preservative and fire retardant treated wood materials with a certified acceptable sealer.
  - 5. Coordinate with plumbing and electrical work for installation of fixtures and service connections in millwork items.
  - 6. Plumb and level items unless shown otherwise.
  - 7. Nail finish at each blocking, lookout, or other nailer and intermediate points; toggle or expansion bolt in place where nails are not suitable.
- B. Shelves:
  - 1. Install mounting strip at back wall and end wall for shelves in closets where shown secured with toggle bolts at each end and not over 600 mm (24 inch) centers between ends.
    - a. Nail Shelf to mounting strip at ends and to back wall strip at not over 900 mm (36 inches) on center.
    - b. Install metal bracket, ANSI A156.16, B04041, not over 1200 mm (4 feet) centers when shelves exceed 1800 mm (6 feet) in length.
    - c. Install metal bracket, ANSI A156.16, B04051, not over 1200 mm (4 feet) on centers where shelf length exceeds 1800 mm (6 feet) in length with metal rods, clothes

hanger bars ANSI A156.16, L03131, of required length,  
full length of shelf.

2. Install vertical slotted shelf standards, ANSI A156.9, B04103 to studs with toggle bolts through each fastener opening. Double slotted shelf standards may be used where adjacent shelves terminate.
  - a. Install brackets ANSI A156.9, B04113, providing supports for shelf not over 900 mm (36 inches) on center and within 13 mm (1/2 inch) of shelf end unless shown otherwise.
  - b. Install shelves on brackets so front edge is restrained by bracket.

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**SECTION 06 26 13**

**MODULAR ARTS SOLID MINERAL PROFILE PANELING**

**PART 1 - GENERAL**

**1.1 SUMMARY**

- A. Section Includes: Modular arts solid mineral profile paneling and seam finishing materials to create a monolithic sculptured wall surface as indicated on the drawings and specified.

**1.2 PREINSTALLATION MEETINGS**

- A. Convene meeting at project site within one week of scheduled start of installation with representatives of the following in attendance: Owner, Architect, General Contractor, Installer, Finisher, and Painter.
- B. Review substrate conditions, requirements of related work, installation instructions, seam finishing, and painting instructions, storage and handling procedures, and protection measures.
- C. Keep minutes of meeting including responsibilities of various parties and deviations from specifications and installation instructions.

**1.3 ACTION SUBMITTALS**

- A. Product Data: Each product specified.
- B. Project List: Minimum 5 previous completed ModularArts, Inc. installations or 5 installations of similar materials and complexity. Include contact name and e-mail address or telephone number for each project.
- C. Shop Drawings: Show standard and project specific details including termination at adjacent surfaces.
- D. Samples: Minimum 15 by 15 inch solid mineral panel of specified design(s).

**1.4 QUALITY ASSURANCE**

- A. Qualifications:
  - 1. Manufacturer: Minimum five years experience in producing mineral profile paneling.
  - 2. Installer: Minimum three years experience in finish carpentry/architectural woodwork installation.
  - 3. Finisher: Minimum three years experience in executing Level 5 finish in accordance with GA- 214.
- B. Field Samples:

1. Provide in a location selected by Architect showing representative sample of installed product including finished seam.
2. Minimum Size: As standard with the manufacturer.
3. Approved field samples may remain as part of completed Work.

#### **1.5 DELIVERY, STORAGE, AND HANDLING**

- A. Storage and Handling Requirements:
1. Store panels in fully enclosed space, protected against damage from moisture, direct sunlight, and surface contamination.
  2. Store panels vertically, in shipping crates, until ready to be installed. Loosen crate lids to allow for venting. Do not stack or lean against walls.
  3. Store panels in area of installation minimum 24 hours prior to installation.
- B. Packaging Waste Management: 100 percent of materials used to package components of this section shall be recyclable.

#### **1.6 FIELD CONDITIONS**

- A. Ambient Conditions:
1. HVAC: Operate HVAC system to maintain occupancy level temperature and relative humidity conditions (35 to 67 percent) in the area of installation from 24 hours prior to delivery of panels to the installation area through remainder of construction period.
  2. Lighting: Permanent project lighting, including any special lighting used to highlight the profiled panels, must be operational prior to seam finishing.

#### **1.7 WARRANTY**

- A. Manufacturer Warranty: Provide manufacturer's standard.

### **PART 2 PRODUCTS**

#### **2.1 MODULAR ARTS SOLID MINERAL PROFILE PANELING**

- A. Subject to compliance with specified requirements provide products by Modular Arts, Inc. (or equal).
- B. Profile Panel: Smooth surface solid mineral composite panel containing no retardants, accelerators, release agents, or plastics.
1. Size: 32 by 32 by 1 inch maximum profile relief.
  2. Physical Properties:



|    |   |                                |
|----|---|--------------------------------|
| a. | Tensile Strength: ASTM D 638            | 960 psi.                       |
| b. | Modulus of Elasticity: ASTM D 638       | 1970 ksi.                      |
| c. | Flexural Strength: ASTM D 790           | 550 psi.                       |
| d. | Flexural Modulus: ASTM D 790            | 360 ksi.                       |
| e. | Izod Impact Strength: ASTM D 256        | 9.4 ft-lb/in .                 |
| f. | Hardness: ASTM D 2583                   | 60 Barcol.                     |
| g. | Thermal Expansion: ASTM D 696           | 3.8x10 <sup>-7</sup> in/in °F. |
| h. | Compressive Strength: ASTM D 696        | 2.3 ksi.                       |
| i. | Flame Spread Index: ASTM E 84           | 0                              |
| j. | Smoke Development Index: ASTM E 84      | 0                              |
| k. | Weight (for all designs excluding YUMA) | 2.5 psf                        |
| l  | Weight (for YUMA design only)           | 3.8 psf                        |

## 2.2 ACCESSORIES

- A. Anchors: 30 lb self-drilling, drywall anchor.
- B. Screws: Coarse thread, drywall type, length as required by panel design and in accordance with Manufacturer's Installation Instructions.

## 2.3 SOURCE QUALITY CONTROL

- A. Fabrication Tolerances:
  - 1. Dimensions, length and width: 1/16 inch, plus or minus
  - 2. Thickness: 1/16 inch, plus or minus
  - Weight: 1/2 lb., plus or minus

## PART 3 - EXECUTION

### 3.1 EXAMINATION

- A. Examine substrates upon which profile paneling will be installed.
  - 1. Verify that substrate is a material listed as an acceptable substrate by the profile paneling manufacturer.
- B. Verify that permanent project lighting is in place and operational prior to start of seam finishing.
- C. Coordinate with responsible entity to correct unsatisfactory conditions.
- D. Commencement of work by installer is acceptance of substrate conditions.

### 3.2 INSTALLATION

- A. Install profile paneling in accordance with Manufacturer's Installation Instructions including that seam finishing and sealing and painting.
  - 1. Panels shall be screw-mounted through the face to the substrate.
  - 2. All panel-to-panel edges shall be glued with approved adhesive

as panels are mounted.

3. Seams shall be filled with the approved spackling compound.
4. Seams shall be sanded.
5. Surface shall be sealed with the approved primer/sealer.
6. Finish paint shall be applied, spray application preferable.

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**SECTION 07 14 21**

**LATEX MASTIC DECK COVERING**

**PART 1 - GENERAL**

**1.1 DESCRIPTION**

This section specifies latex mastic covering for waterproofing deck surfacing.

**1.2 MANUFACTURER'S QUALIFICATIONS**

Latex mastic deck covering shall be a product of a manufacturer regularly engaged in producing and supplying latex mastic deck covering as specified.

**1.3 APPLICATOR'S QUALIFICATIONS**

Deck covering installation shall be performed by an applicator approved by the manufacturer.

**1.4 APPLICABLE PUBLICATIONS**

- A. Publications listed below form a part of this specification to the extent referenced. Publications are referenced in the text by the basic designation only.
- B. American Society for Testing and Materials (ASTM):
  - D412-06.....Vulcanized Rubber and Thermoplastic Elastomers-Tension.
  - D570-98 (R2005).....Water Absorption of Plastics
  - D903-98 (R2005).....Peel or Stripping Strength of Adhesive Bonds.
  - D2240-05.....Rubber Property-Durometer Hardness.

**1.5 SUBMITTALS**

- A. Submit in accordance with Section 01 33 23, SHOP DRAWINGS, PRODUCT DATA, AND SAMPLES.
- B. Samples: 150 mm (6 inch) square, each color.
- C. Manufacturer's Literature and Data:
  - 1. Latex mastic deck covering.
  - 2. Installation instructions.
- D. Certificates:

1. Compliance of material with specification requirements.
2. Manufacturer's qualifications as specified.
3. Applicator's qualifications as specified.

#### **1.6 DELIVERY**

Deliver materials to job site in original sealed containers identified with manufacturer's name and brand.

#### **1.7 WARRANTY**

Deck covering and integral flashing is subject to the "Warranty of Construction", FAR clause 52.246-21, except that the warranty period against leaks or other failures, over and above normal wear and structural failure of the substructure, is two years in lieu of one year.

### **PART 2 - PRODUCTS**

#### **2.1 PRODUCT REQUIREMENTS**

- A. Provide Crossfield Products Corp. "Dex-O-Tex Weatherwear Traffic Bearing Roof Deck," or equal. Subject to review by the architect, comparable products by Mer-Kote, or equal, may also be acceptable.
- B. Product shall be a trowel applied elastomeric material meeting all performance requirements specified and designed primarily for waterproofing deck surfacing.

#### **2.2 PERFORMANCE REQUIREMENTS**

- A. Tensile Strength: ASTM D412: Not less than 7240 KPa (1050 psi).
- B. Water Transmission: ASTM D570: None when subjected to a water pressure of 345 KPa (50 psi) for a period of one hour.
- C. Hardness: ASTM D2240: 60-70 Shore "A".
- D. Adhesive Strength: ASTM D-903: Not less than 1035 kPa (150 psi).
- E. Weight: 1.8 kg/m<sup>2</sup> (0.45 lbs psf).
- F. Elongation: ASTM D412: 500 percent.

#### **2.3 FINISH**

The topcoat shall be of the color selected by the Architect.

### **PART 3 - EXECUTION**

#### **3.1 INSTALLATION**

- A. Prepare surface by removing dirt or other foreign matter including any concrete curing agents.
- B. Apply epoxy primer by roller.
- C. Apply basecoat and pigmented topcoat as per manufacturer's instructions. Turn up the material against walls to form an integral waterproof membrane.
- D. Typical finish of two coats shall be minimum 2 mm (1/16 inch).

- - - E N D - - -

**SECTION 07 21 13**

**THERMAL INSULATION**

**PART 1 - GENERAL**

**1.1 DESCRIPTION**

- A. This section includes thermal and acoustical insulation for buildings.
- B. Acoustical insulation is identified by thickness and words "Acoustical Insulation".

**1.2 SUBMITTALS**

- A. In accordance with Section 01 33 23, SAMPLES AND SHOP DRAWINGS, furnish the following:
  - 1. Manufacturer's Literature and Data:
    - a. Thermal insulation, each type used
    - b. Adhesive, each type used.
    - c. Tape
  - 2. Certificates: Stating the type, thickness and "R" value (thermal resistance) of the insulation to be installed.

**1.3 STORAGE AND HANDLING**

- A. Store insulation materials in weathertight enclosure.
- B. Protect insulation from damage from handling, weather and construction operations before, during, and after installation.

**1.4 APPLICABLE PUBLICATIONS**

- A. The publications listed below form a part of this specification to the extent referenced. The publications are referenced in the text by basic designation only.
- B. Federal Specifications (Fed. Spec.)
  - FF-N-105B(3).....Nails, Brads, Staples And Spikes: Wire, Cut And Wrought
- C. American Society of Testing and Materials (ASTM):
  - C270-86a.....Mortar for Unit Masonry
  - C516-75.....Vermiculite Loose Fill Insulation
  - C549-81.....Perlite Loose Fill Insulation
  - C552-79.....Cellular Glass Block and Pipe Thermal Insulation

|              |  |
|--------------|--|
| C553-70..... | Mineral Fiber Blanket and Felt Insulation<br>(Industrial Type)   |
| C578-85..... | Preformed Cellular Polystyrene Thermal<br>Insulation   |
| C591-83..... | Unfaced Preformed Rigid Cellular<br>Polyurethane Thermal Insulation  |
| C612-83..... | Mineral Fiber Block and Board Thermal<br>Insulation  |
| C665-84..... | Mineral Fiber Blanket Thermal Insulation<br>for Light Frame Construction and<br>Manufactured Housing   |
| C728-82..... | Perlite Thermal Insulation Board   |
| C954-86..... | Steel Drill Screws for the Application of<br>Gypsum Board Metal Plaster Base to Steel<br>Studs From 0.033 inch to 0.112 inch in<br>thickness |
| D312-71..... | Asphalt For Use in Constructing Built-up<br>Roof Coverings   |

## **PART 2 - PRODUCTS**

### **2.1 INSULATION - GENERAL**

- A. Where thermal resistance ("R" value) is specified or shown for insulation, the thickness shown on the drawings is nominal. Use only insulation with actual thickness that is not less than that required to provide the thermal resistance specified.
- B. Where "R" value is not specified for insulation, use the thickness shown on the drawings.
- C. Where more than one type of insulation is specified, the type of insulation for each use is optional, except use only one type of insulation in any particular area.

### **2.2 EXTERIOR FRAMING OR FURRING INSULATION**

- A. Batt or Blanket: Optional.
- B. Mineral Fiber: ASTM C665, Type II, Class C where framing is faced with gypsum board.
- C. Mineral Fiber: ASTM C665, Type III, Class A where framing is not faced with gypsum board.

### **2.3 ACOUSTICAL INSULATION**

- A. Mineral Fiber: ASTM C553, Type II, flexible, or Type III, semirigid (4.5 pound nominal density).
- B. Thickness as shown; of widths and lengths to fit tight against framing.

## **2.4 SOUND DEADENING BOARD**

- A. Mineral Fiber Board: ASTM C612, Class I, 1/2-inch thick
- B. Perlite Board: ASTM C728, 1/2-inch thick.

## **2.5 RIGID INSULATION**

- A. On the inside face of exterior walls, spandrel beams, floors and where shown.
- B. Mineral Fiber Board: ASTM C612, Class 1 or 2.
- C. Perlite Board: ASTM C728.
- D. Cellular Glass Block: ASTM C552, Type I.

## **2.6 FASTENERS**

- A. Staples or Nails: Fed. Spec. F-N-105, zinc-coated, size and type best suited for purpose.
- B. Screws: ASTM C954, size and length best suited for purpose with washer not less than two inches in diameter.
- C. Impaling Pins: Steel pins with head not less than two inches in diameter with adhesive for anchorage to substrate. Provide impaling pins of length to extend beyond insulation and retain cap washer when washer is placed on the pin.

## **2.7 ADHESIVE**

- A. As recommended by the manufacturer of the insulation.
- B. Asphalt: ASTM D312, Type III or IV.
- C. Mortar: ASTM C270, Type 0.

## **2.8 TAPE**

- A. Pressure sensitive adhesive on one face.
- B. Perm rating of not more 0.50.

# **PART 3 - EXECUTION**

## **3.1 INSTALLATION - GENERAL**

- A. Install insulation with the vapor barrier facing the heated side, unless specified otherwise.
- B. Install rigid insulating units with joints close and flush, in regular courses and with cross joints broken.
- C. Install batt or blanket insulation with tight joints and filling framing void completely. Seal cuts, tears, and unlapped joints with tape.
- D. Fit insulation tight against adjoining construction and penetrations, unless specified otherwise.



### **3.2 EXTERIOR FRAMING OR FURRING BLANKET INSULATION**

- A. Pack insulation around door frames and windows and in building expansion joints, door soffits and other voids. Open voids are not permitted. Hold insulation in place with pressure sensitive tape.
- B. Lap vapor retarder flanges together over face of framing for continuous surface. Seal all penetrations through the insulation.
- C. Fasten blanket insulation between metal studs or framing and exterior wall furring by continuous pressure sensitive tape along flanged edges.
- D. Fasten blanket insulation between wood studs or framing with nails or staples through flanged edges on face of stud. Space fastenings not more than six inches apart.
- E. Roof Rafter Insulation or Floor Joist Insulation: Place mineral fiber blankets between framing to provide not less than a two inch air space between insulation and roof sheathing or subfloor.
- F. Ceiling Insulation and Soffit Insulation:
  - 1. Fasten blanket insulation between wood framing or joist with nails or staples through flanged edges of insulation.
  - 2. At metal framing or ceilings suspension systems, install blanket insulation above suspended ceilings or metal framing at right angles to the main runners or framing. Tape insulation tightly together so no gaps occur and metal framing members are covered by insulation.
  - 3. In areas where suspended ceilings adjoin areas without suspended ceilings, install either blanket, batt, or mineral fiberboard extending from the suspended ceiling to underside of deck or slab above. Secure in place to prevent collapse or separation of hung blanket, batt, or board insulation and maintain in vertical position. Secure blanket or batt with continuous cleats to structure above.

### **3.3 RIGID INSULATION ON SURFACE OF EXTERIOR WALLS, FLOORS, AND UNDERSIDE OF FLOORS**

- A. On the interior face of solid masonry and concrete walls, beams, beam soffits, underside of floors, and to the face of studs for interior wall finish where shown.
- B. Bond to solid vertical surfaces with adhesive as recommended by insulation manufacturer. Fill joints with adhesive cement.
- C. Use impaling pins for attachment to underside of horizontal surfaces. Space fastenings as required to hold insulation in place and prevent sagging.
- D. Fasten board insulation to face of studs with screws, nails or staples. Space fastenings not more than 12 inches apart. Stagger fasteners at joints of boards. Install at each corner.

E. Floor insulation:

1. Bond insulation to concrete floors in attic by coating surfaces with hot steep asphalt applied at rate of not less than 25 pounds per 100 square feet, and firmly bed insulation therein.
2. When applied in more than one layer, bed succeeding layers in hot steep asphalt applied at the rate of not less than 25 pounds per 100 square feet.
3. Contractors option: Insulation may be installed with nonflammable adhesive in accordance with the manufacturer's printed instructions when a separate vapor retarder is used.

**3.4 ACOUSTICAL INSULATION:**

- A. Fasten blanket insulation between metal studs and wall furring with continuous pressure sensitive tape along edges or adhesive.
- B. Pack insulation around door frames and windows and in cracks, expansion joints, control joints, door soffits and other voids. Pack behind outlets, around pipes, ducts, and services encased in wall or partition. Hold insulation in place with pressure sensitive tape or adhesive.
- C. Do not compress insulation below required thickness except where embedded items prevent required thickness.
- D. Where acoustical insulation is installed above suspended ceilings install blanket at right angles to the main runners or framing. Extend insulation over wall insulation systems not extending to structure above.
- E. Where sound deadening board is shown, secure with adhesive to masonry or concrete walls and with screws to metal or wood framing. Secure sufficiently in place until subsequent cover is installed. Seal all cracks with caulking.

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**SECTION 07 21 17**

**ACOUSTICAL INSULATION**

**PART 1 - GENERAL**

**1.1 DESCRIPTION**

- A. This section includes acoustical insulation for buildings.
- B. Acoustical insulation is identified by thickness and words "Acoustical Insulation."

**1.2 SUBMITTALS**

- A. In accordance with Section 01340, SAMPLES AND SHOP DRAWINGS, furnish the following:
  - 1. Manufacturer's Literature and Data:
    - a. Acoustical insulation, each type used
    - b. Adhesive, each type used.
    - c. Tape
  - 2. Certificates: Stating the type, thickness and "R" value (thermal resistance) of the insulation to be installed.

**1.3 STORAGE AND HANDLING**

- A. Store insulation materials in weathertight enclosure.
- B. Protect insulation from damage from handling, weather and construction operations before, during, and after installation.

**1.4 APPLICABLE PUBLICATIONS**

- A. The publications listed below form a part of this specification to the extent referenced. The publications are referenced in the text by basic designation only.
- B. Federal Specifications (Fed. Spec.)
  - FF-N-105B(3).....Nails, Brads, Staples And Spikes: Wire, Cut And Wrought
- C. American Society of Testing and Materials (ASTM):
  - C553-70.....Mineral Fiber Blanket and Felt Insulation (Industrial Type)
  - C578-85.....Preformed Cellular Polystyrene Thermal Insulation
  - C591-83.....Unfaced Preformed Rigid Cellular Polyurethane Thermal Insulation
  - C612-83.....Mineral Fiber Block and Board Thermal Insulation

C665-84.....Mineral Fiber Blanket Thermal Insulation for  
Light Frame Construction and Manufactured  
Housing

C954-86.....Steel Drill Screws for the Application of Gypsum  
Board Metal Plaster Base to Steel Studs From  
0.033 inch to 0.112 inch in thickness

## **PART 2 - PRODUCTS**

### **2.1 ACOUSTICAL INSULATION**

- A. Mineral Fiber: ASTM C553, Type II, flexible, or Type III, semirigid (4.5 pound nominal density).
- B. Thickness as shown; of widths and lengths to fit tight against framing.

### **2.2 SOUND DEADENING BOARD**

- A. Mineral Fiber Board: ASTM C612, Class I, 1/2-inch thick
- B. Perlite Board: ASTM C728, 1/2-inch thick.

### **2.3. FASTENERS**

- A. Staples or Nails: Fed. Spec. F-N-105, zinc-coated, size and type best suited for purpose.
- B. Screws: ASTM C954, size and length best suited for purpose with washer not less than two inches in diameter.
- C. Impaling Pins: Steel pins with head not less than two inches in diameter with adhesive for anchorage to substrate. Provide impaling pins of length to extend beyond insulation and retain cap washer when washer is placed on the pin.

### **2.4 ADHESIVE**

- A. As recommended by the manufacturer of the insulation.
- B. Asphalt: ASTM D312, Type III or IV.
- C. Mortar: ASTM C270, Type 0.

### **2.5. TAPE**

- A. Pressure sensitive adhesive on one face.
- B. Perm rating of not more 0.50.

## **PART 3 - EXECUTION**

### **3.1 INSTALLATION - GENERAL**

- A. Install insulation with the vapor barrier facing the heated side, unless specified otherwise.

- B. Install rigid insulating units with joints close and flush, in regular courses and with cross joints broken.
- C. Install batt or blanket insulation with tight joints and filling framing void completely. Seal cuts, tears, and unlapped joints with tape.
- D. Fit insulation tight against adjoining construction and penetrations, unless specified otherwise.

**3.1 INSTALLATION OF ACOUSTICAL INSULATION:**

- A. Fasten blanket insulation between metal studs and wall furring with continuous pressure sensitive tape along edges or adhesive.
- B. Pack insulation around door frames and windows and in cracks, expansion joints, control joints, door soffits and other voids. Pack behind outlets, around pipes, ducts, and services encased in wall or partition. Hold insulation in place with pressure sensitive tape or adhesive.
- C. Do not compress insulation below required thickness except where embedded items prevent required thickness.
- D. Where acoustical insulation is installed above suspended ceilings install blanket at right angles to the main runners or framing. Extend insulation over wall insulation systems not extending to structure above.
- E. Where sound deadening board is shown, secure with adhesive to masonry or concrete walls and with screws to metal or wood framing. Secure sufficiently in place until subsequent cover is installed. Seal all cracks with caulking.

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**SECTION 07 22 00**

**ROOF AND DECK INSULATION**

**PART 1 - GENERAL**

**1.1 DESCRIPTION**

- A. Furnish and install rigid insulation (tapered and even) as indicated on the drawings and specified.

**1.2 RELATED WORK**

- A. Rigid, and batt or blanket insulation not part of roofing system: Section 07 21 13, THERMAL INSULATION.
- B. Sheet metal components and wind uplift requirements for roof-edge design: Section 07 60 00, FLASHING AND SHEET METAL.

**1.3 APPLICABLE PUBLICATIONS**

- A. Publications listed below form a part of this specification to the extent referenced. Publications are referenced in the text by the basic designation only. Editions of applicable publications current on date of issue of bidding documents apply unless otherwise indicated.
- B. American Society of Heating, Refrigeration and Air Conditioning (ASHRAE):
  - 90.1-07.....Energy Standard for Buildings Except Low-Rise Residential Buildings
- C. ASTM International (ASTM):
  - C208-08.....Cellulosic Fiber Insulating Board
  - C552-07.....Cellular Glass Thermal Insulation
  - C726-05.....Mineral Fiber Roof Insulation Board
  - C728-05.....Perlite Thermal Insulation Board
  - C1177/C1177M-08...Standard Specification for Glass Mat Gypsum Substrate for Use as Sheathing
  - C1278/C1278M-07...Standard Specification for Fiber-Reinforced Gypsum Panel
  - C1289-10.....Faced Rigid Cellular Polyisocyanurate Thermal Insulation Board
  - C1396/C1396M-09...Standard Specification for Gypsum Board

- D41-05.....Asphalt Primer Used in Roofing, Dampproofing,  
and Waterproofing
- D312-06.....Asphalt Used in Roofing
- D1970-09.....Standard Specification for Self-Adhering  
Polymer Modified Bituminous Sheet Materials  
Used as Steep Roofing Underlayment for Ice Dam  
Protection
- D2178-04.....Asphalt Glass Felt Used in Roofing and  
Waterproofing
- D2822-05.....Asphalt Roof Cement
- D4586-07.....Standard Specification for Asphalt Roof Cement,  
Asbestos-Free
- E84-09.....Standard Test Method for Surface Burning  
Characteristics of Building Material
- F1667-05.....Driven Fasteners: Nails, Spikes, and Staples
- D. FM Approvals: RoofNav Approved Roofing Assemblies and Products.
- 4450-89.....Approved Standard for Class 1 Insulated Steel  
Deck Roofs
- 4470-10.....Approved Standard for Class 1 Roof Coverings
- 1-28-09.....Loss Prevention Data Sheet: Design Wind Loads.
- 1-29-09.....Loss Prevention Data Sheet: Above-Deck Roof  
Components
- 1-49-09.....Loss Prevention Data Sheet: Perimeter Flashing
- E. National Roofing Contractors Association: Roofing and  
Waterproofing Manual
- F. U.S. Department of Agriculture (USDA): USDA BioPreferred Catalog,  
[www.biopreferred.gov](http://www.biopreferred.gov)
- G. Underwriters Laboratories, Inc. (UL): Fire Resistance Directory  
(2009)
- H. U.S. Department of Commerce National Institute of Standards and  
Technology (NIST):
- DOC PS 1-09.....U.S. Product Standard for Construction and  
Industrial Plywood
- DOC PS 2-04.....Performance Standard for Wood-Based Structural-  
Use Panels.

#### **1.4 PERFORMANCE REQUIREMENTS**

- A. Thermal Performance: Provide roof insulation meeting minimum overall R-value at any location of 10, not less than the thickness required.
- B. FM Approvals: Provide roof insulation complying with requirements in FM Approvals 4450 and 4470 as part of specified roofing system, listed in FM Approvals "RoofNav" as part of roofing system meeting Fire/Windstorm Classification in Division 07 roofing section.

#### **1.5 QUALITY CONTROL**

- A. Unless specified otherwise, comply with the recommendations of the NRCA "Roofing and Waterproofing Manual" applicable to insulation for storage, handling, and application.
- B. Requirements of applicable FM Approval for specified roofing system insulation attachment.
- C. Bio-Based Materials: Where applicable, provide products designated by USDA and meeting or exceeding USDA recommendations for bio-based content, and products meeting Rapidly Renewable Materials and certified sustainable wood content definitions; refer to [www.biopreferred.gov](http://www.biopreferred.gov).

#### **1.6 SUBMITTALS**

- A. Submit in accordance with Section 01 33 23, SHOP DRAWINGS, PRODUCT DATA, AND SAMPLES.
- B. Product Data:
  - 1. Adhesive materials, each type.
  - 2. Roofing cement, each type.
  - 3. Roof insulation, each type.
  - 4. Substrate board, each type.
  - 5. Cover board, each type.
  - 6. Fastening requirements.
  - 7. Insulation span data for flutes of metal decks.
- C. LEED or Federal Sustainable Design Submittals:
  - 1. Product Data for Credit IEQ 4.1: For adhesives and sealants used inside the weatherproofing system, documentation including printed statement of VOC content.



2. Product Data for Credit MR 4: For products having recycled content, documentation indicating percentages by weight of postconsumer and preconsumer recycled content. Include statement indicating cost for each product having recycled content.
  3. Product Data for Federally-Mandated Bio-Based Materials: For roof materials, indicating USDA designation and compliance with definitions for bio-based products, Rapidly Renewable Materials, and certified sustainable wood content.
- D. Shop Drawings: Include plans, sections, details, and attachments.
1. Nailers, cants, and terminations.
  2. Layout of insulation showing slopes, tapers, penetration, and edge conditions.
- E. Samples:
1. Roof insulation, each type.
  2. Nails and fasteners, each type.
- F. Certificates:
1. Indicating type, thermal conductance, and minimum and average thickness of insulation.
  2. Indicating materials and method of application of insulation system meet the requirements of FM Approvals for specified roofing system.
- G. Laboratory Test Reports: Thermal values of insulation products.
- H. Layout of tapered roof system showing units required.
- I. Documentation of supervisors' and inspectors' qualifications.

#### **1.7 DELIVERY, STORAGE AND MARKING**

- A. Comply with the recommendations of the NRCA "Roofing and Waterproofing Manual" applicable to built-up roofing for storage, handling and installation requirements.

#### **1.8 QUALITY ASSURANCE:**

- A. Roof insulation on combustible or steel decks shall have a flame spread rating not greater than 75 and a smoke developed rating not greater than 150, exclusive of covering, when tested in accordance with ASTM E84, or shall have successfully passed FM Approvals 4450.
1. Insulation bearing the UL label and listed in the UL Building Materials Directory as meeting the flame spread

and smoke developed ratings will be accepted in-lieu-of  
copies of test reports.

2. Compliance with flame spread and smoke developed ratings will not be required when insulation has been tested as part of a roof construction assembly of the particular type used for this project and the construction is listed as fire-classified in the UL Building Materials Directory or listed as Class I roof deck construction in the FM Approvals "RoofNav."
3. Insulation tested as part of a roof construction assembly shall bear UL or FM labels attesting to the ratings specified herein.

## **PART 2 - PRODUCTS**

### **2.1 ADHESIVE MATERIALS**

- A. Adhesive Materials, General: Adhesive and sealant materials recommended by roofing system manufacturer for intended use, identical to materials utilized in approved listed roofing system, and compatible with roofing membrane.
  1. Liquid-type adhesive materials shall comply with VOC limits of authorities having jurisdiction.
  2. Adhesives and sealants that are not on the exterior side of weather barrier shall comply with the following limits for VOC content when calculated according to 40 CFR 59, Subpart D (EPA Method 24):
    - a. Plastic Foam Adhesives: 50 g/L.
    - b. Multipurpose Construction Adhesives: 70 g/L.
    - c. Fiberglass Adhesives: 80 g/L.
    - d. Contact Adhesives: 80 g/L.
    - e. Other Adhesives: 250 g/L.
    - f. Nonmembrane Roof Sealants: 300 g/L.
    - g. Sealant Primers for Nonporous Substrates: 250 g/L.
    - h. Sealant Primers for Porous Substrates: 775 g/L.
- B. Primer: ASTM D41.
- C. Asphalt: ASTM D312, Type III or IV for vapor retarders and insulation.
- D. Modified Asphaltic Insulation Adhesive: Insulation manufacturer's recommended modified asphaltic, asbestos-free,

cold-applied adhesive formulated to attach roof insulation to substrate or to another insulation layer.

- E. Bead-Applied Urethane Insulation Adhesive: Insulation manufacturer's recommended bead-applied, low-rise, one- or multicomponent urethane adhesive formulated to attach roof insulation to substrate or to another insulation layer.
- F. Full-Spread Applied Urethane Insulation Adhesive: Insulation manufacturer's recommended spray-applied, low-rise, two-component urethane adhesive formulated to attach roof insulation to substrate or to another insulation layer.
- G. Roof Cement: Asbestos free, ASTM D2822, Type I or Type II, ; or, D4586, Type I or Type II.

## **2.2 ROOF AND DECK INSULATION**

- A. Roof and Deck Insulation, General: Preformed roof insulation boards approved by roofing manufacturer and listed as component of FM Approvals-approved roofing system.
- B. Polyisocyanurate Board Insulation: ASTM C1289, Type II, Class 1, Grade 2, felt or glass-fiber mat facer on both major surfaces.
- C. Cellular Glass Board Insulation: ASTM C552, Type IV, kraft-paper sheet faced.
- D. Perlite Board Insulation: ASTM C728, expanded perlite, cellulosic fibers, binders, and waterproofing agents with top surface seal coated.
- E. Tapered Roof Insulation System:
  - 1. Fabricate of mineral fiberboard, polyisocyanurate, perlite board, or cellular glass. Use only one insulation material for tapered sections. Use only factory-tapered insulation.
  - 2. Cut to provide high and low points with crickets and slopes as shown.
  - 3. Minimum thickness of tapered sections; 38 mm (1-1/2 inch).
  - 4. Minimum slope 1:48 (1/4 inch per 12 inches).

## **2.3 INSULATION ACCESSORIES**

- A. Glass (Felt): ASTM D2178, Type VI, heavy duty ply sheet.
- B. Cants and Tapered Edge Strips:
  - 1. Wood Cant Strips: Provide pressure treated douglas fir.
  - 2. Insulation Cant Strips: ASTM C208, Type II, Grade 1, cellulosic-fiber insulation board.

3. Tapered Edge Strips: 1:12 (one inch per foot), from 0 mm (0 inches), 300 mm to 450 mm (12 inches to 18 inches) wide.
  - a. Cellulosic Fiberboard: ASTM C208.
  - b. Mineral Fiberboard: ASTM C726.
  - c. Perlite Board: ASTM C728.
- C. Vapor Retarder:
  1. Glass-Fiber Felts: ASTM D2178, Type IV, asphalt impregnated.
  2. Self-Adhering Sheet Vapor Retarder: ASTM D1970, minimum of 1.0-mm- (40-mil-) thick, polyethylene film laminated to layer of rubberized asphalt adhesive, or 0.76- to 1.0-mm- (30- to 40-mil-) thick, polyethylene film laminated to layer of butyl rubber adhesive; maximum permeance rating of 6 ng/Pa x s x sq. m (0.1 perm).
- D. Substrate Board: Provide either of the following as required for the proper fire ratings.
  1. Type X gypsum board, ASTM C1396/C1396M, 16 mm (5/8 inch) thick.
  2. Glass-mat, water-resistant gypsum substrate, ASTM C1177/C1177M, 13 mm (1/2 inch) Type X, thick, factory primed.
  3. Perlite Board Insulation, ASTM C728, (19 mm (3/4 inch) thick.
- E. Cover Board: Provide either of the following as required for the proper fire rating.
  1. Glass-mat, water-resistant gypsum substrate, ASTM C1177/C1177M, 6 mm (1/4 inch) thick, factory primed.
  2. Cellulosic-fiber-reinforced, water-resistant gypsum substrate, ASTM C1278/C1278M, 6 mm (1/4 inch).
  3. Oriented Strand Board, DOC PS 2, Exposure 1, 11 mm (7/16 inch) thick.

## **2.4 FASTENERS**

- A. Fasteners: Factory-coated steel fasteners and metal or plastic plates complying with FM Approvals 4470, designed for fastening substrate board to roof deck.
- B. Staples and Nails: ASTM F1667. Type as designated for item anchored and for substrate.

### **PART 3 - EXECUTION**

#### **3.1 EXAMINATION**

- A. Comply with requirements of Division 07 roofing section.

#### **3.2 PREPARATION**

- A. Comply with requirements of Division 07 roofing section.

#### **3.3 SUBSTRATE BOARD INSTALLATION**

- A. Fasten substrate board to top flanges of steel deck to resist uplift pressures according to roofing system manufacturer's instructions and requirements of FM Approvals listing for specified roofing system.

#### **3.4 VAPOR RETARDER INSTALLATION**

- A. General:
  - 1. Install continuous vapor retarder on roof decks where indicated.
  - 2. At vertical surfaces, turn up vapor retarder to top of insulation or base flashing.
  - 3. At all pipes, walls, and similar penetrations through vapor retarder, seal openings with roof cement to prevent moisture entry from below.
  - 4. Seal penetrations with roof cement.
- B. Steel Deck:
  - 1. Material and method of application of roofing systems used on metal decks shall meet the requirements of FM Approvals for Class I-A Insulated Steel Roof Deck.
  - 2. Attach substrate board and subsequent components to meet the requirements of FM Approval's "RoofNav" listing for specified system meeting Fire/Windstorm Classification indicated in Division 07 roofing section.
  - 3. Locate the long dimension edge joints to have solid bearing on top of decking ribs; do not cantilever over rib openings or flutes.

#### **3.5 RIGID INSULATION INSTALLATION**

- A. Insulation Installation, General:
  - 1. Install roof insulation in accordance with roofing system manufacturer's written instructions.

2. Install roof insulation in accordance with requirements of FM Approval's Listing for specified roofing system.
  3. Base Sheet: Where required by roofing system, install one lapped base sheet specified in Division 07 roofing section by mechanically fastening to roofing substrate prior to installation of insulation.
  4. Cant Strips: Install preformed insulation cant strips or wood cant strips at junctures of roofing system with vertical construction.
  5. Use same insulation as existing for roof repair and alterations unless specified otherwise.
- B. Insulation Thickness:
1. Thickness of roof insulation shown on drawings is nominal. Actual thickness shall provide the average thermal resistance "R" value of not less than that specified in Performance Requirements Article.
  2. Insulation on Metal Decks: Provide minimum thickness of insulation for metal decks recommended by the insulation manufacturer to span rib opening (flute size) of metal deck used. Support edges of insulation on metal deck ribs.
  3. When thickness of insulation to be used is more or less than that shown on the drawings, make adjustments in the alignment and location of roof drains, flashing, gravel stops, fascias and similar items at no additional cost to the Government.
  4. Where tapered insulation is used, the thickness of the insulation at high points and roof edges shall be as shown on the drawings; the thickness at the low point (drains) shall be not less than 38 mm (1-1/2 inches).
  5. Use not less than two layers of insulation when insulation is 68 mm (2.7 inch) or more in thickness unless specified otherwise. Stagger joints minimum 150 mm (6 inches).
- C. Lay insulating units with close joints, in regular courses and with cross joints broken. When laid in more than one layer, break joints of succeeding layers of roof insulation with those in preceding layer.
- D. Lay units with long dimension perpendicular to the rolled (longitudinal) direction of the roofing felt.
- E. Seal all cut edges at penetrations and at edges against blocking with bitumen or roof cement.
- F. Cut to fit tight against blocking or penetrations.

G. Cover all insulation installed on the same day; comply with temporary protection requirements of Division 07 roofing section.

H. Installation Method:

1. Adhered Insulation:

- a. Prime substrate as required.
- b. Set each layer of insulation firmly in solid mopping of hot asphalt.
- c. Set each layer of insulation firmly in ribbons of bead-applied insulation adhesive.
- d. Set each layer of insulation firmly in uniform application of full-spread insulation adhesive.

2. Mechanically Fastened Insulation:

- a. Fasten insulation in accordance with FM Approval's "RoofNav" requirement in Division 07 roofing section.
- b. Fasten insulation to resist uplift pressures specified in Division 07 roofing section.

3. Mechanically Fastened and Adhered Insulation:

- a. Fasten first layer of insulation according to "Mechanically Fastened Insulation" requirements.
- b. Fasten each subsequent layer of insulation according to "Adhered Insulation" requirements.

4. Cover Board: Install cover boards over insulation with long joints in continuous straight lines with staggered end joints. Offset cover board joints from insulation joints minimum 150 mm (6 inches). Fasten cover boards according to "Adhered Insulation" or "Mechanically Fastened Insulation" requirements.

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**SECTION 07 41 72**

**MATCH EXISTING METAL WALL PANELS**

**PART 1 - GENERAL**

**1.1 SUMMARY**

- A. Provide metal wall panels that match the existing metal wall panels, or after weathering will match the existing panels as closely as practicable.

**1.2 SUBMITTALS**

- A. Shop Drawings: Submit Shop Drawings, indicating panel and fastener layout, joints, corners, supports, anchorages, trim, flashing, closures and special details.
- B. Product Data:
  - 1. Submit catalog cuts, technical data sheets and descriptive literature on sheets, panels, accessories and fasteners.
  - 2. Submit complete installation recommendations.
- C. Material Samples: Submit Samples showing full range of manufacturer's standard colors, minimum 3 inch x 5 inch size.

**1.3 QUALITY ASSURANCE**

- A. Mockups: Build mockups to verify selections made, compare new to existing panels and demonstrate aesthetic effects, and qualities of materials and execution.
  - 1. Build mockup of typical corner wall panel as shown on Drawings; approximately 48 inches (1200 mm) square by full thickness, including supports, attachments, and accessories.
  - 2. Approval of mockups is for other material and construction qualities specifically approved by Architect in writing.
  - 3. Approval of mockups constitute approval of deviations from the Contract Documents containing in mockups unless such deviations are specifically approved by Architect in writing.
  - 4. Approved mockups may become part of the completed Work if approved by the Architect.
- B. Comply with the following as a minimum requirement:
  - 1. AISC - Steel Construction Manual.
  - 2. AISI - Cold Form Steel Design Manual.
  - 3. ASTM A 653 - Steel Sheet, Zinc Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process.
  - 4. ASTM A 792 - Steel Sheet, 55% Aluminum-Zinc Alloy Coated by the Hot-Dip Process.



- 5. ASTM A 924 - Steel Sheet, Metallic- Coated by the Hot-Dip Process.
- 6. SMACNA - Architectural Sheet Metal Manual.
- C. Qualifications of Installer: Minimum 2 years experience in the installation of roof and wall panel systems of similar complexity as required by this section.
- D. Trained and certified by manufacturer to install the specified products.

#### **1.4 DELIVERY, STORAGE AND HANDLING**

- A. Delivery: Deliver panels to the Project site without damage.
- B. Storage: Store materials and accessories above ground on skidded platforms. Store under waterproof covering. Provide proper ventilation to panels to prevent condensation build-up.
- C. Handling: The bending, warping, or twisting of panels is not permitted during unloading, storing or installation.

#### **1.5 WARRANTY**

- A. Manufacturer shall provide a 20 year material warranty.
- B. Installer shall provide a 5 year labor warranty.

### **PART 2 - PRODUCTS**

#### **2.1 MATCH EXISTING METAL WALL PANELS**

- A. Subject to compliance with specified requirements, wall panels shall be the product of the manufacturer of the original manufacturer, or one of the following:
  - 1. Berridge Manufacturing Company.
  - 2. IMETCO.
  - 3. AEP-Span.
  - 4. Peterson Aluminum Corporation.
  - 5. Una-Clad Copper Sales, Inc.
  - 6. McElroy Metal Inc.

#### **2.2 MISCELLANEOUS METAL FRAMING**

- A. Steel Sheet components, General: complying with ASTM C 645 requirements for metal and with ASTM A 653, G60 (Z180), hot-dip galvanized or manufacturer's standard corrosion-resistant zinc coating.
- B. Subgirts: C- or Z-shaped sections fabricated from 0.598-inch (1.5-mm) bare steel thickness, shop-painted, cold-formed, metallic-coated steel sheet.
- C. Zee Clips: 0.079-inch (2.0-mm) bare steel thickness, cold-formed, galvanized steel sheet.
- D. Base or Sill Angles and Channels: 0.079-inch (2.0-mm) bare steel thickness, cold-formed, galvanized steel sheet.
- E. Hat-Shaped, Rigid Furring Channels: ASTM C 645.

1. Minimum Base Metal Thickness: 0.0179 inch (0.45 mm).
  2. Depth: 7/8 inch (22 mm).
- F. Cold-Rolled Furring Channels: 0.0538-inch (1.37-mm) bare steel thickness, with minimum 1/2-inch (13-mm) wide flange.
1. Depth: 3/4 inch (19 mm).
  2. Furring Brackets: Adjustable, corrugated-edge type of steel sheet with minimum bare steel thickness of 0.0312 inch (0.79 mm).
  3. Tie Wire: ASTM A 641/A 641M, Class 1 zinc coating, soft temper, 0.0625-inch (1.59-mm) diameter wire, or double strand of 0.0475-inch (1.21-mm) diameter wire.
- G. Z-Shaped Furring: With slotted or nonslotted web, face flange of 1-1/4 inches (32 mm), wall attachment flange of 7/8 inch (22 mm), minimum bare metal thickness of 0.0179 inch (0.45 mm), and depth required to fit insulation thickness indicated.
- H. Fasteners for Metal Framing: Of type, material, size, corrosion resistance, holding power, and other properties required to fasten steel members to substrates.

## **2.3 FABRICATION**

- A. Fabricate trim, flashing and accessories to match the existing profiles.
- B. Fabricate trim and flashing from same material as the wall panel.

## **PART 3 - EXECUTION**

### **3.1 MATCH EXISTING WALL PANEL INSTALLATION**

- A. General: Install attachment system required to support wall panels and to provide a complete weathertight wall system, including subgirts, perimeter extrusions, tracks, drainage channels, panel clips and anchor channels.
  1. Match the existing workmanship as closely as practicable.
  2. Include attachment to supports, panel-to-panel joinery, panel-to-dissimilar-material joinery, and panel-system joint seals.
  3. Seal horizontal and vertical joints between adjacent panels with manufacturer's standard gaskets.
- B. Install accessories with positive anchorage to building and weathertight mounting and provide for thermal expansion. Coordinate installation with flashings and other components.
- C. Flashing and Trim: Comply with performance requirements, manufacturer's written installation instructions, and SMACNA's "Architectural sheet Metal Manual." Provide concealed fasteners where possible, and set units true to line and level as indicated. Install work with laps, joints, and seams that will be permanently watertight and weather resistant.

1. Install exposed flashing and trim that is without excessive oil canning, buckling, and tool marks and that is true to line and levels indicated, with exposed edges folded back to form hems. Install sheet metal flashing and trim to fit substrates and to result in waterproof and weather-resistant performance.
2. Expansion Provisions: Provide for thermal expansion of exposed flashing and trim. Space movement joints at a maximum of 10 feet (3 m) with no joints allowed within 24 inches (600 mm) of corner or intersection. Where lapped or bayonet-type expansion provisions cannot be used or would not be sufficiently weather resistant and waterproof, form expansion joints of intermeshing hooked flanges, not less than 1 inch (25 mm) deep, filled with mastic sealant (concealed within joints).

### **3.2 FIELD QUALITY CONTROL**

- A. Testing Agency: the Contractor shall engage and pay a qualified independent testing and inspecting agency to perform field tests and inspection and prepare test reports.
- B. Water Penetration: Test areas of installed wall panels for compliance with system performance requirements according to ASTM E 1105 at minimum differential pressure of 20 percent of inward-acting, wind-load design pressure as defined by ASCE 7, "Minimum Design Loads for Buildings and Other Structures," but not less than 6.24 lbf/sq. ft. (300 Pa).
- C. Water-Spray Test: After completing the installation, test the assembly for water penetration according to AAMA 501.2 in a 2-bay area directed by Architect.
- D. Remove and replace applications of metal wall panels where inspections indicate that they do not comply with specified requirements.
- E. Additional tests and inspections, at Contractor's expense, will be performed to determine compliance of replaced or additional work with specified requirements.

### **3.3 CLEANING AND PROTECTION**

- A. Remove temporary protective coverings and strippable films, if any, as metal wall panels are installed, unless otherwise indicated in manufacturer's written installation instructions. On completion of metal wall panel installation, clean finished surfaces as recommended by metal wall panel manufacturer. Maintain in a clean conditions during construction.
- B. After metal wall panel installation, clear weep holes and drainage channels of obstructions, dirt, and sealant.
- C. Replace metal wall panels that have been damaged or have deteriorated beyond successful repair by finish touchup or similar minor repair procedures.

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**SECTION 07 60 50**

**FLASHING AND SHEET METAL**

**PART 1 - GENERAL**

**1.1 DESCRIPTION**

This section includes materials and workmanship for flashing and sheet metal work indicated on the drawings.

**1.2 RELATED WORK**

- A. Sealant compound and methods of preparation: Section 07920, SEALANT AND CAULKING.

**1.3 SUBMITTALS**

- A. In accordance with Section 01340, SAMPLES AND SHOP DRAWINGS, submit shop drawings for all sheet metal and flashing.

**1.4 APPLICABLE PUBLICATIONS**

- A. The publications listed below form a part of this specification to the extent referenced. The publications are referenced in the text by the basic designation only.
- B. Federal Specification (Fed. Spec):
  - 0-F-506C..... Flux, Soldering; Paste and Liquid
  - FF-S-325..... Shield, Expansion; Nail, Expansion; And Nail, Sheared, Sawed, Or Machine Edges, (Plate, Bar Sheet, And Strip)
  - QQ-S-571E(2)..... Solder; Tin Alloy; Tin-lead Alloy; And Lead Alloy
  - QQ-S-766C..... Steel Plates, Sheets, And Strip-Corrosion Resisting
  - QQ-S-775E..... Steel Sheet, Carbon, Zinc-coated
- C. American Society for Testing and Materials (ASTM):
- D. Sheet Metal and Air Conditioning Contractors National Association (SMACNA):
  - Architectural Sheet Metal Manual (Third Edition, 1979).

**PART 2 - PRODUCTS**

**2.1 MATERIALS**

- A. Flux: Fed. Spec. 0-F-506, Type I, Form A or B, and Type II, Form A or B.
- B. Solder: Fed. Spec. QQ-S-571; flux type and alloy composition as required for use with metals to be soldered.
- C. Expansion Shields: Fed. Spec. FF-S-325, Group II or III.

D. Galvanized Steel: Fed. Spec. QQ-S-775, Type I, Class d.

## **2.2 FABRICATION, GENERAL**

A. Jointing: Surfaces of sheet metal work required to be soldered shall be treated in accordance with metal producers recommendations. Completely remove acid and flux after soldering is completed.

1. Joints shall conform to following requirements:

- a. Flat-lock joints shall finish not less than 3/4-inch wide.
- b. Lap joints subject to stress shall finish not less than one inch wide and shall be soldered and riveted.
- c. Unsoldered lap joints shall finish not less than four inches wide.

2. Flat and lap joints shall be made in direction of flow.

B. Expansion and Contraction Joints: Provide expansion and contraction joints, fabricated in accordance with the Architectural Sheet Metal Manual recommendations for expansion and contraction of sheet metalwork in continuous runs. Expansion and contraction joints shall be slip-type or loose locked, and filled with polyurethane polymer, if joint cover is minimum 3" needs to be riveted, then one side of the joint needs to have longated slotted holes for any movement. Joint covers shall be same thickness material as sheet metal served.

C. Fastenings:

- 1. Direct nailing of sheet metal shall be confined to strips 12 inches or less wide. Flashings shall be nailed along one edge only. Nails shall be spaced not over four inches on center. Nails shall have large flat heads and needle points, and shall penetrate nailer at least 7/8-inch. Nails exposed to the weather shall have neoprene washers.
- 2. Install bolts, rivets, and screws where indicated, specified or required in accordance with the SMACNA Sheet Metal Manual. Rivets shall be spaced at three inches on centers in two rows in a staggered position.

D. Cleats: Provide cleats to secure flashings and sheet metal work over 6" inches wide and elsewhere specified or required. Cleats shall be evenly spaced not over 12 inches on centers. Secure one end of cleat over nail heads. Lock other end into the seam. Pretin cleats for soldered seams.

- 1. Cleats shall be formed of same metal and weights as the sheet metal being installed.

E. Drips: Form drips at lower edge of sheet metal counter-flashings by folding edge back and bending out 45 degrees from vertical to carry water away from the wall. Form drip to provide hook to engage cleat or edge strip for fastening.

### **2.3 BASE FLASHING**

- A. Metal base flashing for use at vertical surfaces intersecting built-up roofing (without cant strips) shall be either copper, stainless steel, or copper clad stainless steel. Flashing shall be either 20 ounce copper, 0.018 inch stainless steel, or 0.018 inch thick copper clad stainless steel.

## **PART 3 - EXECUTION**

### **3.1 INSTALLATION**

Install flashing and sheet metal items as shown in Sheet Metal and Air Conditioning Contractors National Association, Inc., publication, ARCHITECTURAL SHEET METAL MANUAL, except as otherwise shown or specified.

### **3.2 SURFACE PREPARATION**

- A. Apply sheet metal and other flashing material to surfaces which are smooth, sound, clean, dry and free from defects that might affect the application.
- B. Remove projections which would puncture the materials and fill holes and depressions with material compatible with the substrate. Cover holes or cracks in wood wider than 1/4-inch with sheet metal compatible with the flashing material used.

### **3.3 FLASHING, GENERAL**

- A. Install flashing at intersections of roofs with vertical surfaces, at projections through roofs, where shown and specified, and where required to provide watertight construction.
- B. Install counter-flashing in conjunction with all base flashings, except as otherwise specified or shown.
- C. Install metal base flashings, gravel stops, pitch pockets and other metal flashings and accessories having flanges extending out on top of the built-up roofing before final bituminous coat and roof aggregate is applied. Set flanges in heavy trowel coat of plastic cement and nail through flanges into wood nailers.

### **3.4 PIPE FLASHING**

- A. Where vent and other pipes, penetrate built-up roofing, install metal flashing consisting of a sleeve with flange and seal with a polyurethane polymer.

### **3.5 INSPECTION**

- A. Cleat use to secure flashing must be inspected before flashing is applied.
- B. Flashing for any openings must be inspected before lathing, metal siding, or membrane goes on.
- C. Joint must be inspected before any paint is applied.

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**SECTION 07 71 00**

**ROOF SPECIALTIES**

**PART 1 - GENERAL**

**1.1 DESCRIPTION**

This section specifies roof hatches; equipment supports; gravity ventilators; and metal grating roof walkway system.

**1.2 RELATED WORK**

- A. Color and texture of finish: Section 09 06 00, SCHEDULE FOR FINISHES.
- B. Sealant material and installation: Section 07 92 00, JOINT SEALANTS.
- C. General insulation: Section 07 21 13, THERMAL INSULATION.
- D. Rigid insulations for roofing: Section 07 22 00, ROOF AND DECK INSULATION

**1.3 QUALITY CONTROL**

- A. All roof accessories shall be the products of manufacturers regularly engaged in producing the kinds of products specified.
- B. Each accessory type shall be the same and be made by the same manufacturer.
- C. Each accessory shall be completely assembled to the greatest extent possible before delivery to the site.

**1.4 SUBMITTALS**

- A. Submit in accordance with Section 01 33 23, SHOP DRAWINGS, PRODUCT DATA, AND SAMPLES.
- B. Samples: Representative sample panel of color anodized aluminum not less than 100 mm X 100 mm (four by four inches), except extrusions shall be a width not less than section to be used. Sample shall show coating with integral color and texture and shall include manufacturer's identifying label.
- C. Shop Drawings: Each item specified showing design, details of construction, installation and fastenings.
- D. Manufacturer's Literature and Data: Each item specified.
- E. Certificates: Stating that aluminum has been given specified thickness of anodizing.

**1.5 APPLICABLE PUBLICATIONS**

- A. The publications listed below form a part of this specification to the extent referenced. The publications are referenced in the text by the basic designation only.

- B. Federal Specifications (Fed. Spec.):  
RR-G-1602D.....Grating, Metal, Other Than Bar Type (Floor,  
Except for Naval Vessels)
- C. American Society for Testing and Material (ASTM):  
A653/A653M-02.....Steel Sheet, Zinc-Coated (Galvanized) or Zinc-  
Iron Alloy-Coated (Galvannealed) By the Hot-Dip  
Process  
  
B209/209M-02.....Aluminum and Aluminum Alloy-Sheet and Plate  
  
B221/221M-02.....Aluminum-Alloy Extruded Bars, Rods, Wire,  
Shapes, and Tubes  
  
C612-00.....Mineral Fiber Block and Board Thermal Insulation  
  
D1187-97.....Asphalt-Base Emulsions for Use as Protective  
Coatings for Metal
- D. National Association of Architectural Metal Manufacturers (NAAMM):  
AMP 500 Series....Metal Finishes Manual
- E. American Architectural Manufacturers Association (AAMA):  
605-98.....High Performance Organic Coatings on  
Architectural Extrusions and Panels.

## **PART 2 - PRODUCTS**

### **2.1 MATERIALS**

- A. Aluminum, Extruded: ASTM B221/B221M.
- B. Aluminum Sheet: ASTM B209/B209M.
- C. Galvanized Sheet Steel: ASTM A526/A526M; G-90 coating.
- D. Metal Grating for Roof Walkway: Fed. Spec. RR-G-1602.

### **2.2 ROOF HATCH (SCUTTLE)**

- A. Fabricate from aluminum with mill finish.
- B. Curb and Cover:
  - 1. Exterior facing: Minimum 2.3 mm (0.09 inch) thick sheet aluminum.
  - 2. Interior facing: Minimum 1 mm (0.04 inch) thick sheet aluminum.
  - 3. Minimum of 25 mm (one inch) thick mineral fiber insulation between facings of cover and over exterior face of curb.



4. Form exterior curb facing with an integral three inch wide roof flange and cap flashing minimum 2.3 mm (0.09 inch) thick sheet aluminum.
5. Make curb 300 mm (12 inches).
6. Form cover to lap curb and cap flashing.
7. Size opening as shown.

C. Hardware:

1. Provide spring snap latch with inside and outside operating handles and padlock hasp on inside. Provide two snap latches when hinge side is over 2100 mm (7 feet) long.
2. Provide pintle hinges.
3. Provide automatic hold open and operating arm with enclosed torsion or compression spring lifting mechanism.
4. Covers shall automatically lock in the open position at not less than 70 degrees.
5. Provide weatherstripping at cover closure.
6. Galvanize all hardware items.

D. Assembly:

1. Completely shop assemble roof scuttle.
2. Fully weld all joints exposed to the weather and built into the roofing.
3. Finish weld smooth where exposed.
4. Operation with minimum force to open and close.

## 2.3 EQUIPMENT SUPPORTS

- A. Fabricate equipment supports from 1.3 mm (0.0516 inch) thick galvanized steel.
- B. Form exterior curb with integral base, and deck closures for curbs installed on steel decking.
- C. Use galvanized steel liners for curbs having inside dimension over 305 mm (12 inches).
- D. Fabricate curb with a minimum height of 200 mm (8 inches) above roof surface.
- E. Attach preservative treated wood nailers to top of curb. Use 50 mm (2 inch) by 50 mm (2 inch) minimum nominal size on curb with openings and 50 mm (2 inch) thick, width of curb up to 300 mm (12 inches) on equipment support curbs.

- F. Make size of supports suit size of equipment furnished, with height as shown on drawings, but not less than 200 mm (8 inches) above roof surface.

#### **2.4 LOW SILHOUETTE GRAVITY VENTILATORS**

- A. Fabricate base of 1 mm (0.04 inch) thick aluminum, and vent of 0.8 mm (0.032 inch) thick aluminum. Height not to exceed 300 mm (12 inches) above top of roof curb. Design ventilators to withstand 137 Km (85 miles) per hour wind velocity. Provide ventilators with a removable 18 by 18 mesh aluminum wire cloth insect screen.
- B. Construct damper of the same material as the ventilator and design to completely close opening or remain wide open. Hold damper in closed position by a brass chain and catch. Extend chains 300 mm (12 inches) below and engage catch when damper is closed.

#### **2.5 METAL GRATING ROOF WALKWAY SYSTEM**

- A. Provide metal grating roof walkway system consisting of prefabricated pans, of 14 gauge, galvanized (G-90 Coating) steel grating with slip resistant surface.
- B. Grating units shall be in 600 mm (two foot) widths and in 3000 to 3600 mm (10 to 12 foot long) sections as required.
- C. Provide complete with support framing, brackets, connectors, nosings and other accessories as required for complete roof walkway system. Include support stands at minimum 1500 mm (five feet) on center to hold planks a minimum of nine inches above roof surface.
- D. Include step units, nosings framing and connectors to provide changes in elevation as required.
- E. Provide neoprene rubber pads having a shore A hardness of 80 to 90-Durometer under each support, or bearing surface.

#### **2.6 FINISH**

- A. In accordance with NAAMM Amp 500 Series, and as directed by the Architect.
- B. Aluminum, Mill Finish: AA-MIX, as fabricated.
- C. Aluminum, Clear Finish: AA-C22A41 medium matte, clear anodic coating, Class 1, Architectural, 0.7 mils thick, or Class II, Architectural, 0.4 mils thick.
- D. Aluminum Colored Finish: AA-C22A42 (anodized or AA0C22A44 (electrolytically deposited metallic compound) medium matte, integrally colored coating, Class 1, Architectural, 0.7 mils thick, or Class II, Architectural, 0.4 mils thick. Dyes will not be accepted.
- E. Fluorocarbon Finish: AAMA 605.2 high performance organic coating, color as selected by the Architect.

### **PART 3 - EXECUTION**

#### **3.1 INSTALLATION**

- A. Install roof specialties where shown.
- B. Secure with fasteners in accordance with manufacture's printed installation instructions and approved shop drawings unless shown otherwise.
- C. Coordinate to install insulation where shown; see Section 07 21 13, THERMAL INSULATION and Section 07 22 00, ROOF AND DECK INSULATION.
- D. Comply with section 07 92 00, JOINT SEALANTS to install sealants where manufactures installation instructions require sealant.
- E. Coordinate with roofing work for installation of items in sequence to prevent water infiltration.
  - a. After completion of base flashing bend down cap flashing flange and secure to blocking with screws.
  - b. Install expansion joint cover with 6 mm (1/4 inch) wide space at end joints and tension bars at 600 mm (24 inches) on center.
  - c. Install cover plates with formed aluminum flashing concealed and centered on joint. Flashing to lap cover not less than 100 mm (4 inches).
- J. Equipment Supports: Do not anchor to insulating concrete or metal deck. Anchor only to building structure as per manufacturers recommendations.

#### **3.2 PROTECTION OF ALUMINUM**

- A. Provide protection for aluminum against galvanic action wherever dissimilar materials are in contact, by painting the contact surfaces of the dissimilar material with two coats of asphalt coating (complete coverage), or by separating the contact surfaces with a preformed neoprene tape having pressure sensitive adhesive coating on side.
- B. Paint aluminum in contact with wood, concrete and masonry, or other absorptive materials, that may become repeatedly wet, with two coats of asphalt coating.

#### **3.3 ADJUSTING**

- A. Adjust roof hatch hardware to operate freely and so that cover will operate without binding, close tightly at perimeter, and latch securely.

#### **3.4 PROTECTION**

Protect roof accessories from damage during installation and after completion of the work from subsequent construction.

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**SECTION 07 72 00**

**ROOF ACCESSORIES**

**PART 1 - GENERAL**

**1.1 DESCRIPTION**

This section specifies roof accessories as indicated on the drawings.

**1.2 QUALITY CONTROL**

- A. All roof accessories shall be the products of manufacturers regularly engaged in producing the kinds of products specified.
- B. Each accessory type shall be the same and be made by the same manufacturer.
- C. Each accessory shall be completely assembled to the greatest extent possible before delivery to the site.

**1.3 SUBMITTALS**

- A. Submit in accordance with Section 01 33 23, SHOP DRAWINGS, PRODUCT DATA, AND SAMPLES.
- B. Samples: Representative sample panel of color anodized aluminum not less than 100 mm X 100 mm (four by four inches), except extrusions shall be a width not less than section to be used. Sample shall show coating with integral color and texture and shall include manufacturer's identifying label.
- C. Shop Drawings: Each item specified showing design, details of construction, installation and fastenings.
- D. Manufacturer's Literature and Data: Each item specified.
- E. Certificates: Stating that aluminum has been given specified thickness of anodizing.

**1.4 APPLICABLE PUBLICATIONS**

- A. The publications listed below form a part of this specification to the extent referenced. The publications are referenced in the text by the basic designation only.
- B. American Society for Testing and Material (ASTM):
  - B209/209M-07.....Aluminum and Aluminum Alloy-Sheet and Plate
  - B221/221M-07.....Aluminum-Alloy Extruded Bars, Rods, Wire, Shapes, and Tubes
  - C612-04.....Mineral Fiber Block and Board Thermal Insulation
  - D1187-97 (R2002).....Asphalt-Base Emulsions for Use as Protective Coatings for Metal

- C. National Association of Architectural Metal Manufacturers (NAAMM):  
AMP 500-505-88.....Metal Finishes Manual
- D. American Architectural Manufacturers Association (AAMA):  
605-98.....High Performance Organic Coatings on  
Architectural Extrusions and Panels.

## **PART 2 - PRODUCTS**

### **2.1 MATERIALS**

- A. Aluminum, Extruded: ASTM B221/B221M.
- B. Aluminum Sheet: ASTM B209/B209M.
- C. Galvanized Sheet Steel: ASTM A526/A526M; G-90 coating.
- D. Insulation: ASTM C612, Class 1 or 2.
- E. Asphalt Coating: ASTM D 1187, Type I, quick setting.

### **2.2 COPINGS**

- A. Fabricate of aluminum not less than 1.6 mm (0.063 inch thick) or 0.5 mm (0.018 inch thick stainless steel)
- B. Turn outer edges down each face of wall as shown.
- C. Maximum lengths of 3000 mm (10 feet).
- D. Shop fabricate external and internal corners as one piece assemblies with not less than 300 mm (12 inch) leg lengths.
- E. Provide 100 mm (four inch) wide 0.8 mm (0.032 inch) thick watertight joint covers.

### **2.3 EXTRUDED ALUMINUM GRAVEL STOPS AND FASCIAS**

- A. Fabricate of aluminum not less than 2 mm (0.078 inch) thick.
- B. Turn fascia down face of wall and up above roof as shown.
- C. Maximum lengths of 3000 mm (10-feet).
- D. Shop fabricate external and internal corners as one piece assemblies with not less than 300 mm (12 inch) leg lengths.
- E. Provide 100 mm (four inch) wide 2 mm (0.078 inch) thick watertight joint covers with 150 mm (six inch) wide 0.8 mm (0.030 inch) thick underside joint flashing.

### **2.4 EXTRUDED ALUMINUM FASCIA-CANT SYSTEM**

- A. The fascia-cant system consists of three pieces, an extruded aluminum fascia, a galvanized steel cant, and an aluminum compression clamp.

- B. Furnish in stock lengths of not more than 3000 mm (10 feet) long.
- C. Form fascia from not less than 2 mm (0.070 inch) thick aluminum. Provide four inch wide 0.8 mm (0.032-inch) thick concealed sheet aluminum joint cover plates in back of fascia.
- D. Form cant strip from galvanized steel not less than 0.8 mm (0.0299 inch) thick, to profile shown and design to hold lower edge of the fascia.
- E. Form compression clamp of not less than 0.8 mm (0.032 inch) thick aluminum designed to hold the top edge of the fascia and the built-up flashing.

## **2.5 FINISHES**

- A. In accordance with NAAMM Amp 500-505.
- B. Aluminum, Mill Finish: AA-MIX, as fabricated.
- C. Aluminum, Clear Finish: AA-C22A41 medium matte, clear anodic coating, Class 1, Architectural, 0.7 mils thick.
- D. Aluminum Colored Finish: AA-C22A42 (anodized or AA0C22A44 (electrolytically deposited metallic compound) medium matte, integrally colored coating, Class 1, Architectural, 0.7 mils thick. Dyes will not be accepted.
- E. Fluorocarbon Finish: AAMA 605.2 high performance organic coating.

## **PART 3 - EXECUTION**

### **3.1 INSTALLATION**

- A. Install roof accessories where shown.
- B. Secure with fasteners in accordance with manufacture's printed installation instructions and approved shop drawings unless shown otherwise.
- C. Coordinate with roofing work for installation of items in sequence to prevent water infiltration.
- D. Gravel Stops and Fascias:
  - 1. Install gravel stops and fascia with butt joints with approximately 6 mm (1/4 inch) space for expansion.
  - 2. Over each joint provide cover plates of sheet aluminum, complete with concealed sheet aluminum flashing, centered under each joint.
  - 3. Lap cover plates and concealed flashing over the gravel stop and fascia not less than four inches.
  - 4. Extend concealed flashing over built-up roofing, embed in roof cement and turn down over face of blocking at roof edge.
- E. Aluminum Coping:

1. Install sections of coping with approximately 6 mm (1/4-inch) space between ends of sections.
2. Center joint gutter bar and covers at joints and securely lock in place.
3. When snap-on system is used ensure front and back edges are locked in place.

F. Fascia-Cant System:

1. Install galvanized steel cant; coordinate with roofing work and after completion of roofing work install extruded aluminum fascia, concealed joint cover plate, and aluminum compression clamp, where shown.
2. Install system to allow for expansion and contraction with 6 mm (1/4 inch) space between extruded aluminum members and galvanized steel cant as required by manufacturer of system.
3. Offset joints in extruded aluminum members from galvanized steel cant joints.

**3.2 PROTECTION OF ALUMINUM**

- A. Provide protection for aluminum against galvanic action wherever dissimilar materials are in contact, by painting the contact surfaces of the dissimilar material with two coats of asphalt coating (complete coverage), or by separating the contact surfaces with a preformed neoprene tape having pressure sensitive adhesive coating on side.
- B. Paint aluminum in contact with wood, concrete and masonry, or other absorptive materials, that may become repeatedly wet, with two coats of asphalt coating.

**3.3 ADJUSTING**

Adjust expansion joints to close tightly and be watertight; insuring maximum allowance for building movement.

**3.4 PROTECTION**

Protect roof accessories from damage during installation and after completion of the work from subsequent construction.

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**SECTION 07 81 05**

**SPRAYED-ON FIREPROOFING**

**PART 1 - GENERAL**

**1.1 DESCRIPTION**

- A. This section covers the application of sprayed-on cementitious fireproofing as required for Type I construction as specified in the California Building Code (CBC).
- B. Apply fireproofing material on interior structural steel members where removal of such fireproofing has been removed.

**1.2 TESTS**

- A. Sprayed-on fireproofing material shall have been tested for fire endurance by a nationally recognized laboratory in accordance with ASTM E119, or NFPA 251, or UL 263 for each fire rating specified.
- B. Surface Burning Characteristics: Prepare test specimen of fireproofing materials in accordance with Fed. Spec. SS-S-111. Test for flame spread, fuel contributed and smoke developed, and report results in accordance with ASTM E84.
- C. Field Tests: Tests for thickness and density shall be in accordance with ASTM CE605.
  - 1. Tests for thickness and density of applied material will be performed by Contractor.
  - 2. Project Engineer will select areas to be tested in specific bays on each floor using a geometric grid pattern. Areas showing thickness less than that required as a result of fire endurance test will be rejected.
- D. When tested for fire endurance and surface burning characteristics, fireproofing material shall be tested using the adhesive and sealer to be supplied under the contract.

**1.3 SUBMITTALS**

- A. In accordance with Section 01 33 23, SAMPLES AND SHOP DRAWINGS, furnish the following:
- B. Manufacturer's Literature and Data: Manufacturer's complete and detailed application instructions and specifications.
- C. Certificates:
  - 1. Certificates, accompanied by complete test report and test record from testing laboratories attesting that the proposed fireproofing material and application method meet the specified fire rating.
    - a. Certificate shall list thickness and density of material proposed for use, as required to meet the specified fire rating.



- b. Letter from testing laboratories summarizing a test, but not containing the complete test results, will not be accepted as meeting the requirements for submission of complete test reports and test records.
  - c. Certificate indicating that the sprayed-on fireproofing material supplied under the Contract, is the same within manufacturing tolerance as the fireproofing material tested.
- D. Miscellaneous: Manufacturer's written approval of surfaces to receive sprayed-on fireproofing.

#### **1.4 PRODUCT DELIVERY, STORAGE AND HANDLING**

- A. Fireproofing material shall be delivered to job-site in sealed containers marked and labeled to show manufacturer's name and brand and certification of compliance with the specified requirements. Damaged containers will be rejected and shall be removed from the site.
- B. Store the materials off the ground, under cover, away from damp surfaces. Keep dry until ready for use. Materials that have been exposed to water before installation shall be removed from the site.

#### **1.5 APPLICABLE PUBLICATIONS**

- A. The publications listed below form a part of this specification to the extent referenced. The publications are referenced in the test by the basic designation only.
- B. Federal Specifications (Fed. Spec.):  
  
SS-S-111B.....Sound Controlling Materials (Trowel And Spray Applications)
- C. American Society For Testing and Materials (ASTM):  
  
E605.....Test for Thickness and Density of Fireproofing.  
  
E759.....Test Method for Effect of Deflection of Sprayed Fire-Resistive Materials Applied to Structural Members.  
  
E84-81.....Surface Burning Characteristics of Building Materials  
  
E760.....Test Method for Effect of Impact on Binding of Sprayed Fire-Resistive Material Applied to Structural Members.  
  
E859.....Test Method for Air Erosion of Sprayed Fire-Resistive Materials Applied to Structural Members.

E937.....Test Method for Corrosion of Steel by  
Sprayed Fire-Resistive Materials Applied  
to Structural Members.

E119-83.....Fire Tests of Building Construction and  
Materials

D. National Fire Prevention Association (NFPA)

NFPA 521.....Standard Methods of Fire Tests of Building  
Construction and Materials

E. Underwriters Laboratories, Inc. (UL):

UL 263.....Fire Tests of Building Construction and  
Materials

## **PART 2 - PRODUCTS**

### **2.1 SPRAYED-ON FIREPROOFING**

A. Manufacturers: The basis of design is Monokote MK-6HY and Retroguard by W.R. Grace Co. Subject to compliance with specified requirements, "or equal" products by the following manufacturers may also be acceptable:

1. Carboline Co., Fireproofing Div.
2. Isolatek International Corp., Cafco Products.

B. Fed. Spec. SS-S-111, Class 25, Type I, factory mixed cementitious materials with approved aggregate, and integral inorganic binders, having the following characteristics:

1. Material containing asbestos are not permitted.
2. Minimum applied dry density per cubic foot:
  - a. Type I - 15 pounds
3. Deflection: Material shall not crack or delaminate from the surface to which it is applied when tested in accordance with ASTM E759.
4. Corrosion Resistance: Steel with applied replacement fireproofing shall be tested in accordance with ASTM E937 without evidence of corrosion of the steel.
5. Bond-Impact Test: In accordance with ASTM E760, impact test. Test specimen shall not crack or delaminate the material from the surface to which it is applied.
6. Bond Strength: Replacement fireproofing, when tested in accordance with ASTM E736, shall have a minimum average bond strength of 200 PSF, and a minimum individual bond strength of 200 psf, and a minimum individual bond strength of 150 psf.
7. Air Erosion: Maximum allowable weight loss of the fireproofing material shall be 0.025 gm/f+2 when tested in accordance with ASTM E859.

8. Surface Burning Characteristics: Surface Burning characteristics of fireproofing material when tested in accordance with ASTM E84 shall be as follows:

Flame spread.....0  
Fuel contributed...5 or less  
Smoke developed....0

**2.2 ADHESIVE (Not Used) .**

**2.3 SEALER (Not Used) .**

**2.4 WATER**

- A. Clean, fresh, and free from organic and mineral impurities.

**PART 3 - EXECUTION**

**3.1 APPLICATION**

- A. Surface to receive fireproofing shall be clean and free of dust, soot, oil, grease water soluble materials or any foreign substance which would prevent adhesion of the fireproofing material.
- B. Coordinate application of fireproofing material with other trades. Install all hangers, inserts and clips before the application of fireproofing material. Install ductwork, piping and other obstructing material and equipment after the fireproofing is complete.
- C. Applicators shall be approved by the manufacturer of fireproofing material. No fireproofing material shall be applied prior to completion of concrete work on steel decking and concrete encased steel.
1. Application shall not start until written approval has been obtained from Veterans Professional Industrial Hygienist (VPIH) that surfaces have been inspected by the VPIH, and are suitable to receive sprayed-on fireproofing.
2. Mixing and application shall be in accordance with manufacturer's instruction. Furnish two copies of manufacturer's application instructions to the Project Engineer prior to commencement of work. Material and water ratios shall be mechanically controlled on the project site. Apply adhesive and sealer, when not in integral part of the materials, in accordance with the manufacturer's instructions.
3. Temperature and enclosure conditions shall be as required by fireproofing material manufacturer.
4. Application shall be completed in one area, inspected and approved by Project Engineer before removal of application equipment and proceeding with further work.
5. Manufacturer's representative shall observe and advise at the commencement of application, and shall visit the site as required thereafter for the purpose of ascertaining proper

application. The representative shall give manufacturer's approval of completed installation.

### **3.2 PRE-APPLICATION TEST AREA**

- A. A test area consisting of a typical overhead fireproofing installation, but not less than 15 linear feet of beam, shall be installed in location selected by the Project Engineer, for approval by the representative of the fireproofing material manufacturer and by the Government. Fireproofing in other areas shall not proceed until installation of test area has been completed and approved. Approved installation shall remain in place and open for observation as criteria for all work under contract.

### **3.3 PATCHING AND REPAIRING**

- A. Corrective measures shall be taken as directed by the Project Engineer. Manufacturer's representative of fire protection material shall submit recommendations through the Contractor to the Project Engineer for corrections and approval.
- B. Patch fireproofing material which is removed or disturbed after acceptance. Material for patching must be sprayed by machine directly on point to be patched; or, into a container and then hand applied. Hand mixing of material is not permitted.
- C. Repair: Re-spray all test and rejected areas. Final inspection of sprayed areas shall be conducted. Inspect after mechanical, electrical and other trades have completed work in contact with fireproofing material, but before sprayed material is covered. Re-spray all areas requiring additional fireproofing material to provide the required thickness.

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**SECTION 07 84 00**

**FIRESTOPPING**

**PART 1 - GENERAL**

**1.1 DESCRIPTION**

- A. Firestopping as described herein, consists of furnishing and installing materials, or combinations of materials, to form an effective barrier against the spread of flame and hot gases, and to maintain the integrity of time rated construction. It shall be used for fire or smoke barriers that require sealing around penetrations in accordance with NFPA-101 and NFPA 70 when applicable. Types of construction included are two hour partitions, one hour partitions, smoke partitions, floors and interstitial space walk-on decks, chase enclosures, and partitions above ceilings.

**1.2 SUBMITTALS**

- A. In accordance with Section 01340, SAMPLES AND SHOP DRAWINGS, furnish the following:
1. Manufacturers literature and installation instructions.
  2. Certificates: Indicating firestopping material conforms to specified requirements.
  3. Shop Drawings: Complete construction details showing proposed material, reinforcement, anchorage, fastenings, and method of installation.

**1.3 DELIVERY AND STORAGE**

- A. All materials shall be delivered in their original unopened containers and stored in a location providing protection from damage and exposure to the elements. Damaged or deteriorated materials shall be removed from the site.

**1.4 APPLICABLE PUBLICATIONS**

- A. The publications listed below form a part of this specification to the extent referenced. The publications are referenced in the text by the basic designation only.
- B. American Society for Testing and Materials (ASTM):
- C24-79.....Pyrometric Cone Equivalent (PCE) of  
Refractory Materials
- E84-81.....Surface Burning Characteristics of  
Building Materials
- E119-83.....Fire Tests of Building Construction and  
Materials
- E814-81.....Fire Tests of Through-Penetration Fire  
Stops

- C. National Fire Protection Association (NFPA):
- 70-78.....National Electrical Code
- 101-81.....Life Safety Code
- 258-76.....Standard Test Method for Measuring the  
Smoke Generated by Solid Materials

## 2.1 MATERIALS

- A. Rock Wool Fiber: Minimum four pound per cubic foot density. Flame spread 25, smoke developed 0 when tested in accordance with ASTM E84. Minimum melt point shall be 2000 degrees F when tested in accordance with ASTM C24.
- B. Silicone Foam Sealant: Fire retardant, service temperature from minus 50 degrees F to plus 450 degrees F; nontoxic and nonallergenic; UL classified as passing ASTM E119 fire and hose stream tests, flame spread rating 20, fuel contributed factor 20 when tested in accordance with ASTM E84.
1. Form: Two-part liquid product pre-measured and contained in a hand operated disposable cartridge for mixing and dispensing.
  2. Characteristic after Dispensing: Fully expanded in five minutes, fully cured in 24 hours; approximate density 20 pounds per cubic foot.
- C. Intumescent Materials: Intumescent caulks, putty and sheets shall be capable of expanding up to 10 times when exposed to temperatures over 250 degrees F. One part no-mixing system that is non-corrosive and compatible with synthetic cable jackets; UL classified as passing ASTM E814 fire and hose stream tests, flame spread less than 20, fuel contribution 0 when tested in accordance with ASTM E84.
- D. Other Materials: Materials such as concrete, gypsum cement, masonry mortar or combinations of such materials may be used subject to meeting the specified requirements and Project Engineers approval.

## 2.2 PHYSICAL REQUIREMENTS

- A. Materials used for firestopping shall meet the following requirements:
1. Materials used to seal penetrations in time rated floor or wall assemblies shall be capable of preventing the passage of smoke, flame and hot gases sufficient to ignite cotton waste when subjected to time-temperature fire conditions on the opposite side of the wall when tested in accordance with ASTM E119 for the adjacent construction.
  2. Non-toxicity: Non-toxic to human beings at all stages of application and during fire conditions.
  3. Flame spread: 25 or less, ASTM E84.

- 4. Fuel contribution: 25 or less, ASTM E84.
- 5. Smoke density: 250 or less, NFPA 258.

### **PART 3 - EXECUTION**

#### **3.1 INSPECTION**

- A. Contractor shall examine areas to receive firestopping prior to beginning work or submitting data required by paragraph, SUBMITTALS. Data to be submitted shall be based on the findings of the Contractor's examination.

#### **3.2 LOCATIONS**

- A. Duct, conduit, and piping penetrations through floor slab and through time rated partitions and/or fire walls and interstitial space walk on decks. Unless otherwise specified or shown on the drawings, the Contractor shall assume that all floor slabs will be considered as time rated, and all walls or partitions having, or which are part of an enclosure having, fire rated doors will be considered as time rated.
- B. Penetration of vertical service shafts.
- C. Other locations where specifically shown on the drawings, or where called for in other sections of the specification.

#### **3.3 INSTALLATION**

- A. Installation shall be in accordance with approved construction drawings (shop drawings), and approved manufacturer's literature and installation instructions.
- B. Except for intumescent type firestopping materials, the firestopping materials shall completely fill the void space regardless of geometric configuration. Floors and partitions that are sealed with masonry or concrete shall be carefully filled and inspected for cracks or other imperfection. Intumescent firestopping materials shall be installed in accordance with manufacturers' printed instructions.
- C. Pipe Insulation: Insulated pipes and ducts penetrating fire rated floors and walls shall be insulated with material which provides the same performance as the firestopping material. This material shall extend a minimum of six inches on each side of the opening. Vapor barrier of such insulation shall have a perm rating of 0.03 maximum.

#### **3.4 CLEAN-UP AND ACCEPTANCE OF WORK**

- A. As work on each floor is completed, remove materials, litter, and debris. All work shall be inspected and accepted by the Contracting Officer or his designated representative before materials and equipment is moved to the next-scheduled work area.

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**SECTION 07 92 00**

**SEALANTS AND CAULKING**

**PART 1 - GENERAL**

**1.1 DESCRIPTION**

- A. This section covers sealant and caulking material and application.

**1.2 SUBMITTALS**

- A. Submit in accordance with Section 01 33 23, SAMPLES AND SHOP DRAWINGS:
1. Manufacturer's installation instructions for each product used.
  2. Cured samples of exposed sealants for each color where required to match adjacent material.
  3. Manufacturer's Literature and Data for:
    - a. Caulking compound
    - b. Primers
    - c. Sealing compound, each type, including compatibility when different sealants are in contact with each other.

**1.3 DELIVERY, HANDLING, AND STORAGE**

- A. Deliver materials in manufacturers' original unopened containers, with brand names, date of manufacture, shelf life, and material designation clearly marked thereon.
- B. Carefully handle and store to prevent inclusion of foreign materials.
- C. Do not subject to sustained temperatures exceeding 90 degrees or less than 40 degrees F.

**1.4 DEFINITIONS**

- A. Definitions of terms in accordance with ASTM C717 and as specified.
- B. Back-up Rod: A type of sealant backing.
- C. Bond Breakers: A type of sealant backing.
- D. Filler: A sealant backing used behind a back-up rod.

**1.5 GUARANTEE**

- A. Guarantee exterior sealing against leaks and subject to terms of "Guaranty" Article specified in Section, SPECIAL REQUIREMENTS, except that guaranty period shall be two years in lieu of one year.



## 1.6 APPLICABLE PUBLICATIONS

- A. The publications listed below form a part of this specification to the extent referenced. The publications are referenced in the text by the basic designation only.
- B. American Society for Testing and Materials (ASTM):
- C570-72 (1985).....Oil and Resin-Base Caulking Compound for Building Construction.
  - C612-83.....Mineral Fiber Block and Board Thermal Insulation.
  - C717-88.....Definitions of Terms Relating to Building Seals and Sealants (Rev. A).
  - C790-84.....Use of Latex Sealing Compounds
  - C804-83.....Use of Solvent-Release Type of Sealants.
  - C834-76 (1986).....Latex Sealing Compounds
  - C920-87.....Elastomeric Joint Sealants
  - C962-86.....Use of Elastomeric Joint Sealants
  - C1085-87.....Butyl Rubber-Based Solvent-Release Sealants.

## PART 2 - PRODUCTS

### 2.1 SEALANTS

- A. Subject to compliance with specified requirements, sealants shall be the product of one of the following:
1. Tremco Sealant/Weatherproofing division of RPM International, Inc.
  2. 3M Company.
  3. Pecora Corp.
  4. Dow Corning Corp.
  5. GE Corp.
- B. S-6
1. ASTM C920, silicone, neutral cure.
  2. Type S.
  3. Class: Joint movement range of plus 100 percent to minus 50 percent.
  4. Grade NS.

- 5. Shore A hardness of 15-20.
- 6. Minimum elongation of 1200 percent.
- C. S-9
  - 1. ASTM C920 silicone.
  - 2. Type S.
  - 3. Class 25.
  - 4. Grade NS.
  - 5. Shore A hardness of 25-30.
  - 6. Non-yellowing, mildew resistant.

## **2.2 FIRESTOP CAULKING**

- A. Fire Stop Sealant: Single component, noncombustible fire stop sealant Biotherm "T" self leveling silicone by Bio, Pensil 100 by GE, CP25WB by 3M, or equal.
- B. Fire Stop Putty: One-part intumescent type FSP by Nelson, MPS/MPP by 3M, or equal.
- C. Cementitious Fire Stop Mortar: Novasit K-10 (55 lb. density) by Bio, 3M mortar by 3M, or equal. Cementitious mortar shall be non-shrinking, asbestos free type.

## **2.3 COLOR**

- A. Color of sealants shall be clear or white, unless specified otherwise.
- B. Caulking shall be light gray or white, unless specified otherwise.

## **2.4 BOND BREAKERS**

- A. Polyethylene tape or similar type and consistency recommended by the sealant manufacturer for the particular application.
- B. Back-up Rod: ASTM C962, Type A, joint-fillers; closed cell neoprene, butyl, polyurethane, vinyl, or polyethylene rod; diameter approximately 1-1/3 times the joint width.

## **2.5 FILLER**

- A. Mineral fiber board: ASTM C612, Class 1.
- B. Thickness same as joint width.
- C. Depth to fill void completely behind back-up rod.

## **2.6 PRIMER**

- A. As recommended by manufacturer of caulking or sealant material.
- B. Stain type.

### **PART 3 - EXECUTION**

#### **3.1 INSPECTION**

- A. Inspect substrate surface for bond breaker contamination and unsound materials at adherent faces of sealant.
- B. Coordinate for repair and resolution of unsound substrate materials.
- C. Inspect for uniform joint widths and that dimensions are within tolerance established by sealant manufacturer.

#### **3.2 PREPARATIONS**

- A. Prepare joints in accordance with manufacturer's instructions and ASTM C962.
- B. Clean surfaces of joint to receive caulking or sealants leaving joint dry to the touch, free from frost, moisture, grease, oil, wax, lacquer paint, or other foreign matter that would tend to destroy or impair adhesion.
- C. Do not cut or damage joint edges.
- D. Apply masking tape to face of surfaces adjacent to joints before applying primers, caulking, or sealing compounds.
- E. Apply primer to sides of joints wherever required by compound manufacturer's printer instructions.
  - 1. Apply primer prior to installation of back-up rod or bond breaker tape.
  - 2. Use brush or other approved means that will reach all parts of joints.

#### **3.3 BACKING INSTALLATION**

- A. Install back-up material, to form joints enclosed on three sides as required for specified depth of sealant.
- B. Where deep joints occur, install filler to fill space behind the back-up rod and position the rod at proper depth.
- C. Cut fillers installed by others to proper depth for installation of back-up rod and sealants.
- D. Install back-up rod, without puncturing the material, to a uniform depth, within plus or minus 1/8-inch for sealant depths specified.
- E. Where space for back-up rod does not exist, install bond breaker tape strip at bottom of joint so sealant bonds only to two opposing surfaces.
- F. Take all necessary steps to prevent three sided adhesion of sealants.

### **3.4 SEALANT DEPTHS AND GEOMETRY**

- A. At widths up to 1/4-inch, sealant depth equal to width.
- B. At widths over 1/4-inch, sealant depth 1/2 of the width up to 1/2-inch maximum depth at center of joint with sealant thickness at center of joint approximately 1/2 of depth at adhesion surface.

### **3.5 INSTALLATION**

- A. General:
  - 1. Apply the sealants and caulking only when the ambient temperature is between 40 and 100 degrees F.
  - 2. Do not use polysulfide base sealants where sealant may be exposed to fumes from bituminous materials, or where water vapor in continuous contact with cementitious materials may be present.
  - 3. Do not use sealant type listed by manufacture as not suitable for use in locations specified.
  - 4. Apply caulking and sealing compound in accordance with manufacturer's printer instructions.
  - 5. Avoid dropping or smearing compound on adjacent surfaces.
  - 6. Fill joints solidly with compound and finish compound smooth.
  - 7. Tool joints to concave surface unless shown or specified otherwise.
  - 8. Finish paving or floor joints flush unless joint is otherwise detailed.
  - 9. Apply compounds with nozzle size to fit joint width.
  - 10. Test sealants for comparability with each other and substrate. Use only compatible sealant.
- B. For application of sealants, follow requirements of ASTM C962 unless specified otherwise.
- C. Follow requirements of ASTM C790 for application of C-1 caulking.
- D. Follow requirements of ASTM C804 for application of C-2 and C-3 caulking.
- E. Follow requirements of ASTM C570 for application of C-4 caulking.

### **3.6 CLEANING**

- A. Fresh compound accidentally smeared on adjoining surfaces: Scrape off immediately and rub clean with a solvent as recommended by the caulking or sealant manufacturer.
- B. After filling and finishing joints, remove masking tape.

C. Leave adjacent surfaces in a clean and unstained condition.

### 3.7 LOCATIONS

- A. Use S-6 for vertical and inclined joints at:
  - 1. Interior joints and recesses formed where frames of louvers and vents and the like adjoin other materials.
  - 2. Where sealant is shown on drawings, except where sealing compounds for joints in horizontal surfaces and high temperature (over 400 degrees F) applications are specifically required.
- B. Use S-6 at Metal-to-metal joints where sealing is shown or specified.
- C. Use S-6 or S-9 in fire rated partitions or combination fire and smoke or sound rated partitions.
- D. Use S-9 in baths, toilets, and showers. Use at openings between walls and partitions where pipes or toilet and bath accessories or anchors penetrate partition including openings between adjacent lockers, vanities, casework shelving, and plumbing fixtures, built-in or surface mounted.
- E. Use S-9 for sealing between adjoining wall finish and sinks, bath tubs, shower receptors, service sinks and penetrations of wall surfaces in showers including escutcheon (cover) plates.
- F. Use caulking compound or sealant for the following interior applications:
  - 1. Use C-1, C-2, C-3 or C-4 unless specified otherwise for:
    - a. Openings 1/4-inch and less between walls and partitions and adjacent lockers, casework, laboratory furniture, shelving, built-in or surface mounted equipment, and lighting fixtures.
    - b. Where caulking is shown on drawings.
    - c. Other interior locations where small voids between materials require filling for painting.

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**SECTION 08 11 13**

**HOLLOW METAL DOORS AND FRAMES**

**PART 1 - GENERAL**

**1.1 DESCRIPTION**

- A. This section specifies steel doors, steel frames and related components.
- B. Terms relating to steel doors and frames as defined in ANSI A123.1 and as specified.

**1.2 RELATED WORK**

- A. Section 05 50 00, METAL FABRICATIONS.
- B. Section 08 41 13, ALUMINUM-FRAMED ENTRANCES AND STOREFRONTS.
- C. Section 08 17 00, MANUAL PUSH UP COILING COUNTERS.
- D. Door Hardware: Section 08 71 00, DOOR HARDWARE.

**1.3 TESTING**

An independent testing laboratory shall perform testing.

**1.4 SUBMITTALS**

- A. Submit in accordance with Section 01 33 23, SHOP DRAWINGS, PRODUCT DATA, AND SAMPLES.
- B. Manufacturers Literature and Data: Fire rated doors and frames, showing conformance with NFPA 80 and Underwriters Laboratory, Inc., or Intertek Testing Services or Factory Mutual fire rating requirements.

**1.5 SHIPMENT**

- A. Prior to shipment label each door and frame to show location, size, door swing and other pertinent information.
- B. Fasten temporary steel spreaders across the bottom of each door frame.

**1.6 STORAGE AND HANDLING**

- A. Store doors and frames at the site under cover.
- B. Protect from rust and damage during storage and erection until completion.

## 1.7 APPLICABLE PUBLICATIONS

- A. Publications listed below form a part of this specification to the extent referenced. Publications are referenced in the text by the basic designation only.
- B. Federal Specifications (Fed. Spec.):
- L-S-125B..... Screening, Insect, Nonmetallic
- C. Door and Hardware Institute (DHI):
- A115 Series..... Steel Door and Frame Preparation for Hardware, Series A115.1 through A115.17 (Dates Vary)
- D. Steel Door Institute (SDI):
- 113-01..... Thermal Transmittance of Steel Door and Frame Assemblies
- 128-1997..... Acoustical Performance for Steel Door and Frame Assemblies
- A250.8-03..... Standard Steel Doors and Frames
- E. American Society for Testing and Materials (ASTM):
- A167-99(R2004)..... Stainless and Heat-Resisting Chromium-Nickel Steel Plate, Sheet, and Strip
- A568/568-M-07..... Steel, Sheet, Carbon, and High-Strength, Low-alloy, Hot-Rolled and Cold-Rolled
- A1008-08..... Steel, sheet, Cold-Rolled, Carbon, Structural, High Strength Low Alloy and High Strength Low Alloy with Improved Formability
- B209/209M-07..... Aluminum and Aluminum-Alloy Sheet and Plate
- B221/221M-08..... Aluminum and Aluminum-Alloy Extruded Bars, Rods, Wire, Profiles and Tubes
- D1621-04..... Compressive Properties of Rigid Cellular Plastics
- D3656-07..... Insect Screening and Louver Cloth Woven from Vinyl Coated Glass Yarns
- E90-04..... Laboratory Measurement of Airborne Sound Transmission Loss of Building Partitions
- F. The National Association Architectural Metal Manufacturers (NAAMM):
- Metal Finishes Manual (1988 Edition)

- G. National Fire Protection Association (NFPA):  
80-09..... Fire Doors and Fire Windows
- H. Underwriters Laboratories, Inc. (UL):  
Fire Resistance Directory
- I. Intertek Testing Services (ITS):  
Certifications Listings...Latest Edition
- J. Factory Mutual System (FM):  
Approval Guide

## **PART 2 - PRODUCTS**

### **2.1 MATERIALS**

- A. Stainless Steel: ASTM A167, Type 302 or 304; finish, NAAMM Number 4.
- B. Sheet Steel: ASTM A1008, cold-rolled for panels (face sheets) of doors.
- C. Anchors, Fastenings and Accessories: Fastenings anchors, clips connecting members and sleeves from zinc coated steel.
- D. Aluminum Sheet: ASTM B209/209M.
- E. Aluminum, Extruded: ASTM B221/221M.
- F. Prime Paint: Paint that meets or exceeds the requirements of A250.8.

### **2.2 FABRICATION GENERAL**

- A. GENERAL:
  - 1. Follow SDI A250.8 for fabrication of standard steel doors, except as specified otherwise. Doors to receive hardware specified in Section 08 71 00, DOOR HARDWARE. Tolerances as per SDI A250.8. Thickness, 44 mm (1-3/4 inches), unless otherwise shown.
  - 2. Close top edge of exterior doors flush and seal to prevent water intrusion.
  - 3. When vertical steel stiffeners are used for core construction, fill spaces between stiffeners with mineral fiber insulation.
- B. Standard Duty Doors: SDI A250.8, Level 1, Model 2 of size and design shown. Use for interior locations only. Do not use for stairwell doors, security doors and detention doors.



- C. Heavy Duty Doors: SDI A250.8, Level 2, Model 2 of size and design shown. Core construction types a, d, or f, for interior doors, and, types b, c, e, or f, for exterior doors.
- D. Smoke Doors:
  - 1. Close top and vertical edges flush.
  - 2. Provide seamless vertical edges.
  - 3. Apply Steel astragal to the meeting stile at the active leaf of pair of doors or double egress doors.
  - 4. Provide clearance at head, jamb and sill as specified in NFPA 80.
- E. Fire Rated Doors (Labeled):
  - 1. Conform to NFPA 80 when tested by Underwriters Laboratories, Inc., Inchcape Testing Services, or Factory Mutual for the class of door or door opening shown.
  - 2. Fire rated labels of metal, with raised or incised markings of approving laboratory shall be permanently attached to doors.
  - 3. Close top and vertical edges of doors flush. Vertical edges shall be seamless. Apply steel astragal to the meeting stile of the active leaf of pairs of fire rated doors, except where vertical rod exit devices are specified for both leaves swinging in the same direction.
  - 4. Construct fire rated doors in stairwell enclosures for maximum transmitted temperature rise of 230 °C (450 °F) above ambient temperature at end of 30 minutes of fire exposure when tested in accordance with ASTM E152.

## 2.3 METAL FRAMES

- A. General:
  - 1. SDI A250.8, 1.3 mm (0.053 inch) thick sheet steel, types and styles as shown or scheduled.
  - 2. Frames for exterior doors: Fabricate from 1.7 mm (0.067 inch) thick galvanized steel conforming to ASTM A525.
  - 3. Frames for labeled fire rated doors and windows where they occur.
    - a. Comply with NFPA 80. Test by Underwriters Laboratories, Inc., Inchcape Testing Services, or Factory Mutual.

- b. Fire rated labels of approving laboratory permanently attached to frames as evidence of conformance with these requirements. Provide labels of metal or engraved stamp, with raised or incised markings.
    - 4. Knocked-down frames are not acceptable.
  - B. Reinforcement and Covers:
    - 1. SDI A250.8 for, minimum thickness of steel reinforcement welded to back of frames.
    - 2. Provide mortar guards securely fastened to back of hardware reinforcements except on lead-lined frames.
    - 3. Where concealed door closers are installed within the head of the door frames, prepare frames for closers and provide 1 mm (0.042 inch) thick steel removable stop sections for access to concealed face plates and control valves, except when cover plates are furnished with closer.
  - C. Terminated Stops: SDI A250.8.
  - D. Glazed Openings and Panel Opening:
    - a. Integral stop on exterior, corridor, or secure side of door.
    - b. Design rabbet width and depth to receive glazing material or panel shown or specified.
  - E. Frame Anchors:
    - 1. Floor anchors:
      - a. Where floor fills occur, provide extension type floor anchors to compensate for depth of fill.
      - b. At bottom of jamb use 1.3 mm (0.053 inch) thick steel clip angles welded to jamb and drilled to receive two 6 mm (1/4 inch) floor bolts. Use 50 mm x 50 mm (2 inch by 2 inch) 9 mm by (3/8 inch) clip angle for lead lined frames, drilled for 9 mm (3/8 inch) floor bolts.
      - c. Where mullions occur, provide 2.3 mm (0.093 inch) thick steel channel anchors, drilled for two 6 mm (1/4 inch) floor bolts and frame anchor screws.
      - d. Where sill sections occur, provide continuous 1 mm (0.042 inch) thick steel rough bucks drilled for 6 mm (1/4 inch) floor bolts and frame anchor screws. Space floor bolts at 50 mm (24 inches) on center.
    - 2. Jamb anchors:

- a. Locate anchors on jambs near top and bottom of each frame, and at intermediate points not over 600 mm (24 inches) apart, except for fire rated frames space anchors as required by labeling authority.
- b. Form jamb anchors of not less than 1 mm (0.042 inch) thick steel unless otherwise specified.
- c. Anchors set in masonry: Use adjustable anchors designed for friction fit against the frame and for extension into the masonry not less than 250 mm (10 inches). Use one of following type:
  - 1) Wire loop type of 5 mm (3/16 inch) diameter wire.
  - 2) T-shape or strap and stirrup type of corrugated or perforated sheet steel.
- d. Anchors for stud partitions: Either weld to frame or use lock-in snap-in type. Provide tabs for securing anchor to the sides of the studs.
- e. Anchors for frames set in prepared openings:
  - 1) Steel pipe spacers with 6 mm (1/4 inch) inside diameter welded to plate reinforcing at jamb stops or hat shaped formed strap spacers, 50 mm (2 inches) wide, welded to jamb near stop.
  - 2) Drill jamb stop and strap spacers for 6 mm (1/4 inch) flat head bolts to pass thru frame and spacers.
- f. Anchors for observation windows and other continuous frames set in stud partitions.
  - 1) In addition to jamb anchors, weld clip anchors to sills and heads of continuous frames over 1200 mm (4 feet) long.
  - 2) Anchors spaced 600 mm (24 inches) on centers maximum.
- g. Modify frame anchors to fit special frame and wall construction and provide special anchors where shown or required.

#### **2.4 TRANSOM PANELS**

- A. Fabricate panels as specified for flush doors.
- B. Fabricate bottom edge with rabbet stop to fit top of door where no transom bar occurs.

## 2.5 LOUVERS

### A. General:

1. Sight proof type with stationary blades the full thickness of the door.
2. Design lightproof louvers to exclude passage of light but permit free ventilation.
3. Provide insect screen and wire guards at exterior doors, except where doors are located below completely enclosed areaways, the wire guard is not required.

### B. Fabrication:

1. Steel louvers 0.8 mm (0.032 inch) thick for interior doors, and 1.3 mm (0.053 inch) inch thick for exterior doors.
2. Fabricate louvers as complete units. Install in prepared cutouts in doors.
3. Weld stationary blades to frames. Weld louvers into door openings.

### C. Screen frames:

1. Frame of either extruded aluminum or tubular aluminum.
2. Fabricate frame to hold wire fabric in a channel with a retaining bar anchor and to mount on surface of door with screws.
3. Do not lap frame over louver opening.
4. Miter corners of frame members and join by concealed mechanical fastenings extending about 57 mm (2-1/4 inches) into ends of each member.
5. Drill frame and doors for screw attachment. Space screws 50 mm (2 inches) from end of each leg of frame and not over 300 mm (12 inches) on center between end screws.
6. Finish: Clear anodized finish, 0.4 mils thick.
7. Insect Screens: Fasten insect screens to interior side of doors with retaining bar against door and not exposed to view.
8. Wire Guards:
  - a. Wire fabric shall be wire guard screen as specified.
  - b. Fasten wire guard to exterior side of door with retaining bar against door and not exposed to view.

## **2.6 SHOP PAINTING**

SDI A250.8.

## **PART 3 - EXECUTION**

### **3.1 INSTALLATION**

- A. Plumb, align and brace frames securely until permanent anchors are set.
  - 1. Use triangular bracing near each corner on both sides of frames with temporary wood spreaders at midpoint.
  - 2. Use wood spreaders at bottom of frame if the shipping spreader is removed.
  - 3. Protect frame from accidental abuse.
  - 4. Where construction will permit concealment, leave the shipping spreaders in place after installation, otherwise remove the spreaders after the frames are set and anchored.
  - 5. Remove wood spreaders and braces only after the walls are built and jamb anchors are secured.
- B. Floor Anchors:
  - 1. Anchor the bottom of door frames to floor with two 6 mm (1/4 inch) diameter expansion bolts. Use 9 mm (3/8 inch) bolts on lead lined frames.
  - 2. Power actuated drive pins may be used to secure frame anchors to concrete floors.
- C. Jamb Anchors:
  - 1. Anchors in masonry walls: Embed anchors in mortar. Fill space between frame and masonry wall with grout or mortar as walls are built.
  - 2. Coat frame back with a bituminous coating prior to lining of grout filling in masonry walls.
  - 3. Secure anchors to sides of studs with two fasteners through anchor tabs. Use steel drill screws to steel studs.
  - 4. Frames set in prepared openings of masonry or concrete: Expansion bolt to wall with 6 mm (1/4 inch) expansion bolts through spacers. Where subframes or rough bucks are used, 6 mm (1/4 inch) expansion bolts on 600 mm (24 inch) centers or power activated drive pins 600 mm (24 inches) on centers. Secure two piece frames to subframe or rough buck with machine screws on both faces.

- D. Install anchors for labeled fire rated doors to provide rating as required.
- E. Frames for Sound Rated Doors: Coordinate to line frames for sound rated doors with insulation.
- F. Overhead Bracing (Lead Lined Frames): Where jamb extensions extend to structure above, anchor clip angles with not less than two, 9 mm (3/8 inch) expansion bolts or power actuated drive pins to concrete slab. Weld to steel overhead members.

### **3.2 INSTALLATION OF DOORS AND APPLICATION OF HARDWARE**

Install doors and hardware as specified in Sections Section 08 11 13, HOLLOW METAL DOORS AND FRAMES and Section 08 71 00, DOOR HARDWARE.

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**SECTION 08 14 00**

**INTERIOR WOOD DOORS**

**PART 1 - GENERAL**

**1.1 DESCRIPTION**

- A. This section specifies interior flush doors with prefinish, prefit option.

**1.2 RELATED WORK**

- A. Door hardware including hardware location (height): Section 08 71 00, DOOR HARDWARE.
- B. Installation of doors and hardware: Section 08 11 13, HOLLOW METAL DOORS AND FRAMES, Section 08 14 00, WOOD DOORS, or Section 08 71 00, DOOR HARDWARE.

**1.3 SUBMITTALS**

- A. Submit in accordance with Section 01 33 23, SHOP DRAWINGS, PRODUCT DATA, AND SAMPLES.
- B. Samples:
  - 1. Corner section of flush veneered door 300 mm (12 inches) square, showing details of construction, labeled to show grade and type number and conformance to specified standard.
  - 2. Veneer sample 200 mm (8 inch) by 275 mm (11 inch) by 6 mm (1/4 inch) showing specified wood species sanded to receive a transparent finish. Factory finish veneer sample where the prefinished option is accepted.
- C. Shop Drawings:
  - 1. Show every door in project and schedule location in building.
  - 2. Indicate type, grade, finish and size; include pertinent details.
  - 3. Provide information concerning specific requirements not included in the manufacturer's literature and data submittal.
- D. Manufacturer's Literature and Data:
  - 1. Labeled fire rated doors showing conformance with NFPA 80.
- E. Laboratory Test Reports:

1. Screw holding capacity test report in accordance with WDMA T.M.10.
2. Split resistance test report in accordance with WDMA T.M.5.
3. Cycle/Slam test report in accordance with WDMA T.M.7.
4. Hinge-Loading test report in accordance with WDMA T.M.8.

#### **1.4 WARRANTY**

- A. Doors are subject to terms of Article titled "Warranty of Construction", FAR clause 52.246-21, except that warranty shall be as follows:
  1. For interior doors, manufacturer's warranty for lifetime of original installation.

#### **1.5 DELIVERY AND STORAGE**

- A. Factory seal doors and accessories in minimum of 6 mill polyethylene bags or cardboard packages which shall remain unbroken during delivery and storage.
- B. Store in accordance with WDMA I.S.1-A, J-1 Job Site Information.
- C. Label package for door opening where used.

#### **1.6 APPLICABLE PUBLICATIONS**

- A. Publications listed below form a part of this specification to extent referenced. Publications are referenced in text by basic designation only.
- B. Window and Door Manufacturers Association (WDMA):
  - I.S.1-A-04.....Architectural Wood Flush Doors
  - I.S.4-07A.....Water-Repellent Preservative Non-Pressure Treatment for Millwork
  - I.S.6A-01.....Architectural Wood Stile and Rail Doors
  - T.M.5-90.....Split Resistance Test Method
  - T.M.6-08.....Adhesive (Glue Bond) Durability Test Method
  - T.M.7-08.....Cycle-Slam Test Method
  - T.M.8-08.....Hinge Loading Test Method
  - T.M.10-08.....Screwholding Test Method
- C. National Fire Protection Association (NFPA):



80-07.....Protection of Buildings from Exterior  
Fire  
252-08.....Fire Tests of Door Assemblies

D. ASTM International (ASTM):

E90-04.....Laboratory Measurements of Airborne Sound  
Transmission Loss

**PART 2 - PRODUCTS**

**2.1 FLUSH DOORS**

A. General:

1. Meet requirements of WDMA I.S.1-A, Extra Heavy Duty.
2. Adhesive: Type II
3. Thickness: 45 mm (1-3/4 inches) unless otherwise shown or specified.

B. Face Veneer:

1. In accordance with WDMA I.S.1-A.
2. One species throughout the project unless scheduled or otherwise shown.
3. For transparent finishes: Premium Grade, cut, and species as selected by the Architect.
  - a. A grade face veneer standard optional.
  - b. Match face veneers for doors for uniform effect of color and grain at joints.
  - c. Door edges shall be same species as door face veneer except maple may be used for stile face veneer on birch doors.
  - d. In existing buildings, where doors are required to have transparent finish, use wood species and grade of face veneers to match adjacent existing doors.
4. For painted finishes: Custom Grade, mill option close grained hardwood, premium or medium density overlay. Do not use Lauan.
5. Factory sand doors for finishing.

C. Wood for stops, louvers, muntins and moldings of flush doors required to have transparent finish:

1. Solid Wood of same species as face veneer, except maple may be used on birch doors.

2. Glazing:
  - a. On non-labeled doors use applied wood stops nailed tight on room side and attached on opposite side with flathead, countersunk wood screws, spaced approximately 125 mm (5 inches) on centers.
  - b. Use stainless steel or dull chrome plated brass screws for exterior doors.
3. Wood Louvers:
  - a. Door manufacturer's standard product, fabricated of solid wood sections.
  - b. Wood Slats: Not less than 5 mm (3/16 inch) thick.
  - c. Stiles routed out to receive slats.
  - d. Secure louvers in prepared cutouts with wood stops.
- D. Stiles and Rails:
  1. Option for wood stiles and rails:
    - a. Composite material having screw withdrawal force greater than minimum performance level value when tested in accordance with WDMA T.M.10.
  2. Provide adequate blocking for bottom of doors having mechanically operated door bottom seal meeting or exceeding the performance duty level per T.M.10 for horizontal door edge screw holding.
- E. Fire rated wood doors:
  1. Fire Performance Rating:
    - a. "B" label, 1-1/2 hours.
    - b. "C" label, 3/4 hour.
  2. Labels:
    - a. Doors shall conform to the requirements of ASTM E2074, or NFPA 252, and, carry an identifying label from a qualified testing and inspection agency for class of door or opening shown designating fire performance rating.
    - b. Metal labels with raised or incised markings.
  3. Performance Criteria for Stiles of doors utilizing standard mortise leaf hinges:

- a. Hinge Loading: WDMA T.M.8. Average of 10 test samples for Extra Heavy Duty doors.
    - b. Direct screw withdrawal: WDMA T.M.10 for Extra Heavy Duty doors. Average of 10 test samples using a steel, fully threaded #12 wood screw.
    - c. Cycle Slam: 1,000,000 cycles with no loose hinge screws or other visible signs of failure when tested in accordance with WDMA T.M.7.
  4. Additional Hardware Reinforcement:
    - a. Provide fire rated doors with hardware reinforcement blocking.
    - b. Size of lock blocks as required to secure hardware specified.
    - c. Top, bottom and intermediate rail blocks shall measure not less than 125 mm (five inches) minimum by full core width.
    - d. Reinforcement blocking in compliance with manufacturer's labeling requirements.
    - e. Mineral material similar to core is not acceptable.
  5. Other Core Components: Manufacturer's standard as allowed by the labeling requirements.
  6. Provide steel frame approved for use in labeled doors for vision panels.
  7. Provide steel astragal on pair of doors.
- F. Smoke Barrier Doors:
1. For glazed openings use steel frames approved for use in labeled doors.
  2. Provide a steel astragal on one leaf of pairs of doors, including double egress doors.
- G. Sound Rated Doors:
1. Fabricated as specified for flush wood doors with additional construction requirements to meet specified sound transmission class (STC).
  2. STC Rating of the door assembly in place when tested in accordance with ASTM E90 by an independent nationally recognized acoustical testing laboratory not less than 36.
  3. Accessories:

- a. Frame Gaskets: Continuous closed cell sponge neoprene with stop adjusters.
- b. Automatic Door Bottom Seal:
  - 1) Steel spring operated, closed cell sponge neoprene metal mounted removable in extruded aluminum housing with a medium matte 0.1 mm (4.0 mil) thick clear Anodized finish.
  - 2) Concealed or Surface Mounted.
- H. Dutch Doors:
  - 1. Consist of two sections, each fabricated as specified for flush doors.
  - 2. Construct shelf as detailed, from clear hardwood stock, or laminated plastic door shelf, same species as face veneer of door.
  - 3. Place shelf on top of lower section of door and support as shown with a pair of wood or wrought steel brackets.
  - 4. Prime steel brackets for finish painting.

## **2.2 PREFINISH, PREFIT OPTION**

- A. Flush doors may be factory machined to receive hardware, bevels, undercuts, cutouts, accessories and fitting for frame.
- B. Factory fitting to conform to specification for shop and field fitting, including factory application of sealer to edge and routings.
- C. Flush doors to receive transparent finish (in addition to being prefit) may be factory finished as follows:
  - 1. WDMA I.S.1-A Section F-3 specification for System TR-4, Conversion Varnish or System TR-5, Catalyzed Vinyl.
  - 2. Use stain when required to produce the finish approved by the Architect.

## **2.3 IDENTIFICATION MARK:**

- A. On top edge of door.
- B. Either a stamp, brand or other indelible mark, giving manufacturer's name, door's trade name, construction of door, code date of manufacture and quality.
- C. Accompanied by either of the following additional requirements:
  - 1. An identification mark or a separate certification including name of inspection organization.

2. Identification of standards for door, including glue type.
3. Identification of veneer and quality certification.
4. Identification of preservative treatment for stile and rail doors.

#### **2.4 SEALING:**

Give top and bottom edge of doors two coats of catalyzed polyurethane or water resistant sealer before sealing in shipping containers.

#### **2.5 FACTORY FINISHING**

- A. Finish doors at the place of manufacturer. Complete fabrication, including fitting doors for openings and machining for hardware that is not surface applied, before finishing.
  1. Finish faces, all four edges, and mortises. Stains and fillers may be omitted on bottom edges, edges of cutouts and mortises.
- B. Finish doors at factory that are indicated to receive transparent finish.
- C. Transparent Finish:
  1. Grade: Premium.
  2. Finish: WI System (one of the following): Number 4 clear conversion varnish, or 5 catalyzed polyurethane.
  3. Staining: As selected by Architect from manufacturer's full range. Match approved sample.
  4. Effect: Provide either Filled finish or Semifilled finish, produced by applying an additional finish coat to partially fill the wood pores.
  5. Sheen: Satin.

### **PART 3 - EXECUTION**

#### **3.1 DOOR PREPARATION**

- A. Field, shop or factory preparation: Do not violate the qualified testing and inspection agency label requirements for fire rated doors.
- B. Clearances between Doors and Frames and Floors:
  1. Maximum 3 mm (1/8 inch) clearance at the jambs, heads, and meeting stiles, and a 19 mm (3/4 inch) clearance at bottom, except as otherwise specified.

2. Maximum clearance at bottom of sound rated doors, light-proofed doors, doors to operating rooms, and doors designated to be fitted with mechanical seal: 10 mm (3/8 inch).
- C. Provide cutouts for special details required and specified.
- D. Rout doors for hardware using templates and location heights specified in Section, 08 71 00 DOOR HARDWARE.
- E. Fit doors to frame, bevel lock edge of doors 3 mm (1/8 inch) for each 50 mm (two inches) of door thickness, undercut where shown.
- F. Immediately after fitting and cutting of doors for hardware, seal cut edges of doors with two coats of water resistant sealer.
- G. Finish surfaces, including both faces, top and bottom and edges of the doors smooth to touch.
- H. Apply a steel astragal on the opposite side of active door on pairs of fire rated doors.
- I. Apply a steel astragal to meeting style of active leaf of pair of doors or double egress smoke doors.

### **3.2 INSTALLATION OF DOORS APPLICATION OF HARDWARE**

Install doors and hardware as specified in this Section.

### **3.3 DOOR PROTECTION**

- A. As door installation is completed, place polyethylene bag or cardboard shipping container over door and tape in place.
- B. Provide protective covering over knobs and handles in addition to covering door.
- C. Maintain covering in good condition until removal is approved by Resident Engineer.

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**SECTION 08 31 05**

**ACCESS DOORS**

**PART 1 - GENERAL**

**1.1 DESCRIPTION**

This section covers access doors.

**1.2 SUBMITTALS**

In accordance with Section 01 33 23, SAMPLES AND SHOP DRAWINGS, furnish the following:

A. Shop Drawings:

Access doors, each type, showing construction, location and installation details.

B. Manufacturer's Literature and Data:

Access doors, each type

**1.3 APPLICABLE PUBLICATIONS**

The publications listed below form a part of this specification to the extent referenced. The publications are referenced in the text by the basic designation only.

A. The National Association of Architectural Metal Manufacturers (NAAMM):

Metal Finishes Manual (AMP 500-06)

**PART 2 - PRODUCTS**

**2.1 FABRICATION, GENERAL**

A. Fabricate components so as to be straight, square, flat and in same plane where required. Slightly round exposed edges and provide access without burrs, snags and sharp edges. Welds where exposed shall be continuous and ground smooth.

B. Number of locks and non-continuous hinges shall be as required to maintain alignment of panel with frame.

C. Provide anchors or make provisions in frame for anchoring to adjacent construction. Provide size, number and location of anchors as required to secure access door in opening.

**2.2 ACCESS DOORS, FLUSH PANEL**

A. Door Panel: Form of 0.0747 inch thick steel sheet. Reinforce as required to maintain flat surface.

B. Frame: Form of 0.0598 inch thick steel sheet of depth and configuration to suit material and type of construction where installed. Weld exposed joints in flange and grind smooth.

- C. Hinge: Concealed spring hinge to allow panel to open 175 degrees. Provide removable hinge pin to allow removal of panel from frame.
- D. Lock: Flush, screwdriver operated cam lock.

### **2.3 FINISH**

- A. Steel Surfaces: shall have over the prime coat, a finish coat of baked-on enamel in color and texture to match the finish of the adjacent surfaces.

## **PART 3 - EXECUTION**

### **3.1 INSTALLATION, GENERAL**

Install access doors in openings to have sides vertical in wall installations, and parallel to ceiling grid or side walls when installed in ceiling. Set frames so that edge of frames without flanges will finish flush with surrounding finish surfaces. Set frames with flanges to overlap opening and so that the face will be uniformly spaced from the finish surface.

### **3.2 ANCHORAGE**

Secure frames to adjacent construction using anchors attached to the frames or by use of bolts or screws through the frame members. Type, size and number of anchoring device shall be suitable for the material surrounding the opening, and as required to maintain alignment and resist displacement during normal use of the access door and the building.

### **3.3 ADJUSTMENT**

Adjust hardware so that the door panel will open freely, and when closed the door panel will be centered within the frame.

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**SECTION 08 41 13**

**ALUMINUM-FRAMED ENTRANCES AND STOREFRONTS**

**PART 1 - GENERAL**

**1.1 DESCRIPTION:**

This section specifies aluminum entrance work including storefront construction, hung doors, and other components to make a complete assembly.

**1.2 SUBMITTALS:**

- A. Submit in accordance with Section 01 33 23, SHOP DRAWINGS, PRODUCT DATA, AND SAMPLES.
- B. Shop Drawings: (1/2 full scale) showing construction, anchorage, reinforcement, and installation details.
- C. Manufacturer's Literature and Data:
  - 1. Doors, each type.
  - 2. Entrance and Storefront construction.
- D. Samples:
  - 1. Door corner section, 450 mm x 450 mm (18 x 18 inches), of each door type specified, showing vertical and top hinge edges, and door closer reinforcement.
  - 2. Two samples of anodized aluminum or organic finishes of each color showing finish and maximum shade range.
- E. Manufacturer's Certificates:
  - 1. Stating that aluminum has been given specified thickness of anodizing.
  - 2. Indicating manufacturer's qualifications specified.

**1.3 QUALITY ASSURANCE:**

- A. Approval by Contracting Officer is required of products of proposed manufacturer, or supplier, and will be based upon submission by Contractor certification.
- B. Certify manufacturer regularly and presently manufactures aluminum entrances and storefronts as one of their principal products.

**1.4 DELIVERY, STORAGE AND HANDLING:**

- A. Deliver aluminum entrance and storefront material to the site in packages or containers; labeled for identification with the manufacturer's name, brand and contents.
- B. Store aluminum entrance and storefront material in weather-tight and dry storage facility.
- C. Protect from damage from handling, weather and construction operations before, during and after installation.

**1.5. APPLICABLE PUBLICATIONS:**

- A. The publications listed below form a part of this specification to the extent referenced. The publications are referenced in the text by the basic designation only.
- B. American Society for Testing and Materials (ASTM):
  - B209-06.....Aluminum and Aluminum-Alloy Sheet and Plate
  - B221-05.....Aluminum and Aluminum-Alloy Extruded Bars, Rods, Wire, Shapes, and Tubes
  - E283-04.....Rate of Air Leakage Through Exterior Windows, Curtain Walls, and Doors Under Specified Pressure Differences Across the Specimen
  - E331-00.....Water Penetration of Exterior Windows, Curtain Walls, and Doors by Uniform Static Air Pressure Difference
  - F468-06.....Nonferrous Bolts, Hex Cap Screws, and Studs for General Use
  - F593-04.....Stainless Steel Bolts, Hex Cap Screws, and Studs
- C. National Association of Architectural Metal Manufacturers (NAAMM):
  - AMP 500 Series....Metal Finishes Manual
- D. American Architectural Manufacturer's Association (AAMA):
  - 2604-05.....High Performance Organic Coatings on Architectural Aluminum Extrusions and Panels
- E. American Welding Society (AWS):
  - D1.2-03.....Structural Welding Code Aluminum

**1.6 PERFORMANCE REQUIREMENTS:**

- A. Shapes and thickness of framing members shall be sufficient to withstand a design wind load of not less than 30 pounds per

square foot of supported area with a deflection of not more than 1/175 times the length of the member and a safety factor of not less than 1.65 (applied to overall load failure of the unit). Provide glazing beads, moldings, and trim of not less than 1.25 mm (0.050 inch) nominal thickness.

- B. Air Infiltration: When tested in accordance with ASTM E 283, air infiltration shall not exceed 2.63 x 10<sup>-5</sup> cm per square meter (0.06 cubic feet per minute per square foot) of fixed area at a test pressure of 0.30 kPa (6.24 pounds per square foot) 80 kilometers (50 mile) per hour wind.
- C. Water Penetration: When tested in accordance with ASTM E 331, there shall be no water penetration at a pressure of 0.38 kPa (8 pounds per square foot) of fixed area.

## **PART 2 - PRODUCTS**

### **2.1 ALUMINUM FRAMED STOREFRONT**

- A. Manufacturers: Subject to compliance with specified requirements, provide Encore System by Kawneer Company, Inc., or an "or equal" product of one of the following:
  - 1. Armalite Corporatio.
  - 2. Efco Corporation.
  - 3. US Aluminum Curtain Wall.
  - 4. PPG Industries, Inc.
- B. Aluminum, ASTM B209 and B221:
  - 1. Alloy 6063 temper T5 for doors, door frames, fixed glass sidelights, storefronts, and transoms.
  - 2. Alloy 6061 temper T6 for guide tracks for sliding doors and other extruded structural members.
  - 3. For color anodized finish, use aluminum alloy as required to produce specified color.
- C. Thermal Break: Manufacturer standard low conductive material retarding heat flow in the framework, where insulating glass is scheduled.
- D. Fasteners:
  - 1. Aluminum: ASTM F468, Alloy 2024.
  - 2. Stainless Steel: ASTM F593, Alloy Groups 1, 2 and 3.

### **2.2 FABRICATION:**

- A. Fabricate doors, of extruded aluminum sections not less than 3 mm (0.125 inch) thick. Fabricate glazing beads of aluminum not less than 1.0 mm (0.050 inch) thick.

- B. Accurately form metal parts and accurately fit and rigidly assemble joints, except those joints designed to accommodate movement. Seal joints to prevent leakage of both air and water.
- C. Make welds in aluminum in accordance with the recommended practice AWA D1.2. Use electrodes and methods recommended by the manufacturers of the metals and alloys being welded. Make welds behind finished surfaces so as to cause no distortion or discoloration of the exposed side. Clean welded joints of welding flux and dress exposed and contact surfaces.
- D. Make provisions in doors and frames to receive the specified hardware and accessories. Coordinate schedule and template for hardware specified under Section 08 71 00, DOOR HARDWARE. Where concealed closers or other mechanisms are required, provide the necessary space, cutouts, and reinforcement for secure fastening.
- E. Fit and assemble the work at the manufacturer's plant. Mark work that cannot be permanently plant-assembled to assure proper assembly in the field.

### **2.3 PROTECTION OF ALUMINUM:**

- A. Isolate aluminum from contact with dissimilar metals other than stainless steel, white bronze, or zinc by any of the following:
  - 1. Coat the dissimilar metal with two coats of heavy-bodied alkali resistant bituminous paint.
  - 2. Place caulking compound, or non-absorptive tape, or gasket between the aluminum and the dissimilar metal.
  - 3. Paint aluminum in contact with mortar, concrete and plaster, with a coat of aluminum paint primer.

### **2.4 FRAMES:**

- A. Fabricate doors, frames, mullions, transoms, frames for fixed glass and similar members from extruded aluminum not less than 3 mm (0.125 inch) thick.
- B. Provide integral stops and glass rebates and applied snap-on type trim.
- C. Use concealed screws, bolts and other fasteners. Secure cover boxes to frames in back of all lock strike cutouts.
- D. Fabricate framework with thermal breaks in frames where insulating glass is scheduled and specified under Section 08 80 00, GLAZING.

### **2.5 STILE AND RAIL DOORS:**

- A. Nominal 45 mm (1-3/4 inch) thick, with stile and head rail 90 mm (3-1/2 inches) wide, and bottom rail 250 mm (10 inches) wide.

- B. Bevel single-acting doors 3 mm (1/8 inch) at lock, hinge and meeting stile edges. Provide clearances of 2 mm (1/16 inch) at hinge stiles, 3 mm (1/8 inch) at lock stiles and top rails, and 5 mm (3/16 inch) at floors and thresholds. Form glass rebates integrally with stiles and rails. Glazing beads may be formed integrally with stiles and rails or applied type secured with fasteners at 150 mm (six inches) on centers.
- C. Construct doors with a system of welded joints or interlocking dovetail joints between stiles and rails. Clamp door together through top and bottom rails with 9 mm (3/8 inch) primed steel rod extending into the stiles, and having a self-locking nut and washer at each end. Reinforce stiles and rails to prevent door distortion when tie rods are tightened. Provide a compensating spring-type washer under each nut to take up any stresses that may develop. Construct joints between rails and stiles to remain rigid and tight when door is operated.
- D. Weather-stripping: Provide removable, woven pile type (silicone-treated) weather-stripping attached to aluminum or vinyl holder. Make slots for applying weather-stripping integral with doors and door frame stops. Apply continuous weather-stripping to heads, jambs, bottom, and meeting stiles of doors and frames. Install weather-stripping so doors can swing freely and close positively.

## **2.6 REINFORCEMENT FOR BUILDERS HARDWARE:**

- A. Fabricate from stainless steel plates.
- B. Hinge and pivot reinforcing: 4.55 mm (0.1793 inch) thick.
- C. Reinforcing for lock face, flush bolts, concealed holders, concealed or surface mounted closers: 2.66 mm (0.1046 inch) thick.
- D. Reinforcing for all other surface mounted hardware: 1.5 mm (0.0598 inch) thick.

## **2.7 COLUMN COVERS AND TRIM**

- A. Fabricate column covers and trim shown from 1.5 mm (0.0625 inch) thick sheet aluminum of longest available lengths.
- B. Use concealed fasteners.
- C. Provide aluminum stiffener and other supporting members shown or as required to maintain the integrity of the components.

## **2.8 FINISH**

- A. In accordance with NAAMM AMP 500 series, and as selected by the Architect.
- B. Anodized Aluminum:

1. Clear Finish: Chemically etched medium matte, with clear anodic coating, Class I Architectural, 7 mils thick.
2. Color Finish: Chemically etched medium matte, with integrally colored anodic coating, Class I Architectural, 7 mils thick. More than 50 percent variation of the maximum shade range approved will not be accepted in a single component or in adjacent components, stiles, and rails on a continuous series.

C. Fluorocarbon Finish: AAMA 605.2, high performance coating.

### **PART 3 - EXECUTION**

#### **3.1 INSTALLATION:**

- A. Allowable Installation Tolerances: Install work plumb and true, in alignment and in relation to lines and grades shown. Variation of 3 mm (1/8 inch) in 2400 mm (eight feet), non-accumulative, is maximum permissible for plumb, level, warp, bow and alignment.
- B. Anchor aluminum frames to adjoining construction at heads, jams and bottom and to steel supports, and bracing. Anchor frames with stainless steel or aluminum countersunk flathead, expansion bolts or machine screws, as applicable. Use aluminum clips for internal connections of adjoining frame sections.
- C. Where work is installed within masonry or concrete openings, place no parts other than built-in anchors and provision for operating devices located in the floor, until after the masonry or concrete work is completed.
- D. Install hardware specified under Section 08 71 00, DOOR HARDWARE.

#### **3.2 ADJUSTING:**

After installation of entrance and storefront work is completed, adjust and lubricate operating mechanisms to ensure proper performance.

#### **3.3 PROTECTION, CLEANING AND REPAIRING:**

Remove all mastic smears and other unsightly marks, and repair any damaged or disfiguration of the work. Protect the installed work against damage or abuse.

- - - E N D - - -

**SECTION 08 71 00**

**DOOR HARDWARE**

**PART 1 - GENERAL**

**1.1 DESCRIPTION**

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

**1.2 RELATED WORK**

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

**1.3 GENERAL**

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

3. Surface applied overhead door closers.
4. Exit devices.
5. Floor closers.

#### 1.4 WARRANTY

- A. Automatic door operators shall be subject to the terms of FAR Clause 52.24-21, except that the Warranty period shall be two years in lieu of one year for all items except as noted below:
  1. Locks, latchsets, and panic hardware: 5 years.
  2. Door closers and continuous hinges: 10 years.

#### 1.5 MAINTENANCE MANUALS

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

#### 1.6 SUBMITTALS

- A. Submit in accordance with Section 01 33 23, SHOP DRAWINGS, PRODUCT DATA AND SAMPLES. Submit 6 copies of the schedule per Section 01 33 23 plus 2 copies to the VAMC Locksmith (VISN Locksmith if the VAMC does not have a locksmith).
- B. Hardware Schedule: Prepare and submit hardware schedule in the following form:

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

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



- D. Certificate of Compliance and Test Reports: Submit certificates that hardware conforms to the requirements specified herein. Certificates shall be accompanied by copies of reports as referenced. The testing shall have been conducted either in the manufacturer's plant and certified by an independent testing laboratory or conducted in an independent laboratory, within four years of submittal of reports for approval.

#### **1.7 DELIVERY AND MARKING**

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

#### **1.8 PREINSTALLATION MEETING**

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

#### **1.9 INSTRUCTIONS**

- A. Hardware Set Symbols on Drawings: Except for protective plates, door stops, mutes, thresholds and the like specified herein, hardware requirements for each door are indicated on drawings by symbols. Symbols for hardware sets consist of letters (e.g., "HW") followed by a number. Each number designates a set of hardware items applicable to a door type.
- B. Manufacturers' Catalog Number References: Where manufacturers' products are specified herein, products of other manufacturers which are considered equivalent to those specified may be used. Manufacturers whose products are specified are identified by abbreviations as follows:

|                 |   |                   |
|-----------------|---|-------------------|
| Adams-Rite      | Adams Rite Mfg. Co.                     | Pomona, CA        |
| Best            | Best Access Systems                     | Indianapolis, IN  |
| Don-Jo          | Don-Jo Manufacturing                    | Sterling, MA      |
| G.E. Security   | GE Security, Inc.                       | Bradentown, FL    |
| Markar          | Markar Architectural Products           | Pomona, CA        |
| Pemko           | Pemko Manufacturing Co.                 | Ventura, CA       |
| Rixson          | Rixson                                  | Franklin Park, IL |
| Rockwood        | Rockwood Manufacturing Co.              | Rockwood, PA      |
| Securitron      | Securitron Magnalock Corp.              | Sparks, NV        |
| Southern Folger | Southern Folger Detention Equipment Co. | San Antonio, TX   |
| Stanley         | The Stanley Works                       | New Britain, CT   |
| Tice            | Tice Industries                         | Portland, OR      |
| Trimco          | Triangle Brass Mfg. Co.                 | Los Angeles, CA   |
| Zero            | Zero Weather Stripping Co.              | New York, NY      |

C. Keying: All cylinders shall be keyed into existing Grand Master Key System. Provide removable core cylinders that are removable only with a special key or tool without disassembly of knob or lockset. Cylinders shall be 6 pin type. Keying information shall be furnished at a later date by the Resident Engineer.

1. Keying information will be furnished to the Contractor by the Resident Engineer.
2. Supply information regarding key control of cylinder locks to manufacturers of equipment having cylinder type locks. Notify Resident Engineer immediately when and to whom keys or keying information is supplied. Return all such keys to the Resident Engineer.

#### 1.10 APPLICABLE PUBLICATIONS

A. The publications listed below form a part of this specification to the extent referenced. The publications are referenced in the text by the basic designation only. In text, hardware items are referred to by series, types, etc., listed in such specifications and standards, except as otherwise specified.

B. American Society for Testing and Materials (ASTM):

F883-04.....Padlocks

E2180-07.....Standard Test Method for Determining the Activity of Incorporated Antimicrobial Agent(s) In Polymeric or Hydrophobic Materials

C. American National Standards Institute/Builders Hardware Manufacturers Association (ANSI/BHMA):

A156.1-06.....Butts and Hinges

A156.2-03.....Bored and Pre-assembled Locks and Latches

A156.3-08.....Exit Devices, Coordinators, and Auto  
Flush Bolts

A156.4-08.....Door Controls (Closers)

A156.5-01.....Auxiliary Locks and Associated Products

A156.6-05.....Architectural Door Trim

A156.8-05.....Door Controls-Overhead Stops and Holders

A156.12-05 .....Interconnected Locks and Latches

A156.13-05.....Mortise Locks and Latches Series 1000

A156.14-07 .....Sliding and Folding Door Hardware

A156.15-06.....Release Devices-Closer Holder,  
Electromagnetic and Electromechanical

A156.16-08.....Auxiliary Hardware

A156.17-04 .....Self-Closing Hinges and Pivots

A156.18-06.....Materials and Finishes

A156.20-06 .....Strap and Tee Hinges, and Hasps

A156.21-09.....Thresholds

A156.22-05.....Door Gasketing and Edge Seal Systems

A156.23-04.....Electromagnetic Locks

A156.24-03.....Delayed Egress Locking Systems

A156.25-07 .....Electrified Locking Devices

A156.26-06.....Continuous Hinges

A156.28-07 .....Master Keying Systems

A156.29-07 .....Exit Locks and Alarms

A156.30-03 .....High Security Cylinders

A156.31-07 .....Electric Strikes and Frame Mounted  
Actuators

A250.8-03.....Standard Steel Doors and Frames

D. National Fire Protection Association (NFPA):

80-10.....Fire Doors and Fire Windows

101-09.....Life Safety Code

E. Underwriters Laboratories, Inc. (UL):

Building Materials Directory (2008)

## **PART 2 - PRODUCTS**

### **2.1 BUTT HINGES**

A. ANSI A156.1. Provide only three-knuckle hinges, except five-knuckle where the required hinge type is not available in a three-knuckle version (e.g., some types of swing-clear hinges). The following types of butt hinges shall be used for the types of doors listed, except where otherwise specified:

1. Exterior Doors: Type A2112/A5112 for doors 900 mm (3 feet) wide or less and Type A2111/A5111 for doors over 900 mm (3 feet) wide. Hinges for exterior outswing doors shall have non-removable pins. Hinges for exterior fire-rated doors shall be of stainless steel material.
2. Interior Doors: Type A8112/A5112 for doors 900 mm (3 feet) wide or less and Type A8111/A5111 for doors over 900 mm (3 feet) wide. Hinges for doors exposed to high humidity areas (shower rooms, toilet rooms, kitchens, janitor rooms, etc. shall be of stainless steel material.

B. Provide quantity and size of hinges per door leaf as follows:

1. Doors up to 1210 mm (4 feet) high: 2 hinges.
2. Doors 1210 mm (4 feet) to 2260 mm (7 feet 5 inches) high: 3 hinges minimum.
3. Doors greater than 2260 mm (7 feet 5 inches) high: 4 hinges.
4. Doors up to 900 mm (3 feet) wide, standard weight: 114 mm x 114 mm (4-1/2 inches x 4-1/2 inches) hinges.
5. Doors over 900 mm (3 feet) to 1065 mm (3 feet 6 inches) wide, standard weight: 127 mm x 114 mm (5 inches x 4-1/2 inches).
6. Doors over 1065 mm (3 feet 6 inches) to 1210 mm (4 feet), heavy weight: 127 mm x 114 mm (5 inches x 4-1/2 inches).
7. Provide heavy-weight hinges where specified.
8. At doors weighing 330 kg (150 lbs.) or more, furnish 127 mm (5 inch) high hinges.

- C. See Articles "MISCELLANEOUS HARDWARE" and "HARDWARE SETS" for pivots and hinges other than butts specified above and continuous hinges specified below.

## **2.2 CONTINUOUS HINGES**

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

## **2.3 DOOR CLOSING DEVICES**

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

## **2.4 OVERHEAD CLOSERS**

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

14. All closers shall have a 1 ½" (38mm) minimum piston diameter.

## **2.5 FLOOR CLOSERS AND FLOOR PIVOT SETS**

- A. Comply with ANSI A156.4. Provide stainless steel floor plates for floor closers and floor pivots, except where metal thresholds occur. Provide cement case for all floor closers. Floor closers specified for fire doors shall comply with Underwriters Laboratories, Inc., requirements for concealed type floor closers for classes of fire doors indicated on drawings. Hold-open mechanism, where required, shall engage when door is opened 105 degrees, except when door swing is limited by building construction or equipment, the hold-open feature shall engage when door is opened approximately 90 degrees. The hold-open mechanism shall be selectable on/off by turning a screw through the floor plate. Floor closers shall have adjustable hydraulic back-check, adjustable close speed, and adjustable latch speed. Provide closers with delayed action where a hold-open mechanism is not required. Floor closers shall be multi-sized. Single acting floor closers shall also have built in dead stop. Where required, provide closers with special cement cases appropriate for shallow deck installation or where concrete joint lines run through the floor blockout. At offset-hung doors installed in deep reveals, provide special closer arm and spindle to allow for installation. Where stone or terrazzo is applied over the floor closer case, provide closer without floor plate and with extended spindle (length as required) and special cover pan (depth as required) to allow closer to be accessed without damaging the material applied over the closer. Pivots for non-labeled doors shall be cast, forged or extruded brass or bronze.
- B. Where floor closer appears in hardware set provide the following as applicable.
  1. Double Acting Floor Closers: Type C06012.
  2. Single Acting Floor Closer: Type C06021 (center pivoted). (Intermediate pivot is not required).
  3. Single Acting Floor Closers: Type C06041 (offset pivoted).
  4. Single Acting Floor Closer for Labeled Fire Doors: Type C06051 (offset pivoted).
  5. Single Acting Floor Closers For Lead Lined Doors: Type C06071 (offset pivoted).

## **2.6 COMBINATION CLOSER - HOLDER**

- A. Conform to ANSI A156.15; combination closer-holder with built-in electronic release.
- B. Combination closer-holder shall have the following features:

1. Control door closing and latching sequence by hydraulic action.
2. Wiring for 24V DC current. Current draw shall not exceed 0.16 amperes.
3. Combination closer-holder type:
  - a. At doors with 90-110° hold-open point: Single lever arm with slide track closing action, and adjustable hydraulic back-check. Provide tracks with spring-cushion stop assemblies to avoid the necessity of a separate wall or floor stop. Provide with double egress arm where required.
  - b. At doors with over 110° to 175° hold-open point: Single or double lever arm and adjustable hydraulic back-check. Provide with long arms where required for deep frame reveals.
4. Spring power for closing force shall conform to ANSI A156.4 and have 50% spring power adjustment.
5. Size closers per manufacturer's printed catalog recommendations.
6. Hold open mechanism shall hold door open between 85 degrees and 175 degrees depending on wall and frame conditions. Mount device to provide maximum door opening permitted by building construction or equipment.
7. Electronic release shall release door when signaled by smoke detector. Smoke detectors shall not be incorporated as an integral part of door holders. Smoke detectors are specified in the ELECTRICAL Section.
8. All closers to have full covers.
9. All closers shall have a 1 ½" minimum piston diameter and an adjustable back check position valve.

## 2.7 DOOR STOPS

- A. Conform to ANSI A156.16.
- B. Provide door stops wherever an opened door or any item of hardware thereon would strike a wall, column, equipment or other parts of building construction. For concrete, masonry or quarry tile construction, use lead expansion shields for mounting door stops.
- C. Where cylindrical locks with turn pieces or pushbuttons occur, equip wall bumpers Type L02251 (rubber pads having concave face) to receive turn piece or button.



- D. Provide floor stops (Type L02141 or L02161 in office areas; Type L02121 x 3 screws into floor elsewhere. Wall bumpers, where used, must be installed to impact the trim or the door within the leading half of its width. Floor stops, where used, must be installed within 4-inches of the wall face and impact the door within the leading half of its width.
- E. Where drywall partitions occur, use floor stops, Type L02141 or L02161 in office areas, Type L02121 elsewhere.
- F. Provide stop Type L02011, as applicable for exterior doors. At outswing doors where stop can be installed in concrete, provide stop mated to concrete anchor set in 76mm (3-inch) core-drilled hole and filled with quick-setting cement.
- G. Omit stops where floor mounted door holders are required and where automatic operated doors occur.
- H. Provide appropriate roller bumper for each set of doors (except where closet doors occur) where two doors would interfere with each other in swinging.
- I. Provide appropriate door mounted stop on doors in individual toilets where floor or wall mounted stops cannot be used.
- J. Provide overhead surface applied stop Type C02541, ANSI A156.8 on patient toilet doors in bedrooms where toilet door could come in contact with the bedroom door.
- K. Provide door stops on doors where combination closer magnetic holders are specified, except where wall stops cannot be used or where floor stops cannot be installed within 4-inches of the wall.
- L. Where the specified wall or floor stop cannot be used, provide concealed overhead stops (surface-mounted where concealed cannot be used).

## **2.8 OVERHEAD DOOR STOPS and HOLDERS**

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

## **2.9 FLOOR DOOR HOLDERS**

- A. Conform to ANSI Standard A156.16. Provide extension strikes for Types L01301 and L01311 holders where necessary.

## 2.10 LOCKS AND LATCHES

- A. Conform to ANSI A156.2. Locks and latches for doors 45 mm (1-3/4 inch) thick or over shall have beveled fronts. Lock cylinders shall have not less than six pins. Cylinders for all locksets shall be removable core type. Cylinder shall be removable by special key or tool. Construct all cores so that they will be interchangeable into the core housings of all mortise locks, rim locks, cylindrical locks, and any other type lock included in the Great Grand Master Key System. Disassembly of lever or lockset shall not be required to remove core from lockset. All locksets or latches on double doors with fire label shall have latch bolt with 19 mm (3/4 inch) throw, unless shorter throw allowed by the door manufacturer's fire label. Provide temporary keying device or construction core of allow opening and closing during construction and prior to the installation of final cores.
- B. In addition to above requirements, locks and latches shall comply with following requirements:
  - 1. Mortise Lock and Latch Sets: Conform to ANSI/BHMA A156.13. Mortise locksets shall be series 1000, minimum Grade 2. All locksets and latchsets, except on designated doors in Psychiatric (Mental Health) areas, shall have lever handles fabricated from cast stainless steel. No substitute lever material shall be accepted. All locks and latchsets shall be furnished with 122.55 mm (4-7/8-inch) curved lip strike and wrought box. At outswing pairs with overlapping astragals, provide flat lip strip with 21mm (7/8-inch) lip-to-center dimension. Lock function F02 shall be furnished with emergency tools/keys for emergency entrance. All lock cases installed on lead lined doors shall be lead lined before applying final hardware finish. Furnish armored fronts for all mortise locks. Where mortise locks are installed in high-humidity locations or where exposed to the exterior on both sides of the opening, provide non-ferrous mortise lock case.
  - 2. Cylindrical Lock and Latch Sets: levers shall meet ADA (Americans with Disabilities Act) requirements. Cylindrical locksets shall be series 4000 Grade I. All locks and latchsets shall be furnished with 122.55 mm (4-7/8-inch) curved lip strike and wrought box. At outswing pairs with overlapping astragals, provide flat lip strip with 21mm (7/8-inch) lip-to-center dimension. Provide lever design to match design selected by Architect or to match existing lever design. Where two turn pieces are specified for lock F76, turn piece on inside knob shall lock and unlock inside knob, and turn piece on outside knob shall unlock outside knob when inside knob is in the locked position. (This function is intended to allow emergency entry into these rooms without an emergency key or any special tool.)
  - 3. Auxiliary locks shall be as specified under hardware sets and conform to ANSI A156.5.

4. Locks on designated doors in Psychiatric (Mental Health) areas shall be paddle type with arrow projection covers and be UL Listed. Provide these locks with paddle in the down position on both sides of the door. Locks shall be fabricated of wrought stainless steel.
5. Privacy locks in non-mental-health patient rooms shall have an inside thumbturn for privacy and an outside thumbturn for emergency entrance. Single occupancy patient privacy doors shall typically swing out; where such doors cannot swing out, provide center-pivoted doors with rescue hardware (see HW-2B).

#### **2.11 PUSH-BUTTON COMBINATION LOCKS**

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

#### **2.12 ELECTROMAGNETIC LOCKS**

- A. ANSI/BHMA A156.23; electrically powered, of strength and configuration indicated; with electromagnet attached to frame and armature plate attached to door. Listed under Category E in BHMA's "Certified Product Directory."
  1. Type: Full exterior or full interior, as required by application indicated.
  2. Strength Ranking: 1500 lbf (6672 N).
  3. Inductive Kickback Peak Voltage: Not more than 53.
  4. Residual Magnetism: Not more than 4 lbf (18 N) to separate door from magnet.
- B. Delayed-Egress Locks: BHMA A156.24.
  1. Means of Egress Doors: Lock releases within 15 seconds after applying a force not more than 15 lbf (67 N) for not more than 3 seconds, as required by NFPA 101.
  2. Security Grade: Activated from secure side of door by initiating device.
  3. Movement Grade: Activated by door movement as initiating device.

4. The lock housing shall not project more than 4-inches (101mm) from the underside of the frame head stop.

## 2.13 ELECTRIC STRIKES

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

## 2.14 KEYS

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

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

- B. Psychiatric keys shall be cut so that first two bittings closest to the key shoulder are shallow to provide greater strength at point of greatest torque.

## 2.15 ARMOR PLATES, KICK PLATES, MOP PLATES AND DOOR EDGING

- A. Conform to ANSI Standard A156.6.
- B. Provide protective plates and door edging as specified below:
  1. Kick plates, mop plates and armor plates of metal, Type J100 series.
  2. Provide kick plates and mop plates where specified. Kick plates shall be 254 mm (10 inches) or 305 mm (12 inches) high. Mop plates shall be 152 mm (6 inches) high. Both kick and mop plates shall be minimum 1.27 mm (0.050 inches) thick. Provide kick and mop plates beveled on all 4 edges (B4E). On push side of doors where jamb stop extends to floor, make kick plates 38 mm (1-1/2 inches) less than width of door, except pairs of metal doors which shall have plates 25 mm (1 inch) less than width of each door. Extend all other kick and mop plates to within 6 mm (1/4 inch) of each edge of doors. Kick and mop plates shall butt astragals. For jamb stop requirements, see specification sections pertaining to door frames.
  3. Kick plates and/or mop plates are not required on following door sides:
    - a. Armor plate side of doors;
    - b. Exterior side of exterior doors;

- c. Closet side of closet doors;
  - d. Both sides of aluminum entrance doors.
- 4. Armor plates for doors are listed under Article "Hardware Sets". Armor plates shall be thickness as noted in the hardware set, 875 mm (35 inches) high and 38 mm (1-1/2 inches) less than width of doors, except on pairs of metal doors. Provide armor plates beveled on all 4 edges (B4E). Plates on pairs of metal doors shall be 25 mm (1 inch) less than width of each door. Where top of intermediate rail of door is less than 875 mm (35 inches) from door bottom, extend armor plates to within 13 mm (1/2 inch) of top of intermediate rail. On doors equipped with panic devices, extend armor plates to within 13 mm (1/2 inch) of panic bolt push bar.
  - 5. Where louver or grille occurs in lower portion of doors, substitute stretcher plate and kick plate in place of armor plate. Size of stretcher plate and kick plate shall be 254 mm (10 inches) high.
  - 6. Provide stainless steel edge guards where so specified at wood doors. Provide mortised type instead of surface type except where door construction and/or ratings will not allow. Provide edge guards of bevel and thickness to match wood door. Provide edge guards with factory cut-outs for door hardware that must be installed through or extend through the edge guard. Provide full-height edge guards except where door rating does not allow; in such cases, provide edge guards to height of bottom of typical lockset armor front. Forward edge guards to wood door manufacturer for factory installation on doors.

## **2.16 EXIT DEVICES**

- A. Conform to ANSI Standard A156.3. Exit devices shall be Grade 1; type and function are specified in hardware sets. Provide flush with finished floor strikes for vertical rod exit devices in interior of building. Trim shall have cast satin stainless steel lever handles of design similar to locksets, unless otherwise specified. Provide key cylinders for keyed operating trim and, where specified, cylinder dogging.
- B. Surface vertical rod panics shall only be provided less bottom rod; provide fire pins as required by exit device and door fire labels. Do not provide surface vertical rod panics at exterior doors.
- C. Concealed vertical rod panics shall be provided less bottom rod at interior doors, unless lockable or otherwise specified; provide fire pins as required by exit device and door fire labels. Where concealed vertical rod panics are specified at exterior doors, provide with both top and bottom rods.

- D. Where removable mullions are specified at pairs with rim panic devices, provide mullion with key-removable feature.
- E. At non-rated openings with panic hardware, provide panic hardware with key cylinder dogging feature.
- F. Exit devices for fire doors shall comply with Underwriters Laboratories, Inc., requirements for Fire Exit Hardware. Submit proof of compliance.

#### **2.17 FLUSH BOLTS (LEVER EXTENSION)**

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

#### **2.18 FLUSH BOLTS (AUTOMATIC)**

- A. Conform to ANSI A156.3. Dimension of flush bolts shall conform to ANSI A115. Bolts shall conform to Underwriters Laboratories, Inc., requirements for fire door hardware. Flush bolts shall automatically latch and unlatch. Furnish dustproof strikes conforming to ANSI A156.16 for bottom flushbolt. Face plates for dustproof strike shall be rectangular and not less than 38 mm by 90 mm (1-1/2 by 3-1/2 inches).
- B. At interior doors, provide auto flush bolts less bottom bolt, unless otherwise specified, except at wood pairs with fire-rating greater than 20 minutes; provide fire pins as required by auto flush bolt and door fire labels.

#### **2.19 DOOR PULLS**

- A. Conform to ANSI A156.6. Pull plate 90 mm by 350 mm (3-1/2 inches by 14 inches), unless otherwise specified. Cut plates of door pulls for cylinders, or turn pieces where required.

#### **2.20 PUSH PLATES**

- A. Conform to ANSI A156.6. Metal, Type J302, 200 mm (8 inches) wide by 350 mm (14 inches) high. Provide metal Type J300 plates 100 mm (4 inches wide by 350 mm (14 inches) high) where push plates are

specified for doors with stiles less than 200 mm (8 inches) wide.  
Cut plates for cylinders, and turn pieces where required.

## **2.21 COMBINATION PUSH AND PULL PLATES**

- A. Conform to ANSI 156.6. Type J303, stainless steel 3 mm (1/8 inch) thick, 80 mm (3-1/3 inches) wide by 800 mm (16 inches) high, top and bottom edges shall be rounded. Secure plates to wood doors with 38 mm (1-1/2 inch) long No. 12 wood screws. Cut plates for turn pieces, and cylinders where required. Pull shall be mounted down.

## **2.22 COORDINATORS**

- A. Conform to ANSI A156.16. Coordinators, when specified for fire doors, shall comply with Underwriters Laboratories, Inc., requirements for fire door hardware. Coordinator may be omitted on exterior pairs of doors where either door will close independently regardless of the position of the other door. Coordinator may be omitted on interior pairs of non-labeled open where open back strike is used. Open back strike shall not be used on labeled doors. Paint coordinators to match door frames, unless coordinators are plated. Provide bar type coordinators, except where gravity coordinators are required at acoustic pairs. For bar type coordinators, provide filler bars for full width and, as required, brackets for push-side surface mounted closers, overhead stops, and vertical rod panic strikes.

## **2.23 THRESHOLDS**

- A. Conform to ANSI A156.21, mill finish extruded aluminum, except as otherwise specified. In existing construction, thresholds shall be installed in a bed of sealant with ¼-20 stainless steel machine screws and expansion shields. In new construction, embed aluminum anchors coated with epoxy in concrete to secure thresholds. Furnish thresholds for the full width of the openings.
- B. For thresholds at elevators entrances see other sections of specifications.
- C. At exterior doors and any interior doors exposed to moisture, provide threshold with non-slip abrasive finish.
- D. Provide with miter returns where threshold extends more than 12 mm (0.5 inch) from frame face.

## **2.24 AUTOMATIC DOOR BOTTOM SEAL AND RUBBER GASKET FOR LIGHT PROOF OR SOUND CONTROL DOORS**

- A. Conform to ANSI A156.22. Provide mortise or under-door type, except where not practical. For mortise automatic door bottoms, provide type specific for door construction (wood or metal).

## **2.25 WEATHERSTRIPS (For Exterior Doors)**

- A. Conform to ANSI A156.22. Air leakage shall not to exceed 0.50 CFM per foot of crack length (0.000774m<sup>3</sup>/s/m).

## **2.26 MISCELLANEOUS HARDWARE**

- A. Access Doors (including Sheet Metal, Screen and Woven Wire Mesh Types): Except for fire-rated doors and doors to Temperature Control Cabinets, equip each single or double metal access door with Lock Type E76213, conforming to ANSI A156.5. Key locks as directed. Ship lock prepaid to the door manufacturer. Hinges shall be provided by door manufacturer.
- B. Cylinders for Various Partitions and Doors: Key cylinders same as entrance doors of area in which partitions and door occur, except as otherwise specified. Provide cylinders to operate locking devices where specified for following partitions and doors:
  - 1. Folding doors and partitions.
  - 2. Wicket door (in roll-up door assemblies).
  - 3. Slide-up doors.
  - 4. Swing-up doors.
  - 5. Fire-rated access doors-Engineer's key set.
  - 6. Doors from corridor to electromagnetic shielded room.
  - 7. Day gate on vault door.
- C. Mutes: Conform to ANSI A156.16. Provide door mutes or door silencers Type L03011 or L03021, depending on frame material, of white or light gray color, on each steel or wood door frame, except at fire-rated frames, lead-lined frames and frames for sound-resistant, lightproof and electromagnetically shielded doors. Furnish 3 mutes for single doors and 2 mutes for each pair of doors, except double-acting doors. Provide 4 mutes or silencers for frames for each Dutch type door. Provide 2 mutes for each edge of sliding door which would contact door frame.

## **2.27 FINISHES**

- A. Exposed surfaces of hardware shall have ANSI A156.18, finishes as specified below. Finishes on all hinges, pivots, closers, thresholds, etc., shall be as specified below under "Miscellaneous Finishes." For field painting (final coat) of ferrous hardware, see Section 09 91 00, PAINTING.
- B. 626 or 630: All surfaces on exterior and interior of buildings, except where other finishes are specified.
- C. Miscellaneous Finishes:



1. Hinges --exterior doors: 626 or 630.
  2. Hinges --interior doors: 652 or 630.
  3. Pivots: Match door trim.
  4. Door Closers: Factory applied paint finish. Dull or Satin Aluminum color.
  5. Thresholds: Mill finish aluminum.
  6. Cover plates for floor hinges and pivots: 630.
  7. Other primed steel hardware: 600.
- D. Hardware Finishes for Existing Buildings: U.S. Standard finishes shall match finishes of hardware in (similar) existing spaces except where otherwise specified.
- E. Special Finish: Exposed surfaces of hardware for dark bronze anodized aluminum doors shall have oxidized oil rubbed bronze finish (dark bronze) finish on door closers shall closely match doors.
- F. Anti-microbial Coating: All hand-operated hardware (levers, pulls, push bars, push plates, paddles, and panic bars) shall be provided with an anti-microbial/anti-fungal coating that has passed ASTM E2180 tests. Coating to consist of ionic silver (Ag+). Silver ions surround bacterial cells, inhibiting growth of bacteria, mold, and mildew by blockading food and respiration supplies.

## 2.28 BASE METALS

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

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

## PART 3 - EXECUTION

### 3.1 HARDWARE HEIGHTS

- A. For existing buildings locate hardware on doors at heights to match existing hardware. The Contractor shall visit the site, verify location of existing hardware and submit locations to VA Resident Engineer for approval.
- B. Hardware Heights from Finished Floor:
1. Exit devices centerline of strike (where applicable) 1024 mm (40-5/16 inches).

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

### 3.2 INSTALLATION

- A. Closer devices, including those with hold-open features, shall be equipped and mounted to provide maximum door opening permitted by building construction or equipment. Closers shall be mounted on side of door inside rooms, inside stairs, and away from corridors except security bedroom, bathroom and anteroom doors which shall have closer installed parallel arm on exterior side of doors. At exterior doors, closers shall be mounted on interior side. Where closers are mounted on doors they shall be mounted with sex nuts and bolts; foot shall be fastened to frame with machine screws.

- B. Hinge Size Requirements:

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

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

E. Hinges Required Per Door:

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

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

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

### 3.3 FINAL INSPECTION

A. Installer to provide letter to VA Resident/Project Engineer that upon completion, installer has visited the Project and has accomplished the following:

1. Re-adjust hardware.
2. Evaluate maintenance procedures and recommend changes or additions, and instruct VA personnel.
3. Identify items that have deteriorated or failed.
4. Submit written report identifying problems.

### 3.4 DEMONSTRATION

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

### 3.5 HARDWARE SETS

A. Following sets of hardware correspond to hardware symbols shown on drawings. Only those hardware sets that are shown on drawings

will be required. Disregard hardware sets listed in specifications but not shown on drawings.

ELECTRIC HARDWARE ABBREVIATIONS LEGEND:  
ADO = Automatic Door Operator  
EMCH = Electro-Mechanical Closer-Holder  
MHO = Magnetic Hold-Open (wall- or floor-mounted)  
UNK = Unknow

# **INTERIOR SINGLE DOORS**

## HW-1

Each Door to Have:

NON-RATED

|   |                             |   |
|---|-----------------------------|---|
| 1 | Continuous Hinge            | A51031B                                 |
| 1 | Push/Pull Plate Set         | 1894-4 x 1195-1 PULL (TRIMCO), OR EQUAL |
| 1 | Kick Plate                  | J102                                    |
| 1 | Mop Plate (@ Inswing Doors) | J102                                    |
| 1 | Closer                      | C02011/C02021 (PT4D, PT4F, PT4H)        |
| 1 | Floor Stop                  | L02121 x 3 FASTENERS                    |
| 3 | Silencers                   | L03011                                  |

## HW-1A

Each Door to Have:

RATED

|   | Hinges                      | QUANTITY & TYPE AS REQUIRED         |
|---|-----------------------------|-------------------------------------|
|   |                             | X HOSPITAL TIPS @ INSWING DOORS     |
| 1 | Latchset                    | F01                                 |
| 1 | Closer                      | C02011/C02021 (PT4D, PT4F, PT4H)    |
|   |                             | x INSTALL OUTSIDE ROOM              |
| 1 | Kick Plate                  | J102                                |
| 1 | Mop Plate (@ Inswing Doors) | J102                                |
| 1 | Floor Stop                  | L02121 x 3 FASTENERS                |
| 1 | Threshold                   | J32300 x 57 mm width (2-1/4 inches) |
| 1 | Auto Door Bottom            | R0Y346 - HEAVY DUTY                 |
| 1 | Set Seals                   | R3C164                              |

## HW-1B

Each Door to Have:

NON-RATED/RATED

|   |                           |  |
|---|---------------------------|--|
| 1 | Continuous Hinge          | A51031B x INTEGRAL HINGE GUARD CHANNEL |
|   |                           | X SWING-CLEAR X ADJUSTA-SCREWS         |
| 1 | Hospital Latch            | F01 x PADDLES POINTING DOWN            |
| 1 | Armor Plate               | J101 x 1.275 MM (0.050 INCH) THICKNESS |
| 1 | Edge Guard (@ Wood Doors) | J208M / J211 (VERIFY), CUT: HARDWARE   |
| 1 | Overhead Stop             | C01541-ADJUSTABLE                      |
| 1 | Set Seals                 | R3C164                                 |

NO CLOSER REQUIRED DUE TO EXEMPTION FOR PATIENT ROOM DOORS.

THIS SET NOT USED.

HW-1C

Each Door to Have: NON-RATED

|   |                           |  |
|---|---------------------------|--|
| 1 | Continuous Hinge          | A51031B x INTEGRAL HINGE GUARD CHANNEL<br>X SWING-CLEAR X ADJUSTA-SCREWS |
| 1 | Hospital Latch            | F01 x PADDLES POINTING DOWN  |
| 1 | Armor Plate               | J101 x 1.275 MM (0.050 INCH) THICKNESS                                   |
| 1 | Mop Plate                 | J102   |
| 1 | Edge Guard (@ Wood Doors) | J208M / J211 (VERIFY), CUT: HARDWARE                                     |
| 1 | Overhead Stop             | C01541-ADJUSTABLE  |
| 3 | Silencers                 | L03011   |

HW-1E

Each Door to Have: RATED

|   |                             |  |
|---|-----------------------------|--|
| 1 | Continuous Hinge            | A51031B x INTEGRAL HINGE GUARD CHANNEL<br>X SWING-CLEAR X ADJUSTA-SCREWS |
| 1 | Hospital Latch              | F01 x PADDLES POINTING DOWN  |
| 1 | Closer                      | C02011/C02021 (PT4D, PT4F, PT4H)   |
| 1 | Armor Plate                 | J101 x 1.275 MM (0.050 INCH) THICKNESS                                   |
| 1 | Edge Guard (@ Wood Doors)   | J208M / J211 (VERIFY), CUT: HARDWARE                                     |
| 1 | Wall Stop (@ Inswing Doors) | L52101 CONVEX  |
| 1 | Set Self-Adhesive Seals     | R0E154   |

HW-1F

Each Door to Have: NON-RATED

|   |                  |               |
|---|------------------|---------------|
| 1 | Continuous Hinge | A51031B       |
| 1 | Latchset         | F01           |
| 1 | Kick Plate       | J102          |
| 1 | Wall Stop        | L52101 CONVEX |
| 3 | Silencers        | L03011        |

HW-1G

Each Door to Have: NON-RATED

|   |                           |  |
|---|---------------------------|--|
| 1 | Continuous Hinge          | A51031B x INTEGRAL HINGE GUARD CHANNEL<br>X ADJUSTA-SCREWS |
| 1 | Latchset                  | F01  |
| 1 | Kick Plate                | J102   |
| 1 | Edge Guard (@ Wood Doors) | J208M / J211 (VERIFY), CUT: HARDWARE                       |
| 1 | Wall Stop                 | L52101 CONVEX  |
| 3 | Silencers                 | L03011   |
| 1 | Coat Hook                 | L03121   |

| <u>Each Dwarf Door to Have:</u> |                         | <u>HW-1H</u>             | <u>NON-RATED</u> |
|---------------------------------|-------------------------|--------------------------|------------------|
| 1                               | Gate Spring Pivot Hinge | K13311                   |                  |
| 1                               | Secret Gate Latch       | 602 (ROCKWOOD), OR EQUAL |                  |
| 1                               | Wall Stop               | L52101 CONVEX            |                  |
| 2                               | Silencers               | L03021                   |                  |

| <u>Each [MHO] Door to Have:</u>                                   |                           | <u>HW-1J</u>   | <u>RATED</u> |
|---|---------------------------|--|--------------|
| 1   | Continuous Hinge          | A51031B x INTEGRAL HINGE GUARD CHANNEL<br>X ADJUSTA-SCREWS |              |
| 1   | Latchset                  | F01  |              |
| 1   | Closer                    | C02011/C02021 (PT4D, PT4H)                                 |              |
| 1   | Heavy-Duty Armor Plate    | J101 x 3.175 MM (0.125 INCH) THICKNESS                     |              |
| 1   | Lock Trim Protector Bar   | R111LPB-630 (ROCKWOOD), OR EQUAL                           |              |
| 1   | Edge Guard (@ Wood Doors) | J208M / J211 (VERIFY), CUT: HARDWARE                       |              |
| 1   | Magnetic Holder           | C00011 TRI-VOLTAGE   |              |
| 1   | Set Self-Adhesive Seals   | R0E154   |              |
| POWER, WIRING, CONDUIT, AND FIRE ALARM CONNECTION BY DIVISION 26. |                           |  |              |

| <u>Each Door to Have:</u> |                           | <u>HW-1K</u>   | <u>NON-RATED</u> |
|---------------------------|---------------------------|--|------------------|
| 1                         | Continuous Hinge          | A51031B x INTEGRAL HINGE GUARD CHANNEL<br>X ADJUSTA-SCREWS |                  |
| 1                         | Hospital Latch            | F01 x PADDLES POINTING DOWN                                |                  |
| 1                         | Closer                    | C02011/C02021 (PT4D, PT4F, PT4H)                           |                  |
| 1                         | Armor Plate               | J101 x 1.275 MM (0.050 INCH) THICKNESS                     |                  |
| 1                         | Edge Guard (@ Wood Doors) | J208M / J211 (VERIFY), CUT: HARDWARE                       |                  |
| 1                         | Overhead Stop             | C01541-ADJUSTABLE  |                  |
| 1                         | Auto Door Bottom          | R0Y346 - HEAVY DUTY  |                  |
| 2                         | Sets Self-Adhesive Seals  | R0E154   |                  |

| <u>Each Door to Have:</u> |                          | <u>HW-1L</u>                        | <u>NON-RATED</u> |
|---------------------------|--------------------------|-------------------------------------|------------------|
| 1                         | Continuous Hinge         | A51031B                             |                  |
| 1                         | Latchset                 | F01                                 |                  |
| 1                         | Kick Plate               | J102                                |                  |
| 1                         | Wall Stop                | L52101 CONVEX                       |                  |
| 1                         | Threshold                | J32300 x 57 mm width (2-1/4 inches) |                  |
| 1                         | Auto Door Bottom         | R0Y346 - HEAVY DUTY                 |                  |
| 2                         | Sets Self-Adhesive Seals | R0E154                              |                  |

| <u>Each Door to Have:</u> |              | <u>HW-1M</u>        | <u>NON-RATED</u> |
|---------------------------|--------------|---------------------|------------------|
| 1                         | Floor Closer | C06011 (PT8A, PT8J) |                  |
| 2                         | Push Plates  | J304 8" x 16"       |                  |
| 2                         | Kick Plates  | J102                |                  |

VA SAN DIEGO  
HEALTHCARE SYSTEM

RENOVATE BUILDING 1 FIRST FLOOR FOR  
VOLUNTEER AND PATIENT SERVICES (PHASE 2)  
PROJECT NO. 664-09-103

2 Edge Guard (@ Wood Doors) J209M / J212 (VERIFY)  
1 Overhead Stop C01541-ADJUSTABLE

HW-1N

Each Door to Have:

NON-RATED

1 Continuous Hinge A51031B  
1 Push/Pull Plate Set 1894-4 x 1195-1 PULL (TRIMCO), OR EQUAL  
1 Kick Plate J102  
1 Mop Plate (@ Inswing Doors) J102  
1 Closer C02011/C02021 (PT4D, PT4F, PT4H)  
1 Floor Stop L02121 x 3 FASTENERS  
3 Silencers L03011

HW-1P

Each Lead-Lined Door to Have:

NON-RATED

1 Floor Closer C6062 (PT8A, PT8G, PT8M)  
2 Push Plates J304 8" x 16"  
2 Kick Plates J102  
2 Edge Guard (@ Wood Doors) J209M / J212 (VERIFY)  
1 Overhead Stop C01541-ADJUSTABLE

HW-1Q

Each Door to Have:

RATED/NON-RATED

1 Continuous Hinge A51031B  
1 Latchset F01  
1 Kick Plate J102  
1 Closer (@ rated doors) C02011/C02021 (PT4D, PT4F, PT4H)  
1 Closer (@ non-rated doors) C02051/C02061 (PT4D, PT4H)  
1 Wall Stop L52101 CONVEX  
1 Threshold J32300 x 57 mm width (2-1/4 inches)  
1 Auto Door Bottom R0Y346 - HEAVY DUTY  
2 Sets Self-Adhesive Seals R0E154

HW-1R

Each Door to Have:

RATED/NON-RATED

1 Continuous Hinge A51031B  
1 Latchset F01  
1 Kick Plate J102  
1 Closer (@ rated doors) C02011/C02021 (PT4D, PT4F, PT4H)  
1 Closer (@ non-rated doors) C02051/C02061 (PT4D, PT4H)  
1 Wall Stop L52101 CONVEX  
1 Set Self-Adhesive Seals R0E154

| <u>Each Door to Have:</u>        |                              | <u>HW-2</u>                      | <u>RATED/NON-RATED</u> |
|----------------------------------|------------------------------|----------------------------------|------------------------|
|                                  | Hinges                       | QUANTITY & TYPE AS REQUIRED      |                        |
| 1                                | Keyed Privacy Indicator Lock | F13 x OCCUPANCY INDICATOR        |                        |
| 1                                | Closer                       | C02011/C02021 (PT4D, PT4F, PT4H) |                        |
| 1                                | Kick Plate                   | J102                             |                        |
| 1                                | Mop Plate (@ Inswing Doors)  | J102                             |                        |
| 1                                | Floor Stop                   | L02121 x 3 FASTENERS             |                        |
| 1                                | Set Self-Adhesive Seals      | R0E154                           |                        |
| STONE THRESHOLD BY OTHER TRADES. |                              |                                  |                        |

| <u>Each [ADO] Door to Have:</u>  |                              | <u>HW-2A</u>  | <u>RATED/NON-RATED</u> |
|--|------------------------------|---|------------------------|
| 1  | Continuous Transfer Hinge    | A51031B x INTEGRAL HINGE GUARD CHANNEL<br>X ADJUSTA-SCREWS x 8-THRUWIRE<br>TRANSFER X IN-HINGE ACCESS PANEL |                        |
| 1  | Keyed Privacy Indicator Lock | F13 x OCCUPANCY INDICATOR   |                        |
| 1  | Electric Strike              | E59391 (FAIL-SECURE), 24VDC   |                        |
| 1  | Power Supply                 | Regulated, Filtered, 24VDC, Amperage<br>as required   |                        |
| 1  | Kick Plate                   | J102  |                        |
| 1  | Mop Plate (@ Inswing Doors)  | J102  |                        |
| 1  | Edge Guard (@ Wood Doors)    | J208M / J211 (VERIFY), CUT: HARDWARE  |                        |
| 1  | Floor Stop                   | L02121 x 3 FASTENERS  |                        |
| 1  | Threshold                    | J32300 x 57 mm width (2-1/4 inches)   |                        |
| 1  | Auto Door Bottom             | R0Y346 - HEAVY DUTY   |                        |
| 2  | Set Self-Adhesive Seals      | R0E154  |                        |
| AUTOMATIC DOOR OPERATOR AND CONTROLS BY SECTION 08 71 13, AUTOMATIC DOOR<br>OPERATORS. |                              |   |                        |
| STONE THRESHOLD BY OTHER TRADES.   |                              |   |                        |

| <u>Each Door to Have:</u>        |                             | <u>HW-2B</u>  | <u>NON-RATED</u> |
|----------------------------------|-----------------------------|---|------------------|
| 1                                | Center Pivot Set            | C07042  |                  |
| 1                                | Privacy Lock                | F02-MOD x THUMBTURN BOTH SIDES X<br>OCCUPANCY INDICATOR |                  |
| 1                                | Rescue Stop                 | ES-1 (STANLEY), OR EQUAL                                |                  |
| 1                                | Custom Rescue Strike        | CUSTOM DOUBLE-LIPPED (TICE), OR EQUAL                   |                  |
| 1                                | Kick Plate                  | J102  |                  |
| 1                                | Mop Plate (@ Inswing Doors) | J102  |                  |
| 1                                | Wall Stop                   | L52101 CONVEX   |                  |
| STONE THRESHOLD BY OTHER TRADES. |                             |   |                  |



| <u>Each Door to Have:</u>        |                             | <u>HW-2C</u>                  | <u>NON-RATED</u> |
|----------------------------------|-----------------------------|-------------------------------|------------------|
|                                  | Hinges                      | QUANTITY & TYPE AS REQUIRED   |                  |
| 1                                | Privacy Lock                | F02-MOD X OCCUPANCY INDICATOR |                  |
| 1                                | Kick Plate                  | J102                          |                  |
| 1                                | Mop Plate (@ Inswing Doors) | J102                          |                  |
| 1                                | Wall Stop                   | L52101 CONVEX                 |                  |
| 3                                | Silencers                   | L03011                        |                  |
| STONE THRESHOLD BY OTHER TRADES. |                             |                               |                  |

| <u>Each Door to Have:</u>        |                             | <u>HW-2D</u>                     | <u>RATED</u> |
|----------------------------------|-----------------------------|----------------------------------|--------------|
|                                  | Hinges                      | QUANTITY & TYPE AS REQUIRED      |              |
| 1                                | Privacy Lock                | F02-MOD X OCCUPANCY INDICATOR    |              |
| 1                                | Closer                      | C02011/C02021 (PT4D, PT4F, PT4H) |              |
| 1                                | Kick Plate                  | J102                             |              |
| 1                                | Mop Plate (@ Inswing Doors) | J102                             |              |
| 1                                | Wall Stop                   | L52101 CONVEX                    |              |
| 1                                | Set Self-Adhesive Seals     | R0E154                           |              |
| STONE THRESHOLD BY OTHER TRADES. |                             |                                  |              |

| <u>Each Door to Have:</u>        |                             | <u>HW-2E</u>   | <u>RATED</u> |
|----------------------------------|-----------------------------|--|--------------|
| 1                                | Continuous Hinge            | A51031B x INTEGRAL HINGE GUARD CHANNEL<br>X ADJUSTA-SCREWS |              |
| 1                                | Hospital Privacy Latch      | F02-MOD x TURNPIECE BOTH SIDES                             |              |
| 1                                | Closer                      | C02011/C02021 (PT4D, PT4F, PT4H)                           |              |
| 1                                | Armor Plate                 | J101 x 1.275 MM (0.050 INCH) THICKNESS                     |              |
| 1                                | Mop Plate (@ Inswing Doors) | J102   |              |
| 1                                | Edge Guard (@ Wood Doors)   | J208M / J211 (VERIFY), CUT: HARDWARE                       |              |
| 1                                | Overhead Stop               | C01541-ADJUSTABLE  |              |
| 1                                | Set Self-Adhesive Seals     | R0E154   |              |
| STONE THRESHOLD BY OTHER TRADES. |                             |  |              |

| <u>Each Door to Have:</u> |              | <u>HW-2F</u>                  | <u>NON-RATED</u> |
|---------------------------|--------------|-------------------------------|------------------|
|                           | Hinges       | QUANTITY & TYPE AS REQUIRED   |                  |
| 1                         | Privacy Lock | F02-MOD X OCCUPANCY INDICATOR |                  |
| 1                         | Wall Stop    | L52101 CONVEX                 |                  |
| 3                         | Silencers    | L03011                        |                  |
| 1                         | Coat Hook    | L03121                        |                  |

| <u>Each Door to Have:</u>        |                              | <u>HW-2G</u>                     | <u>RATED/NON-RATED</u> |
|----------------------------------|------------------------------|----------------------------------|------------------------|
|                                  | Hinges                       | QUANTITY & TYPE AS REQUIRED      |                        |
| 1                                | Keyed Privacy Indicator Lock | F13 x OCCUPANCY INDICATOR        |                        |
| 1                                | Closer                       | C02011/C02021 (PT4D, PT4F, PT4H) |                        |
| 1                                | Kick Plate                   | J102                             |                        |
| 1                                | Mop Plate (@ Inswing Doors)  | J102                             |                        |
| 1                                | Floor Stop                   | L02121 x 3 FASTENERS             |                        |
| 1                                | Auto Door Bottom             | R0Y346 - HEAVY DUTY              |                        |
| 2                                | Set Self-Adhesive Seals      | R0E154                           |                        |
| STONE THRESHOLD BY OTHER TRADES. |                              |                                  |                        |

| <u>Each Door to Have:</u>        |                             | <u>HW-2H</u>   | <u>NON-RATED</u> |
|----------------------------------|-----------------------------|--|------------------|
| 1                                | Continuous Hinge            | A51031B x INTEGRAL HINGE GUARD CHANNEL<br>X ADJUSTA-SCREWS |                  |
| 1                                | Hospital Privacy Latch      | F02-MOD x TURNPIECE BOTH SIDES X<br>OCCUPANCY INDICATOR    |                  |
| 1                                | Kick Plate                  | J102   |                  |
| 1                                | Mop Plate (@ Inswing Doors) | J102   |                  |
| 1                                | Edge Guard (@ Wood Doors)   | J208M / J211 (VERIFY), CUT: HARDWARE                       |                  |
| 1                                | Overhead Stop               | C01541-ADJUSTABLE  |                  |
| 3                                | Silencers                   | L03011   |                  |
| STONE THRESHOLD BY OTHER TRADES. |                             |  |                  |

| <u>Each Door to Have:</u>        |                             | <u>HW-2J</u>                  | <u>NON-RATED</u> |
|----------------------------------|-----------------------------|-------------------------------|------------------|
|                                  | Hinges                      | QUANTITY & TYPE AS REQUIRED   |                  |
| 1                                | Privacy Lock                | F02-MOD X OCCUPANCY INDICATOR |                  |
| 1                                | Kick Plate                  | J102                          |                  |
| 1                                | Mop Plate (@ Inswing Doors) | J102                          |                  |
| 1                                | Wall Stop                   | L52101 CONVEX                 |                  |
| 1                                | Auto Door Bottom            | R0Y346 - HEAVY DUTY           |                  |
| 2                                | Set Self-Adhesive Seals     | R0E154                        |                  |
| STONE THRESHOLD BY OTHER TRADES. |                             |                               |                  |

| <u>Each Door to Have:</u>        |                             | <u>HW-2K</u>   | <u>NON-RATED</u> |
|----------------------------------|-----------------------------|--|------------------|
| 1                                | Continuous Hinge            | A51031B x INTEGRAL HINGE GUARD CHANNEL<br>X ADJUSTA-SCREWS |                  |
| 1                                | Hospital Privacy Latch      | F02-MOD x TURNPIECE BOTH SIDES X<br>OCCUPANCY INDICATOR    |                  |
| 1                                | Kick Plate                  | J102   |                  |
| 1                                | Mop Plate (@ Inswing Doors) | J102   |                  |
| 1                                | Edge Guard (@ Wood Doors)   | J208M / J211 (VERIFY), CUT: HARDWARE                       |                  |
| 1                                | Overhead Stop               | C01541-ADJUSTABLE  |                  |
| 1                                | Auto Door Bottom            | R0Y346 - HEAVY DUTY  |                  |
| 2                                | Set Self-Adhesive Seals     | R0E154   |                  |
| STONE THRESHOLD BY OTHER TRADES. |                             |  |                  |

| <u>Each Door to Have:</u> |                         | <u>HW-3</u>                      | <u>RATED</u> |
|---------------------------|-------------------------|----------------------------------|--------------|
|                           |                         | QUANTITY & TYPE AS REQUIRED      |              |
| 1                         | Hinges                  | F04                              |              |
| 1                         | Office Lock             | C02011/C02021 (PT4D, PT4F, PT4H) |              |
| 1                         | Closer                  | J102                             |              |
| 1                         | Kick Plate              | L02121 x 3 FASTENERS             |              |
| 1                         | Floor Stop              | R0E154                           |              |
| 1                         | Set Self-Adhesive Seals |                                  |              |

| <u>Each Door to Have:</u> |  | <u>HW-3A</u> | <u>NON-RATED</u> |
|---------------------------|--|--------------|------------------|
| THIS SET NOT USED.        |  |              |                  |

| <u>Each Door to Have:</u>                      |                         | <u>HW-3B</u>                       | <u>NON-RATED/RATED</u> |
|--|-------------------------|------------------------------------|------------------------|
|  |                         | QUANTITY & TYPE AS REQUIRED        |                        |
| 1  | Hinges                  | F04                                |                        |
| 1  | Office Lock             | C02011/C02021 (PT4D, PT4F, PT4H)   |                        |
| 1  | Closer                  | C02051/C02061 (PT4D, PT4F, PT4H)   |                        |
| 1  | Closer                  | AT NON-RATED                       |                        |
| 1  | Floor Stop              | L02121 x 3 FASTENERS               |                        |
| 1  | Door Viewer             | L03221 - 190° (VIEW INTO CORRIDOR) |                        |
| 1  | Set Self-Adhesive Seals | R0E154                             |                        |
| OMIT VIEWER IF DOOR PROVIDED WITH VISION LITE. |                         |                                    |                        |

| <u>Each Door to Have:</u> |  | <u>HW-3C</u> |
|---------------------------|--|--------------|
| THIS SET NOT USED.        |  |              |

| <u>Each Door to Have:</u> |                          | <u>HW-3D</u>                        | <u>RATED</u> |
|---------------------------|--------------------------|-------------------------------------|--------------|
|                           |                          | QUANTITY & TYPE AS REQUIRED         |              |
| 1                         | Hinges                   | F04                                 |              |
| 1                         | Office Lock              | C02011/C02021 (PT4D, PT4F, PT4H)    |              |
| 1                         | Closer                   | J102                                |              |
| 1                         | Kick Plate               | L02121 x 3 FASTENERS                |              |
| 1                         | Floor Stop               | J32300 x 57 mm width (2-1/4 inches) |              |
| 1                         | Threshold                | R0Y346 - HEAVY DUTY                 |              |
| 1                         | Auto Door Bottom         | R0E154                              |              |
| 2                         | Sets Self-Adhesive Seals |                                     |              |

Each Door to Have: HW-3E NON-RATED

|   |                         |                             |
|---|-------------------------|-----------------------------|
|   | Hinges                  | QUANTITY & TYPE AS REQUIRED |
| 1 | Office Lock             | F04                         |
| 1 | Closer                  | C02051/C02061 (PT4D, PT4H)  |
| 1 | Floor Stop              | L02121 x 3 FASTENERS        |
| 1 | Set Self-Adhesive Seals | R0E154                      |
| 1 | Coat Hook               | L03121                      |

OMIT COAT HOOK WHERE GLASS LITE PREVENTS INSTALLATION.

Each Door to Have: HW-3F RATED/NON-RATED

|   |                           |  |
|---|---------------------------|--|
| 1 | Continuous Hinge          | A51031B x INTEGRAL HINGE GUARD CHANNEL<br>X ADJUSTA-SCREWS |
| 1 | Office Lock               | F04  |
| 1 | Closer                    | C02051/C02061 (PT4D, PT4H)                                 |
| 1 | Closer                    | CO2011/CO2021 (PT4D, PT4F, PT4H)<br>@ RATED DOOR           |
| 1 | Kick Plate                | J102   |
| 1 | Edge Guard (@ Wood Doors) | J208M / J211 (VERIFY), CUT: HARDWARE                       |
| 1 | Floor Stop                | L02121 x 3 FASTENERS                                       |
| 1 | Threshold                 | J32300 x 57 mm width (2-1/4 inches)                        |
| 1 | Auto Door Bottom          | R0Y346 - HEAVY DUTY  |
| 2 | Sets Self-Adhesive Seals  | R0E154   |

Each Door to Have: HW-3G NON-RATED

|   |                                  |                                     |
|---|----------------------------------|-------------------------------------|
|   | Hinges                           | QUANTITY & TYPE AS REQUIRED         |
| 1 | Office Lock                      | F04                                 |
| 1 | Closer                           | C02051/C02061 (PT4D, PT4H)          |
| 1 | Floor Stop                       | L02121 x 3 FASTENERS                |
| 1 | Coat Hook                        | L03121                              |
| 1 | Door Viewer (Mental Health Only) | L03221 - 190° (VIEW INTO CORRIDOR)  |
| 1 | Threshold                        | J32300 x 57 mm width (2-1/4 inches) |
| 1 | Auto Door Bottom                 | R0Y346 - HEAVY DUTY                 |
| 2 | Sets Self-Adhesive Seals         | R0E154                              |

OMIT VIEWER IF DOOR PROVIDED WITH VISION LITE.  
OMIT COAT HOOK WHERE GLASS LITE PREVENTS INSTALLATION.

Each Door to Have: HW-3H RATED

|   |                           |  |
|---|---------------------------|--|
| 1 | Continuous Hinge          | A51031B x INTEGRAL HINGE GUARD CHANNEL<br>X ADJUSTA-SCREWS |
| 1 | Office Lock               | F04  |
| 1 | Closer                    | CO2011/CO2021 (PT4D, PT4F, PT4H)                           |
| 1 | Kick Plate                | J102   |
| 1 | Edge Guard (@ Wood Doors) | J208M / J211 (VERIFY), CUT: HARDWARE                       |
| 1 | Floor Stop                | L02121 x 3 FASTENERS                                       |

1 Sets Self-Adhesive Seals R0E154

HW-3J

Each Door to Have:

NON-RATED

|   |  |  |
|---|--|--|
| 1 | Continuous Hinge                                   | A51031B x INTEGRAL HINGE GUARD CHANNEL<br>X ADJUSTA-SCREWS |
| 1 | Office Lock  | F04  |
| 1 | Closer   | C02051/C02061 (PT4D, PT4H)                                 |
| 1 | Kick Plate   | J102   |
| 1 | Edge Guard (@ Wood Doors)                          | J208M / J211 (VERIFY), CUT: HARDWARE                       |
| 1 | Floor Stop   | L02121 x 3 FASTENERS                                       |
| 1 | Threshold  | J32300 x 57 mm width (2-1/4 inches)                        |
| 1 | Auto Door Bottom                                   | R0Y346 - HEAVY DUTY  |
| 1 | Set Sound/Light Seals                              | R0C266   |
| 1 | Z-Bracket (as required for<br>parallel arm closer) | 770SPB (ZERO), OR EQUAL                                    |

HW-4

Each Door to Have:

NON-RATED

|   |                |                             |
|---|----------------|-----------------------------|
|   | Hinges         | QUANTITY & TYPE AS REQUIRED |
| 1 | Classroom Lock | F08                         |
| 1 | Overhead Stop  | C04541                      |
| 3 | Silencers      | L03011                      |

HW-4A

Each [ADO] Door to Have:

RATED

|   |                             |   |
|---|-----------------------------|---|
| 1 | Continuous Transfer Hinge   | A51031B x INTEGRAL HINGE GUARD CHANNEL<br>X ADJUSTA-SCREWS x 4-THRUWIRE TRANSFER<br>X IN-HINGE ACCESS PANEL |
| 1 | Classroom Lock              | F08   |
| 1 | Electric Strike             | E59311 (FAIL-SECURE), 24VDC   |
| 1 | Power Supply                | Regulated, Filtered, 24VDC, Amperage<br>as required   |
| 1 | Kick Plate                  | J102  |
| 1 | Mop Plate (@ Inswing Doors) | J102 @ TOILET ROOMS ONLY  |
| 1 | Edge Guard (@ Wood Doors)   | J208M / J211 (VERIFY), CUT: HARDWARE  |
| 1 | Floor Stop                  | L02121 x 3 FASTENERS  |
| 1 | Set Self-Adhesive Seals     | R0E154  |

AUTOMATIC DOOR OPERATOR AND CONTROLS BY SECTION 08 71 13, AUTOMATIC DOOR OPERATORS.

POWER TRANSFER FOR RE-ACTIVATION SENSOR WIRING (RE-ACTIVATION SENSORS PROVIDED BY SECTION 08 71 13).

| <u>Each Door to Have:</u>                     |                               | <u>HW-4B</u>                        | <u>NON-RATED/RATED</u> |
|---|-------------------------------|-------------------------------------|------------------------|
| 1   | Continuous Hinge              | A51031B                             |                        |
| 1   | Public Restroom Lock          | F09                                 |                        |
| 1   | Closer                        | C02011/C02021 (PT4D, PT4F, PT4H)    |                        |
| 1   | Closer                        | C02051/C02061 (PT4D, PT4H)          |                        |
| 1   | Kick Plate                    | J102                                |                        |
| 1   | Mop Plate (@ Inswing Doors)   | J102                                |                        |
| 1   | Floor Stop (@ Outswing Doors) | L02121 x 3 FASTENERS                |                        |
| 1   | Wall Stop (@ Inswing Doors)   | L52101 CONVEX                       |                        |
| 1   | Threshold                     | J32300 x 57 mm width (2-1/4 inches) |                        |
| 1   | Auto Door Bottom              | R0Y346 - HEAVY DUTY                 |                        |
| 2   | Sets Self-Adhesive Seals      | R0E154                              |                        |
| PROVIDE NON-HOLD-OPEN CLOSER AT TOILET ROOMS. |                               |                                     |                        |
| STONE THRESHOLD BY OTHER TRADES.              |                               |                                     |                        |

| <u>Each Door to Have:</u> |                           | <u>HW-4C</u>   | <u>RATED</u> |
|---------------------------|---------------------------|--|--------------|
| 1                         | Continuous Hinge          | A51031B x INTEGRAL HINGE GUARD CHANNEL<br>X ADJUSTA-SCREWS |              |
| 1                         | Hospital Utility Lock     | F09 x PADDLES POINTING DOWN                                |              |
| 1                         | Key Cylinder              | TYPE AS REQUIRED   |              |
| 1                         | Closer                    | C02011/C02021 (PT4D, PT4F, PT4H)                           |              |
| 1                         | Armor Plate               | J101 x 1.275 MM (0.050 INCH) THICKNESS                     |              |
| 1                         | Edge Guard (@ Wood Doors) | J208M / J211 (VERIFY), CUT: HARDWARE                       |              |
| 1                         | Overhead Stop             | C01541-ADJUSTABLE  |              |
| 1                         | Threshold                 | J32300 x 57 mm width (2-1/4 inches)                        |              |
| 1                         | Auto Door Bottom          | R0Y346 - HEAVY DUTY  |              |
| 1                         | Set Seals                 | R3C164   |              |

| <u>Each Door to Have:</u> |                               | <u>HW-4D</u>   | <u>RATED</u> |
|---------------------------|-------------------------------|--|--------------|
| 1                         | Continuous Hinge              | A51031B x INTEGRAL HINGE GUARD CHANNEL<br>X ADJUSTA-SCREWS |              |
| 1                         | Classroom Lock                | F08  |              |
| 1                         | Closer                        | C02011/C02021 (PT4D, PT4F, PT4H)                           |              |
| 1                         | Armor Plate                   | J101 x 1.275 MM (0.050 INCH) THICKNESS                     |              |
| 1                         | Mop Plate (@ Inswing Doors)   | J102   |              |
| 1                         | Edge Guard (@ Wood Doors)     | J208M / J211 (VERIFY), CUT: HARDWARE                       |              |
| 1                         | Floor Stop (@ Outswing Doors) | L02121 x 3 FASTENERS                                       |              |
| 1                         | Wall Stop (@ Inswing Doors)   | L52101 CONVEX  |              |
| 1                         | Set Self-Adhesive Seals       | R0E154   |              |

| <u>Each Door to Have:</u> |                            | <u>HW-4E</u>                        | <u>NON-RATED/RATED</u> |
|---------------------------|----------------------------|-------------------------------------|------------------------|
|                           | Hinges                     | QUANTITY & TYPE AS REQUIRED         |                        |
| 1                         | Utility Lock               | F09                                 |                        |
| 1                         | Closer (@ rated doors)     | C02011/C02021 (PT4D, PT4F, PT4H)    |                        |
| 1                         | Closer (@ non-rated doors) | C02051/C02061 (PT4D, PT4F)          |                        |
| 1                         | Kick Plate                 | J102                                |                        |
| 1                         | Floor Stop                 | L02121 x 3 FASTENERS                |                        |
| 1                         | Threshold                  | J32300 x 57 mm width (2-1/4 inches) |                        |
| 1                         | Auto Door Bottom           | R0Y346 - HEAVY DUTY                 |                        |
| 2                         | Sets Self-Adhesive Seals   | R0E154                              |                        |

| <u>Each Door to Have:</u> |                               | <u>HW-4F</u>   | <u>RATED</u> |
|---------------------------|-------------------------------|--|--------------|
| 1                         | Continuous Hinge              | A51031B x INTEGRAL HINGE GUARD CHANNEL<br>X ADJUSTA-SCREWS |              |
| 1                         | Utility Lock                  | F09  |              |
| 1                         | Closer                        | C02011/C02021 (PT4D, PT4F, PT4H)                           |              |
| 1                         | Armor Plate                   | J101 x 1.275 MM (0.050 INCH) THICKNESS                     |              |
| 1                         | Edge Guard (@ Wood Doors)     | J208M / J211 (VERIFY), CUT: HARDWARE                       |              |
| 1                         | Floor Stop (@ Outswing Doors) | L02121 x 3 FASTENERS                                       |              |
| 1                         | Wall Stop (@ Inswing Doors)   | L52101 CONVEX  |              |
| 1                         | Set Self-Adhesive Seals       | R0E154   |              |

| <u>Each Door to Have:</u> |                            | <u>HW-4G</u>                     | <u>RATED/NON-RATED</u> |
|---------------------------|----------------------------|----------------------------------|------------------------|
|                           | Hinges                     | QUANTITY & TYPE AS REQUIRED      |                        |
| 1                         | Utility Lock               | F09                              |                        |
| 1                         | Closer (@ Rated Doors)     | C02011/C02021 (PT4D, PT4F, PT4H) |                        |
| 1                         | Closer (@ Non-rated Doors) | C02051/C02061 (PT4D, PT4H)       |                        |
| 1                         | Kick Plate                 | J102                             |                        |
| 1                         | Floor Stop                 | L02121 x 3 FASTENERS             |                        |
| 1                         | Set Self-Adhesive Seals    | R0E154                           |                        |

| <u>Each [MHO] Door to Have:</u> |                         | <u>HW-4H</u>                     | <u>RATED</u> |
|---------------------------------|-------------------------|----------------------------------|--------------|
|                                 | Hinges                  | QUANTITY & TYPE AS REQUIRED      |              |
| 1                               | Classroom Lock          | F08                              |              |
| 1                               | Closer                  | C02011/C02021 (PT4D, PT4F, PT4H) |              |
| 1                               | Kick Plate              | J102                             |              |
| 1                               | Magnetic Holder         | C00011 TRI-VOLTAGE               |              |
| 1                               | Set Self-Adhesive Seals | R0E154                           |              |

POWER, WIRING, CONDUIT, AND FIRE ALARM CONNECTION BY DIVISION 26.

| <u>Each Door to Have:</u> |                            | <u>HW-4J</u>                        | <u>RATED/NON-RATED</u> |
|---------------------------|----------------------------|-------------------------------------|------------------------|
|                           | Hinges                     | QUANTITY & TYPE AS REQUIRED         |                        |
| 1                         | Utility Lock               | F09                                 |                        |
| 1                         | Closer (@ Rated Doors)     | C02011/C02021 (PT4D, PT4F, PT4H)    |                        |
| 1                         | Closer (@ Non-rated Doors) | C02051/C02061 (PT4D, PT4H)          |                        |
| 1                         | Kick Plate                 | J102                                |                        |
| 1                         | Floor Stop                 | L02121 x 3 FASTENERS                |                        |
| 1                         | Threshold                  | J32300 x 57 mm width (2-1/4 inches) |                        |
| 1                         | Auto Door Bottom           | R0Y346 - HEAVY DUTY                 |                        |
| 2                         | Sets Self-Adhesive Seals   | R0E154                              |                        |

| <u>Each Door to Have:</u> |                           | <u>HW-4K</u>   | <u>NON-RATED</u> |
|---------------------------|---------------------------|--|------------------|
| 1                         | Continuous Hinge          | A51031B x INTEGRAL HINGE GUARD CHANNEL<br>X ADJUSTA-SCREWS |                  |
| 1                         | Utility Lock              | F09  |                  |
| 1                         | Closer                    | C02051/C02061 (PT4D, PT4H)                                 |                  |
| 1                         | Armor Plate               | J101 x 1.275 MM (0.050 INCH) THICKNESS                     |                  |
| 1                         | Edge Guard (@ Wood Doors) | J208M / J211 (VERIFY), CUT: HARDWARE                       |                  |
| 1                         | Floor Stop                | L02121 x 3 FASTENERS                                       |                  |
| 1                         | Set Self-Adhesive Seals   | R0E154   |                  |

| <u>Each Door to Have:</u> |  | <u>HW-4L</u>   | <u>NON-RATED</u> |
|---------------------------|--|--|------------------|
| 1                         | Continuous Hinge                                   | A51031B x INTEGRAL HINGE GUARD CHANNEL<br>X ADJUSTA-SCREWS |                  |
| 1                         | Classroom Lock                                     | F08  |                  |
| 1                         | Closer   | C02051/C02061 (PT4D, PT4H)                                 |                  |
| 1                         | Kick Plate   | J102   |                  |
| 1                         | Edge Guard (@ Wood Doors)                          | J208M / J211 (VERIFY), CUT: HARDWARE                       |                  |
| 1                         | Floor Stop   | L02121 x 3 FASTENERS                                       |                  |
| 1                         | Threshold  | J32300 x 57 mm width (2-1/4 inches)                        |                  |
| 1                         | Auto Door Bottom                                   | R0Y346 - HEAVY DUTY  |                  |
| 1                         | Set Sound/Light Seals                              | R0C266   |                  |
| 1                         | Z-Bracket (as required for<br>parallel arm closer) | 770SPB (ZERO), OR EQUAL                                    |                  |

| <u>Each Door to Have:</u> |                           | <u>HW-4M</u>   | <u>NON-RATED</u> |
|---------------------------|---------------------------|--|------------------|
| 1                         | Continuous Hinge          | A51031B x INTEGRAL HINGE GUARD CHANNEL<br>X ADJUSTA-SCREWS |                  |
| 1                         | Classroom Hospital Lock   | F08 x PADDLES POINTING DOWN                                |                  |
| 1                         | Closer                    | C02051/C02061 (PT4D, PT4H)                                 |                  |
| 1                         | Heavy-Duty Armor Plate    | J101 x 3.175 MM (0.125 INCH) THICKNESS                     |                  |
| 1                         | Edge Guard (@ Wood Doors) | J208M / J211 (VERIFY), CUT: HARDWARE                       |                  |
| 1                         | Floor Stop                | L02121 x 3 FASTENERS                                       |                  |
| 1                         | Set Self-Adhesive Seals   | R0E154   |                  |



| <u>Each Door to Have:</u> |                            | <u>HW-4N</u>   | <u>RATED/NON-RATED</u> |
|---------------------------|----------------------------|--|------------------------|
| 1                         | Continuous Hinge           | A51031B x INTEGRAL HINGE GUARD CHANNEL<br>X ADJUSTA-SCREWS |                        |
| 1                         | Utility Lock               | F09  |                        |
| 1                         | Closer (@ rated doors)     | C02011/C02021 (PT4D, PT4F, PT4H)                           |                        |
| 1                         | Closer (@ non-rated doors) | C02051/C02061 (PT4D, PT4H)                                 |                        |
| 1                         | Kick Plate                 | J102   |                        |
| 1                         | Edge Guard (@ Wood Doors)  | J208M / J211 (VERIFY), CUT: HARDWARE                       |                        |
| 1                         | Floor Stop                 | L02121 x 3 FASTENERS                                       |                        |
| 1                         | Threshold                  | J32300 x 57 mm width (2-1/4 inches)                        |                        |
| 1                         | Auto Door Bottom           | R0Y346 - HEAVY DUTY  |                        |
| 2                         | Sets Self-Adhesive Seals   | R0E154   |                        |

| <u>Each Door to Have:</u> |                           | <u>HW-4P</u>   | <u>NON-RATED</u> |
|---------------------------|---------------------------|--|------------------|
| 1                         | Continuous Hinge          | A51031B x INTEGRAL HINGE GUARD CHANNEL<br>X ADJUSTA-SCREWS |                  |
| 1                         | Classroom Hospital Lock   | F08 x PADDLES POINTING DOWN                                |                  |
| 1                         | Closer                    | C02051/C02061 (PT4D, PT4H)                                 |                  |
| 1                         | Armor Plate               | J101 x 1.275 MM (0.050 INCH) THICKNESS                     |                  |
| 1                         | Edge Guard (@ Wood Doors) | J208M / J211 (VERIFY), CUT: HARDWARE                       |                  |
| 1                         | Overhead Stop             | C01541-ADJUSTABLE  |                  |
| 1                         | Threshold                 | J32300 x 57 mm width (2-1/4 inches)                        |                  |
| 1                         | Auto Door Bottom          | R0Y346 - HEAVY DUTY  |                  |
| 2                         | Sets Self-Adhesive Seals  | R0E154   |                  |

| <u>Each Door to Have:</u> |                           | <u>HW-4Q</u>                              | <u>NON-RATED</u> |
|---------------------------|---------------------------|---|------------------|
| 1                         | Pivot Set                 | C07162 x 454KG (1000 LBS) WEIGHT CAPACITY |                  |
| 1                         | Intermediate Pivot        | C07311                                    |                  |
| 1                         | Utility Hospital Lock     | F09 x LEAD-LINED x PADDLES POINTING DOWN  |                  |
| 1                         | Armor Plate               | J101 x 1.275 MM (0.050 INCH) THICKNESS    |                  |
| 2                         | Edge Guard (@ Wood Doors) | J208M / J211 (VERIFY), CUT: HARDWARE      |                  |
| 1                         | Overhead Stop             | C01541-ADJUSTABLE                         |                  |
| 1                         | Set Self-Adhesive Seal    | R0E154                                    |                  |

| <u>Each [ADO] Door to Have:</u> |                             | <u>HW-4R</u>  | <u>RATED</u> |
|---------------------------------|-----------------------------|---|--------------|
| 1                               | Continuous Hinge            | A51031B x INTEGRAL HINGE GUARD CHANNEL<br>X ADJUSTA-SCREWS x 4-THRUWIRE TRANSFER<br>X IN-HINGE ACCESS PANEL |              |
| 1                               | Classroom Lock              | F08   |              |
| 1                               | Electric Strike             | E59311 (FAIL-SECURE), 24VDC   |              |
| 1                               | Power Supply                | Regulated, Filtered, 24VDC, Amperage<br>as required   |              |
| 1                               | Kick Plate                  | J102  |              |
| 1                               | Mop Plate (@ Inswing Doors) | J102 @ TOILET ROOMS ONLY  |              |
| 1                               | Edge Guard (@ Wood Doors)   | J208M / J211 (VERIFY), CUT: HARDWARE  |              |
| 1                               | Floor Stop                  | L02121 x 3 FASTENERS  |              |
| 1                               | Threshold                   | J32300 x 57 mm width (2-1/4 inches)   |              |
| 1                               | Auto Door Bottom            | R0Y346 - HEAVY DUTY   |              |
| 2                               | Set Self-Adhesive Seals     | R0E154  |              |

AT TOILET ROOMS, OMIT METAL THRESHOLD; STONE THRESHOLD BY OTHER TRADES.  
AUTOMATIC DOOR OPERATOR AND CONTROLS BY SECTION 08 71 13, AUTOMATIC DOOR  
OPERATORS.

POWER TRANSFER FOR RE-ACTIVATION SENSOR WIRING (RE-ACTIVATION SENSORS  
PROVIDED BY SECTION 08 71 13).

| <u>Each Door to Have:</u> |                           | <u>HW-4S</u>   | <u>NON-RATED</u> |
|---------------------------|---------------------------|--|------------------|
| 1                         | Continuous Hinge          | A51031B x INTEGRAL HINGE GUARD CHANNEL<br>X ADJUSTA-SCREWS |                  |
| 1                         | Classroom Lock            | F08  |                  |
| 1                         | Closer                    | C02051/C02061 (PT4D, PT4H)                                 |                  |
| 1                         | Heavy-Duty Armor Plate    | J101 x 3.175 MM (0.125 INCH) THICKNESS                     |                  |
| 1                         | Lock Trim Protector Bar   | R111LPB-630 (ROCKWOOD), OR EQUAL                           |                  |
| 1                         | Edge Guard (@ Wood Doors) | J208M / J211 (VERIFY), CUT: HARDWARE                       |                  |
| 1                         | Floor Stop                | L02121 x 3 FASTENERS                                       |                  |
| 1                         | Auto Door Bottom          | R0Y346 - HEAVY DUTY  |                  |
| 2                         | Sets Self-Adhesive Seals  | R0E154   |                  |

| <u>Each Door to Have:</u> |                           | <u>HW-4T</u>   | <u>NON-RATED</u> |
|---------------------------|---------------------------|--|------------------|
| 1                         | Continuous Hinge          | A51031B x INTEGRAL HINGE GUARD CHANNEL<br>X ADJUSTA-SCREWS |                  |
| 1                         | Classroom Hospital Lock   | F08 x PADDLES POINTING DOWN                                |                  |
| 1                         | Closer                    | C02051/C02061 (PT4D, PT4H)                                 |                  |
| 1                         | Armor Plate               | J101 x 1.275 MM (0.050 INCH) THICKNESS                     |                  |
| 1                         | Edge Guard (@ Wood Doors) | J208M / J211 (VERIFY), CUT: HARDWARE                       |                  |
| 1                         | Overhead Stop             | C01541-ADJUSTABLE  |                  |
| 1                         | Set Self-Adhesive Seals   | R0E154   |                  |

| <u>Each Door to Have:</u> |                               | <u>HW-4U</u>                     | <u>NON-RATED/RATED</u> |
|---------------------------|-------------------------------|----------------------------------|------------------------|
| 1                         | Continuous Hinge              | A51031B                          |                        |
| 1                         | Public Restroom Lock          | F09                              |                        |
| 1                         | Closer                        | C02011/C02021 (PT4D, PT4F, PT4H) |                        |
| 1                         | Closer                        | C02051/C02061 (PT4D, PT4H)       |                        |
| 1                         | Kick Plate                    | J102                             |                        |
| 1                         | Mop Plate (@ Inswing Doors)   | J102                             |                        |
| 1                         | Floor Stop (@ Outswing Doors) | L02121 x 3 FASTENERS             |                        |
| 1                         | Wall Stop (@ Inswing Doors)   | L52101 CONVEX                    |                        |
| 1                         | Set Self-Adhesive Seals       | R0E154                           |                        |

PROVIDE NON-HOLD-OPEN CLOSER AT TOILET ROOMS.  
STONE THRESHOLD BY OTHER TRADES.

| <u>Each Lead-Lined Door to Have:</u> |                           | <u>HW-4V</u>   | <u>NON-RATED</u> |
|--------------------------------------|---------------------------|--|------------------|
| 1                                    | Pivot Set                 | C07162 x 454KG (1000 LBS) WEIGHT CAPACITY                    |                  |
| 1                                    | Intermediate Pivot        | CO7311   |                  |
| 1                                    | Utility Hospital Lock     | F09 x LEAD-LINED x PADDLES POINTING DOWN                     |                  |
| 1                                    | Closer                    | CO2011/CO2021 (PT4D, PT4F, PT4H) x METAL<br>LEAD-LINED COVER |                  |
| 1                                    | Armor Plate               | J101 x 1.275 MM (0.050 INCH) THICKNESS                       |                  |
| 2                                    | Edge Guard (@ Wood Doors) | J208M / J211 (VERIFY), CUT: HARDWARE                         |                  |
| 1                                    | Overhead Holder-Stop      | C01541-ADJUSTABLE  |                  |
| 1                                    | Set Self-Adhesive Seal    | R0E154   |                  |

| <u>Each [ADO] Lead-Lined Door to Have:</u> |                             | <u>HW-4X</u>  | <u>NON-RATED</u> |
|--|-----------------------------|---|------------------|
| 1  | Pivot Set                   | C07162 x 454KG (1000 LBS) WEIGHT CAPACITY           |                  |
| 1  | Intermediate Transfer Pivot | CO7311 x 4 WIRE TRANSFER                            |                  |
| 1  | Utility Hospital Lock       | F09 x LEAD-LINED x PADDLES POINTING DOWN            |                  |
| 1  | Electric Unlatch Strike     | MUNL (SECURITRON), OR EQUAL                         |                  |
| 1  | Power Supply                | REGULATED, FILTERED, 24VDC, AMPERAGE<br>AS REQUIRED |                  |
| 1  | Armor Plate                 | J101 x 1.275 MM (0.050 INCH) THICKNESS              |                  |
| 2  | Edge Guard (@ Wood Doors)   | J208M / J211 (VERIFY), CUT: HARDWARE                |                  |
| 1  | Overhead Stop               | C01541-ADJUSTABLE                                   |                  |
| 1  | Set Self-Adhesive Seal      | R0E154  |                  |

POWER TRANSFER PIVOT IS FOR RE-ACTIVATION SENSOR WIRING (RE-ACTIVATION  
SENSORS PROVIDED BY SECTION 08 71 13).  
AUTO DOOR OPERATORS AND CONTROLS BY SECTION 08 71 13.

HW-4Y

Each [ADO] Door to Have:

NON-RATED

|   |                           |   |
|---|---------------------------|---|
| 1 | Continuous Hinge          | A51031B x INTEGRAL HINGE GUARD CHANNEL<br>X ADJUSTA-SCREWS x 4-THRUWIRE TRANSFER<br>X IN-HINGE ACCESS PANEL |
| 1 | Utility Hospital Lock     | F09 x PADDLES POINTING DOWN   |
| 1 | Electric Unlatch Strike   | MUNL (SECURITRON), OR EQUAL   |
| 1 | Power Supply              | REGULATED, FILTERED, 24VDC, AMPERAGE<br>AS REQUIRED   |
| 1 | Armor Plate               | J101 x 1.275 MM (0.050 INCH) THICKNESS  |
| 1 | Edge Guard (@ Wood Doors) | J208M / J211 (VERIFY), CUT: HARDWARE  |
| 1 | Overhead Stop             | C01541-ADJUSTABLE   |
| 1 | Set Self-Adhesive Seals   | R0E154  |

POWER TRANSFER PIVOT IS FOR RE-ACTIVATION SENSOR WIRING (RE-ACTIVATION  
SENSORS PROVIDED BY SECTION 08 71 13).

AUTOMATIC DOOR OPERATOR AND CONTROLS BY SECTION 08 71 13, AUTOMATIC DOOR  
OPERATORS.

Each Door to Have:

HW-5

RATED

|   |                         |   |
|---|-------------------------|---|
|   | Hinges                  | QUANTITY & TYPE AS REQUIRED             |
| 1 | Storeroom Lock          | F07                                     |
| 1 | Closer                  | C02011/C02021 (PT4D, PT4F, PT4H)        |
| 1 | Kick Plate              | J102 (@ STORAGE, EVM, & HAC ROOMS ONLY) |
| 1 | Floor Stop              | L02121 x 3 FASTENERS                    |
| 1 | Set Self-Adhesive Seals | R0E154                                  |

HW-5A

THIS SET NOT USED.

Each Door to Have:

HW-5B

RATED

|   |                           |  |
|---|---------------------------|--|
| 1 | Continuous Hinge          | A51031B x INTEGRAL HINGE GUARD CHANNEL<br>X ADJUSTA-SCREWS |
| 1 | Storeroom Lock            | F07  |
| 1 | Closer                    | C02011/C02021 (PT4D, PT4F, PT4H)                           |
| 1 | Armor Plate               | J101 x 1.275 MM (0.050 INCH) THICKNESS                     |
| 1 | Edge Guard (@ Wood Doors) | J208M / J211 (VERIFY), CUT: HARDWARE                       |
| 1 | Floor Stop                | L02121 x 3 FASTENERS                                       |
| 1 | Set Self-Adhesive Seals   | R0E154   |

HW-5C

THIS SET NOT USED.

| <u>Each Door to Have:</u> |                              | <u>HW-5D</u>                            | <u>NON-RATED</u> |
|---------------------------|------------------------------|---|------------------|
|                           | Hinges                       | QUANTITY & TYPE AS REQUIRED             |                  |
| 1                         | Storeroom Lock               | F07                                     |                  |
| 1                         | Kick Plate                   | J102 (@ STORAGE, EVM, & HAC ROOMS ONLY) |                  |
| 1                         | Floor Stop (@ Inswing Doors) | L02121 x 3 FASTENERS                    |                  |
| 1                         | Wall Stop (@ Outswing Doors) | L52101 CONVEX                           |                  |
| 3                         | Silencers                    | L03011                                  |                  |

| <u>Each Door to Have:</u> |                           | <u>HW-5E</u>   | <u>NON-RATED</u> |
|---------------------------|---------------------------|--|------------------|
| 1                         | Continuous Hinge          | A51031B x INTEGRAL HINGE GUARD CHANNEL<br>X ADJUSTA-SCREWS             |                  |
| 1                         | Storeroom Lock            | F13-MOD x RIGID OUTSIDE LEVER x KEY<br>RETRACTS DEADBOLT AND LATCHBOLT |                  |
| 1                         | Closer                    | C02051/C02061 (PT4D, PT4H)   |                  |
| 1                         | Armor Plate               | J101 x 3.125 MM (0.125 INCH) THICKNESS                                 |                  |
| 1                         | Edge Guard (@ Wood Doors) | J208M / J211 (VERIFY), CUT: HARDWARE                                   |                  |
| 1                         | Floor Stop                | L02121 x 3 FASTENERS   |                  |
| 1                         | Set Self-Adhesive Seals   | R0E154   |                  |

| <u>Each Door to Have:</u> |                            | <u>HW-5F</u>   | <u>RATED/NON-RATED</u> |
|---------------------------|----------------------------|--|------------------------|
| 1                         | Continuous Hinge           | A51031B x INTEGRAL HINGE GUARD CHANNEL<br>X ADJUSTA-SCREWS |                        |
| 1                         | Storeroom Lock             | F07  |                        |
| 1                         | Closer (@ Rated Doors)     | C02011/C02021 (PT4D, PF4F, PT4H)                           |                        |
| 1                         | Closer (@ Non-Rated Doors) | C02051/C02061 (PT4D, PT4H)                                 |                        |
| 1                         | Heavy-Duty Armor Plate     | J101 x 3.175 MM (0.125 INCH) THICKNESS                     |                        |
| 1                         | Lock Trim Protector Bar    | R111LPB-630 (ROCKWOOD), OR EQUAL                           |                        |
| 1                         | Edge Guard (@ Wood Doors)  | J208M / J211 (VERIFY), CUT: HARDWARE                       |                        |
| 1                         | Floor Stop                 | L02121 x 3 FASTENERS                                       |                        |
| 1                         | Set Self-Adhesive Seals    | R0E154   |                        |

| <u>Each Door to Have:</u> |                          | <u>HW-5G</u>                        | <u>NON-RATED</u> |
|---------------------------|--------------------------|-------------------------------------|------------------|
|                           | Hinges                   | QUANTITY & TYPE AS REQUIRED         |                  |
| 1                         | Storeroom Lock           | F07                                 |                  |
| 1                         | Kick Plate               | J102                                |                  |
| 1                         | Floor Stop               | L02121 x 3 FASTENERS                |                  |
| 1                         | Threshold                | J32300 x 57 MM WIDTH (2-1/4 INCHES) |                  |
| 1                         | Auto Door Bottom         | R0Y346 - HEAVY DUTY                 |                  |
| 2                         | Sets Self-Adhesive Seals | R0E154                              |                  |

| <u>Each Dutch Door to Have:</u> |                           | <u>HW-5H</u>   | <u>NON-RATED</u> |
|---------------------------------|---------------------------|--|------------------|
|                                 | Hinges                    | QUANTITY & TYPE AS REQUIRED  |                  |
| 1                               | Dutch Door Bolt           | L04161-4" @ Top Leaf   |                  |
| 1                               | Storeroom Lock            | F07 @ Bottom Leaf  |                  |
| 1                               | Kick Plate                | J102   |                  |
| 1                               | Floor Stop                | L02121 x 3 FASTENERS @ Bottom Leaf                                     |                  |
| 1                               | Wall Stop                 | L01201 @ Top Leaf  |                  |
| 1                               | Set Self-Adhesive Seals   | R0E154   |                  |
| <u>Each Door to Have:</u>       |                           | <u>HW-5J</u>   | <u>RATED</u>     |
|                                 | Hinges                    | QUANTITY & TYPE AS REQUIRED  |                  |
| 1                               | Storeroom Lock            | F07  |                  |
| 1                               | Closer                    | C02011/C02021 (PT4D, PF4F, PT4H)                                       |                  |
| 1                               | Kick Plate                | J102   |                  |
| 1                               | Floor Stop                | L02121 x 3 FASTENERS   |                  |
| 1                               | Threshold                 | J32300 x 57 MM WIDTH (2-1/4 INCHES)                                    |                  |
| 1                               | Auto Door Bottom          | R0Y346 - HEAVY DUTY  |                  |
| 2                               | Sets Self-Adhesive Seals  | R0E154   |                  |
| <u>Each Door to Have:</u>       |                           | <u>HW-5K</u>   | <u>RATED</u>     |
| 1                               | Continuous Hinge          | A51031B x INTEGRAL HINGE GUARD CHANNEL<br>X ADJUSTA-SCREWS             |                  |
| 1                               | Storeroom Lock            | F07  |                  |
| 1                               | Closer                    | C02011/C02021 (PT4D, PT4F, PT4H)                                       |                  |
| 1                               | Armor Plate               | J101 x 1.275 MM (0.050 INCH) THICKNESS                                 |                  |
| 1                               | Edge Guard (@ Wood Doors) | J208M / J211 (VERIFY), CUT: HARDWARE                                   |                  |
| 1                               | Floor Stop                | L02121 x 3 FASTENERS   |                  |
| 1                               | Threshold                 | J32300 x 57 MM WIDTH (2-1/4 INCHES)                                    |                  |
| 1                               | Auto Door Bottom          | R0Y346 - HEAVY DUTY  |                  |
| 2                               | Sets Self-Adhesive Seals  | R0E154   |                  |
| <u>Each Door to Have:</u>       |                           | <u>HW-5L</u>   | <u>NON-RATED</u> |
| 1                               | Continuous Hinge          | A51031B x INTEGRAL HINGE GUARD CHANNEL<br>X ADJUSTA-SCREWS             |                  |
| 1                               | Security Storeroom Lock   | F13-MOD x RIGID OUTSIDE LEVER x KEY<br>RETRACTS DEADBOLT AND LATCHBOLT |                  |
| 1                               | Closer                    | C02051/C02061 (PT4D, PT4H)   |                  |
| 1                               | Armor Plate               | J101 x 1.275 MM (0.050 INCH) THICKNESS                                 |                  |
| 1                               | Edge Guard (@ Wood Doors) | J208M / J211 (VERIFY), CUT: HARDWARE                                   |                  |
| 1                               | Floor Stop                | L02121 x 3 FASTENERS   |                  |
| 1                               | Set Self-Adhesive Seals   | R0E154   |                  |

| <u>Each Door to Have:</u> |                         | <u>HW-6</u>                      | <u>RATED</u> |
|---------------------------|-------------------------|----------------------------------|--------------|
|                           | Hinges                  | QUANTITY & TYPE AS REQUIRED      |              |
| 1                         | Exit Device             | TYPE 1 F13 LEVER                 |              |
| 1                         | Key Cylinder            | TYPE AS REQUIRED                 |              |
| 1                         | Closer                  | C02011/C02021 (PT4D, PT4F, PT4H) |              |
| 1                         | Floor Stop              | L02121 x 3 FASTENERS             |              |
| 1                         | Set Self-Adhesive Seals | R0E154                           |              |

| <u>Each Door to Have:</u> |                           | <u>HW-6A</u>  | <u>RATED</u> |
|---------------------------|---------------------------|---|--------------|
| 1                         | Continuous Hinge          | A51031B x INTEGRAL HINGE GUARD CHANNEL<br>X HOSPITAL TIP X ADJUSTA-SCREWS |              |
| 1                         | Exit Device               | TYPE 1 F08 LEVER  |              |
| 1                         | Key Cylinder              | TYPE AS REQUIRED  |              |
| 1                         | Closer                    | C02011/C02021 (PT4D, PT4F, PT4H)  |              |
| 1                         | Kick Plate                | J102  |              |
| 1                         | Edge Guard (@ Wood Doors) | J208M / J211 (VERIFY), CUT: HARDWARE                                      |              |
| 1                         | Floor Stop                | L02121 x 3 FASTENERS  |              |
| 1                         | Set Self-Adhesive Seals   | R0E154  |              |

| <u>Each [MHO] Door to Have:</u>                                   |                           | <u>HW-6B</u>   | <u>RATED</u> |
|---|---------------------------|--|--------------|
| 1   | Continuous Hinge          | A51031B x INTEGRAL HINGE GUARD CHANNEL<br>X ADJUSTA-SCREWS |              |
| 1   | Exit Device               | TYPE 1 F08 LEVER   |              |
| 1   | Key Cylinder              | TYPE AS REQUIRED   |              |
| 1   | Closer                    | C02011/C02021 (PT4D, PT4H)                                 |              |
| 1   | Kick Plate                | J102   |              |
| 1   | Edge Guard (@ Wood Doors) | J208M / J211 (VERIFY), CUT: HARDWARE                       |              |
| 1   | Magnetic Holder           | C00011 TRI-VOLTAGE   |              |
| 1   | Set Self-Adhesive Seals   | R0E154   |              |
| POWER, WIRING, CONDUIT, AND FIRE ALARM CONNECTION BY DIVISION 26. |                           |  |              |

| <u>Each Door to Have:</u> |                           | <u>HW-6C</u>   | <u>NON-RATED/RATED</u> |
|---------------------------|---------------------------|--|------------------------|
| 1                         | Continuous Hinge          | A51031B x INTEGRAL HINGE GUARD CHANNEL<br>X ADJUSTA-SCREWS |                        |
| 1                         | Exit Device               | TYPE 1 F08 LEVER   |                        |
| 1                         | Key Cylinder              | TYPE AS REQUIRED   |                        |
| 1                         | Closer                    | C02021 (PT4D, PT4F, PT4H)                                  |                        |
| 1                         | Kick Plate                | J102   |                        |
| 1                         | Edge Guard (@ Wood Doors) | J208M / J211 (VERIFY), CUT: HARDWARE                       |                        |
| 1                         | Floor Stop                | L02121 x 3 FASTENERS                                       |                        |
| 1                         | Threshold                 | J32300 x 57 MM WIDTH (2-1/4 INCHES)                        |                        |
| 1                         | Auto Door Bottom          | R0Y346 - HEAVY DUTY  |                        |
| 2                         | Sets Self-Adhesive Seals  | R0E154   |                        |

HW-6D  
Each [ADO] Integrated Door to Have: RATED

1 Key Cylinder TYPE AS REQUIRED  
ALL HARDWARE BY SECTION 08 17 10, INTEGRATED DOOR ASSEMBLIES  
AUTO DOOR OPERATOR AND CONTROLS BY SECTION 08 71 13, AUTOMATIC DOOR  
OPERATORS.

HW-6E  
Each Door to Have: NON-RATED

|   |                           |  |
|---|---------------------------|--|
| 1 | Continuous Hinge          | A51031B x INTEGRAL HINGE GUARD CHANNEL<br>X ADJUSTA-SCREWS |
| 1 | Exit Device               | TYPE 1 F08 LEVER   |
| 1 | Key Cylinder              | TYPE AS REQUIRED   |
| 1 | Closer                    | C02051/C02061 (PT4D, PT4H)                                 |
| 1 | Kick Plate                | J102   |
| 1 | Edge Guard (@ Wood Doors) | J208M / J211 (VERIFY), CUT: HARDWARE                       |
| 1 | Floor Stop                | L02121 x 3 FASTENERS                                       |
| 1 | Set Self-Adhesive Seals   | R0E154   |

HW-6F  
Each [ADO] Door to Have: NON-RATED/RATED

|   |                           |  |
|---|---------------------------|--|
| 1 | Continuous Hinge          | A51031B x INTEGRAL HINGE GUARD CHANNEL<br>X ADJUSTA-SCREWS x 8-THRUWIRE<br>TRANSFER X IN-HINGE ACCESS PANELS |
| 1 | Elec. Exit Device         | TYPE 1 F08 LEVER (E04)   |
| 1 | Key Cylinder              | TYPE AS REQUIRED   |
| 1 | Power Supply              | BY EXIT DEVICE MFR. FOR E04 FUNCTION   |
| 1 | Armor Plate               | J101 x 1.275 MM (0.050 INCH) THICKNESS   |
| 1 | Edge Guard (@ Wood Doors) | J208M / J211 (VERIFY), CUT: HARDWARE   |
| 1 | Floor Stop                | L02121 x 3 FASTENERS   |
| 1 | Set Self-Adhesive Seals   | R0E154   |

POWER TRANSFER **SHARED BY ELECTRIC PANIC AND** RE-ACTIVATION SENSOR WIRING (RE-  
ACTIVATION SENSORS PROVIDED BY SECTION 08 71 13).  
AUTO DOOR OPERATORS AND CONTROLS BY SECTION 08 71 13.

HW-6G  
Each Door to Have: NON-RATED

|   |                          |                                     |
|---|--------------------------|-------------------------------------|
|   | Hinges                   | QUANTITY & TYPE AS REQUIRED         |
| 1 | Exit Device              | TYPE 1 F13 LEVER                    |
| 1 | Key Cylinder             | TYPE AS REQUIRED                    |
| 1 | Closer                   | C02011/C02021 (PT4D, PT4F, PT4H)    |
| 1 | Floor Stop               | L02121 x 3 FASTENERS                |
| 1 | Threshold                | J32300 x 57 MM WIDTH (2-1/4 INCHES) |
| 1 | Auto Door Bottom         | R0Y346 - HEAVY DUTY                 |
| 2 | Sets Self-Adhesive Seals | R0E154                              |

HW-7



Each Motorized Roll-up Door to Have:

NON-RATED

1 Key Cylinder (for keyswitch) TYPE AS REQUIRED  
BALANCE OF HARDWARE BY SECTION 08 33 00, COILING DOORS AND GRILLES

HW-7A

Each Special Door to Have:

NON-RATED

1 Padlock TYPE AS REQUIRED PER 08 71 00 2.29.  
BALANCE OF HARDWARE BY DOOR MANUFACTURER.

HW-7B

Each RF Shielded Door to Have:

NON-RATED

1 Key Cylinder TYPE AS REQUIRED  
BALANCE OF HARDWARE BY SECTION 13 49 00.

**INTERIOR PAIRS OF DOORS**

HW-8

Each [MHO] Pair Integrated Doors to Have:

RATED

ALL HARDWARE BY SECTION 08 17 10, INTEGRATED DOOR ASSEMBLIES

HW-8A

Each Aluminum Storefront Pair to Have:

NON-RATED

|   |                     |  |
|---|---------------------|--|
| 2 | Floor Closers       | C06041 (PT8A, PT8F, PT8G, PT8J, PT8M)    |
| 2 | Intermediate Pivots | C07321                                   |
| 2 | Push/Pull Bar Sets  | J505 - 305 MM (12 INCH) CENTER-TO-CENTER |
|   |                     | PULL                                     |
| 2 | Overhead Stops      | C01541-ADJUSTABLE                        |

HW-8B

Each Pair to Have:

NON-RATED

|   |                             |                                  |
|---|-----------------------------|----------------------------------|
| 2 | Continuous Hinge            | A51031B                          |
| 2 | Push Plate                  | J304 8" x 16"                    |
| 2 | Hospital Grip               | J401                             |
| 2 | Kick Plate                  | J102                             |
| 2 | Mop Plate (@ Inswing Doors) | J102                             |
| 2 | Closer                      | C02011/C02021 (PT4D, PT4F, PT4H) |
| 2 | Floor Stop                  | L02121 x 3 FASTENERS             |
| 2 | Silencers                   | L03011                           |

| <u>Each Double-Acting Pair to Have:</u> |                             | <u>HW-8C</u>                           | <u>NON-RATED</u> |
|---|-----------------------------|--|------------------|
| 2                                       | Double-Acting Floor Closers | C06011 (PT8A, PT8G, PT8J, PT8M)        |                  |
| 4                                       | Push Plates                 | J304 8" x 16"                          |                  |
| 4                                       | Heavy-Duty Armor Plates     | J101 x 3.175 MM (0.125 INCH) THICKNESS |                  |
| 4                                       | Edge Guard (@ Wood Doors)   | J209P / J212 (VERIFY)                  |                  |
| 2                                       | Overhead Holders            | C01511-ADJUSTABLE                      |                  |

| <u>Each [ADO] Aluminum Storefront Pair to Have:</u>   |                              | <u>HW-8D</u>                                     | <u>NON-RATED</u> |
|---|------------------------------|--|------------------|
| 2   | Pivot Sets                   | C07162   |                  |
| 2   | Intermediate Transfer Pivots | C07321 x 4-WIRES                                 |                  |
| 2   | Intermediate Pivots          | C07321   |                  |
| 2   | Push/Pull Bar Sets           | J505 - 305 MM (12 INCH) CENTER-TO-CENTER<br>PULL |                  |
| 2   | Overhead Stops               | C01541-ADJUSTABLE                                |                  |
| AUTO DOOR OPERATORS, CONTROLS, AND REACTIVATION SENSORS BY SECTION 08 71 13.11.                       |                              |  |                  |
| POWER TRANSFERS FOR RE-ACTIVATION SENSOR WIRING (RE-ACTIVATION SENSORS PROVIDED BY SECTION 08 71 13). |                              |  |                  |
| 120VAC POWER, CONDUIT, AND WIRING BY DIVISION 26.   |                              |  |                  |

| <u>Each [ADO] Pair to Have:</u>   |                             | <u>HW-8E</u>   | <u>NON-RATED</u> |
|---|-----------------------------|--|------------------|
| 2   | Continuous Hinges           | A51031B x INTEGRAL HINGE GUARD CHANNEL<br>X ADJUSTA-SCREWS x 4-THRUWIRE TRANSFERS<br>X IN-HINGE ACCESS PANEL |                  |
| 2   | Push Plate                  | J304 8" x 16"  |                  |
| 2   | Hospital Grip               | J401   |                  |
| 2   | Kick Plate                  | J102   |                  |
| 2   | Mop Plate (@ Inswing Doors) | J102   |                  |
| 2   | Edge Guard (@ Wood Doors)   | J208M / J211 (VERIFY), CUT: HARDWARE   |                  |
| 2   | Floor Stop                  | L02121 x 3 FASTENERS   |                  |
| 2   | Silencers                   | L03011   |                  |
| AUTOMATIC DOOR OPERATORS AND CONTROLS BY SECTION 08 71 13, AUTOMATIC DOOR OPERATORS.                  |                             |  |                  |
| POWER TRANSFERS FOR RE-ACTIVATION SENSOR WIRING (RE-ACTIVATION SENSORS PROVIDED BY SECTION 08 71 13). |                             |  |                  |

| <u>Each [ADO] Pair to Have:</u>   |                             | <u>HW-8F</u>   | <u>NON-RATED</u> |
|---|-----------------------------|--|------------------|
| 2   | Continuous Hinges           | A51031B x INTEGRAL HINGE GUARD CHANNEL<br>X ADJUSTA-SCREWS x 4-THRUWIRE TRANSFERS<br>X IN-HINGE ACCESS PANEL |                  |
| 2   | Push Plate                  | J304 8" x 16"  |                  |
| 2   | Hospital Grip               | J401   |                  |
| 2   | Kick Plate                  | J102   |                  |
| 2   | Mop Plate (@ Inswing Doors) | J102   |                  |
| 2   | Edge Guard (@ Wood Doors)   | J208M / J211 (VERIFY), CUT: HARDWARE   |                  |
| 2   | Floor Stop                  | L02121 x 3 FASTENERS   |                  |
| 1   | Threshold                   | J32300 x 57 MM WIDTH (2-1/4 INCHES)  |                  |
| 2   | Auto Door Bottoms           | R0Y346 - HEAVY DUTY  |                  |
| 2   | Set Self-Adhesive Seals     | R0E154   |                  |
| AUTOMATIC DOOR OPERATORS AND CONTROLS BY SECTION 08 71 13, AUTOMATIC DOOR OPERATORS.                  |                             |  |                  |
| POWER TRANSFERS FOR RE-ACTIVATION SENSOR WIRING (RE-ACTIVATION SENSORS PROVIDED BY SECTION 08 71 13). |                             |  |                  |

HW-9

THIS HARDWARE SET LEFT INTENTIONALLY BLANK AT THIS TIME.

| <u>Each Pair to Have:</u>  |  | <u>HW-10</u>   | <u>RATED</u> |
|--|--|--|--------------|
| 2  | Continuous Hinges                            | A51031B x INTEGRAL HINGE GUARD CHANNEL<br>X ADJUSTA-SCREWS |              |
| 1  | Set Auto Flush Bolts                         | TYPE 25 LESS BOTTOM BOLT                                   |              |
| 1  | Classroom Lock                               | F08  |              |
| 1  | Coordinator                                  | TYPE 21A   |              |
| 1  | Overlapping Astragal with Self-Adhesive Seal | R5Y634 x R0E154 x THRU-BOLTS                               |              |
| 2  | Closers                                      | C02011/C02021 (PT4D, PT4F, PT4H)                           |              |
| 2  | Heavy-Duty Armor Plates                      | J101 x 3.175 MM (0.125 INCH) THICKNESS                     |              |
| 1  | Lock Trim Protector Bar                      | R111LPB-630 (ROCKWOOD), OR EQUAL                           |              |
| 2  | Edge Guard (@ Wood Doors)                    | J208M / J211 (VERIFY), CUT: HARDWARE                       |              |
| 2  | Floor Stops                                  | L02121 x 3 FASTENERS                                       |              |
| 1  | Threshold                                    | J32300 x 57 MM WIDTH (2-1/4 INCHES)                        |              |
| 2  | Auto Door Bottoms                            | R0Y346 - HEAVY DUTY  |              |
| 2  | Set Self-Adhesive Seals                      | R0E154   |              |
| INSTALL LOCK TRIM PROTECTOR BAR ON PUSH SIDE OF ACTIVE LEAF TO PROTECT LEVER TRIM. |  |  |              |

| <u>Each [ADO] Pair to Have:</u>   |   | <u>HW-10A</u>   | <u>NON-RATED</u> |
|---|---|---|------------------|
| 1   | Continuous Hinge                                | A51031B x INTEGRAL HINGE GUARD CHANNEL<br>X ADJUSTA-SCREWS x 8-THRUWIRE<br>TRANSFER X IN-HINGE ACCESS PANEL |                  |
| 1   | Continuous Hinge                                | A51031B x INTEGRAL HINGE GUARD CHANNEL<br>X ADJUSTA-SCREWS X 4-THRUWIRE<br>TRANSFER X IN-HINGE ACCESS PANEL |                  |
| 1   | Set Auto Flush Bolts                            | TYPE 25 LESS BOTTOM BOLT  |                  |
| 1   | Classroom Lock                                  | F08   |                  |
| 1   | Electric Unlatch Strike                         | MUNL (FAIL-SECURE), 24VDC (SECURITRON),<br>OR EQUAL   |                  |
| 1   | Power Supply                                    | REGULATED, FILTERED, 24VDC, AMPERAGE<br>AS REQUIRED   |                  |
| 1   | Coordinator                                     | TYPE 21A  |                  |
| 1   | Overlapping Astragal with<br>Self-Adhesive Seal | R5Y634 x R0E154 x THRU-BOLTS  |                  |
| 2   | Armor Plates                                    | J101 x 1.275 MM (0.050 INCH) THICKNESS  |                  |
| 2   | Edge Guard (@ Wood Doors)                       | J208M / J211 (VERIFY), CUT: HARDWARE  |                  |
| 2   | Floor Stops                                     | L02121 x 3 FASTENERS  |                  |
| 1   | Threshold                                       | J32300 x 57 MM WIDTH (2-1/4 INCHES)   |                  |
| 2   | Auto Door Bottoms                               | R0Y346 - HEAVY DUTY   |                  |
| 2   | Set Self-Adhesive Seals                         | R0E154  |                  |
| AUTOMATIC DOOR OPERATORS AND CONTROLS BY SECTION 08 71 13, AUTOMATIC DOOR<br>OPERATORS.   |   |   |                  |
| POWER TRANSFER <b>SHARED BY ELECTRIC STRIKE AND</b> RE-ACTIVATION SENSOR WIRING (RE-<br>ACTIVATION SENSORS PROVIDED BY SECTION 08 71 13). |   |   |                  |

| <u>Each Pair to Have:</u>   |   | <u>HW-10B</u>  | <u>NON-RATED/RATED</u> |
|---|---|--|------------------------|
| 2   | Continuous Hinges                               | A51031B x INTEGRAL HINGE GUARD CHANNEL<br>X ADJUSTA-SCREWS |                        |
| 1   | Set Auto Flush Bolts                            | TYPE 25 LESS BOTTOM BOLT                                   |                        |
| 1   | Classroom Hospital Lock                         | F08 x PADDLES POINTING DOWN                                |                        |
| 1   | Coordinator                                     | TYPE 21A   |                        |
| 1   | Overlapping Astragal with<br>Self-Adhesive Seal | R5Y634 x R0E154 x THRU-BOLTS                               |                        |
| 2   | Closers (@ non-rated doors)                     | C02051/C02061 (PT4D, PT4H)                                 |                        |
| 2   | Closers (@ rated doors)                         | C02011/C02021 (PT4D, PT4F, PT4H)                           |                        |
| 2   | Heavy-Duty Armor Plates                         | J101 x 3.175 MM (0.125 INCH) THICKNESS                     |                        |
| 1   | Lock Trim Protector Bar                         | R111LPB-630 (ROCKWOOD), OR EQUAL                           |                        |
| 2   | Edge Guard (@ Wood Doors)                       | J208M / J211 (VERIFY), CUT: HARDWARE                       |                        |
| 2   | Floor Stops                                     | L02121 x 3 FASTENERS                                       |                        |
| INSTALL LOCK TRIM PROTECTOR BAR ON PUSH SIDE OF ACTIVE LEAF TO PROTECT LEVER<br>TRIM. |   |  |                        |

| <u>Each Pair to Have:</u> |   | <u>HW-10C</u>  | <u>NON-RATED</u> |
|---------------------------|---|--|------------------|
| 2                         | Continuous Hinges                               | A51031B x INTEGRAL HINGE GUARD CHANNEL<br>X ADJUSTA-SCREWS |                  |
| 1                         | Set Auto Flush Bolts                            | TYPE 25 LESS BOTTOM BOLT                                   |                  |
| 1                         | Utility Lock                                    | F09  |                  |
| 1                         | Coordinator                                     | TYPE 21A   |                  |
| 1                         | Overlapping Astragal with<br>Self-Adhesive Seal | R5Y634 x R0E154 x THRU-BOLTS                               |                  |
| 2                         | Closers   | C02051/C02061 (PT4D, PT4H)                                 |                  |
| 2                         | Kick Plates                                     | J102   |                  |
| 1                         | Edge Guard (@ Wood Doors)                       | J208M / J211 (VERIFY), CUT: HARDWARE                       |                  |
| 2                         | Floor Stops                                     | L02121 x 3 FASTENERS                                       |                  |
| 1                         | Set Self-Adhesive Seals                         | R0E154   |                  |

| <u>Each Pair to Have:</u> |   | <u>HW-10D</u>                | <u>NON-RATED</u> |
|---------------------------|---|------------------------------|------------------|
|                           | Hinges  | QUANTITY & TYPE AS REQUIRED  |                  |
| 1                         | Set Auto Flush Bolts                            | TYPE 25 LESS BOTTOM BOLT     |                  |
| 1                         | Classroom Lock                                  | F08                          |                  |
| 1                         | Coordinator                                     | TYPE 21A                     |                  |
| 1                         | Overlapping Astragal with<br>Self-Adhesive Seal | R5Y634 x R0E154 x THRU-BOLTS |                  |
| 2                         | Closers   | C02051/C02061 (PT4D, PT4H)   |                  |
| 2                         | Kick Plates                                     | J102                         |                  |
| 2                         | Floor Stops                                     | L02121 x 3 FASTENERS         |                  |
| 1                         | Set Self-Adhesive Seals                         | R0E154                       |                  |

| <u>Each Lead Lined Pair to Have:</u> |   | <u>HW-10E</u>                             | <u>NON-RATED</u> |
|--------------------------------------|---|---|------------------|
| 2                                    | Pivot Sets                                      | C07162 x 454KG (1000 LBS) WEIGHT CAPACITY |                  |
| 2                                    | Intermediate Pivots                             | C07311                                    |                  |
| 1                                    | Set Auto Flush Bolts                            | TYPE 25 LESS BOTTOM BOLT x LEAD-LINED     |                  |
| 1                                    | Classroom Lock                                  | F08 x LEAD-LINED x PADDLES POINTING DOWN  |                  |
| 1                                    | Coordinator                                     | TYPE 21A                                  |                  |
| 1                                    | Overlapping Astragal with<br>Self-Adhesive Seal | R5Y634 x R0E154 x THRU-BOLTS X LEAD-LINED |                  |
| 2                                    | Closers   | C02051/C02061 (PT4D, PT4H)                |                  |
| 2                                    | Armor Plates                                    | J101 x 1.275 MM (0.050 INCH) THICKNESS    |                  |
| 4                                    | Edge Guard (@ Wood Doors)                       | J208M / J211 (VERIFY), CUT: HARDWARE      |                  |
| 2                                    | Floor Stops                                     | L02121 x 3 FASTENERS                      |                  |
| 1                                    | Set Self-Adhesive Seals                         | R0E154                                    |                  |

| <u>Each Pair to Have:</u>  |   | <u>HW-10F</u>  | <u>NON-RATED</u> |
|--|---|--|------------------|
| 2  | Continuous Hinges                               | A51031B x INTEGRAL HINGE GUARD CHANNEL<br>X ADJUSTA-SCREWS |                  |
| 1  | Set Auto Flush Bolts                            | TYPE 25 LESS BOTTOM BOLT                                   |                  |
| 1  | Classroom Hospital Lock                         | F08 x PADDLES POINTING DOWN                                |                  |
| 1  | Coordinator                                     | TYPE 21A   |                  |
| 1  | Overlapping Astragal with<br>Self-Adhesive Seal | R5Y634 x R0E154 x THRU-BOLTS                               |                  |
| 2  | Closers   | C02051/C02061 (PT4D, PT4H)                                 |                  |
| 2  | Heavy-Duty Armor Plates                         | J101 x 3.175 MM (0.125 INCH) THICKNESS                     |                  |
| 1  | Lock Trim Protector Bar                         | R111LPB-630 (ROCKWOOD), OR EQUAL                           |                  |
| 2  | Edge Guard (@ Wood Doors)                       | J208M / J211 (VERIFY), CUT: HARDWARE                       |                  |
| 2  | Floor Stops                                     | L02121 x 3 FASTENERS                                       |                  |
| 1  | Threshold                                       | J32300 x 57 MM WIDTH (2-1/4 INCHES)                        |                  |
| 2  | Auto Door Bottom                                | R0Y346 - HEAVY DUTY  |                  |
| 2  | Sets Self-Adhesive Seals                        | R0E154   |                  |
| INSTALL LOCK TRIM PROTECTOR BAR ON PUSH SIDE OF ACTIVE LEAF TO PROTECT LEVER TRIM. |   |  |                  |

| <u>Each Pair to Have:</u>  |   | <u>HW-10G</u>  | <u>NON-RATED</u> |
|--|---|--|------------------|
| 2  | Continuous Hinges                               | A51031B x INTEGRAL HINGE GUARD CHANNEL<br>X ADJUSTA-SCREWS |                  |
| 1  | Set Auto Flush Bolts                            | TYPE 25 LESS BOTTOM BOLT                                   |                  |
| 1  | Classroom Lock                                  | F08  |                  |
| 1  | Coordinator                                     | TYPE 21A   |                  |
| 1  | Overlapping Astragal with<br>Self-Adhesive Seal | R5Y634 x R0E154 x THRU-BOLTS                               |                  |
| 2  | Closers   | C02051/C02061 (PT4D, PT4H)                                 |                  |
| 2  | Heavy-Duty Armor Plates                         | J101 x 3.175 MM (0.125 INCH) THICKNESS                     |                  |
| 1  | Lock Trim Protector Bar                         | R111LPB-630 (ROCKWOOD), OR EQUAL                           |                  |
| 2  | Edge Guard (@ Wood Doors)                       | J208M / J211 (VERIFY), CUT: HARDWARE                       |                  |
| 2  | Floor Stops                                     | L02121 x 3 FASTENERS                                       |                  |
| 1  | Threshold                                       | J32300 x 57 MM WIDTH (2-1/4 INCHES)                        |                  |
| 2  | Auto Door Bottom                                | R0Y346 - HEAVY DUTY  |                  |
| 2  | Sets Self-Adhesive Seals                        | R0E154   |                  |
| INSTALL LOCK TRIM PROTECTOR BAR ON PUSH SIDE OF ACTIVE LEAF TO PROTECT LEVER TRIM. |   |  |                  |

| <u>Each [ADO] Lead-Lined Pair to Have:</u>   |   | <u>HW-10H</u>  | <u>RATED/NON-RATED</u> |
|--|---|--|------------------------|
| 2  | Bottom Pivots                                   | C07162 LESS TOP PIVOT x 454KG (1000 LBS)<br>WEIGHT CAPACITY      |                        |
| 1  | Intermediate Pivot                              | C07311 (MIDDLE OF ACTIVE LEAF)                                   |                        |
| 1  | Intermediate Transfer Pivot                     | C07311 x 4 WIRE TRANSFER (MIDDLE OF<br>INACTIVE LEAF)            |                        |
| 2  | Intermediate Transfer Pivot                     | C07311 x 4 WIRE TRANSFER (NEAR TOP OF<br>EACH LEAF)              |                        |
| 1  | Set Auto Flush Bolts                            | TYPE 25 LESS BOTTOM BOLT X LEAD-LINED                            |                        |
| 1  | Hospital Utility Lock                           | F09 x PADDLES POINTING DOWN X LEAD-LINED                         |                        |
| 1  | Electric Unlatch Strike                         | MUNL (FAIL-SECURE), 24VDC (SECURITRON),<br>OR EQUAL (LEAD-LINED) |                        |
| 1  | Power Supply                                    | REGULATED, FILTERED, 24VDC, AMPERAGE<br>AS REQUIRED              |                        |
| 1  | Coordinator                                     | TYPE 21A   |                        |
| 1  | Overlapping Astragal with<br>Self-Adhesive Seal | R5Y634 x R0E154 x THRU-BOLTS X LEAD-LINED                        |                        |
| 2  | Armor Plates                                    | J101 x 1.275 MM (0.050 INCH) THICKNESS                           |                        |
| 4  | Edge Guard (@ Wood Doors)                       | J208M / J211 (VERIFY), CUT: HARDWARE                             |                        |
| 2  | Overhead Stops                                  | C01541-ADJUSTABLE  |                        |
| 1  | Set Self-Adhesive Seals                         | R0E154   |                        |
| AUTOMATIC DOOR OPERATORS AND CONTROLS BY SECTION 08 71 13, AUTOMATIC DOOR<br>OPERATORS.  |   |  |                        |
| POWER TRANSFER PIVOTS NEAR TOP OF EACH DOOR FOR RE-ACTIVATION SENSOR WIRING<br>(RE-ACTIVATION SENSORS PROVIDED BY SECTION 08 71 13). |   |  |                        |

| <u>Each [ADO] Pair to Have:</u>   |   | <u>HW-10J</u>   | <u>RATED/NON-RATED</u> |
|---|---|---|------------------------|
| 1   | Continuous Transfer Hinge                       | A51031B x INTEGRAL HINGE GUARD CHANNEL<br>X ADJUSTA-SCREWS x 8-THRUWIRE<br>TRANSFER X IN-HINGE ACCESS PANEL |                        |
| 1   | Continuous Transfer Hinge                       | A51031B x INTEGRAL HINGE GUARD CHANNEL<br>X ADJUSTA-SCREWS x 4-THRUWIRE<br>TRANSFER X IN-HINGE ACCESS PANEL |                        |
| 1   | Set Auto Flush Bolts                            | TYPE 25 LESS BOTTOM BOLT  |                        |
| 1   | Classroom Hospital Lock                         | F08 x PADDLES POINTING DOWN   |                        |
| 1   | Electric Unlatch Strike                         | *MUNL (FAIL-SECURE), 24VDC (SECURITRON),<br>OR EQUAL  |                        |
| 1   | Power Supply                                    | REGULATED, FILTERED, 24VDC, AMPERAGE<br>AS REQUIRED   |                        |
| 1   | Coordinator                                     | TYPE 21A  |                        |
| 1   | Overlapping Astragal with<br>Self-Adhesive Seal | R5Y634 x R0E154 x THRU-BOLTS  |                        |
| 2   | Armor Plates                                    | J101 x 1.275 MM (0.050 INCH) THICKNESS  |                        |
| 2   | Edge Guard (@ Wood Doors)                       | J208M / J211 (VERIFY), CUT: HARDWARE  |                        |
| 2   | Overhead Stops                                  | C01541-ADJUSTABLE   |                        |
| 1   | Set Self-Adhesive Seals                         | R0E154  |                        |
| AUTOMATIC DOOR OPERATORS AND CONTROLS BY SECTION 08 71 13, AUTOMATIC DOOR<br>OPERATORS.   |   |   |                        |
| POWER TRANSFERS <b>SHARED BY ELECTRIC STRIKE AND</b> RE-ACTIVATION SENSOR WIRING<br>(RE-ACTIVATION SENSORS PROVIDED BY SECTION 08 71 13). |   |   |                        |

\*AT WOOD PAIRS RATED 45-MINUTES OR MORE, PROVIDE ELECTRIC STRIKE 310-2-3/4 (FOLGER ADAM OR EQUAL) IN LIEU OF SPECIFIC UNLATCH STRIKE.

| <u>Each [ADO] Pair to Have:</u> |   | <u>HW-10K</u>   | <u>RATED/NON-RATED</u> |
|---------------------------------|---|---|------------------------|
| 1                               | Continuous Transfer Hinge                       | A51031B x INTEGRAL HINGE GUARD CHANNEL<br>X ADJUSTA-SCREWS x 8-THRUWIRE<br>TRANSFER X IN-HINGE ACCESS PANEL |                        |
| 1                               | Continuous Transfer Hinge                       | A51031B x INTEGRAL HINGE GUARD CHANNEL<br>X ADJUSTA-SCREWS x 4-THRUWIRE<br>TRANSFER X IN-HINGE ACCESS PANEL |                        |
| 1                               | Set Auto Flush Bolts                            | TYPE 25 LESS BOTTOM BOLT  |                        |
| 1                               | Classroom Lock                                  | F08   |                        |
| 1                               | Electric Unlatch Strike                         | MUNL (FAIL-SECURE), 24VDC (SECURITRON),<br>OR EQUAL   |                        |
| 1                               | Power Supply                                    | REGULATED, FILTERED, 24VDC, AMPERAGE<br>AS REQUIRED   |                        |
| 1                               | Coordinator                                     | TYPE 21A  |                        |
| 1                               | Overlapping Astragal with<br>Self-Adhesive Seal | R5Y634 x R0E154 x THRU-BOLTS  |                        |
| 2                               | Armor Plates                                    | J101 x 1.275 MM (0.050 INCH) THICKNESS  |                        |
| 2                               | Edge Guard (@ Wood Doors)                       | J208M / J211 (VERIFY), CUT: HARDWARE  |                        |
| 2                               | Floor Stops                                     | L02121 x 3 FASTENERS  |                        |
| 1                               | Set Self-Adhesive Seals                         | R0E154  |                        |

AUTOMATIC DOOR OPERATORS AND CONTROLS BY SECTION 08 71 13, AUTOMATIC DOOR OPERATORS.

POWER TRANSFER **SHARED BY ELECTRIC STRIKE AND** RE-ACTIVATION SENSOR WIRING (RE-ACTIVATION SENSORS PROVIDED BY SECTION 08 71 13).

\*AT WOOD PAIRS RATED 45-MINUTES OR MORE, PROVIDE ELECTRIC STRIKE 310-2-3/4 (FOLGER ADAM OR EQUAL) IN LIEU OF SPECIFIC UNLATCH STRIKE.

| <u>Each Pair to Have:</u> |   | <u>HW-10L</u>                       | <u>NON-RATED</u> |
|---------------------------|---|-------------------------------------|------------------|
|                           | Hinges  | QUANTITY & TYPE AS REQUIRED         |                  |
| 1                         | Set Auto Flush Bolts                            | TYPE 25 LESS BOTTOM BOLT            |                  |
| 1                         | Classroom Lock                                  | F08                                 |                  |
| 1                         | Coordinator                                     | TYPE 21A                            |                  |
| 1                         | Overlapping Astragal with<br>Self-Adhesive Seal | R5Y634 x R0E154 x THRU-BOLTS        |                  |
| 2                         | Closers   | C02051/C02061 (PT4D, PT4H)          |                  |
| 2                         | Kick Plates                                     | J102                                |                  |
| 2                         | Floor Stops                                     | L02121 x 3 FASTENERS                |                  |
| 1                         | Threshold                                       | J32300 x 57 MM WIDTH (2-1/4 INCHES) |                  |
| 2                         | Auto Door Bottom                                | R0Y346 - HEAVY DUTY                 |                  |
| 2                         | Sets Self-Adhesive Seals                        | R0E154                              |                  |



| <u>Each Pair to Have:</u> |   | <u>HW-10M</u>  | <u>NON-RATED</u> |
|---------------------------|---|--|------------------|
| 2                         | Continuous Hinges                               | A51031B x INTEGRAL HINGE GUARD CHANNEL<br>X ADJUSTA-SCREWS |                  |
| 1                         | Set Auto Flush Bolts                            | TYPE 25 LESS BOTTOM BOLT                                   |                  |
| 1                         | Utility Lock                                    | F09  |                  |
| 1                         | Coordinator                                     | TYPE 21A   |                  |
| 1                         | Overlapping Astragal with<br>Self-Adhesive Seal | R5Y634 x R0E154 x THRU-BOLTS                               |                  |
| 2                         | Closers   | C02051/C02061 (PT4D, PT4H)                                 |                  |
| 2                         | Kick Plates                                     | J102   |                  |
| 2                         | Edge Guard (@ Wood Doors)                       | J208M / J211 (VERIFY), CUT: HARDWARE                       |                  |
| 2                         | Floor Stops                                     | L02121 x 3 FASTENERS                                       |                  |
| 1                         | Threshold                                       | J32300 x 57 MM WIDTH (2-1/4 INCHES)                        |                  |
| 2                         | Auto Door Bottom                                | R0Y346 - HEAVY DUTY  |                  |
| 2                         | Sets Self-Adhesive Seals                        | R0E154   |                  |

| <u>Each Pair to Have:</u> |   | <u>HW-11</u>                     | <u>RATED/NR</u> |
|---------------------------|---|----------------------------------|-----------------|
|                           | Hinges  | QUANTITY & TYPE AS REQUIRED      |                 |
| 1                         | Set Auto Flush Bolts                            | TYPE 25 LESS BOTTOM BOLT         |                 |
| 1                         | Storeroom Lock                                  | F07                              |                 |
| 1                         | Coordinator                                     | TYPE 21A                         |                 |
| 1                         | Overlapping Astragal with<br>Self-Adhesive Seal | R5Y634 x R0E154 x THRU-BOLTS     |                 |
| 2                         | Closers   | C02011/C02021 (PT4D, PT4F, PT4H) |                 |
| 2                         | Kick Plates                                     | J102 (@ STORAGE ROOMS ONLY)      |                 |
| 2                         | Floor Stops                                     | L02121 x 3 FASTENERS             |                 |
| 1                         | Set Self-Adhesive Seals                         | R0E154                           |                 |

| <u>Each Pair to Have:</u> |   | <u>HW-11A</u>  | <u>NON-RATED</u> |
|---------------------------|---|--|------------------|
| 2                         | Continuous Hinges                               | A51031B x INTEGRAL HINGE GUARD CHANNEL<br>X ADJUSTA-SCREWS             |                  |
| 1                         | Set Auto Flush Bolts                            | TYPE 25  |                  |
| 1                         | Security Storeroom Lock                         | F13-MOD x RIGID OUTSIDE LEVER x KEY<br>RETRACTS DEADBOLT AND LATCHBOLT |                  |
| 1                         | Coordinator                                     | TYPE 21A   |                  |
| 1                         | Overlapping Astragal with<br>Self-Adhesive Seal | R5Y634 x R0E154 x THRU-BOLTS   |                  |
| 2                         | Closers   | C02051/C02061 (PT4D, PT4H)   |                  |
| 2                         | Armor Plates                                    | J101 x 1.275 MM (0.050 INCH) THICKNESS                                 |                  |
| 2                         | Edge Guard (@ Wood Doors)                       | J208M / J211 (VERIFY), CUT: HARDWARE                                   |                  |
| 2                         | Floor Stops                                     | L02121 x 3 FASTENERS   |                  |
| 1                         | Set Self-Adhesive Seals                         | R0E154   |                  |

| <u>Each Pair to Have:</u> |   | <u>HW-11B</u>  | <u>RATED</u> |
|---------------------------|---|--|--------------|
| 2                         | Continuous Hinges                               | A51031B x INTEGRAL HINGE GUARD CHANNEL<br>X ADJUSTA-SCREWS |              |
| 1                         | Set Auto Flush Bolts                            | TYPE 25  |              |
| 1                         | Storeroom Lock                                  | F07  |              |
| 1                         | Coordinator                                     | TYPE 21A   |              |
| 1                         | Overlapping Astragal with<br>Self-Adhesive Seal | R5Y634 x R0E154 x THRU-BOLTS                               |              |
| 2                         | Closers   | C02011/C02021 (PT4D, PT4F, PT4H)                           |              |
| 2                         | Armor Plates                                    | J101 x 1.275 MM (0.050 INCH) THICKNESS                     |              |
| 2                         | Edge Guard (@ Wood Doors)                       | J208M / J211 (VERIFY), CUT: HARDWARE                       |              |
| 2                         | Floor Stops                                     | L02121 x 3 FASTENERS                                       |              |
| 1                         | Set Self-Adhesive Seals                         | R0E154   |              |

| <u>Each Pair to Have:</u> |   | <u>HW-11C</u>                       | <u>RATED/NR</u> |
|---------------------------|---|-------------------------------------|-----------------|
|                           | Hinges  | QUANTITY & TYPE AS REQUIRED         |                 |
| 1                         | Set Auto Flush Bolts                            | TYPE 25 LESS BOTTOM BOLT            |                 |
| 1                         | Storeroom Lock                                  | F07                                 |                 |
| 1                         | Coordinator                                     | TYPE 21A                            |                 |
| 1                         | Overlapping Astragal with<br>Self-Adhesive Seal | R5Y634 x R0E154 x THRU-BOLTS        |                 |
| 2                         | Closers   | C02011/C02021 (PT4D, PT4F, PT4H)    |                 |
| 2                         | Kick Plates                                     | J102 (@ STORAGE ROOMS ONLY)         |                 |
| 2                         | Floor Stops                                     | L02121 x 3 FASTENERS                |                 |
| 1                         | Threshold                                       | J32300 x 57 MM WIDTH (2-1/4 INCHES) |                 |
| 2                         | Auto Door Bottoms                               | R0Y346 - HEAVY DUTY                 |                 |
| 2                         | Set Self-Adhesive Seals                         | R0E154                              |                 |

| <u>Each Pair to Have:</u> |                             | <u>HW-12</u>                     | <u>RATED</u> |
|---------------------------|-----------------------------|----------------------------------|--------------|
|                           | Hinges                      | QUANTITY & TYPE AS REQUIRED      |              |
| 1                         | Exit Device                 | TYPE 7 or 8 F01                  |              |
| 1                         | Exit Device                 | TYPE 7 or 8 F08 LEVER            |              |
| 1                         | Key Cylinder                | TYPE AS REQUIRED                 |              |
| 1                         | Set Meeting Stile Astragals | R3E834                           |              |
| 2                         | Closers                     | C02011/C02021 (PT4D, PT4F, PT4H) |              |
| 2                         | Floor Stops                 | L02121 x 3 FASTENERS             |              |
| 1                         | Set Self-Adhesive Seals     | R0E154                           |              |

| <u>Each [MHO] Pair Integrated Doors to Have:</u> |  | <u>HW-12A</u> | <u>RATED</u> |
|--|--|---------------|--------------|
|--|--|---------------|--------------|

ALL HARDWARE BY SECTION 08 17 10, INTEGRATED DOOR ASSEMBLIES

HW-12B

Each [ADO] Pair Integrated Doors to Have:

RATED

1 Key Cylinder TYPE AS REQUIRED  
BALANCE OF HARDWARE BY SECTION 08 17 10, INTEGRATED DOOR ASSEMBLIES  
AUTOMATIC DOOR OPERATORS AND CONTROLS BY SECTION 08 71 13, AUTOMATIC DOOR  
OPERATORS.

HW-12C

Each [MHO] Pair Integrated Double Egress Doors to Have:

RATED

ALL HARDWARE BY SECTION 08 17 10, INTEGRATED DOOR ASSEMBLIES

HW-12D

Each [ADO] Pair Integrated Double Egress Doors to Have:

RATED

ALL HARDWARE BY SECTION 08 17 10, INTEGRATED DOOR ASSEMBLIES  
AUTOMATIC DOOR OPERATORS AND CONTROLS BY SECTION 08 71 13, AUTOMATIC DOOR  
OPERATORS.

HW-12E

Each Pair to Have:

RATED

|   |                             |   |
|---|-----------------------------|---|
| 2 | Continuous Hinges           | A51031B x INTEGRAL HINGE GUARD CHANNEL<br>X HOSPITAL TIP X ADJUSTA-SCREWS |
| 1 | Exit Device                 | TYPE 7 or 8 F01   |
| 1 | Exit Device                 | TYPE 7 or 8 F08 LEVER   |
| 1 | Key Cylinder                | TYPE AS REQUIRED  |
| 1 | Set Meeting Stile Astragals | R3E834  |
| 2 | Closers                     | C02011/C02021 (PT4D, PT4F, PT4H)  |
| 2 | Kick Plates                 | J102  |
| 2 | Edge Guard (@ Wood Doors)   | J208M / J211 (VERIFY), CUT: HARDWARE                                      |
| 2 | Floor Stops                 | L02121 x 3 FASTENERS  |
| 2 | Door Bottom                 | R0Y434 x NYLON BRUSH INSERT   |
| 2 | Set Self-Adhesive Seals     | R0E154  |

HW-12F

Each Pair to Have:

RATED

|   |                             |                             |
|---|-----------------------------|-----------------------------|
|   | Hinges                      | QUANTITY & TYPE AS REQUIRED |
| 1 | Exit Device                 | TYPE 7 or 8 F01             |
| 1 | Exit Device                 | TYPE 7 or 8 F08 LEVER       |
| 1 | Key Cylinder                | TYPE AS REQUIRED            |
| 1 | Set Meeting Stile Astragals | R3E834                      |
| 2 | Closers                     | C02021 (PT4D, PT4F, PT4H)   |
| 2 | Floor Stops                 | L02121 x 3 FASTENERS        |
| 2 | Door Bottom                 | R0Y434 x NYLON BRUSH INSERT |
| 2 | Sets Self-Adhesive Seals    | R0E154                      |

| <u>Each Pair to Have:</u> |                             | <u>HW-12G</u>  | <u>NON-RATED</u> |
|---------------------------|-----------------------------|--|------------------|
| 2                         | Continuous Hinges           | A51031B x INTEGRAL HINGE GUARD CHANNEL<br>X ADJUSTA-SCREWS |                  |
| 1                         | Exit Device                 | TYPE 7 or 8 F01  |                  |
| 1                         | Exit Device                 | TYPE 7 or 8 F08 LEVER                                      |                  |
| 1                         | Key Cylinder                | TYPE AS REQUIRED   |                  |
| 1                         | Set Meeting Stile Astragals | R3E834   |                  |
| 2                         | Closers                     | C02051/C02071 (PT4D, PT4H)                                 |                  |
| 2                         | Kick Plates                 | J102   |                  |
| 2                         | Edge Guard (@ Wood Doors)   | J208M / J211 (VERIFY), CUT: HARDWARE                       |                  |
| 2                         | Floor Stops                 | L02121 x 3 FASTENERS                                       |                  |
| 2                         | Door Bottom                 | R0Y434 x NYLON BRUSH INSERT                                |                  |
| 2                         | Sets Self-Adhesive Seals    | R0E154   |                  |

| <u>Each [ADO] Pair to Have:</u> |                             | <u>HW-12H</u>   | <u>NON-RATED</u> |
|---------------------------------|-----------------------------|---|------------------|
| 2                               | Continuous Transfer Hinge   | A51031B x INTEGRAL HINGE GUARD CHANNEL<br>X ADJUSTA-SCREWS x 8-THRUWIRE<br>TRANSFER X IN-HINGE ACCESS PANEL |                  |
| 1                               | Elec. Exit Device           | TYPE 7 or 8 F01 (E04)   |                  |
| 1                               | Elec. Exit Device           | TYPE 7 or 8 F08 LEVER (E04)   |                  |
| 1                               | Key Cylinder                | TYPE AS REQUIRED  |                  |
| 1                               | Power Supply                | BY EXIT DEVICE MFR. FOR E04 FUNCTION  |                  |
| 1                               | Set Meeting Stile Astragals | R3E834  |                  |
| 2                               | Kick Plates                 | J102  |                  |
| 2                               | Edge Guard (@ Wood Doors)   | J208M / J211 (VERIFY), CUT: HARDWARE  |                  |
| 2                               | Floor Stops                 | L02121 x 3 FASTENERS  |                  |
| 2                               | Door Bottom                 | R0Y434 x NYLON BRUSH INSERT   |                  |
| 2                               | Sets Self-Adhesive Seals    | R0E154  |                  |

POWER TRANSFERS **SHARED BY ELECTRIC PANIC AND** RE-ACTIVATION SENSOR WIRING (RE-ACTIVATION SENSORS PROVIDED BY SECTION 08 71 13).  
AUTO DOOR OPERATORS AND CONTROLS BY SECTION 08 71 13.

| <u>Each Pair to Have:</u> |                             | <u>HW-12J</u>                    | <u>RATED</u> |
|---------------------------|-----------------------------|----------------------------------|--------------|
|                           | Hinges                      | QUANTITY & TYPE AS REQUIRED      |              |
| 1                         | Exit Device                 | TYPE 7 or 8 F01                  |              |
| 1                         | Exit Device                 | TYPE 7 or 8 F13 LEVER            |              |
| 1                         | Key Cylinder                | TYPE AS REQUIRED                 |              |
| 1                         | Set Meeting Stile Astragals | R3E834                           |              |
| 2                         | Closers                     | C02011/C02021 (PT4D, PT4F, PT4H) |              |
| 2                         | Floor Stops                 | L02121 x 3 FASTENERS             |              |
| 2                         | Door Bottom                 | R0Y434 x NYLON BRUSH INSERT      |              |
| 2                         | Sets Self-Adhesive Seals    | R0E154                           |              |

| <u>Each [ADO] Bi-Parting Automatic Pair to Have:</u> |  | <u>HW-13</u> | <u>NON-RATED</u> |
|--|--|--------------|------------------|
|--|--|--------------|------------------|

ALL HARDWARE BY SECTION 08 42 29.

**EXTERIOR SINGLE DOORS**

| <u>Each Door to Have:</u> |                               | <u>HW-E1</u>   | <u>NON-RATED</u> |
|---------------------------|-------------------------------|--|------------------|
| 1                         | Continuous Hinge              | A51031B  |                  |
| 1                         | Entry Lock                    | F11  |                  |
| 1                         | Latch Protector (outswing dr) | MLP-111 (DON-JO), OR EQUAL   |                  |
| 1                         | Closer                        | C02011/C02021 (PT4D, PT4F, PT4H)                                       |                  |
| 1                         | Kick Plate                    | J102   |                  |
| 1                         | Floor Stop                    | 1214CK x 1268CK (TRIMCO), OR EQUAL                                     |                  |
| 1                         | Threshold (outswing door)     | J35130 x SILICONE GASKET   |                  |
| 1                         | Threshold (inswing door)      | ALUMINUM, PER ARCHITECTURAL DETAIL                                     |                  |
| 1                         | Door Sweep                    | 90100CNB (PEMKO), OR EQUAL   |                  |
| 1                         | Set Frame Seals               | 2891AS X CSK SCREWS (PEMKO), OR EQUAL                                  |                  |
| 1                         | Drip                          | R0Y976   |                  |
| <u>Each Door to Have:</u> |                               | <u>HW-E2</u>   | <u>NON-RATED</u> |
| 1                         | Continuous Hinge              | A51031B  |                  |
| 1                         | Classroom Lock                | F05  |                  |
| 1                         | Closer                        | C02011/C02021 (PT4D, PT4F, PT4H)                                       |                  |
| 1                         | Kick Plate                    | J102   |                  |
| 1                         | Floor Stop                    | 1214CK x 1268CK (TRIMCO), OR EQUAL                                     |                  |
| 1                         | Threshold (outswing door)     | J35130 x SILICONE GASKET   |                  |
| 1                         | Threshold (inswing door)      | ALUMINUM, PER ARCHITECTURAL DETAIL                                     |                  |
| 1                         | Door Sweep                    | 90100CNB (PEMKO), OR EQUAL   |                  |
| 1                         | Set Frame Seals               | 2891AS X CSK SCREWS (PEMKO), OR EQUAL                                  |                  |
| 1                         | Drip                          | R0Y976   |                  |
| <u>Each Door to Have:</u> |                               | <u>HW-E3</u>   | <u>NON-RATED</u> |
| 1                         | Continuous Hinge              | A51031B x INTEGRAL HINGE GUARD CHANNEL<br>X ADJUSTA-SCREWS             |                  |
| 1                         | Storeroom Lock                | F13-MOD x RIGID OUTSIDE LEVER x KEY<br>RETRACTS DEADBOLT AND LATCHBOLT |                  |
| 1                         | Latch Protector (outswing dr) | MLP-111 (DON-JO), OR EQUAL   |                  |
| 1                         | Closer                        | C02011/C02021 (PT4D, PT4H)   |                  |
| 1                         | Edge Guard (@ Wood Doors)     | J208M / J211 (VERIFY),   |                  |
| CUT: HARDWARE             |                               |  |                  |
| 1                         | Armor Plate                   | J101 x 3.125 MM (0.125 INCH) THICKNESS                                 |                  |
| 1                         | Overhead Holder               | C01511-ADJUSTABLE  |                  |
| 1                         | Threshold (outswing door)     | J35130 x SILICONE GASKET   |                  |
| 1                         | Threshold (inswing door)      | ALUMINUM, PER ARCHITECTURAL DETAIL                                     |                  |
| 1                         | Door Sweep                    | 90100CNB (PEMKO), OR EQUAL   |                  |
| 1                         | Set Frame Seals               | 2891AS X CSK SCREWS (PEMKO), OR EQUAL                                  |                  |
| 1                         | Drip                          | R0Y976   |                  |

| <u>Each Door to Have:</u> |                  | <u>HW-E4</u>                          | <u>NON-RATED</u> |
|---------------------------|------------------|---------------------------------------|------------------|
| 1                         | Continuous Hinge | A51031B                               |                  |
| 1                         | Anti-Vandal Pull | 1097HASP (TRIMCO), OR EQUAL           |                  |
| 1                         | Exit Device      | TYPE 1 F03 LES TRIM                   |                  |
| 1                         | Key Cylinder     | TYPE AS REQUIRED                      |                  |
| 1                         | Closer           | C02011 (PT4D, PT4F, PT4H)             |                  |
| 1                         | Kick Plate       | J102                                  |                  |
| 1                         | Floor Stop       | 1214CK x 1268CK (TRIMCO), OR EQUAL    |                  |
| 1                         | Threshold        | J35130 x SILICONE GASKET              |                  |
| 1                         | Door Sweep       | 90100CNB (PEMKO), OR EQUAL            |                  |
| 1                         | Set Frame Seals  | 2891AS X CSK SCREWS (PEMKO), OR EQUAL |                  |
| 1                         | Drip             | R0Y976                                |                  |

| <u>Each Roll-up Door to Have:</u>                                  |                        | <u>HW-E5</u>     | <u>NON-RATED</u> |
|--|------------------------|------------------|------------------|
| 1  | Padlock or 2 Cylinders | TYPE AS REQUIRED |                  |
| BALANCE OF HARDWARE BY SECTION 08 33 00, COILING DOORS AND GRILLES |                        |                  |                  |

**EXTERIOR PAIRS OF DOORS**

| <u>Each Pair to Have:</u> |  | <u>HW-E6</u>                          | <u>NON-RATED</u> |
|---------------------------|--|---------------------------------------|------------------|
| 2                         | Continuous Hinge                             | A51031B                               |                  |
| 1                         | Set Auto Flush Bolts                         | TYPE 25                               |                  |
| 1                         | Dust Proof Strike                            | L04021                                |                  |
| 1                         | Entry Lock                                   | F11                                   |                  |
| 1                         | Overlapping Astragal with Self-Adhesive Seal | R5Y634 x R0E154 x THRU-BOLTS          |                  |
| 1                         | Coordinator                                  | TYPE 21A                              |                  |
| 2                         | Closer                                       | C02011/C02021 (PT4D, PT4F, PT4H)      |                  |
| 2                         | Kick Plate                                   | J102                                  |                  |
| 2                         | Floor Stop                                   | 1214CK x 1268CK (TRIMCO), OR EQUAL    |                  |
| 1                         | Threshold (outswing door)                    | J35130 x SILICONE GASKET              |                  |
| 1                         | Threshold (inswing door)                     | ALUMINUM, PER ARCHITECTURAL DETAIL    |                  |
| 2                         | Door Sweep                                   | 90100CNB (PEMKO), OR EQUAL            |                  |
| 1                         | Set Frame Seals                              | 2891AS X CSK SCREWS (PEMKO), OR EQUAL |                  |
| 1                         | Drip   | R0Y976                                |                  |

| <u>Each Pair to Have:</u> |  | <u>HW-E7</u>                          | <u>NON-RATED</u> |
|---------------------------|--|---------------------------------------|------------------|
| 2                         | Continuous Hinge                             | A51031B                               |                  |
| 1                         | Set Auto Flush Bolts                         | TYPE 25                               |                  |
| 1                         | Dust Proof Strike                            | L04021                                |                  |
| 1                         | Classroom Lock                               | F05                                   |                  |
| 1                         | Overlapping Astragal with Self-Adhesive Seal | R5Y634 x R0E154 x THRU-BOLTS          |                  |
| 1                         | Coordinator                                  | TYPE 21A                              |                  |
| 2                         | Closer                                       | C02011/C02021 (PT4D, PT4F, PT4H)      |                  |
| 2                         | Kick Plate                                   | J102                                  |                  |
| 2                         | Floor Stop                                   | 1214CK x 1268CK (TRIMCO), OR EQUAL    |                  |
| 1                         | Threshold (outswing door)                    | J35130 x SILICONE GASKET              |                  |
| 1                         | Threshold (inswing door)                     | ALUMINUM, PER ARCHITECTURAL DETAIL    |                  |
| 2                         | Door Sweep                                   | 90100CNB (PEMKO), OR EQUAL            |                  |
| 1                         | Set Frame Seals                              | 2891AS X CSK SCREWS (PEMKO), OR EQUAL |                  |
| 1                         | Drip   | R0Y976                                |                  |

| <u>Each Pair to Have:</u> |  | <u>HW-E8</u>   | <u>NON-RATED</u> |
|---------------------------|--|--|------------------|
| 2                         | Continuous Hinge                             | A51031B  |                  |
| 1                         | Set Auto Flush Bolts                         | TYPE 25  |                  |
| 1                         | Dust Proof Strike                            | L04021   |                  |
| 1                         | Storeroom Lock                               | F13-MOD x RIGID OUTSIDE LEVER x KEY<br>RETRACTS DEADBOLT AND LATCHBOLT |                  |
| 1                         | Overlapping Astragal with Self-Adhesive Seal | R5Y634 x R0E154 x THRU-BOLTS   |                  |
| 1                         | Coordinator                                  | TYPE 21A   |                  |
| 2                         | Closer                                       | C02011/C02021 (PT4D, PT4F, PT4H)                                       |                  |
| 2                         | Armor Plate                                  | J101 x 3.125 MM (0.125 INCH) THICKNESS                                 |                  |
| 2                         | Floor Stop                                   | 1214CK x 1268CK (TRIMCO), OR EQUAL                                     |                  |
| 1                         | Threshold (outswing door)                    | J35130 x SILICONE GASKET   |                  |
| 1                         | Threshold (inswing door)                     | ALUMINUM, PER ARCHITECTURAL DETAIL                                     |                  |
| 2                         | Door Sweep                                   | 90100CNB (PEMKO), OR EQUAL   |                  |
| 1                         | Set Frame Seals                              | 2891AS X CSK SCREWS (PEMKO), OR EQUAL                                  |                  |
| 1                         | Drip   | R0Y976   |                  |

| <u>Each Door to Have:</u> |                             | <u>HW-E9</u>   | <u>NON-RATED</u> |
|---------------------------|-----------------------------|--|------------------|
| 2                         | Continuous Hinge            | A51031B  |                  |
| 2                         | Anti-Vandal Pull            | 1097HASP (-NC @ INACTIVE LEAF) (TRIMCO),<br>OR EQUAL |                  |
| 1                         | Exit Device                 | TYPE 8 F01   |                  |
| 1                         | Exit Device                 | TYPE 8 F12 LESS PULL                                 |                  |
| 1                         | Key Cylinder                | TYPE AS REQUIRED                                     |                  |
| 1                         | Set Meeting Stile Astragals | R3E834   |                  |
| 2                         | Closer                      | C02011 (PT4D, PT4F, PT4H)                            |                  |
| 2                         | Kick Plate                  | J102   |                  |
| 2                         | Floor Stop                  | 1214CK x 1268CK (TRIMCO), OR EQUAL                   |                  |
| 1                         | Threshold                   | J35130 x SILICONE GASKET                             |                  |
| 2                         | Door Sweep                  | 90100CNB (PEMKO), OR EQUAL                           |                  |
| 1                         | Set Frame Seals             | 2891AS X CSK SCREWS (PEMKO), OR EQUAL                |                  |

1 Drip R0Y976

HW-E10

Each Sliding Door to Have:

NON-RATED

|   |                                |  |
|---|--------------------------------|--|
| 1 | Set Track Hardware             | TYPE REQUIRED FOR DOOR MATERIAL, WEIGHT,<br>AND MOUNTING DETAILS (COMPLETE WITH<br>TRACK, TRACK BRACKETS, HANGERS, GUIDES,<br>BUMPERS, AND INTERNAL TRACK STOPS) |
| 2 | Pulls                          | 1102T (TRIMCO), OR EQUAL   |
| 1 | Padlock or Sliding Door Lock   | TYPE AS REQUIRED (PADLOCK) OR MS1850SN-<br>450 (SLIDING DOOR LOCK) (ADAMS RITE, OR<br>EQUAL  |
| 2 | Cylinder (for sliding dr lock) | TYPE AS REQUIRED   |

**EXTERIOR SINGLE GATES**

HW-G1

Each Traffic Gate to Have:

NON-RATED

Spring Hinge TYPE REQUIRED X STAINLESS STEEL  
BALANCE OF HARDWARE BY SECTION 32 31 33, CHAIN LINK FENCES AND GATES //  
SECTION 32 31 19, DECORATIVE METAL FENCES AND GATES

HW-G2

Each Gate to Have:

NON-RATED

|   |                        |   |
|---|------------------------|---|
| 2 | Weldable Gate Hinges   | I-8513 X WELDED OR FASTENED X SHEAR HINGE<br>LEAVES TO FIT GATE MEMBERS (BROOKFIELD),<br>OR EQUAL |
| 1 | Weldable Lock Box      | K-BXMOR X TYPE TO FIT LOCK BRAND/MODEL<br>(KEEDEX), OR EQUAL                                      |
| 1 | Utility Lock           | F09 X NON-FERROUS LOCK CASE   |
| 1 | Stainless Steel Closer | C52011/C22021 (PT4D, PT4F, PT4H)  |

BALANCE OF HARDWARE BY SECTION 32 31 33, CHAIN LINK FENCES AND GATES //  
SECTION 32 31 19, DECORATIVE METAL FENCES AND GATES

HW-G3

Each Gate to Have:

NON-RATED

|   |                        |   |
|---|------------------------|---|
| 2 | Weldable Gate Hinges   | I-8513 X WELDED OR FASTENED X SHEAR HINGE<br>LEAVES TO FIT GATE MEMBERS (BROOKFIELD),<br>OR EQUAL |
| 1 | Weldable Lock Box      | K-BXMOR X TYPE TO FIT LOCK BRAND/MODEL<br>(KEEDEX), OR EQUAL                                      |
| 1 | Storeroom Lock         | F13-MOD x RIGID OUTSIDE LEVER x KEY<br>RETRACTS DEADBOLT AND LATCHBOLT                            |
| 1 | Stainless Steel Closer | C52011/C22021 (PT4D, PT4F, PT4H)  |

BALANCE OF HARDWARE BY SECTION 32 31 33, CHAIN LINK FENCES AND GATES //  
SECTION 32 31 19, DECORATIVE METAL FENCES AND GATES



| <u>Each Gate to Have:</u>   |                        | <u>HW-G4</u>  | <u>NON-RATED</u> |
|---|------------------------|---|------------------|
| 2   | Weldable Gate Hinges   | I-8513 X WELDED OR FASTENED X SHEAR HINGE<br>LEAVES TO FIT GATE MEMBERS (BROOKFIELD),<br>OR EQUAL |                  |
| 1   | Weldable Panic Box     | K-BXED X TYPE TO FIT LOCK BRAND/MODEL<br>(KEEDEEX), OR EQUAL                                      |                  |
| 1   | Anti-Vandal Pull       | 1097HASP (TRIMCO), OR EQUAL   |                  |
| 1   | Rim Panic Device       | TYPE 1 F03 LESS TRIM  |                  |
| 1   | Cylinder               | TYPE AS REQUIRED  |                  |
| 1   | Stainless Steel Closer | C52011/C22021 (PT4D, PT4F, PT4H)  |                  |
| BALANCE OF HARDWARE BY SECTION 32 31 33, CHAIN LINK FENCES AND GATES // |                        |   |                  |
| SECTION 32 31 19, DECORATIVE METAL FENCES AND GATES                     |                        |   |                  |

| <u>Each Rolling or Swing-Up Gate to Have:</u>                           |                        | <u>HW-G5</u>     | <u>NON-RATED</u> |
|---|------------------------|------------------|------------------|
| 1   | Padlock or 2 Cylinders | TYPE AS REQUIRED |                  |
| BALANCE OF HARDWARE BY SECTION 32 31 33, CHAIN LINK FENCES AND GATES // |                        |                  |                  |
| SECTION 32 31 19, DECORATIVE METAL FENCES AND GATES                     |                        |                  |                  |

#### **EXTERIOR PAIRS OF GATES**

| <u>Each Pair Traffic Gates to Have:</u>                                 |              | <u>HW-G6</u>                    | <u>NON-RATED</u> |
|---|--------------|---------------------------------|------------------|
|   | Spring Hinge | TYPE REQUIRED X STAINLESS STEEL |                  |
| BALANCE OF HARDWARE BY SECTION 32 31 33, CHAIN LINK FENCES AND GATES // |              |                                 |                  |
| SECTION 32 31 19, DECORATIVE METAL FENCES AND GATES                     |              |                                 |                  |

  

| <u>Each Pair Gates to Have:</u>  |  | <u>HW-G7</u>  | <u>NON-RATED</u> |
|--|--|---|------------------|
| 4  | Weldable Gate Hinges                           | I-8513 X WELDED OR FASTENED X SHEAR HINGE<br>LEAVES TO FIT GATE MEMBERS (BROOKFIELD),<br>OR EQUAL               |                  |
| 2  | Padlockable Cane Bolts<br>with Hold-up Springs | 524-P23 x P23SP x 524PL (1 STRIKE @<br>ACTIVE LEAF; 2 STRIKES AT INACTIVE LEAF)<br>(CROWN INDUSTRIAL), OR EQUAL |                  |
| 2  | Padlocks                                       | TYPE AS REQUIRED  |                  |
| 1  | Weldable Lock Box                              | K-BXMOR X TYPE TO FIT LOCK BRAND/MODEL X<br>K-BXSTR STRIKE BRACKET (KEEDEEX), OR<br>EQUAL                       |                  |
| 1  | Utility Lock                                   | F09 X NON-FERROUS LOCK CASE   |                  |
| 2  | Stainless Steel Closer                         | C52011/C22021 (PT4D, PT4F, PT4H)  |                  |
| BALANCE OF HARDWARE BY SECTION 32 31 33, CHAIN LINK FENCES AND GATES //  |  |   |                  |
| SECTION 32 31 19, DECORATIVE METAL FENCES AND GATES.   |  |   |                  |
| INSTALL CANE BOLTS ON PULL SIDE OF EACH LEAF. ACTIVE LEAF CANE BOLT TO HAVE<br>STRIKE IN OPEN POSITION ONLY. INACTIVE LEAF CANE BOLT TO HAVE STRIKES IN<br>BOTH OPEN AND CLOSED POSITIONS. |  |   |                  |

| <u>Each Pair Gates to Have:</u>   |  | <u>HW-G8</u>  | <u>NON-RATED</u> |
|---|--|---|------------------|
| 4   | Weldable Gate Hinges                           | I-8513 X WELDED OR FASTENED X SHEAR HINGE<br>LEAVES TO FIT GATE MEMBERS (BROOKFIELD),<br>OR EQUAL               |                  |
| 2   | Padlockable Cane Bolts<br>with Hold-up Springs | 524-P23 x P23SP x 524PL (1 STRIKE @<br>ACTIVE LEAF; 2 STRIKES AT INACTIVE LEAF)<br>(CROWN INDUSTRIAL), OR EQUAL |                  |
| 2   | Padlocks                                       | TYPE AS REQUIRED  |                  |
| 1   | Weldable Lock Box                              | K-BXMOR X TYPE TO FIT LOCK BRAND/MODEL X<br>K-BXSTR STRIKE BRACKET (KEEDEKX), OR<br>EQUAL                       |                  |
| 1   | Storeroom Lock                                 | F13-MOD x RIGID OUTSIDE LEVER x KEY<br>RETRACTS DEADBOLT AND LATCHBOLT  |                  |
| 2   | Stainless Steel Closer                         | C52011/C22021 (PT4D, PT4F, PT4H)  |                  |
| BALANCE OF HARDWARE BY SECTION 32 31 33, CHAIN LINK FENCES AND GATES //     |  |   |                  |
| SECTION 32 31 19, DECORATIVE METAL FENCES AND GATES.                        |  |   |                  |
| INSTALL CANE BOLTS ON PULL SIDE OF EACH LEAF. ACTIVE LEAF CANE BOLT TO HAVE |  |   |                  |
| STRIKE IN OPEN POSITION ONLY. INACTIVE LEAF CANE BOLT TO HAVE STRIKES IN    |  |   |                  |
| BOTH OPEN AND CLOSED POSITIONS.   |  |   |                  |

| <u>Each Pair Gates to Have:</u>  |                        | <u>HW-G9</u>  | <u>NON-RATED</u> |
|--|------------------------|---|------------------|
| 2  | Weldable Gate Hinges   | I-8513 X WELDED OR FASTENED X SHEAR HINGE<br>LEAVES TO FIT GATE MEMBERS (BROOKFIELD),<br>OR EQUAL |                  |
| 2  | Weldable Panic Boxes   | K-BXED X TYPE TO FIT LOCK BRAND/MODEL<br>(KEEDEKX), OR EQUAL                                      |                  |
| 1  | Anti-Vandal Pull       | 1097HASP (-NC AT NON-KEYED PANIC)<br>(TRIMCO), OR EQUAL   |                  |
| 1  | Rim Panic Device       | TYPE 1 F01  |                  |
| 1  | Rim Panic Device       | TYPE 1 F03 LESS TRIM  |                  |
| 1  | Cylinder               | TYPE AS REQUIRED  |                  |
| 2  | Stainless Steel Closer | C52011/C22021 (PT4D, PT4F, PT4H)  |                  |
| BALANCE OF HARDWARE AND FIXED MULLION BY SECTION 32 31 33, CHAIN LINK FENCES |                        |   |                  |
| AND GATES // SECTION 32 31 19, DECORATIVE METAL FENCES AND GATES.            |                        |   |                  |

| <u>Each Rolling or Swing-Up Gate to Have:</u>                           |                        | <u>HW-G10</u>    | <u>NON-RATED</u> |
|---|------------------------|------------------|------------------|
| 1   | Padlock or 2 Cylinders | TYPE AS REQUIRED |                  |
| BALANCE OF HARDWARE BY SECTION 32 31 33, CHAIN LINK FENCES AND GATES // |                        |                  |                  |
| SECTION 32 31 19, DECORATIVE METAL FENCES AND GATES                     |                        |                  |                  |

**RESIDENTIAL UNIT SINGLE DOORS**

| <u>Each Door to Have:</u> |                          | <u>HW-R1</u>                        | <u>NON-RATED/RATED</u> |
|---------------------------|--------------------------|-------------------------------------|------------------------|
|                           | Hinges                   | QUANTITY & TYPE AS REQUIRED         |                        |
| 1                         | Guestroom Card Lock      | BY OTHER SECTION.                   |                        |
| 1                         | Closer (@ Rated Doors)   | C02011 (PT4D, PT4F PT4H)            |                        |
| 1                         | Floor Stop               | L02121 x 3 FASTENERS                |                        |
| 2                         | Door Viewers             | L03221 - 190°                       |                        |
| 1                         | Threshold                | J32300 x 57 MM WIDTH (2-1/4 INCHES) |                        |
| 1                         | Auto Door Bottom         | R0Y346 - HEAVY DUTY                 |                        |
| 2                         | Sets Self-Adhesive Seals | R0E154                              |                        |

| <u>Each Door to Have:</u> |                             | <u>HW-R1A</u>                         | <u>NON-RATED</u> |
|---------------------------|-----------------------------|---------------------------------------|------------------|
| 1                         | Continuous Hinge            | A51031B                               |                  |
| 1                         | Guestroom Card Lock         | BY OTHER SECTION.                     |                  |
| 1                         | Latch Protector (@ O/S Drs) | MLP-111 (DON-JO), OR EQUAL            |                  |
| 1                         | Closer                      | C02011/C02021 (PT4D, PT4F PT4H)       |                  |
| 1                         | Kick Plate                  | J102                                  |                  |
| 1                         | Floor Stop (@ I/S Doors)    | L02121 x 3 FASTENERS                  |                  |
| 1                         | Overhead Stop (@ O/S Doors) | C01541-ADJUSTABLE                     |                  |
| 1                         | Threshold (outswing door)   | J35130 x SILICONE GASKET              |                  |
| 1                         | Threshold (inswing door)    | ALUMINUM, PER ARCHITECTURAL DETAIL    |                  |
| 1                         | Door Sweep                  | 90100CNB (PEMKO), OR EQUAL            |                  |
| 1                         | Set Frame Seals             | 2891AS X CSK SCREWS (PEMKO), OR EQUAL |                  |
| 1                         | Drip                        | R0Y976                                |                  |

| <u>Each Door to Have:</u> |           | <u>HW-R2</u>                | <u>NON-RATED</u> |
|---------------------------|-----------|-----------------------------|------------------|
|                           | Hinges    | QUANTITY & TYPE AS REQUIRED |                  |
| 1                         | Latchset  | F75                         |                  |
| 1                         | Base Stop | L02031 x 3 FASTENERS        |                  |
| 3                         | Silencers | L03011                      |                  |

| <u>Each Door to Have:</u> |                             | <u>HW-R2A</u>                           | <u>NON-RATED</u> |
|---------------------------|-----------------------------|---|------------------|
|                           | Hinges                      | QUANTITY & TYPE AS REQUIRED             |                  |
| 1                         | Push/Pull Plate Set         | 1894-4 x 1195-1 PULL (TRIMCO), OR EQUAL |                  |
| 1                         | Kick Plate                  | J102                                    |                  |
| 1                         | Mop Plate (@ Inswing Doors) | J102                                    |                  |
| 1                         | Closer                      | C02011/C02021 (PT4D, PT4F, PT4H)        |                  |
| 1                         | Floor Stop                  | L02121 x 3 FASTENERS                    |                  |
| 3                         | Silencers                   | L03011                                  |                  |

| <u>Each Door to Have:</u> |                          | <u>HW-R2B</u>                       | <u>NON-RATED</u> |
|---------------------------|--------------------------|-------------------------------------|------------------|
|                           | Hinges                   | QUANTITY & TYPE AS REQUIRED         |                  |
| 1                         | Latchset                 | F75                                 |                  |
| 1                         | Floor Stop               | L02121 x 3 FASTENERS                |                  |
| 1                         | Threshold                | J32300 x 57 MM WIDTH (2-1/4 INCHES) |                  |
| 1                         | Auto Door Bottom         | R0Y346 - HEAVY DUTY                 |                  |
| 2                         | Sets Self-Adhesive Seals | R0E154                              |                  |

| <u>Each Door to Have:</u> |                             | <u>HW-R2C</u>                           | <u>NON-RATED</u> |
|---------------------------|-----------------------------|---|------------------|
|                           | Hinges                      | QUANTITY & TYPE AS REQUIRED             |                  |
| 1                         | Push/Pull Plate Set         | 1894-4 x 1195-1 PULL (TRIMCO), OR EQUAL |                  |
| 1                         | Kick Plate                  | J102                                    |                  |
| 1                         | Mop Plate (@ Inswing Doors) | J102                                    |                  |
| 1                         | Closer                      | C02011/C02021 (PT4D, PT4F, PT4H)        |                  |
| 1                         | Floor Stop                  | L02121 x 3 FASTENERS                    |                  |
| 1                         | Threshold                   | J32300 x 57 MM WIDTH (2-1/4 INCHES)     |                  |
| 1                         | Auto Door Bottom            | R0Y346 - HEAVY DUTY                     |                  |
| 2                         | Sets Self-Adhesive Seals    | R0E154                                  |                  |

| <u>Each Door to Have:</u> |           | <u>HW-R3</u>                | <u>NON-RATED</u> |
|---------------------------|-----------|-----------------------------|------------------|
|                           | Hinges    | QUANTITY & TYPE AS REQUIRED |                  |
| 1                         | Privacy   | F76B                        |                  |
| 1                         | Base Stop | L02031 x 3 FASTENERS        |                  |
| 1                         | Coat Hook | L03121                      |                  |
| 3                         | Silencers | L03011                      |                  |

| <u>Each Door to Have:</u>   |                          | <u>HW-R3A</u>                       | <u>NON-RATED</u> |
|---|--------------------------|-------------------------------------|------------------|
|   | Hinges                   | QUANTITY & TYPE AS REQUIRED         |                  |
| 1   | Privacy                  | F76B                                |                  |
| 1   | Base Stop                | L02031 x 3 FASTENERS                |                  |
| 1   | Coat Hook                | L03121                              |                  |
| 1   | Threshold                | J32300 x 57 MM WIDTH (2-1/4 INCHES) |                  |
| 1   | Auto Door Bottom         | R0Y346 - HEAVY DUTY                 |                  |
| 2   | Sets Self-Adhesive Seals | R0E154                              |                  |
| AT TOILET ROOMS, OMIT METAL THRESHOLD; STONE THRESHOLD BY OTHER TRADES. |                          |                                     |                  |

| <u>Each Door to Have:</u> |                         | <u>HW-R4</u>                     | <u>RATED</u> |
|---------------------------|-------------------------|----------------------------------|--------------|
|                           | Hinges                  | QUANTITY & TYPE AS REQUIRED      |              |
| 1                         | Classroom Lock          | F84                              |              |
| 1                         | Closer                  | C02011/C02021 (PT4D, PT4F, PT4H) |              |
| 1                         | Base Stop               | L02031 x 3 FASTENERS             |              |
| 1                         | Set Self-Adhesive Seals | R0E154                           |              |

HW-R5

THIS HARDWARE SET LEFT INTENTIONALLY BLANK AT THIS TIME.

**RESIDENTIAL UNIT PAIRS OF DOORS**

HW-R6

THIS HARDWARE SET LEFT INTENTIONALLY BLANK AT THIS TIME.

HW-R7

Each Pair to Have:

NON-RATED

|   |                |                             |
|---|----------------|-----------------------------|
|   | Hinges         | QUANTITY & TYPE AS REQUIRED |
| 2 | Dummy Sets     | 93K02DT (BEST), OR EQUAL    |
| 2 | Roller Latches | E09091 x MORTISE STRIKE     |
| 2 | Base Stops     | L02031 x 3 FASTENERS        |
| 2 | Silencers      | L03011                      |

HW-R7A

Each Door to Have:

NON-RATED/RATED

|   |   |                                     |
|---|---|-------------------------------------|
|   | Hinges  | QUANTITY & TYPE AS REQUIRED         |
| 1 | Set Auto Flush Bolts                            | TYPE 25 LESS BOTTOM BOLT            |
| 1 | Guestroom Card Lock                             | BY OTHER SECTION.                   |
| 1 | Coordinator                                     | TYPE 21A                            |
| 1 | Overlapping Astragal with<br>Self-Adhesive Seal | R5Y634 x R0E154 x THRU-BOLTS        |
| 2 | Closer (@ Rated Doors)                          | C02011 (PT4D, PT4F PT4H)            |
| 2 | Floor Stop                                      | L02121 x 3 FASTENERS                |
| 2 | Door Viewers                                    | L03221 - 190°                       |
| 1 | Threshold                                       | J32300 x 57 MM WIDTH (2-1/4 INCHES) |
| 2 | Auto Door Bottom                                | R0Y346 - HEAVY DUTY                 |
| 2 | Sets Self-Adhesive Seals                        | R0E154                              |

SECURITY HARDWARE ABBREVIATIONS LEGEND:

AC = Access Control Device (Card reader, biometric reader, keypad, etc.)  
ADO = Automatic Door Operator  
DEML = Delayed Egress Magnetic Lock  
DEPH = Delayed Egress Panic Exit Device  
DPS = Door Position Switch (Door or Alarm Contact)  
EL = Electric Lock or Electric Lever Exit Device  
PB = Push-button Combination Lock (stand-alone)  
RR = Remote Release Button  
ELR = Electric Latch Retraction Exit Device  
REX = Request-to-Exit Switch in Latching Device Inside Trim

**INTERIOR SINGLE SECURITY DOORS**

HW-SH-1

THIS HARDWARE SET LEFT INTENTIONALLY BLANK AT THIS TIME.

HW-SH-2

Each Door to Have:

NON RATED

|   |                      |   |
|---|----------------------|---|
| 1 | Continuous Hinge     | FM-3500 X 83 1/8" X SEC. TORX (MARKAR),<br>OR EQUAL           |
| 1 | Pull                 | 212C X SEC. TORX (SOUTHERN FOLGER),<br>OR EQUAL               |
| 1 | Lock                 | 1080A-1 X HM MOUNT X SEC. TORX (SOUTHERN<br>FOLGER), OR EQUAL |
| 1 | Strike/Keeper        | 4CL X SEC. TORX (SOUTHERN FOLGER), OR<br>EQUAL                |
| 1 | Overhead Stop        | C01541-ADJUSTABLE X SEC. TORX                                 |
| 1 | Door Position Switch | 2757 X SEC. TORX (GE SECURITY), OR EQUAL                      |

HW-SH-3

Each [AC, EL, REX, DPS] Door to Have:

RATED/NON-RATED

|   |                          |   |
|---|--------------------------|---|
|   | Hinges                   | QUANTITY & TYPE AS REQUIRED                         |
| 1 | Transfer Hinge           | 4-WIRE TYPE AS REQUIRED                             |
| 1 | Electrified Lock         | F07 (E01-REX, E06) 24VDC                            |
| 1 | Power Supply             | REGULATED, FILTERED, 24VDC, AMPERAGE<br>AS REQUIRED |
| 1 | Closer                   | C02011/C02021 (PT4D, PT4F, PT4H)                    |
| 1 | Floor Stop               | L02121 x 3 FASTENERS                                |
| 1 | Threshold                | J32300 x 57 MM WIDTH (2-1/4 INCHES)                 |
| 1 | Auto Door Bottom         | R0Y346 - HEAVY DUTY                                 |
| 2 | Sets Self-Adhesive Seals | R0E154  |
| 1 | Alarm Contact            | 1078-G (G.E. SECURITY), OR EQUAL                    |

120VAC POWER, CONDUIT, AND WIRING BY DIVISION 26.

CARD READER BY DIVISION 28.

HW-SH-3A

THIS SET NOT USED.

HW-SH-3B

Each [PB] Door to Have:

RATED

|   |                              |                                  |
|---|------------------------------|----------------------------------|
| 1 | Continuous Hinge             | A51031B                          |
| 1 | Push-button Combination Lock | N3 - A156.13 F07 G1 E06          |
| 1 | Closer                       | C02011/C02021 (PT4D, PT4F, PT4H) |
| 1 | Kick Plate                   | J102                             |
| 1 | Mop Plate (@ Inswing Doors)  | J102                             |
| 1 | Floor Stop                   | L02121 x 3 FASTENERS             |
| 1 | Set Self-Adhesive Seals      | R0E154                           |

HW-SH-3C

Each [PB] Door to Have:

NON-RATED/RATED

|   |                              |  |
|---|------------------------------|--|
| 1 | Continuous Hinge             | A51031B x INTEGRAL HINGE GUARD CHANNEL<br>X ADJUSTA-SCREWS |
| 1 | Push-button Combination Lock | N3 - A156.13 F07 G1 E06                                    |
| 1 | Closer                       | C02011/C02021 (PT4D, PT4F, PT4H)                           |
| 1 | Armor Plate                  | J101 x 1.275 MM (0.050 INCH) THICKNESS                     |
| 1 | Edge Guard (@ Wood Doors)    | J208M / J211 (VERIFY), CUT: HARDWARE                       |
| 1 | Floor Stop                   | L02121 x 3 FASTENERS                                       |
| 1 | Set Self-Adhesive Seals      | R0E154   |

HW-SH-3D

Each [AC, EL, REX, DPS] Door to Have:

RATED

|   |                           |   |
|---|---------------------------|---|
| 1 | Continuous Hinge          | A51031B x INTEGRAL HINGE GUARD CHANNEL<br>X ADJUSTA-SCREWS X 4-THRUWIRE<br>TRANSFER X IN-HINGE ACCESS PANEL |
| 1 | Electrified Lock          | F07 (E01-REX, E06) 24VDC  |
| 1 | Power Supply              | REGULATED, FILTERED, 24VDC, AMPERAGE<br>AS REQUIRED   |
| 1 | Closer                    | C02011/C02021 (PT4D, PT4F, PT4H)  |
| 1 | Armor Plate               | J101 x 1.275 MM (0.050 INCH) THICKNESS  |
| 1 | Edge Guard (@ Wood Doors) | J208M / J211 (VERIFY), CUT: HARDWARE  |
| 1 | Threshold                 | J32300 x 57 MM WIDTH (2-1/4 INCHES)   |
| 1 | Auto Door Bottom          | R0Y346 - HEAVY DUTY   |
| 2 | Sets Self-Adhesive Seals  | R0E154  |
| 1 | Alarm Contact             | 1078-G (G.E. SECURITY), OR EQUAL  |

120VAC POWER, CONDUIT, AND WIRING BY DIVISION 26.

CARD READER BY DIVISION 28.

HW-SH-3E

Each [AC, EL, REX, DPS] Door to Have:

RATED

|   |                                      |   |
|---|--------------------------------------|---|
|   | Hinges                               | QUANTITY & TYPE AS REQUIRED   |
| 1 | Transfer Hinge                       | 4-WIRE TYPE AS REQUIRED   |
| 1 | Electrified Occupancy Indicator Lock | F13-MODIFIED (E01-REX, E06) 24VDC<br>X OCCUPANCY INDICATOR X KEY RETRACTS<br>LATCHBOLT AND DEADBOLT X INTERNAL<br>DEADBOLT MONITOR SWITCH |
| 1 | Power Supply                         | REGULATED, FILTERED, 24VDC, AMPERAGE<br>AS REQUIRED   |
| 1 | Closer                               | C02011/C02021 (PT4D, PT4F, PT4H)  |
| 1 | Floor Stop                           | L02121 x 3 FASTENERS  |
| 1 | Threshold                            | J32300 x 57 mm width (2-1/4 inches)   |
| 1 | Auto Door Bottom                     | R0Y346 - HEAVY DUTY   |
| 2 | Sets Self-Adhesive Seals             | R0E154  |
| 1 | Alarm Contact                        | 1078-G (G.E. SECURITY), OR EQUAL  |

INTERNAL DEADBOLT MONITOR SWITCH SHUNTS ACCESS CONTROL DEVICE WHEN DEADBOLT IS THROWN.  
120VAC POWER, CONDUIT, AND WIRING BY DIVISION 26.  
CARD READER BY DIVISION 28.

HW-SH-3F

Each [AC, RR, EL, REX, DPS] Door to Have:

RATED

|   |                           |   |
|---|---------------------------|---|
| 1 | Continuous Transfer Hinge | A51031B x INTEGRAL HINGE GUARD CHANNEL<br>X ADJUSTA-SCREWS x 4-THRUWIRE TRANSFER x<br>IN-HINGE ACCESS PANEL     |
| 1 | Electrified Lock          | F13-MOD x RIGID OUTSIDE LEVER X NO INSIDE<br>TURN X KEY RETRACTS LATCHBOLT AND<br>DEADBOLT (E01-REX, E06) 24VDC |
| 1 | Power Supply              | REGULATED, FILTERED, 24VDC, AMPERAGE<br>AS REQUIRED   |
| 1 | Closer                    | C02011/C02021 (PT4D, PT4F, PT4H)  |
| 1 | Armor Plate               | J101 x 1.275 MM (0.050 INCH) THICKNESS  |
| 1 | Edge Guard (@ Wood Doors) | J208M / J211 (VERIFY), CUT: HARDWARE  |
| 1 | Floor Stop                | L02121 x 3 FASTENERS  |
| 1 | Set Self-Adhesive Seals   | R0E154  |
| 1 | Alarm Contact             | 1078-G (G.E. SECURITY), OR EQUAL  |

120VAC POWER, CONDUIT, AND WIRING BY DIVISION 26.  
CARD READER BY DIVISION 28.



HW-SH-3G

Each [AC, RR, EL, REX, DPS] Door to Have:

RATED

|   |                           |   |
|---|---------------------------|---|
| 1 | Continuous Transfer Hinge | A51031B x INTEGRAL HINGE GUARD CHANNEL<br>X ADJUSTA-SCREWS x 4-THRUWIRE TRANSFER x<br>IN-HINGE ACCESS PANEL     |
| 1 | Electrified Lock          | F13-MOD x RIGID OUTSIDE LEVER X NO INSIDE<br>TURN X KEY RETRACTS LATCHBOLT AND<br>DEADBOLT (E01-REX, E06) 24VDC |
| 1 | Power Supply              | REGULATED, FILTERED, 24VDC, AMPERAGE<br>AS REQUIRED   |
| 1 | Closer                    | C02011/C02021 (PT4D, PT4F, PT4H)  |
| 1 | Armor Plate               | J101 x 1.275 MM (0.050 INCH) THICKNESS  |
| 1 | Edge Guard (@ Wood Doors) | J208M / J211 (VERIFY), CUT: HARDWARE  |
| 1 | Floor Stop                | L02121 x 3 FASTENERS  |
| 1 | Threshold                 | J32300 x 57 MM WIDTH (2-1/4 INCHES)   |
| 1 | Auto Door Bottom          | R0Y346 - HEAVY DUTY   |
| 1 | Set Self-Adhesive Seals   | R0E154  |
| 1 | Alarm Contact             | 1078-G (G.E. SECURITY), OR EQUAL  |

120VAC POWER, CONDUIT, AND WIRING BY DIVISION 26.  
CARD READER BY DIVISION 28.

HW-SH-3H

Each [AC, EL, REX, DPS] Door to Have:

NON-RATED/RATED

|   |                           |  |
|---|---------------------------|--|
| 1 | Continuous Transfer Hinge | A51031B x 4-THRUWIRE TRANSFER x<br>IN-HINGE ACCESS PANEL                                       |
| 1 | Electrified Lock          | F13-MOD x RIGID OUTSIDE LEVER X KEY<br>RETRACTS LATCHBOLT AND DEADBOLT (E01-REX,<br>E06) 24VDC |
| 1 | Power Supply              | REGULATED, FILTERED, 24VDC, AMPERAGE<br>AS REQUIRED  |
| 1 | Closer                    | C02011/C02021 (PT4D, PT4F, PT4H)   |
| 1 | Kick Plate                | J102   |
| 1 | Floor Stop                | L02121 x 3 FASTENERS   |
| 1 | Set Self-Adhesive Seals   | R0E154   |
| 1 | Door Viewer               | L03221 - 190°  |
| 1 | Alarm Contact             | 1078-G (G.E. SECURITY), OR EQUAL   |

120VAC POWER, CONDUIT, AND WIRING BY DIVISION 26.  
CARD READER BY DIVISION 28.

HW-SH-4

Each [AC, EL, REX, DPS] Integrated Door to Have:

RATED

|   |              |                  |
|---|--------------|------------------|
| 1 | Key Cylinder | TYPE AS REQUIRED |
|---|--------------|------------------|

BALANCE OF HARDWARE BY SECTION 08 17 10, INTEGRATED DOOR ASSEMBLIES

HW-SH-4A

Each [ADO, AC, ELR, REX, DPS] Integrated Door to Have:

RATED

|   |              |                  |
|---|--------------|------------------|
| 1 | Key Cylinder | TYPE AS REQUIRED |
|---|--------------|------------------|

BALANCE OF HARDWARE BY SECTION 08 17 10, INTEGRATED DOOR ASSEMBLIES

| <u>HW-SH-4B</u>  |                           |  |
|--|---------------------------|--|
| <u>Each [ADO, AC, EL, REX, DPS] Door to Have:</u>  |                           | <u>RATED</u>   |
| 1  | Continuous Transfer Hinge | A51031B x INTEGRAL HINGE GUARD CHANNEL<br>X ADJUSTA-SCREWS x 12-THRUWIRE<br>TRANSFER X IN-HINGE ACCESS PANEL |
| 1  | Electrified Exit Device   | TYPE 1 (E01-REX, E04) F13 LEVER  |
| 1  | Key Cylinder              | TYPE AS REQUIRED   |
| 1  | Power Supply              | TYPE REQUIRED BY PANIC MANUFACTURER X ADO<br>BOARD   |
| 1  | Armor Plate               | J101 x 1.275 MM (0.050 INCH) THICKNESS   |
| 1  | Edge Guard (@ Wood Doors) | J208M / J211 (VERIFY), CUT: HARDWARE   |
| 1  | Floor Stop                | L02121 x 3 FASTENERS   |
| 1  | Set Self-Adhesive Seals   | R0E154   |
| POWER TRANSFER <b>SHARED BY ELECTRIC PANIC AND</b> RE-ACTIVATION SENSOR WIRING (RE-ACTIVATION SENSORS PROVIDED BY SECTION 08 71 13). |                           |  |
| AUTOMATIC DOOR OPERATOR AND CONTROLS BY SECTION 08 71 13, AUTOMATIC DOOR OPERATORS.  |                           |  |

HW-SH-5

THIS HARDWARE SET LEFT INTENTIONALLY BLANK AT THIS TIME.

HW-SH-6

THIS HARDWARE SET LEFT INTENTIONALLY BLANK AT THIS TIME.

**INTERIOR PAIRS OF SECURITY DOORS**

HW-SH-7

THIS HARDWARE SET LEFT INTENTIONALLY BLANK AT THIS TIME.

HW-SH-8

THIS HARDWARE SET LEFT INTENTIONALLY BLANK AT THIS TIME.

HW-SH-9

Each [AC, EL, REX, DPS] Pair to Have:

RATED

|   |   |   |
|---|---|---|
|   | Hinges  | QUANTITY & TYPE AS REQUIRED                         |
| 1 | Transfer Hinge                                  | 4-WIRE TYPE AS REQUIRED                             |
| 1 | Set Auto Flush Bolts                            | TYPE 25   |
| 1 | Dust Proof Strike                               | L04021  |
| 1 | Electrified Lock                                | F07 (E01-REX, E06) 24VDC                            |
| 1 | Power Supply                                    | REGULATED, FILTERED, 24VDC, AMPERAGE<br>AS REQUIRED |
| 1 | Coordinator                                     | TYPE 21A  |
| 1 | Overlapping Astragal with<br>Self-Adhesive Seal | R5Y634 x R0E154 x THRU-BOLTS                        |
| 2 | Closers   | C02011/C02021 (PT4D, PT4F, PT4H)                    |
| 2 | Kick Plates                                     | J102 (@ STORAGE ROOMS ONLY)                         |
| 2 | Floor Stops                                     | L02121 x 3 FASTENERS                                |
| 1 | Set Self-Adhesive Seals                         | R0E154  |
| 2 | Alarm Contacts                                  | 1078-G (G.E. SECURITY), OR EQUAL                    |

120VAC POWER, CONDUIT, AND WIRING BY DIVISION 26.  
CARD READER BY DIVISION 28.

HW-SH-9A

Each [PB] Pair to Have:

RATED

|   |   |  |
|---|---|--|
| 2 | Continuous Hinge                                | A51031B x INTEGRAL HINGE GUARD CHANNEL<br>X ADJUSTA-SCREWS |
| 1 | Set Auto Flush Bolts                            | TYPE 25  |
| 1 | Dust Proof Strike                               | L04021   |
| 1 | Push-button Combination Lock                    | N3 - A156.13 F07 G1 E06                                    |
| 1 | Coordinator                                     | TYPE 21A   |
| 1 | Overlapping Astragal with<br>Self-Adhesive Seal | R5Y634 x R0E154 x THRU-BOLTS                               |
| 2 | Closers   | C02011/C02021 (PT4D, PT4F, PT4H)                           |
| 2 | Armor Plates                                    | J101 x 1.275 MM (0.050 INCH) THICKNESS                     |
| 2 | Edge Guard (@ Wood Doors)                       | J208M / J211 (VERIFY), CUT: HARDWARE                       |
| 2 | Floor Stops                                     | L02121 x 3 FASTENERS                                       |
| 1 | Set Self-Adhesive Seals                         | R0E154   |

HW-SH-10

Each [AC, EL, REX, DPS] Pair Integrated Doors to Have:

RATED

|   |              |                  |
|---|--------------|------------------|
| 1 | Key Cylinder | TYPE AS REQUIRED |
|---|--------------|------------------|

BALANCE OF HARDWARE BY SECTION 08 17 10, INTEGRATED DOOR ASSEMBLIES

HW-SH-10A

Each [AC, ADO, EL, REX, DPS] Pair Integrated Doors to Have:

RATED

|   |              |                  |
|---|--------------|------------------|
| 1 | Key Cylinder | TYPE AS REQUIRED |
|---|--------------|------------------|

BALANCE OF HARDWARE BY SECTION 08 17 10, INTEGRATED DOOR ASSEMBLIES.  
AUTOMATIC DOOR OPERATORS AND CONTROLS BY SECTION 08 71 13, AUTOMATIC DOOR  
OPERATORS.

**EXTERIOR SINGLE SECURITY DOORS**

HW-SH-12

Each [AC, ELR, REX, DPS] Integrated Door to Have: NON-RATED

1 Key Cylinder TYPE AS REQUIRED  
BALANCE OF HARDWARE BY SECTION 08 17 10, INTEGRATED DOOR ASSEMBLIES

**MENTAL HEALTH AREAS**

HW-MH1

Each Door to Have: NON-RATED/RATED

|   |                           |   |
|---|---------------------------|---|
| 1 | Continuous Hinge          | A51031B x INTEGRAL HINGE GUARD CHANNEL<br>X HOSPITAL TIP X ADJUSTA-SCREWS |
| 1 | Passage Latch             | F01 x LESS TRIM   |
| 1 | Set Anti-Ligature Trim    | CH (Accurate Lock), or equal  |
| 1 | Armor Plate               | J101 x 1.275 MM (0.050 INCH) THICKNESS                                    |
| 1 | Edge Guard (@ Wood Doors) | J208M / J211 (VERIFY), CUT: HARDWARE                                      |
| 1 | Floor Stop                | L02121 x 3 FASTENERS  |
| 1 | Set Seals                 | R3C164  |

PROVIDE SECURITY FASTENERS FOR ALL HARDWARE ITEMS.  
NO CLOSER REQUIRED DUE TO EXEMPTION FOR PATIENT ROOM DOORS.

HW-MH1A

Each Door to Have: RATED

|   |                             |  |
|---|-----------------------------|--|
|   | Hinges                      | QUANTITY & TYPE AS REQUIRED<br>X HOSPITAL TIPS             |
| 1 | Passage Latch               | F01 x LESS TRIM  |
| 1 | Set Anti-Ligature Trim      | CH (Accurate Lock), or equal                               |
| 1 | Closer                      | C02011/C02021 (PT4D, PT4F, PT4H)<br>x INSTALL OUTSIDE ROOM |
| 1 | Kick Plate                  | J102   |
| 1 | Mop Plate (@ Inswing Doors) | J102   |
| 1 | Floor Stop                  | L02121 x 3 FASTENERS                                       |
| 1 | Threshold                   | J32300 x 57 MM WIDTH (2-1/4 INCHES)                        |
| 1 | Auto Door Bottom            | R0Y346 - HEAVY DUTY  |
| 1 | Set Seals                   | R3C164   |

PROVIDE SECURITY FASTENERS FOR ALL HARDWARE ITEMS.

| <u>Each Door to Have:</u>                          |                            | <u>HW-MH1B</u>                      | <u>RATED/NON-RATED</u> |
|--|----------------------------|-------------------------------------|------------------------|
| 1  | Continuous Hinge           | A51031B x HOSPITAL TIP              |                        |
| 1  | Passage Latch              | F01 x LESS TRIM                     |                        |
| 1  | Set Anti-Ligature Trim     | CH (Accurate Lock), or equal        |                        |
| 1  | Kick Plate                 | J102                                |                        |
| 1  | Closer (@ rated doors)     | C02011/C02021 (PT4D, PT4F, PT4H)    |                        |
| 1  | Closer (@ non-rated doors) | C02051/C02061 (PT4D, PT4H)          |                        |
| 1  | Wall Stop                  | L52101 CONVEX                       |                        |
| 1  | Threshold                  | J32300 x 57 MM WIDTH (2-1/4 INCHES) |                        |
| 1  | Auto Door Bottom           | R0Y346 - HEAVY DUTY                 |                        |
| 2  | Sets Self-Adhesive Seals   | R0E154                              |                        |
| INSTALL CLOSER OUTSIDE ROOM.                       |                            |                                     |                        |
| PROVIDE SECURITY FASTENERS FOR ALL HARDWARE ITEMS. |                            |                                     |                        |

| <u>Each Door to Have:</u>                          |                             | <u>HW-MH2</u>                                 | <u>NON-RATED</u> |
|--|-----------------------------|---|------------------|
|  | Hinges                      | QUANTITY & TYPE AS REQUIRED x HOSPITAL TIP    |                  |
| 1  | Keyed Privacy Lock          | F12-MOD x TURNPIECE BOTH SIDES x LESS TRIM    |                  |
| 1  | Set Anti-Ligature Trim      | CH (Accurate Lock), or equal                  |                  |
| 2  | Anti-Ligature Thumbturns    | ALT-ADA-D/P (VERIFY) (Accuate Lock), or equal |                  |
| 1  | Kick Plate                  | J102  |                  |
| 1  | Mop Plate (@ Inswing Doors) | J102  |                  |
| 1  | Floor Stop                  | L02121 x 3 FASTENERS                          |                  |
| 1  | Auto Door Bottom            | R0Y346 - HEAVY DUTY                           |                  |
| 1  | Set Seals                   | R3C164  |                  |
| PROVIDE SECURITY FASTENERS FOR ALL HARDWARE ITEMS. |                             |   |                  |
| STONE THRESHOLD BY OTHER TRADES.                   |                             |   |                  |

| <u>Each Door to Have:</u>                          |                              | <u>HW-MH2A</u>                                | <u>RATED/NON-RATED</u> |
|--|------------------------------|---|------------------------|
|  | Hinges                       | QUANTITY & TYPE AS REQUIRED x HOSPITAL TIP    |                        |
| 1  | Keyed Privacy Indicator Lock | F13 x OCCUPANCY INDICATOR x LESS TRIM         |                        |
| 1  | Set Anti-Ligature Trim       | CH (Accurate Lock), or equal                  |                        |
| 1  | Anti-Ligature Thumbturn      | ALT-ADA-D/P (VERIFY) (Accuate Lock), or equal |                        |
| 1  | Closer                       | C02011/C02021 (PT4D, PT4F, PT4H)              |                        |
| 1  | Kick Plate                   | J102  |                        |
| 1  | Mop Plate (@ Inswing Doors)  | J102  |                        |
| 1  | Floor Stop                   | L02121 x 3 FASTENERS                          |                        |
| 1  | Set Self-Adhesive Seals      | R0E154  |                        |
| INSTALL CLOSER OUTSIDE ROOM                        |                              |   |                        |
| PROVIDE SECURITY FASTENERS FOR ALL HARDWARE ITEMS. |                              |   |                        |
| STONE THRESHOLD BY OTHER TRADES.                   |                              |   |                        |

| <u>Each Door to Have:</u>                          |                           | <u>HW-MH3</u>   | <u>NON-RATED</u> |
|--|---------------------------|---|------------------|
| 1  | Continuous Hinge          | A51031B x INTEGRAL HINGE GUARD CHANNEL<br>X HOSPITAL TIP X ADJUSTA-SCREWS |                  |
| 1  | Classroom Lock            | F05 x LESS TRIM   |                  |
| 1  | Set Anti-Ligature Trim    | CH (Accurate Lock), or equal  |                  |
| 1  | Armor Plate               | J101 x 1.275 MM (0.050 INCH) THICKNESS                                    |                  |
| 1  | Mop Plate                 | J102  |                  |
| 1  | Edge Guard (@ Wood Doors) | J208M / J211 (VERIFY), CUT: HARDWARE                                      |                  |
| 1  | Floor Stop                | L02121 x 3 FASTENERS  |                  |
| 3  | Silencers                 | L03011  |                  |
| PROVIDE SECURITY FASTENERS FOR ALL HARDWARE ITEMS. |                           |   |                  |

| <u>Each Door to Have:</u>                          |                           | <u>HW-MH3A</u>  | <u>RATED</u> |
|--|---------------------------|---|--------------|
| 1  | Continuous Hinge          | A51031B x INTEGRAL HINGE GUARD CHANNEL<br>X HOSPITAL TIP X ADJUSTA-SCREWS |              |
| 1  | Classroom Lock            | F05 x LESS TRIM   |              |
| 1  | Set Anti-Ligature Trim    | CH (Accurate Lock), or equal  |              |
| 1  | Closer                    | C02011/C02021 (PT4D, PT4F, PT4H)  |              |
| 1  | Armor Plate               | J101 x 1.275 MM (0.050 INCH) THICKNESS                                    |              |
| 1  | Edge Guard (@ Wood Doors) | J208M / J211 (VERIFY), CUT: HARDWARE                                      |              |
| 1  | Floor Stop                | L02121 x 3 FASTENERS  |              |
| 1  | Set Self-Adhesive Seals   | R0E154  |              |
| INSTALL CLOSER OUTSIDE ROOM.                       |                           |   |              |
| PROVIDE SECURITY FASTENERS FOR ALL HARDWARE ITEMS. |                           |   |              |

| <u>Each [AC, RR, EL, REX, DPS] Door to Have:</u>   |                           | <u>HW-MH4</u>   | <u>RATED</u> |
|--|---------------------------|---|--------------|
| 1  | Continuous Transfer Hinge | A51031B x INTEGRAL HINGE GUARD CHANNEL<br>X ADJUSTA-SCREWS x 4-THRUWIRE TRANSFER x<br>IN-HINGE ACCESS PANEL |              |
| 1  | Electrified Lock          | F07 (E01-REX, E06) 24VDC x<br>LESS TRIM   |              |
| 1  | Set Anti-Ligature Trim    | CH (Accurate Lock), or equal  |              |
| 1  | Power Supply              | REGULATED, FILTERED, 24VDC, AMPERAGE<br>AS REQUIRED   |              |
| 1  | Closer                    | C02011/C02021 (PT4D, PT4F, PT4H)  |              |
| 1  | Kick Plate                | J102  |              |
| 1  | Stretcher Plate           | J102  |              |
| 1  | Edge Guard (@ Wood Doors) | J208M / J211 (VERIFY), CUT: HARDWARE  |              |
| 1  | Floor Stop                | L02121 x 3 FASTENERS  |              |
| 1  | Door Viewer               | L03221 - 190° (VIEW INTO WAITING ROOM)  |              |
| 1  | Door Viewer               | L03221 - 190° (VIEW INTO TREATMENT AREA)  |              |
| 1  | Set Self-Adhesive Seals   | R0E154  |              |
| 1  | Alarm Contact             | 1078-G (G.E. SECURITY), OR EQUAL  |              |
| OMIT DOOR VIEWERS AT DOORS WITH VISION LITES.      |                           |   |              |
| INSTALL DOOR CLOSER ON WAITING ROOM SIDE.          |                           |   |              |
| PROVIDE SECURITY FASTENERS FOR ALL HARDWARE ITEMS. |                           |   |              |
| 120VAC POWER, CONDUIT, AND WIRING BY DIVISION 26.  |                           |   |              |

CARD READER BY DIVISION 28.

| <u>Each Door to Have:</u>                                   |                           | <u>HW-MH4A</u>  | <u>RATED</u> |
|---|---------------------------|---|--------------|
| 1   | Continuous Hinge          | A51031B x INTEGRAL HINGE GUARD CHANNEL<br>X HOSPITAL TIP X ADJUSTA-SCREWS |              |
| 1   | Lock                      | F08 x LESS TRIM   |              |
| 1   | Set Anti-Ligature Trim    | CH (Accurate Lock), or equal  |              |
| 1   | Armor Plate               | J101 x 1.275 MM (0.050 INCH) THICKNESS                                    |              |
| 1   | Edge Guard (@ Wood Doors) | J208M / J211 (VERIFY), CUT: HARDWARE                                      |              |
| 1   | Floor Stop                | L02121 x 3 FASTENERS  |              |
| 1   | Threshold                 | J32300 x 57 MM WIDTH (2-1/4 INCHES)                                       |              |
| 1   | Auto Door Bottom          | R0Y346 - HEAVY DUTY   |              |
| 1   | Set Seals                 | R3C164  |              |
| PROVIDE SECURITY FASTENERS FOR ALL HARDWARE ITEMS.          |                           |   |              |
| NO CLOSER REQUIRED DUE TO EXEMPTION FOR PATIENT ROOM DOORS. |                           |   |              |

| <u>Each Door to Have:</u>  |                           | <u>HW-MH5</u>   | <u>RATED/NON-RATED</u> |
|--|---------------------------|---|------------------------|
| 1  | Continuous Hinge          | A51031B x INTEGRAL HINGE GUARD CHANNEL<br>X HOSPITAL TIP X ADJUSTA-SCREWS |                        |
| 2  | Anti-Ligature Pulls       | DL34042 x BTB MOUNT (TRIMCO), OR EQUAL                                    |                        |
| 1  | Deadlatch                 | F30 LESS TRIM BOTH SIDES  |                        |
| 1  | Armor Plate               | J101 x 1.275 MM (0.050 INCH) THICKNESS                                    |                        |
| 1  | Edge Guard (@ Wood Doors) | J208M / J211 (VERIFY), CUT: HARDWARE                                      |                        |
| 1  | Floor Stop                | L02121 x 3 FASTENERS  |                        |
| 1  | Threshold                 | J32300 x 57 MM WIDTH (2-1/4 INCHES)                                       |                        |
| 1  | Auto Door Bottom          | R0Y346 - HEAVY DUTY   |                        |
| 1  | Set Seals                 | R3C164  |                        |
| PROVIDE SECURITY FASTENERS FOR ALL HARDWARE ITEMS.                         |                           |   |                        |
| NO CLOSER REQUIRED AT RATED DOORS DUE TO EXEMPTION FOR PATIENT ROOM DOORS. |                           |   |                        |

| <u>Each Door to Have:</u>                          |                           | <u>HW-MH5A</u>  | <u>RATED</u> |
|--|---------------------------|---|--------------|
| 1  | Continuous Hinge          | A51031B x INTEGRAL HINGE GUARD CHANNEL<br>X HOSPITAL TIP X ADJUSTA-SCREWS |              |
| 2  | Anti-Ligature Pulls       | DL34042 x BTB MOUNT (TRIMCO), OR EQUAL                                    |              |
| 1  | Deadlatch                 | F30 LESS TRIM BOTH SIDES  |              |
| 1  | Edge Guard (@ Wood Doors) | J208M / J211 (VERIFY), CUT: HARDWARE                                      |              |
| 1  | Armor Plate               | J101 x 1.275 MM (0.050 INCH) THICKNESS                                    |              |
| 1  | Floor Stop                | L02121 x 3 FASTENERS  |              |
| 3  | Silencers                 | L03011  |              |
| STONE THRESHOLD BY OTHER TRADES.                   |                           |   |              |
| PROVIDE SECURITY FASTENERS FOR ALL HARDWARE ITEMS. |                           |   |              |

HW-MH6

Each Pair to Have: RATED/NON-RATED

|   |                               |   |
|---|-------------------------------|---|
| 2 | Continuous Hinges             | A51031B x INTEGRAL HINGE GUARD CHANNEL<br>X HOSPITAL TIP X ADJUSTA-SCREWS |
| 2 | Anti-Ligature Pulls (act. 1f) | DL34042 x BTB MOUNT (TRIMCO), OR EQUAL                                    |
| 2 | Manual Flush Bolts            | L04251/L04261 (VERIFY)  |
| 1 | Dust Proof Strike             | L04021  |
| 1 | Deadlatch                     | F30 LESS TRIM BOTH SIDES  |
| 1 | Overlapping Astragal          | R5Y634 x R0E154 x THRU-BOLTS  |
| 2 | Armor Plates                  | J101 x 1.275 MM (0.050 INCH) THICKNESS                                    |
| 2 | Edge Guard (@ Wood Doors)     | J208M / J211 (VERIFY), CUT: HARDWARE                                      |
| 2 | Floor Stops                   | L02121 x 3 FASTENERS  |
| 1 | Threshold                     | J32300 x 57 MM WIDTH (2-1/4 INCHES)                                       |
| 2 | Auto Door Bottom              | R0Y336 - HEAVY DUTY   |
| 1 | Set Seals                     | R3C164  |

PROVIDE SECURITY FASTENERS FOR ALL HARDWARE ITEMS.

HW-MH6A

Each Pair to Have: NON-RATED/RATED

|   |                           |   |
|---|---------------------------|---|
| 2 | Continuous Hinge          | A51031B x INTEGRAL HINGE GUARD CHANNEL<br>X HOSPITAL TIP X ADJUSTA-SCREWS |
| 2 | Manual Flush Bolts        | L04251/L04261 (VERIFY)  |
| 1 | Dust Proof Strike         | L04021  |
| 1 | Passage Latch             | F01 x LESS TRIM   |
| 1 | Set Anti-Ligature Trim    | CH (Accurate Lock), or equal  |
| 1 | Overlapping Astragal      | R5Y634 x R0E154 x THRU-BOLTS  |
| 2 | Armor Plate               | J101 x 1.275 MM (0.050 INCH) THICKNESS                                    |
| 2 | Edge Guard (@ Wood Doors) | J208M / J211 (VERIFY), CUT: HARDWARE                                      |
| 2 | Floor Stop                | L02121 x 3 FASTENERS  |
| 1 | Set Seals                 | R3C164  |

PROVIDE SECURITY FASTENERS FOR ALL HARDWARE ITEMS.

NO CLOSER REQUIRED DUE TO EXEMPTION FOR PATIENT ROOM DOORS.

- - - E N D - - -



**SECTION 08 75 00**

**INSTALLATION OF DOORS AND HARDWARE**

**PART 1 - GENERAL**

**1.1 DESCRIPTION**

This section covers the hanging of metal doors, the fitting, preparation for hardware, and the installation of builder's hardware, and lock cylinders.

**1.2 RELATED WORK**

- A. Steel doors and frames, including fitting and preparation for hardware: Section 08 11 15, STEEL DOORS AND FRAMES AND WINDOW FRAMES.
- B. Door hardware and its location (height): Section 08 71 00, HARDWARE.

**PART 2 - PRODUCTS**

**2.1 FASTENERS**

- A. Use the fasteners furnished with the hardware to be installed. Where fasteners are not furnished with the item to be installed, use fasteners of suitable size and type to harmonize with the item to be installed as to material and finish and to suit the material to which fastened.
- B. Provide machine screws and metal expansion shields to secure hardware door assembly. Fiber, plastic, and lead or plugs and adhesives are not permitted.
- C. All fastenings exposed to weather shall be of non-ferrous metal.

**PART 3 - EXECUTION**

**3.1 HARDWARE HEIGHTS**

- A. Locate hardware on doors at heights specified below:
- B. Hardware Heights from Finished Floor:
  - 1. Locksets and latch sets centerline of strike 40-5/16 inches.
  - 2. Deadlocks centerline of strike 40-5/16 inches.
  - 3. Centerline of deadlock strike to be 33 inches when used with push-pull latch.

NOTE: Other hardware shall be located at standard commercial heights. Push and pull plates shall be located to prevent conflict with other hardware.

- C. Modifications, necessitated by reason of construction, shall be submitted to Project Engineer for approval before being made.

### **3.2 INSTALLATION, GENERAL**

- A. Hang doors and install hardware when concrete work, and other operations which increase humidity and dust in the building, have been completed.
- B. All materials in areas where wood doors are to be hung shall be sufficiently dry so as to not affect the dimensional stability of the door.
- C. Install hardware, except hinges, after field painting.

### **3.3 INSTALLING DOORS AND BUILDER'S HARDWARE**

- A. Install hardware at the location (heights) specified in accordance with the manufacturer's printed instructions.
- B. Drill and tap screw holes in steel frames and doors for surface mounted hardware.
- C. Use of shims will only be permitted at hinges where required to provide uniform clearance and alignment of door. Shims shall be cut from stainless steel sheet, same size as hinge.
- D. Screws shall not be driven in place.
- E. Hardware items shall be carefully fitted and securely attached to doors and frames.

### **3.4 CLEANING AND ADJUSTING**

- A. Doors, including hardware shall be cleaned and adjusted to operate as designed without binding or deformation of the members.
- B. Doors shall be centered in the opening or frame and shall have all contact surfaces fit tight and even without forcing or warping the components.
- C. Installation of doors and frames that do not conform to hardware heights requirements is not acceptable and shall be replaced.
- D. After installation, clean all surfaces, remove temporary labels, paint spots and other defacement. Clean prefinished and plated items and all items fabricated from stainless steel, aluminum and copper alloys, as recommended by the manufacturer.

### **3.5 PROTECTION**

- A. Protect doors and hardware from damage caused by weather or during construction until completion of the project.

- - - E N D - - -

**SECTION 08 80 00**

**GLAZING**

**PART 1 - GENERAL**

**1.1 DESCRIPTION**

This section specifies glass, plastic, related glazing materials and accessories. Glazing products specified apply to factory or field glazed items.

**1.2 RELATED WORK**

- A. Factory glazed by manufacturer in following units:
  - 1. Section 08 11 13, HOLLOW METAL DOORS AND FRAMES, and Section 08 14 00, WOOD DOORS.
  - 2. Section 08 41 13, Aluminum Framed Entrances and Storefronts.
  - 3. Color of spandrel glass, tinted Section 09 06 00, SCHEDULE FOR FINISHES.

**1.3 LABELS**

- A. Temporary labels:
  - 1. Provide temporary label on each light of glass identifying manufacturer or brand and glass type, quality and nominal thickness.
  - 2. Label in accordance with NFRC (National Fenestration Rating Council) label requirements.
  - 3. Temporary labels shall remain intact until glass is approved by Project Engineer.
- B. Permanent labels:
  - 1. Locate in corner for each pane.
  - 2. Label in accordance with ANSI Z97.1 and SGCC (Safety Glass Certification Council) label requirements.
    - a. Tempered glass.
    - b. Laminated glass or have certificate for panes without permanent label.
    - c. Organic coated glass.

**1.4 PERFORMANCE REQUIREMENTS**

- A. Building Enclosure Vapor Retarder and Air Barrier:

1. Utilize the inner pane of multiple pane sealed units for the continuity of the air barrier and vapor retarder seal.
  2. Maintain a continuous air barrier and vapor retarder throughout the glazed assembly from glass pane to heel bead of glazing sealant.
- B. Glass Thickness:
1. Select thickness of exterior glass to withstand dead loads and wind loads acting normal to plane of glass at design pressures calculated in accordance with applicable California Building Code (CBC).
  2. Test in accordance with ASTM E 1300.
  3. Thicknesses listed are minimum. Coordinate thicknesses with framing system manufacturers.

#### **1.5 SUBMITTALS**

- A. In accordance with Section 01 33 23, SHOP DRAWINGS, PRODUCT DATA, AND SAMPLES.
- B. Manufacturer's Certificates:
1. Certificates stating that wire glass, meets requirements for safety glazing material as specified in ANSI Z97.1.
  2. Certificate on shading coefficient.
  3. Certificate on "R" value when value is specified.
  4. Certificate test reports confirming compliance's with specified bullet resistive rating.
- C. Warranty: Submit written guaranty, conforming to General Condition requirements, and to "Warranty of Construction" Article in this Section.
- D. Manufacturer's Literature and Data:
1. Glass, each kind required.
  2. Insulating glass units.
  3. Elastic compound for metal sash glazing.
  4. Glazing cushion.
  5. Sealing compound.
- E. Samples:
1. Size: 150 mm by 150 mm (6 inches by 6 inches).

- 2. Tinted glass.
- 3. Reflective glass.
- F. Preconstruction Adhesion and Compatibility Test Report: Submit glazing sealant manufacturer's test report indicating glazing sealants were tested for adhesion to glass and glazing channel substrates and for compatibility with glass and other glazing materials.

#### **1.6 DELIVERY, STORAGE AND HANDLING**

- A. Delivery: Schedule delivery to coincide with glazing schedules so minimum handling of crates is required. Do not open crates except as required for inspection for shipping damage.
- B. Storage: Store cases according to printed instructions on case, in areas least subject to traffic or falling objects. Keep storage area clean and dry.
- C. Handling: Unpack cases following printed instructions on case. Stack individual windows on edge leaned slightly against upright supports with separators between each.

#### **1.7 PROJECT CONDITIONS**

Field Measurements: Field measure openings before ordering tempered glass products. Be responsible for proper fit of field measured products.

#### **1.8 WARRANTY**

- A. Warranty: Conform to terms of "Warranty of Construction", FAR clause 52.246-21, except extend warranty period for the following:
  - 1. Bullet resistive plastic material to remain visibly clear without discoloration for 10 years.
  - 2. Insulating glass units to remain sealed for 10 years.
  - 3. Laminated glass units to remain laminated for 5 years.

#### **1.9 APPLICABLE PUBLICATIONS**

- A. Publications listed below form a part of this specification to extent referenced. Publications are referenced in text by basic designation only.
- B. American National Standards Institute (ANSI):
  - Z97.1-04.....Safety Glazing Material Used in Building - Safety Performance Specifications and Methods of Test.

- C. American Society for Testing and Materials (ASTM):
- C1363-05.....Thermal Performance of Building Assemblies, by Means of A Hot Box Apparatus
  - C542-05.....Lock-Strip Gaskets.
  - C716-06.....Installing Lock-Strip Gaskets and Infill Glazing Materials.
  - C794-06.....Adhesion-in-Peel of Elastomeric Joint Sealants.
  - C864-05.....Dense Elastomeric Compression Seal Gaskets, Setting Blocks, and Spacers.
  - C920-08.....Elastomeric Joint Sealants.
  - C964-07.....Standard Guide for Lock-Strip Gasket Glazing.
  - C1036-06.....Flat Glass.
  - C1048-04.....Heat-Treated Flat Glass-Kind HS, Kind FT Coated and Uncoated Glass.
  - C1172-09.....Laminated Architectural Flat Glass.
  - C1376-10.....Pyrolytic and Vacuum Deposition Coatings on Flat Glass.
  - D635-06.....Rate of Burning and/or Extent and Time of Burning of Self-Supporting Plastic in a Horizontal Position.
  - D4802-02.....Poly (Methyl Methacrylate) Acrylic Plastic Sheet.
  - E84-09.....Surface Burning Characteristics of Building Materials.
  - E1300-09.....Determining Load Resistance of Glass in Buildings.
  - E2190-08.....Insulating Glass Unit
- D. Commercial Item Description (CID):
- A-A-59502.....Plastic Sheet, Polycarbonate
- E. Code of Federal Regulations (CFR):
- 16 CFR 1201 - Safety Standard for Architectural Glazing Materials; 1977, with 1984 Revision.
- F. National Fire Protection Association (NFPA):
- 80-08.....Fire Doors and Windows.

- G. National Fenestration Rating Council (NFRC)
- H. Safety Glazing Certification Council (SGCC) 2009:  
Certified Products Directory (Issued Semi-Annually).
- I. Underwriters Laboratories, Inc. (UL):  
752-06.....Bullet-Resisting Equipment.
- J. Unified Facilities Criteria (UFC):  
4-010-01-2007.....DOD Minimum Antiterrorism Standards for  
Buildings
- K. Glass Association of North America (GANA):  
Glazing Manual (Latest Edition)  
Sealant Manual (2008)
- L. American Society of Civil Engineers (ASCE):  
ASCE 7-10.....Wind Load Provisions

## **PART 2 - PRODUCTS**

### **2.1 GLASS**

- A. Use thickness stated unless specified otherwise in assemblies.
- B. Clear Glass:
  - 1. ASTM C1036, Type I, Class 1, Quality.
  - 2. Thickness, as indicated.
  - 3. Coordinate color/tint/coating to comply with the selections made by the Architect.
- C. Tinted Heat reflective and low emissivity coated glass:
  - 1. ASTM C1036, Type I, Class 2, Quality q3.
  - 2. Color: As selected by the architect.
  - 3. Thickness, indicated on the drawings.

### **2.2 HEAT-TREATED AND FULLY TEMPERED GLASS**

- A. Clear Heat Strengthened Glass:
  - 1. ASTM C1048, Kind HS, Condition A, Type I, Class 1, Quality q3.

2. Thickness, as indicated on the drawings.
- B. Clear Tempered Glass:
1. ASTM C1048, Kind FT, Condition A, Type I, Class 1, Quality q3.
  2. Thickness, as indicated on the drawings.
- C. Tinted Tempered Glass.
1. ASTM C1048, Kind FT, Condition A, Type I, Class 2, Quality q3.
  2. Color: As selected by the Architect.
  3. Thickness as indicated on the drawings.

### **2.3 COATED GLASS**

- A. Spandrel Glass:
1. ASTM C1048, Kind HS, Condition B, Type I.
  2. Thickness, as indicated on the drawings.
- B. Reflective Tempered Glass:
1. ASTM C1048, Kind FT, Condition C, Type I, Class 1, Quality q3 with reflective metallic coating, having nominal values of 25 percent day light, 30 percent solar, and 7.9 percent ultraviolet transmittance within three percent plus or minus.
  2. Thickness, as indicated on the drawings.
- C. Low-E Tempered Glass:
1. ASTM C1048, Kind FT, Condition C, Type I, Class 1, Quality q3 with low emissivity pyrolytic coating having an E of 0.15.
  2. Apply coating to second or third surface of insulating glass units as standard with the product manufacturer.
  3. Thickness, as indicated on the drawings.
- D. Ceramic Coated Spandrel Glass:
1. ASTM C1048, Kind FT, Condition B, Type I, Class 1, Quality q3 with ceramic coating applied over and fused into glass surface.
  2. Pattern as indicated in drawings, or as selected by the Architect.
  3. Apply coating to second surface.



4. Thickness, as indicated on the drawings.

## **2.4 LAMINATED GLASS**

- A. Two or more lites of glass bonded with an interlayer material for use in building glazing
- B. Colored Interlayer:
  1. Use color interlayer ultraviolet light color stabilization.
  2. Option: Use colored interlayer with clear glass in lieu of tinted glass and clear interlayer.
  3. Option: Use white interlayer with clear glass in lieu of obscure glass and clear interlayer.
  4. The interlayer assembly shall have uniform color presenting same appearance as tinted glass assembly.
- C. Use 1.5 mm (0.060 inch) thick interlayer for:
  1. Horizontal or Sloped glazing.
  2. Acoustical glazing.
  3. Heat strengthened or fully tempered glass assemblies.
- D. Use min. 0.75 mm (0.030 inch) thick interlayer for vertical glazing where 1.5 mm (0.060 inch) interlayer is not otherwise shown or required.

## **2.5 INSULATING GLASS UNITS**

- A. Provide factory fabricated, hermetically sealed glass unit consisting of two panes of glass separated by a dehydrated air space and comply with ASTM E2190.
- B. Assemble units using glass types indicated on the drawings.
- C. Sealed Edge Units (SEU):
  1. Insulating Glass Unit Makeup
    - a. Outboard Lite
      - 1) Glass type:
      - 2) Glass Tint:
      - 3) Nominal Thickness:
      - 4) Glass Strength: (Annealed, Heat-Strengthened, Tempered)
    - b. Spacer

- 1) Nominal Thickness:
- 2) Gas Fill: (Air or 90% Argon)
- c. Inboard Lite
  - 1) Glass Type:
  - 2) Glass Tint:
  - 3) Nominal Thickness:
  - 4) Glass Strength: (Annealed, Heat-Strengthened, Tempered)
3. Glass shall be annealed, heat strengthened or tempered as required by codes, as required to meet thermal stress and wind loads, or indicated on the drawings.
4. Glass heat-treated by horizontal (roller hearth) process with inherent roller wave distortion parallel to the bottom edge of the glass as installed when specified.
- D. Fused Edge Units, (FEU):
  1. Glass to glass sealed edges electrically fused.
  2. Air space not less than 4.8 mm (3/16 inch) wide up to 6 mm (1/4 inch) wide.
  3. R value not less than 1.5.
- E. FEU Clear Glass.
  1. Interior and exterior panes, ASTM C1036, Type I, Class 1, Quality q3, 3 mm (1/8 inch) thick.
  2. Thickness, 11 mm (7/16 inch) minimum.

## **2.6 FIRE RESISTANT GLASS WITHOUT WIRE MESH**

- A. Fire resistant glass or glass assembly classified by UL in Building Materials Directory or other approved testing laboratory bearing permanent mark of classification.
- B. Firelite.
  1. UL listing R13377-1, 4.8 mm (3/16 inch) thick, unpolished.
  2. Distributed by Technical Glass Products; Kirkland, WA 98033.
- C. Pyrovue Commercial.
  1. UL listing R10178(N), 41 mm (1-5/8 inch) thick.

2. Represented by Advanced Glass Systems Corporation,  
Trumbauersville, PA 18970-0051

## **2.7 GLAZING ACCESSORIES**

- A. As required to supplement the accessories provided with the items to be glazed and to provide a complete installation. Ferrous metal accessories exposed in the finished work shall have a finish that will not corrode or stain while in service.
- B. Setting Blocks: ASTM C864:
  1. Channel shape; having 6 mm (1/4 inch) internal depth.
  2. Shore a hardness of 80 to 90 Durometer.
  3. Block lengths: 50 mm (two inches) except 100 to 150 mm (four to six inches) for insulating glass.
  4. Block width: Approximately 1.6 mm (1/16 inch) less than the full width of the rabbet.
  5. Block thickness: Minimum 4.8 mm (3/16 inch). Thickness sized for rabbet depth as required.
- C. Spacers: ASTM C864:
  1. Channel shape having a 6 mm (1/4 inch) internal depth.
  2. Flanges not less 2.4 mm (3/32 inch) thick and web 3 mm (1/8 inch) thick.
  3. Lengths: One to 25 to 76 mm (one to three inches).
  4. Shore a hardness of 40 to 50 Durometer.
- D. Sealing Tapes:
  1. Semi-solid polymeric based material exhibiting pressure-sensitive adhesion and withstanding exposure to sunlight, moisture, heat, cold, and aging.
  2. Shape, size and degree of softness and strength suitable for use in glazing application to prevent water infiltration.
- E. Spring Steel Spacer: Galvanized steel wire or strip designed to position glazing in channel or rabbeted sash with stops.
- F. Glazing Gaskets: ASTM C864:
  1. Firm dense wedge shape for locking in sash.
  2. Soft, closed cell with locking key for sash key.

3. Flanges may terminate above the glazing-beads or terminate flush with top of beads.
- G. Lock-Strip Glazing Gaskets: ASTM C542, shape, size, and mounting as indicated.
- H. Glazing Sealants: ASTM C920, silicone neutral cure:
  1. Type S.
  2. Class 25
  3. Grade NS.
  4. Shore A hardness of 25 to 30 Durometer.
- I. Structural Sealant: ASTM C920, silicone acetoxycure:
  1. Type S.
  2. Class 25.
  3. Grade NS.
  4. Shore a hardness of 25 to 30 Durometer.
- J. Neoprene, EPDM, or Vinyl Glazing Gasket: ASTM C864.
  1. Channel shape; flanges may terminate above the glazing channel or flush with the top of the channel.
  2. Designed for dry glazing.
- M. Color: As selected by the Architect.
  1. Color of glazing compounds, gaskets, and sealants used for aluminum color frames shall match color of the finished aluminum and be nonstaining.
  2. Color of other glazing compounds, gaskets, and sealants which will be exposed in the finished work and unpainted shall be black, gray, or neutral color.

### **PART 3 - EXECUTION**

#### **3.1 EXAMINATION**

- A. Verification of Conditions:
  1. Examine openings for glass and glazing units; determine they are proper size; plumb; square; and level before installation is started.
  2. Verify that glazing openings conform with details, dimensions and tolerances indicated on manufacturer's approved shop drawings.

- B. Advise Contractor of conditions which may adversely affect glass and glazing unit installation, prior to commencement of installation: Do not proceed with installation until unsatisfactory conditions have been corrected.
- C. Verify that wash down of adjacent masonry is completed prior to erection of glass and glazing units to prevent damage to glass and glazing units by cleaning materials.

### **3.2 PREPARATION**

- A. For sealant glazing, prepare glazing surfaces in accordance with GANA-02 Sealant Manual.
- B. Determine glazing unit size and edge clearances by measuring the actual unit to receive the glazing.
- C. Shop fabricate and cut glass with smooth, straight edges of full size required by openings to provide GANA recommended edge clearances.
- D. Verify that components used are compatible.
- E. Clean and dry glazing surfaces.
- F. Prime surfaces scheduled to receive sealants, as determined by preconstruction sealant-substrate testing.

### **3.3 INSTALLATION - GENERAL**

- A. Install in accordance with GANA-01 Glazing Manual and GANA-02 Sealant Manual unless specified otherwise.
- B. Glaze in accordance with recommendations of glazing and framing manufacturers, and as required to meet the Performance Test Requirements specified in other applicable sections of specifications.
- C. Set glazing without bending, twisting, or forcing of units.
- D. Do not allow glass to rest on or contact any framing member.
- E. Glaze doors and operable sash, in a securely fixed or closed and locked position, until sealant, glazing compound, or putty has thoroughly set.
- F. Tempered Glass: Install with roller distortions in horizontal position unless otherwise directed.
- G. Laminated Glass:
  - 1. Tape edges to seal interlayer and protect from glazing sealants.
  - 2. Do not use putty or glazing compounds.

H. Insulating Glass Units:

1. Glaze in compliance with glass manufacturer's written instructions.
2. When glazing gaskets are used, they shall be of sufficient size and depth to cover glass seal or metal channel frame completely.
3. Do not use putty or glazing compounds.
4. Do not grind, nip, cut, or otherwise alter edges and corners of fused glass units after shipping from factory.
5. Install with tape or gunnable sealant in wood sash.

I. Fire Resistant Glass:

1. Wire glass: Glaze in accordance with NFPA 80.
2. Other fire resistant glass: Glaze in accordance with UL design requirements.

**3.4 INSTALLATION - WET/DRY METHOD (PREFORMED TAPE AND SEALANT)**

- A. Cut glazing tape to length and set against permanent stops, 5 mm (3/16 inch) below sight line. Seal corners by butting tape and dabbing with butyl sealant.
- B. Apply heel bead of butyl sealant along intersection of permanent stop with frame ensuring full perimeter seal between glass and frame to complete the continuity of the air and vapor seal.
- C. Place setting blocks at 1/4 points with edge block no more than 150 mm (6 inches) from corners.
- D. Rest glazing on setting blocks and push against tape and heel bead of sealant with sufficient pressure to achieve full contact at perimeter of pane or glass unit.
- E. Install removable stops, with spacer strips inserted between glazing and applied stops, 6 mm (1/4 inch) below sight line. Place glazing tape on glazing pane or unit with tape flush with sight line.
- F. Fill gap between glazing and stop with elastomeric type sealant to depth equal to bite of frame on glazing, but not more than 9 mm (3/8 inch) below sight line.
- G. Apply cap bead of sealant along void between the stop and the glazing, to uniform line, flush with sight line. Tool or wipe sealant surface smooth.

**3.5 REPLACEMENT AND CLEANING**

- A. Clean new glass surfaces removing temporary labels, paint spots, and defacement after approval by Project Engineer.
- B. Replace cracked, broken, and imperfect glass, or glass which has been installed improperly.
- C. Leave glass, putty, and other setting material in clean, whole, and acceptable condition.

**3.6 PROTECTION**

Protect finished surfaces from damage during erection, and after completion of work. Strippable plastic coatings on colored anodized finish are not acceptable.

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**SECTION 09 06 00**

**COLORS AND DESIGN**

**PART 1 - GENERAL**

**1.1 DESCRIPTION:**

- A. This section covers color and design information for products that are exposed to view in the finished construction. The word "finish", as used herein, includes color and pattern, and other surface characteristics requirements for quality and method of installation are covered in other appropriate sections of the specifications. Specific locations where the various materials are required are shown on the drawings. Items not designated for finish in this section may be specified in other sections. When finish is not designated for items, the Contractor shall propose a finish for approval.
- B. This section includes physical data requirements for materials specified and shown on the drawings.
- C. Samples:
  - 1. Color boards shall reflect all actual finish textures, patterns, and colors required for this contract.
  - 2. Materials shall be labeled with the finish type, manufacturer's name, pattern, and color reference.
  - 3. Samples shall be on size 8-1/2 by 11 inch boards with a maximum spread of size 25-1/2 by 33 inches for foldouts.
  - 4. Samples for this color board are required in addition to samples requested in other specification sections.

**1.2 RELATED WORK:**

Refer to specific items identified.

**1.3 MANUFACTURER'S REQUIREMENT:**

Refer to "Manufacturers Qualifications" for specific requirements.

**1.4 SUBMITTALS:**

In accordance with Section 01 33 23, SAMPLES AND SHOP DRAWING, furnish the following:

- A. Shop Drawing:
  - 1. Where specifically requested, shop drawing will be submitted identifying all parts by name, kind of material and showing construction, installation and anchorage.
- B. Manufacturer's Literature & Data Sheets:
  - 1. Indicating manufacturer's qualifications, physical data and warranties.



**1.5 REFERENCE TO MANUFACTURER'S PROPRIETARY IDENTIFYING NAMES**

- A. Where finish is shown as being specific to one manufacturer, an "or equal" product by another manufacturer may be submitted for approval. Manufacturers and materials specified are not intended to deter the proposal of another producer, nor limit the selection of equal finish from other manufacturers.
- B. The finish schedule may list the colors, patterns and textures required for both exterior and interior finishes, including both factory applied and field applied colors.

**PART 2 - PRODUCTS (TBD)**

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**SECTION 09 22 16**

**NON-STRUCTURAL FRAMING SYSTEMS**

**PART 1 - GENERAL**

**1.1 DESCRIPTION**

- A. This section covers steel stud wall and ceiling systems, wall furring, fasteners, and accessories.

**1.2 RELATED WORK**

- A. Description of terms shall be in accordance with ASTM C754, ASTM C11, ASTM C841 and as specified.
- B. Underside of Structure Overhead: In spaces where steel trusses or bar joists are shown, the underside of structure overhead shall be the underside of the floor or roof construction supported by beams, trusses, or bar joists. In interstitial spaces, with walk-on floors, the underside of the walk-on floor is the underside of structure overhead.
- C. Thickness of steel is specified in decimals of an inch and is the minimum bare (uncoated) steel thickness.

**1.3 SUBMITTALS**

- A. Submit in accordance with Section 01 33 23, SAMPLES AND SHOP DRAWINGS:
  - 1. Manufacturer's Literature and Data:
    - a. Studs, runners and accessories.
    - b. Hanger inserts.
    - c. Channels (Rolled steel).
    - e. Furring channels.
    - f. Screws, clips and other fasteners.

**1.4 DELIVERY, IDENTIFICATION, HANDLING AND STORAGE**

- A. In accordance with the requirements of ASTM C754.

**1.5 APPLICABLE PUBLICATIONS**

- A. The publications listed below form a part of this specification to the extent referenced. The publications are referenced in the text by the basic designation only.
- B. American Society For Testing And Materials (ASTM)
  - A525-87.....Steel Sheet, Zinc-Coated (Galvanized) by the Hot-Dip Process.
  - A641-82.....Zinc-Coated (Galvanized) Carbon-Steel Wire

- C11-87.....Definitions of Terms Relating to Gypsum  
and related Building and Systems
- C635-87.....Metal Suspension System for Acoustical  
Tile and Lay-in Panel Ceilings.
- C636-86.....Installation of Metal Suspension Systems  
for Acoustical Tile and Lay-in Panels.
- C645-83.....Non-Load (Axial) Bearing Steel Studs,  
Runners (Track), and Rigid Furring  
Channels for Screw Application of Gypsum  
Board
- C754-82.....Installation of Steel Framing Members to  
Receive Screw-Attached Gypsum Wallboard,  
Backing Board or Water-Resistant Backing  
Board
- C841-87.....Installation of Interior Lathing and  
Furring
- C1002-83.....Steel Drill Screws for the Application of  
Gypsum Board
- C. Federal Specification (Fed. Spec.):
  - FF-P-395B.....Pin, Drive, Guided And Pin Drive, Power  
Actuated (Fasteners For Powder Actuated  
And Hand Actuated Fastening Tools

## **PART 2 - PRODUCTS**

### **2.1 PROTECTIVE COATING**

- A. Protect steel studs, runners (track), rigid (hat section) furring channels, "Z" shaped furring channels, and resilient furring channels, with not less than G60 galvanizing per ASTM A525.

### **2.2 STEEL STUDS AND RUNNERS (TRACK)**

- A. ASTM C645.
  - 1. Use ASTM A525 steel.
  - 2. Runners same thickness as studs.
- B. Provide not less than two cutouts in web of each stud, approximately 12 inches from each end, and intermediate cutouts on approximately 24-inch centers.
- C. Doubled studs for openings.
- D. Studs 12 feet or less in length shall be in one piece.

### **2.3 FASTENERS, CLIPS, AND OTHER METAL ACCESSORIES**

- A. ASTM C754, except as otherwise specified.

- B. Fasteners for steel studs thicker than 0.033-inch thick shall be steel drill screws of size and type recommended by the manufacturer of the material being fastened.
- C. Clips: ASTM C841 (paragraph 6.11), manufacturers standard items. Clips used in lieu of tie wire shall have holding power equivalent to that provided by the tie wire for the specific application.
- D. Attachments for Wall Furring:
  - 1. Manufacturers standard items fabricated from zinc-coated (galvanized) steel sheet.
  - 2. For concrete or masonry walls: Metal slots with adjustable inserts or adjustable wall furring brackets. Spacers may be fabricated from 0.0396-inch thick galvanized steel with corrugated edges.
- E. Power Actuated Fasteners:
  - 1. Fed. Spec. FF-P-395.
  - 2. Fastener length and Class as required to resist twice the imposed loads; style suitable for type of hanger or bracket used.
  - 3. Eye Pin: Type I, Class 4, Style EP.
  - 4. Threaded Stud: Style SC for concrete; Style SS for steel.
  - 5. Drive Pins: Style PC for concrete, Style PS for steel.
  - 6. For applications not specified, type and size as recommended by the manufacturer of the material being fastened.

#### **2.4 SUSPENDED CEILING SYSTEM FOR GYPSUM BOARD (OPTION)**

- A. Conform to ASTM C635, heavy duty, with not less than 35 mm (1-3/8 inch) wide knurled capped flange face designed for screw attachment of gypsum board.
- B. Wall track channel with 35 mm (1-3/8 inch) wide flange.

### **PART 3 - EXECUTION**

#### **3.1 INSTALLING STUDS**

- A. Install studs in accordance with ASTM C754, except as otherwise shown or specified.
- B. Space studs not more than 16 inches on center.
- C. Cut studs 1/4 to 3/8-inch less than floor to underside of structure overhead when extended to underside of structure overhead.
- D. Openings:
  - 1. Frame jambs of openings in stud partitions and furring with two 0.0341-inch thick steel studs placed back to back or as shown.

2. Fasten back to back studs together with 3/8-inch long Type S panhead screws at not less than two feet on center, staggered along webs.
  3. Studs fastened flange to flange shall have splice plates on both sides approximately two inches by three inches screwed to each stud with two screws in each stud. Locate splice plates at 24 inches on center between runner tracks.
- E. Fastening Studs:
1. Fasten studs located adjacent to partition intersections, corners and studs at jambs of openings to flange of runner tracks with either two screws through each end of each stud and flange of runner, or by use of metal lock fastener tool.
  2. Do not fasten studs to top runner track when studs extend to underside of structure overhead.
- F. Chase Wall Partitions:
1. Locate cross braces for chase wall partitions to permit the installation of pipes, conduits, carriers and similar items.
  2. Studs or runners used as cross bracing shall be not less than 2-1/2 inches wide.
- G. Form building seismic or expansion joints with double studs back to back spaced three inches apart plus the width of the seismic or expansion joint.
- H. Form control joint, with double studs spaced 1/2-inch apart.

### 3.2 CEILING SYSTEMS

- A. Installing suspended ceiling system for gypsum board (ASTM C635 Option):
1. Install only for ceilings to receive screw attached gypsum board.
  2. Install in accordance with ASTM C636.
    - a. Install main runners spaced 1200 mm (48 inches) on center.
    - b. Install 1200 mm (four foot) tees not over 600 mm (24 inches) on center; locate for edge support of gypsum board.
    - c. Install wall track channel at perimeter.
- B. Installing Ceiling Bracing System:
1. Brace suspended ceiling or soffit framing in seismic areas in accordance with ASTM E580.
  2. Construct bracing of 38 mm (1-1/2 inch) channels for lengths up to 2400 mm (8 feet) and 50 mm (2 inch) channels for lengths over 2400 mm (8 feet) with ends bent to form surfaces for anchorage to carrying channels and over head

construction. Lap channels not less than 600 mm (2 feet) at midpoint back to back. Screw or bolt lap together with two fasteners.

3. Install bracing at an approximate 45 degree angle to carrying channels and structure overhead; secure as specified to structure overhead with two fasteners and to carrying channels with two fasteners or wire ties.

### **3.3 INSTALLING SUPPORTS REQUIRED BY OTHER TRADES**

- A. Provide for attachment and support of electrical outlets, plumbing, laboratory or heating fixtures, recessed type plumbing fixture accessories, access panel frames, wall bumpers, wood seats, toilet stall partitions, dressing booth partitions, urinal screens, chalkboards, tackboards, wall-hung casework, handrail brackets, recessed fire extinguisher cabinets and other items supported by stud construction.
- B. Provide additional studs where required. Install metal backing plates, or special metal shapes as required, securely fastened to metal studs.

### **3.4 TOLERANCES**

- A. Fastening surface for application of subsequent materials shall not vary more than 1/8-inch from the layout line.
- B. Plumb and align vertical members within 1/8-inch.
- C. Level or align ceilings within 1/8-inch.

- - - E N D - - -

**SECTION 09 29 00**

**GYPSUM BOARD**

**PART 1 - GENERAL**

**1.1 DESCRIPTION**

- A. This section specifies installation and finishing of gypsum board.

**1.2 RELATED WORK**

- A. Installation of steel framing members for walls, partitions, furring, soffits, and ceilings: Section 09 22 16, NON-STRUCTURAL METAL FRAMING.
- B. Sound deadening board: Section 07 21 13, THERMAL INSULATION.
- C. Acoustical Sealants: Section 07 92 00, JOINT SEALANTS.

**1.3 TERMINOLOGY**

- A. Definitions and description of terms shall be in accordance with ASTM C11, C840, and as specified.
- B. Underside of Structure Overhead: In spaces where steel trusses or bar joists are shown, the underside of structure overhead shall be the underside of the floor or roof construction supported by the trusses or bar joists.
- C. "Yoked": Gypsum board cut out for opening with no joint at the opening (along door jamb or above the door).

**1.4 SUBMITTALS**

- A. Submit in accordance with Section 01 33 23, SHOP DRAWINGS, PRODUCT DATA, AND SAMPLES.
- B. Manufacturer's Literature and Data:
  - 1. Cornerbead and edge trim.
  - 2. Finishing materials.
  - 3. Laminating adhesive.
  - 4. Gypsum board, each type.
  - 5. Cementitious Backer Board
- C. Shop Drawings:
  - 1. Typical gypsum board installation, showing corner details, edge trim details and the like.
  - 2. Typical sound rated assembly, showing treatment at perimeter of partitions and penetrations at gypsum board.
  - 3. Typical shaft wall assembly.

D. Samples:

1. Cornerbead.
2. Edge trim.
3. Control joints.

E. Test Results:

1. Fire rating test, each fire rating required for each assembly.
2. Sound rating test.

**1.5 DELIVERY, IDENTIFICATION, HANDLING AND STORAGE**

- A. In accordance with the requirements of ASTM C840.

**1.6 ENVIRONMENTAL CONDITIONS**

- A. In accordance with the requirements of ASTM C840.

**1.7 APPLICABLE PUBLICATIONS**

- A. The publications listed below form a part of this specification to the extent referenced. The publications are referenced in the text by the basic designation only.

- B. American Society for Testing And Materials (ASTM):

C11-07.....Terminology Relating to Gypsum and Related  
Building Materials and Systems

C475-02.....Joint Compound and Joint Tape for  
Finishing Gypsum Board

C840-07.....Application and Finishing of Gypsum Board

C954-07.....Steel Drill Screws for the Application of  
Gypsum Board or Metal Plaster Bases to  
Steel Stud from 0.033 in. (0.84mm) to  
0.112 in. (2.84mm) in thickness

C1002-07.....Steel Self-Piercing Tapping Screws for the  
Application of Gypsum Panel Products or  
Metal Plaster Bases to Wood Studs or Steel  
Studs

C1047-05.....Accessories for Gypsum Wallboard and  
Gypsum Veneer Base

C1177-06.....Glass Mat Gypsum Substrate for Use as  
Sheathing

C1396-06.....Gypsum Board

E84-07.....Surface Burning Characteristics of  
Building Materials



E497-99.....Installing Sound Isolating Lightweight  
Partitions

- C. Underwriters Laboratories Inc. (UL):  
Latest Edition.....Fire Resistance Directory
- D. Inchcape Testing Services (ITS):  
Latest Editions.....Certification Listings

## **PART 2 - PRODUCTS**

### **2.1 GYPSUM BOARD**

- A. Gypsum Board: ASTM C1396, Type X, 16 mm (5/8 inch) thick unless shown otherwise. Shall contain a minimum of 20 percent recycled gypsum.
- B. Coreboard or Shaft Wall Liner Panels.
  - 1. ASTM C1396, Type X.
  - 2. Coreboard for shaft walls 300, 400, 600 mm (12, 16, or 24 inches) wide by required lengths 25 mm (one inch) thick with paper faces treated to resist moisture.
- C. Cementitious Backing Board: Provide one of the following, as indicated:
  - 1. Cementitious Backing Panels: Water-resistant cementitious panels reinforced with a fiberglass scrim, complying with ANSI A118.9, Durock, Hardibacker 500, or equal.
  - 2. Screws for board attachment: ASTM C 1002.
- D. Water Resistant Gypsum Backing Board: ASTM C620, Type X, 16 mm (5/8 inch) thick.
- E. Gypsum cores shall contain a minimum of 95 percent post industrial recycled gypsum content. Paper facings shall contain 100 percent post-consumer recycled paper content.

### **2.2 GYPSUM SHEATHING BOARD**

- A. ASTM C1396, Type X, water-resistant core, 16 mm (5/8 inch) thick.
- B. ASTM C1177, Type X.

### **2.3 ACCESSORIES**

- A. ASTM C1047, except form of 0.39 mm (0.015 inch) thick zinc coated steel sheet or rigid PVC plastic.
- B. Flanges not less than 22 mm (7/8 inch) wide with punchouts or deformations as required to provide compound bond.

### **2.4 FASTENERS**

- A. ASTM C1002 and ASTM C840, except as otherwise specified.

- B. ASTM C954, for steel studs thicker than 0.04 mm (0.33 inch).
- C. Select screws of size and type recommended by the manufacturer of the material being fastened.
- D. For fire rated construction, type and size same as used in fire rating test.
- E. Clips: Zinc-coated (galvanized) steel; gypsum board manufacturer's standard items.

## **2.5 FINISHING MATERIALS AND LAMINATING ADHESIVE**

- A. ASTM C475 and ASTM C840. Free of antifreeze, vinyl adhesives, preservatives, biocides and other VOC. Adhesive shall contain a maximum VOC content of 50 g/l.

## **PART 3 - EXECUTION**

### **3.1 GYPSUM BOARD HEIGHTS**

- A. Extend all layers of gypsum board from floor to underside of structure overhead on following partitions and furring:
  - 1. Two sides of partitions:
    - a. Fire rated partitions.
    - b. Smoke partitions.
    - c. Sound rated partitions.
    - d. Full height partitions shown (FHP).
    - e. Corridor partitions.
  - 2. One side of partitions or furring:
    - a. Inside of exterior wall furring or stud construction.
    - b. Room side of room without suspended ceilings.
    - c. Furring for pipes and duct shafts, except where fire rated shaft wall construction is shown.
  - 3. Extend all layers of gypsum board construction used for fireproofing of columns from floor to underside of structure overhead, unless shown otherwise.
- B. In locations other than those specified, extend gypsum board from floor to heights as follows:
  - 1. Not less than 100 mm (4 inches) above suspended acoustical ceilings.
  - 2. At ceiling of suspended gypsum board ceilings.
  - 3. At existing ceilings.

### 3.2 INSTALLING GYPSUM BOARD

- A. Coordinate installation of gypsum board with other trades and related work.
- B. Install gypsum board in accordance with ASTM C840, except as otherwise specified.
- C. Use gypsum boards in maximum practical lengths to minimize number of end joints.
- D. Bring gypsum board into contact, but do not force into place.
- E. Ceilings:
  - 1. For single-ply construction, use perpendicular application.
  - 2. For two-ply assemblies:
    - a. Use perpendicular application.
    - b. Apply face ply of gypsum board so that joints of face ply do not occur at joints of base ply with joints over framing members.
- F. Walls (Except Shaft Walls):
  - 1. When gypsum board is installed parallel to framing members, space fasteners 300 mm (12 inches) on center in field of the board, and 200 mm (8 inches) on center along edges.
  - 2. When gypsum board is installed perpendicular to framing members, space fasteners 300 mm (12 inches) on center in field and along edges.
  - 3. Stagger screws on abutting edges or ends.
  - 4. For single-ply construction, apply gypsum board with long dimension either parallel or perpendicular to framing members as required to minimize number of joints except gypsum board shall be applied vertically over "Z" furring channels.
  - 5. For two-ply gypsum board assemblies, apply base ply of gypsum board to assure minimum number of joints in face layer. Apply face ply of wallboard to base ply so that joints of face ply do not occur at joints of base ply with joints over framing members.
  - 6. For three-ply gypsum board assemblies, apply plies in same manner as for two-ply assemblies, except that heads of fasteners need only be driven flush with surface for first and second plies. Apply third ply of wallboard in same manner as second ply of two-ply assembly, except use fasteners of sufficient length enough to have the same penetration into framing members as required for two-ply assemblies.
  - 7. No offset in exposed face of walls and partitions will be permitted because of single-ply and two-ply or three-ply application requirements.

8. Installing Two Layer Assembly Over Sound Deadening Board:
  - a. Apply face layer of wallboard vertically with joints staggered from joints in sound deadening board over framing members.
  - b. Fasten face layer with screw, of sufficient length to secure to framing, spaced 300 mm (12 inches) on center around perimeter, and 400 mm (16 inches) on center in the field.
9. Control Joints ASTM C840 and as follows:
  - a. Locate at both side jambs of openings if gypsum board is not "yoked". Use one system throughout.
  - b. Not required for wall lengths less than 9000 mm (30 feet).
  - c. Extend control joints the full height of the wall or length of soffit/ceiling membrane.
- G. Acoustical or Sound Rated Partitions, Fire and Smoke Partitions:
  1. Cut gypsum board for a space approximately 3 mm to 6 mm (1/8 to 1/4 inch) wide around partition perimeter.
  2. Coordinate for application of caulking or sealants to space prior to taping and finishing.
  3. Follow ASTM E497 for sound rated partitions. STC minimum values as shown.
- H. Accessories:
  1. Set accessories plumb, level and true to line, neatly mitered at corners and intersections, and securely attach to supporting surfaces as specified.
  2. Install in one piece, without the limits of the longest commercially available lengths.
  3. Corner Beads:
    - a. Install at all vertical and horizontal external corners and where shown.
    - b. Use screws only. Do not use crimping tool.
  4. Edge Trim (casings Beads):
    - a. At both sides of expansion and control joints unless shown otherwise.
    - b. Where gypsum board terminates against dissimilar materials and at perimeter of openings, except where covered by flanges, casings or permanently built-in equipment.
    - c. Where gypsum board surfaces of non-load bearing assemblies abut load bearing members.

d. Where shown.

### 3.3 CAVITY SHAFT WALL

- A. Coordinate assembly with Section 09100, NON-STRUCTURAL METAL FRAMING, for erection of framing and gypsum board.
- B. Conform to UL Design No. U438 or FM WALL CONSTRUCTION 12-2/HR (Nonbearing for two-hour fire rating or 25-1/HR (Non-loadbearing) for one-hour fire rating where shown.
- C. Cut coreboard (liner) panels 25 mm (one inch) less than floor-to-ceiling height, and erect vertically between J-runners on shaft side.
  - 1. Where shaft walls exceed 4300 mm (14 feet) in height, position panel end joints within upper and lower third points of wall.
  - 2. Stagger joints top and bottom in adjacent panels.
- D. Gypsum Board:
  - 1. Two hour wall:
    - a. Erect base layer (backing board) vertically on finish side of wall with end joints staggered. Fasten base layer panels to studs with 25 mm (one inch) long screws, spaced 600 mm (24 inches) on center.
    - b. Use laminating adhesive between plies in accordance with UL or FM if required by fire test.
    - c. Apply face layer of gypsum board required by fire test vertically over base layer with joints staggered and attach with screws of sufficient length to secure to framing staggered from those in base, spaced 300 mm (12 inches) on center.
  - 2. One hour wall with one layer on finish side of wall: Apply face layer of gypsum board vertically. Attach to studs with screws of sufficient length to secure to framing, spaced 300 mm (12 inches) on center in field and along edges.
  - 3. Where coreboard is covered with face layer of gypsum board, stagger joints of face layer from those in the coreboard base.
- E. Treat joints, corners, and fasteners in face layer as specified for finishing of gypsum board.

### 3.4 FINISHING OF GYPSUM BOARD

- A. Finish joints, edges, corners, and fastener heads in accordance with ASTM C840. Use Level 5 finish for all finished areas open to public view.
- B. Before proceeding with installation of finishing materials, assure the following:

1. Gypsum board is fastened and held close to framing or furring.
  2. Fastening heads in gypsum board are slightly below surface in dimple formed by driving tool.
- C. Finish joints, fasteners, and all openings, including openings around penetrations, on that part of the gypsum board extending above suspended ceilings to seal surface of non decorated smoke barrier, fire rated and sound rated gypsum board construction. After the installation of hanger rods, hanger wires, supports, equipment, conduits, piping and similar work, seal remaining openings and maintain the integrity of the smoke barrier, fire rated and sound rated construction/ Sanding is not required of non decorated surfaces.

### **3.5 REPAIRS**

- A. After taping and finishing has been completed, and before decoration, repair all damaged and defective work, including nondecorated surfaces.
- B. Patch holes or openings 13 mm (1/2 inch) or less in diameter, or equivalent size, with a setting type finishing compound or patching plaster.
- C. Repair holes or openings over 13 mm (1/2 inch) diameter, or equivalent size, with 16 mm (5/8 inch) thick gypsum board secured in such a manner as to provide solid substrate equivalent to undamaged surface.
- D. Tape and refinish scratched, abraded or damaged finish surfaces including cracks and joints in non decorated surface to provide smoke tight construction fire protection equivalent to the fire rated construction and STC equivalent to the sound rated construction.

- - E N D - - -

**SECTION 09 51 00**

**ACOUSTICAL CEILINGS**

**PART 1- GENERAL**

**1.1 DESCRIPTION**

- A. Metal ceiling suspension system for acoustical ceilings.
- B. Acoustical units.

**1.2 RELATED WORK**

- A. Color, pattern, and location of each type of acoustical unit: Section 09 06 00, SCHEDULE FOR FINISHES. Also refer to the finish schedule displayed on the drawings.

**1.3 SUBMITTAL**

- A. Submit in accordance with Section 01 33 23, SHOP DRAWINGS, PRODUCT DATA, AND SAMPLES.
- B. Samples:
  - 1. Acoustical units, each type, with label indicating conformance to specification requirements, including units specified to match existing.
  - 2. Colored markers for units providing access.
- C. Manufacturer's Literature and Data:
  - 1. Ceiling suspension system, each type, showing complete details of installation, including suspension system specified to match existing and upward access system details for concealed grid systems.
  - 2. Acoustical units, each type
  - 3. Runners designed for snap-in attachment of metal pans.
- D. Manufacturer's Certificates: Acoustical units, each type, in accordance with specification requirements.

**1.4 DEFINITIONS**

- A. Standard definitions as defined in ASTM C634.
- B. Terminology as defined in ASTM E1264.

**1.5 APPLICABLE PUBLICATIONS**

- A. Publications listed below form a part of this specification to extent referenced. Publications are referenced in the text by basic designation only.
- B. American Society for Testing and Materials (ASTM):  
A641/A641M-03.....Zinc-coated (Galvanized) Carbon Steel Wire

- A653/A653M-07.....Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-coated (Galvannealed) by the Hot-Dip Process
- C423-07.....Sound Absorption and Sound Absorption Coefficients by the Reverberation Room Method
- C634-02 (E2007)...Standard Terminology Relating to Environmental Acoustics
- C635-04.....Metal Suspension Systems for Acoustical Tile and Lay-in Panel Ceilings
- C636-06.....Installation of Metal Ceiling Suspension Systems for Acoustical Tile and Lay-in Panels
- E84-07.....Surface Burning Characteristics of Building Materials
- E119-07.....Fire Tests of Building Construction and Materials
- E413-04.....Classification for Rating Sound Insulation.
- E580-06.....Application of Ceiling Suspension Systems for Acoustical Tile and Lay-in Panels in Areas Requiring Seismic Restraint
- E1264-(R2005).....Classification for Acoustical Ceiling Products

## **PART 2 - PRODUCTS**

### **2.1 METAL SUSPENSION SYSTEM**

- A. ASTM C635, heavy-duty system, except as otherwise specified.
1. Ceiling suspension system members may be fabricated from either of the following unless specified otherwise.
    - a. Galvanized cold-rolled steel, bonderized.
    - b. Extruded aluminum.
    - c. Fire resistant plastic (glass fiber) having a flame spread and smoke developed rating of not more than 25 when tested in accordance with ASTM E84.
  2. Use same construction for cross runners as main runners. Use of lighter-duty sections for cross runners is not acceptable.
  3. Use aluminum suspension in kitchens and aluminum or fire resistant plastic in toilets adjacent to shower areas, hydrotherapy, and swimming pools.
- B. Exposed grid suspension system for support of lay-in panels:
1. Exposed grid width not less than 22 mm (7/8 inch) with not less than 8 mm (5/16 inch) panel bearing surface.



2. Fabricate wall molding and other special molding from the same material with same exposed width and finish as the exposed grid members.
  3. On exposed metal surfaces apply baked-on enamel flat texture finish in color to match adjacent acoustical units unless specified otherwise in Section 09 06 00, SCHEDULE FOR FINISHES.
- C. Concealed grid suspension system for support of mineral base acoustical tile:
1. Concealed grid upward access suspension system to provide an initial opening of 300 mm by 600 mm (12 by 24 inches) and for removal of adjacent runners and tile without the use of special tools, and without damage to suspension system and acoustical tile.
  2. Minimum flange width of 22 mm (7/8 inch) except for access hook and angle.
  3. Minimum flange width of 11 mm (7/16 inch) for access hook and angle.
- D. Suspension system for support of Metal Type V, VI, and VII tiles: Concealed grid type having runners designed for the snap-in attachment of metal tile (pans).

## **2.2 PERIMETER SEAL**

- A. Vinyl, polyethylene or polyurethane open cell sponge material having density of 1.3 plus or minus 10 percent, compression set less than 10 percent with pressure sensitive adhesive coating on one side.
- B. Thickness as required to fill voids between back of wall molding and finish wall.
- C. Not less than 9 mm (3/8 inch) wide strip.

## **2.3 WIRE**

- A. ASTM A641.
- B. For wire hangers: Minimum diameter 2.68 mm (0.1055 inch).
- C. For bracing wires: Minimum diameter 3.43 mm (0.1350 inch).

## **2.4 ANCHORS AND INSERTS**

- A. Use anchors or inserts to support twice the loads imposed by hangers attached thereto.
- B. Hanger Inserts:
  1. Fabricate inserts from steel, zinc-coated (galvanized after fabrication).
  2. Nailing type option for wood forms:

- a. Upper portion designed for anchorage in concrete and positioning lower portion below surface of concrete approximately 25 mm (one inch).
  - b. Lower portion provided with not less than 8 mm (5/16 inch) hole to permit attachment of hangers.
3. Flush ceiling insert type:
- a. Designed to provide a shell covered opening over a wire loop to permit attachment of hangers and keep concrete out of insert recess.
  - b. Insert opening inside shell approximately 16 mm (5/8 inch) wide by 9 mm (3/8 inch) high over top of wire.
  - c. Wire 5 mm (3/16 inch) diameter with length to provide positive hooked anchorage in concrete.
- C. Clips:
1. Galvanized steel.
  2. Designed to clamp to steel beam or bar joists, or secure framing member together.
  3. Designed to rigidly secure framing members together.
  4. Designed to sustain twice the loads imposed by hangers or items supported.
- D. Tile Splines: ASTM C635.

## 2.5 CARRYING CHANNELS FOR SECONDARY FRAMING

- A. Fabricate from cold-rolled or hot-rolled steel, black asphaltic paint finish, free of rust.
- B. Weighing not less than the following, per 300 m (per thousand linear feet):

| Size mm | Size Inches | Cold-rolled |       | Hot-rolled |       |
|---------|-------------|-------------|-------|------------|-------|
|         |             | Kg          | Pound | Kg         | Pound |
| 38      | 1 1/2       | 215.4       | 475   | 508        | 1120  |
| 50      | 2           | 267.6       | 590   | 571.5      | 1260  |

## 2.6 ADHESIVE

- A. ASTM D1779, having flame spread index of 25 or less when tested in accordance with ASTM E84.
- B. Developing minimum strength of 7 kg/m<sup>2</sup> (one psi) of contact surface 48 hours after installation in temperature of 21 °C (70 °F).

## 2.7 ACOUSTICAL UNITS

- A. General:

1. Ceiling Tile shall meet minimum 37% bio-based content in accordance with USDA Bio-Preferred Product requirements.
  2. ASTM E1264, weighing 3.6 kg/m<sup>2</sup> (3/4 psf) minimum for mineral fiber panels or tile.
  3. Class A Flame Spread: ASTM 84
  4. Minimum NRC (Noise Reduction Coefficient): 0.55 unless specified otherwise: ASTM C423.
  5. Minimum CAC (Ceiling Attenuation Class): 40-44 range unless specified otherwise: ASTM E413.
  6. Manufacturers standard finish, minimum Light Reflectance (LR) coefficient of 0.75 on the exposed surfaces, except as specified otherwise in Section 09 06 00, SCHEDULE FOR FINISHES. Colored units integrally colored throughout.
  7. Lay-in panels: Sizes as shown, with square edges reveal edges, tegular, or as indicated on the drawings.
  8. Tile for concealed grid upward access system: Optional 300 by 300 or 300 by 600 mm (12 by 12 or 12 by 24 inch) size.
    - a. Cross score 300 by 600 mm (12 by 24 inch) tile to simulate 300 by 300 mm (12 by 12 inch) tile edges.
    - b. Provide tile with beveled or square edges and joints as required to suit suspension and access system.
- B. Type III Units - Mineral base with water-based painted finish less than 10 g/l VOC, Form 2 - Water felted, minimum 16 mm (5/8 inch) thick. Mineral base to contain minimum 65 percent recycled content.
- C. Type IV Units - Mineral base with membrane-faced overlay, Form 2 - Water felted, minimum 16 mm (5/8 inch) thick. Apply over the paint coat on the face of the unit a poly (vinyl) chloride overspray having a flame spread index of 25 or less when tested in accordance with ASTM E84.
- D. Type V Units - Perforated steel facing (pan) with mineral or glass fiber base backing.
1. Steel ASTM A653, not less than 0.38 mm (0.015 inch) thick, minimum G30 galvanizing.
  2. Bonderize both sides of sheet and apply two coats of baked-on enamel finish, free from gloss or sheen, on surfaces exposed to view and at least one coat on concealed surfaces.

## 2.9 ACCESS IDENTIFICATION

- A. Markers:
1. Use colored markers with pressure sensitive adhesive on one side.
  2. Make colored markers of paper or plastic, 6 to 9 mm (1/4 to 3/8 inch) in diameter.

- B. Use markers of the same diameter throughout building.
- C. Color Code: Use following color markers for service identification:  
  
Color.....Service  
  
Red.....Sprinkler System: Valves and Controls  
  
Green.....Domestic Water: Valves and Controls  
  
Yellow.....Chilled Water and Heating Water  
  
Orange.....Ductwork: Fire Dampers  
  
Blue.....Ductwork: Dampers and Controls  
  
Black.....Gas: Laboratory, Medical, Air and Vacuum

### **PART 3 - EXECUTION**

#### **3.1 CEILING TREATMENT**

- A. Treatment of ceilings shall include sides and soffits of ceiling beams, furred work 600 mm (24 inches) wide and over, and vertical surfaces at changes in ceiling heights unless otherwise shown. Install acoustic tiles after wet finishes have been installed and solvents have cured.
- B. Lay out acoustical units symmetrically about center lines of each room or space unless shown otherwise on reflected ceiling plan.
- C. Moldings:
  - 1. Install metal wall molding at perimeter of room, column, or edge at vertical surfaces.
  - 2. Install special shaped molding at changes in ceiling heights and at other breaks in ceiling construction to support acoustical units and to conceal their edges.
- D. Perimeter Seal:
  - 1. Install perimeter seal between vertical leg of wall molding and finish wall, partition, and other vertical surfaces.
  - 2. Install perimeter seal to finish flush with exposed faces of horizontal legs of wall molding.
- E. Existing ceiling:
  - 1. Where extension of existing ceilings occur, match existing.
  - 2. Where acoustical units are salvaged and reinstalled or joined, use salvaged units within a space. Do not mix new and salvaged units within a space which results in contrast between old and new acoustic units.
  - 3. Comply with specifications for new acoustical units for new units required to match appearance of existing units.

### 3.2 CEILING SUSPENSION SYSTEM INSTALLATION

A. General:

1. Install metal suspension system for acoustical tile and lay-in panels in accordance with ASTM C636, except as specified otherwise.
2. Use direct or indirect hung suspension system or combination thereof as defined in ASTM C635.
3. Support a maximum area of 1.48 m<sup>2</sup> (16 sf) of ceiling per hanger.
4. Prevent deflection in excess of 1/360 of span of cross runner and main runner.
5. Provide extra hangers, minimum of one hanger at each corner of each item of mechanical, electrical and miscellaneous equipment supported by ceiling suspension system not having separate support or hangers.
6. Provide not less than 100 mm (4 inch) clearance from the exposed face of the acoustical units to the underside of ducts, pipe, conduit, secondary suspension channels, concrete beams or joists; and steel beam or bar joist unless furred system is shown,
7. Use main runners not less than 1200 mm (48 inches) in length.
8. Install hanger wires vertically. Angled wires are not acceptable except for seismic restraint bracing wires.

B. Anchorage to Structure:

1. Concrete:

- a. Install hanger inserts and wire loops required for support of hanger and bracing wire in concrete forms before concrete is placed. Install hanger wires with looped ends through steel deck if steel deck does not have attachment device.
- b. Use eye pins or threaded studs with screw-on eyes in existing or already placed concrete structures to support hanger and bracing wire. Install in sides of concrete beams or joists at mid height.

2. Steel:

- a. When steel framing does not permit installation of hanger wires at spacing required, install carrying channels for attachment of hanger wires.
  - 1) Size and space carrying channels to ensure that the maximum deflection specified will not be exceeded.
  - 2) Attach hangers to steel carrying channels, spaced four feet on center, unless area

supported or deflection exceeds the amount specified.

- b. Attach carrying channels to the bottom flange of steel beams spaced not 1200 mm (4 feet) on center before fire proofing is installed. Weld or use steel clips to attach to beam to develop full strength of carrying channel.
  - c. Attach hangers to bottom chord of bar joists or to carrying channels installed between the bar joists when hanger spacing prevents anchorage to joist. Rest carrying channels on top of the bottom chord of the bar joists, and securely wire tie or clip to joist.
- B. Direct Hung Suspension System:
  - 1. As illustrated in ASTM C635.
  - 2. Support main runners by hanger wires attached directly to the structure overhead.
  - 3. Maximum spacing of hangers, 1200 mm (4 feet) on centers unless interference occurs by mechanical systems. Use indirect hung suspension system where not possible to maintain hanger spacing.
- C. Indirect Hung Suspension System:
  - 1. As illustrated in ASTM C635.
  - 2. Space carrying channels for indirect hung suspension system not more than 1200 mm (4 feet) on center. Space hangers for carrying channels not more than 2400 mm (8 feet) on center or for carrying channels less than 1200 mm (4 feet) on center so as to ensure that specified requirements are not exceeded.
  - 3. Support main runners by specially designed clips attached to carrying channels.
- D. Seismic Ceiling Bracing System: Conform to California Building Code (CBC) Seismic Zone 4.
  - 1. Construct system in accordance with ASTM E580.
  - 2. Connect bracing wires to structure above as specified for anchorage to structure and to main runner or carrying channels of suspended ceiling at bottom.

### **3.3 ACOUSTICAL UNIT INSTALLATION**

- A. Cut acoustic units for perimeter borders and penetrations to fit tight against penetration for joint not concealed by molding.
- B. Install lay-in acoustic panels in exposed grid with not less than 6 mm (1/4 inch) bearing at edges on supports.
  - 1. Install tile to lay level and in full contact with exposed grid.

2. Replace cracked, broken, stained, dirty, or tile not cut for minimum bearing.
- C. Tile in concealed grid upward access suspension system:
  1. Install acoustical tile with joints close, straight and true to line, and with exposed surfaces level and flush at joints.
  2. Make corners and arises full, and without worn or broken places.
  3. Locate acoustical units providing access as specified under Article, ACCESS.
- D. Markers:
  1. Install markers of color code specified to identify the various concealed piping, mechanical, and plumbing systems.
  2. Attach colored markers to exposed grid on opposite sides of the units providing access.
  3. Attach marker on exposed ceiling surface of upward access acoustical unit.

### **3.5 CLEAN-UP AND COMPLETION**

- A. Replace damaged, discolored, dirty, cracked and broken acoustical units.
- B. Leave finished work free from defects.

- - - E N D - - -

**SECTION 09 63 40**

**STONE FLOORING**

**PART 1 - GENERAL**

**1.1 DESCRIPTION**

The requirements for interior stone flooring, set in mortar on a rigid base are covered in this section, including sealing the stone.

**1.2 RELATED WORK**

- A. Color and texture of grout, mortar, and stone: Section 09 06 00, SCHEDULE FOR FINISHES
- B. See drawings for the paving pattern.

**1.3 ALLOWABLE TOLERANCES**

- A. Floor surface true to plane within 1 in 1000 (1/8-inch in 10 feet) not cumulative.
- B. Joint width deviation not greater than 10 percent of dimension shown.

**1.4 SUBMITTAL**

- A. In accordance with Section 01 33 23, SHOP DRAWINGS, PRODUCT DATA AND SAMPLES, furnish the following:
- B. Samples: Five individual samples of stone showing extreme variations in color and texture.
- C. Shop Drawings: Special stone shapes.

**1.5 PRODUCT DELIVERY, STORAGE AND HANDLING**

- A. Deliver masonry materials in original sealed containers marked with name of manufacturer and identification of contents.
- B. Store masonry materials under waterproof covers on planking clear of ground, and protect from handling damage, dirt stain, water and wind.

**1.6 APPLICABLE PUBLICATIONS**

- A. The publications listed below form a part of this specification to the extent referenced. The publications are referenced in the text by the basic designation only.
- B. American Society for Testing and Materials (ASTM):
  - C150-07.....Portland Cement
  - C241-90 (R2005).....Abrasion Resistance of Stone Subjected to Foot Traffic
  - C270-07.....Mortar for Unit Masonry



## **PART 2 - PRODUCTS**

### **2.1 MATERIALS**

- A. Stone Slabs: With abrasion resistance of at least 25 as measured by ASTM C241. Stone slabs to be uniform in quality and texture, free from shale, excess mica, seams, sealing and disintegration.
- B. Portland Cement: ASTM C150.
- C. Coloring Pigments: Pure mineral pigments, lime proof and non-fading; added to grout, and mortar by the manufacturer at the place of manufacture. Job colored grout and mortar are not acceptable.

### **2.2 MORTAR**

ASTM C270, Type S. No admixtures permitted. Type N lime is not permitted.

### **2.3 GROUT**

One part portland cement and three parts sand by volume. Mix with enough water for flowability.

### **2.4 PROPRIETARY MATERIALS PERMITTED**

- A. Portland Cement Mortar Thin Bed: Sand-cement mortar mix gauged with Laticrete Acrylic Admix or Custom Building Products Thin-Set Mortar Admix, or equal.
- B. Portland Cement Mortar Thick Bed: Laticrete 226 Thick Bed Mortar Mix gauged with Latricrete 3701 Mortar and Grout Admix or on site mix per ANSI A108.1A with Custom Building Products Thin-Set Mortar Admix, or equal.
- C. Latex Portland Cement Bond Mortar: Laticrete 317 Floor & Wall thinset gauged with Laticrete Admix, or Custom building Products Master Blend mixed with Thin-Set Mortar Admix, or equal.
- D. Latex Portland Cement Grout: Laticrete Sanded Grout (1500 Series), Custom Polyblend Sanded Grout or Laticrete Unsanded Grout 1600 Series (for joints smaller than 1/8"), Custom Polyblend Unsanded Grout, or equal.

### **2.5 CLEANER AND SEALER**

- A. Cleaner and sealer shall be from one manufacturer, acceptable to tile and grout manufactures. To establish quality, the Specification is based on Aqual Mix Inc., or equal. Equivalent products from Miracle Sealants Co. or Watco Tile and Brick may be provided.
- B. Cleaner: Aqua Mix Concentrated Tile Cleaner, neutral phosphate-free cleaner, or Custom Building Products Tile Lab Surface Gard, or equal.

**PART 3 - EXECUTION**

**3.1 APPLICATION**

- A. General: Proprietary products shall be installed as recommended by its manufacturer. Do not use stone slabs with chips, cracks, discoloration or other visible defects.
- B. Installation with Portland Cement Grout:
  - 1. Spread and screed mortar setting bed mixture 13 mm to 25 mm (1/2-inch to 1-inch) in thickness true to plane.
  - 2. Limit setting bed to minimum amount which can be covered with stone before initial set.
  - 3. Apply 1 mm (1/32-inch) layer of neat cement paste over setting bed. Set and level each stone immediately. Tamp stone to completely contact setting bed.
  - 4. Grout joints as soon as initial set is achieved. Place grout in joints, strike flush and tool slightly concave.
  - 5. Cure grout by maintaining in a damp condition for seven days.
- C. Installation with Portland Cement Mortar:
  - 1. Install in full bed joint. Remove excess mortar. Strike joints flush with top surface of stone and tool slightly concave.
  - 2. Cure mortar by maintaining in a damp condition for seven days.

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**SECTION 09 65 13**

**RESILIENT BASE AND ACCESSORIES**

**PART 1 - GENERAL**

**1.1 DESCRIPTION**

This section specifies the installation of resilient flooring, vinyl or rubber base.

**1.2 RELATED WORK**

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

**1.3 SUBMITTALS**

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

**1.4 DELIVERY**

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

**1.5 STORAGE**

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

**1.6 APPLICABLE PUBLICATIONS**

- A. The publication listed below form a part of this specification to the extent referenced. The publications are referenced in the text by the basic designation only.

- B. American Society for Testing and Materials (ASTM):

F1861-02..... Resilient Wall Base

## **PART 2 - PRODUCTS**

### **2.1 GENERAL**

- A. Subject to compliance with specified requirements, topset rubber base shall be by Johnsonite or equal. Refer to finish schedule on Architectural Drawings for style and color designation.
- B. Use only products by the same manufacturer and from the same production run.

### **2.2 RESILIENT BASE**

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

### **2.3 ADHESIVES**

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

## **PART 3 - EXECUTION**

### **3.1 PROJECT CONDITIONS**

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

### **3.2 INSTALLATION REQUIREMENTS**

- A. The respective manufacturer's instructions for application and installation will be considered for use when approved by the Resident Engineer.
- B. Submit proposed installation deviation from this specification to the Resident Engineer indicating the differences in the method of installation.

- C. The Resident Engineer reserves the right to have test portions of material installation removed to check for non-uniform adhesion and spotty adhesive coverage.

### **3.3 PREPARATION**

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

### **3.4 BASE INSTALLATION**

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

1. Score back of outside corner.
  2. Score face of inside corner and notch cove.
- D. Roll base for complete adhesion.

### **3.5 STAIR TREAD INSTALLATION**

- A. Prepare surfaces to receive the treads in accordance with applicable portions of paragraph, preparation.
- B. Layout of Treads.
1. No joints will be accepted in treads.,
  2. Set full treads on intermediate and floor landings.
- C. Application:
1. Apply adhesive uniformly with no bare spots.
  2. Roll and pound treads to assure adhesion.

### **3.6 SHEET RUBBER INSTALLATION.**

- A. Prepare surfaces to receive sheet rubber in accordance with applicable portions of paragraph, preparation.
- B. Layout of Sheet Rubber:
1. Use minimum number of joints compatible with material direction and symmetrical joint location.
  2. Where sheet rubber intersect vertical stair members, other sheets, stair treads, and other resilient materials at the floor landings, material shall touch for the entire length within 5 mils (0.005 inch).
  3. Install sheet rubber on floors and intermediate landings where resilient stair treads are installed; center joint with other flooring material under doors.
- C. Application:
1. Apply adhesive uniformly with no bare spots.
  2. Roll sheet rubber to assure adhesion.

### **3.7 CLEANING AND PROTECTION**

- A. Clean all exposed surfaces of base and adjoining areas of adhesive spatter before it sets.
- B. Keep traffic off resilient material for at least 72 hours after installation.
- C. Clean and polish materials in the following order:
1. After two weeks, scrub resilient base, sheet rubber and treads materials with a minimum amount of water and a mild

detergent. Leave surfaces clean and free of detergent residue. Polish resilient base to a gloss finish.

2. Do not polish tread and sheet rubber materials.

- D. When construction traffic is anticipated, cover tread materials with reinforced kraft paper and plywood or hardboard properly secured and maintained until removal is directed by the Resident Engineer.
- E. Where protective materials are removed and immediately prior to acceptance, replace damaged materials and re-clean resilient materials. Damaged materials are defined as having cuts, gouges, scrapes or tears and not fully adhered.

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**SECTION 09 65 16**

**RESILIENT SHEET FLOORING**

**PART 1 - GENERAL**

**1.1 DESCRIPTION**

- A. This section covers the installation of sheet flooring with integral cove base.
- B. Unless otherwise specified where sheet flooring is scheduled, provide integral base at intersection of floor and vertical surfaces. Provide sheet flooring and base scheduled for room on floors and walls under and behind areas where casework, furniture and other equipment occurs, except where mounted in wall recesses.
- C. Refer to Finish Schedule on drawings.

**1.2 INSTALLATION REQUIREMENTS**

- A. The sheet flooring manufacturer's instructions for application and installation shall be the basis for obtaining the specified results.
- B. Inform the Project Engineer of conflicts between this section and the manufacturer's instructions or recommendations for auxiliary materials, or installation methods, before proceeding.

**1.3 SUBMITTALS**

In accordance with Section 01 33 23, SAMPLES AND SHOP DRAWINGS, submit the following:

- A. Manufacturer's Literature and Data:
  - 1. Description of each product to be provided.
  - 2. Sheet flooring manufacturers' recommendations for adhesives, underlayment, and primers.
  - 3. Application and installation instructions.
- B. Samples:
  - 1. Sheet material: 12 inches by 12 inches for each type, pattern and color.
  - 2. Adhesive, underlayment and primer: Pint container, each type.
  - 3. Cap strip and fillet strip for integral base.

**1.4 DELIVERY**

Deliver sheet flooring to the site in full width roll, factory wrapped, completely enclosed, and clearly marked with the manufacturer's number, type and color, production run number and manufacture date. Deliver



other materials to the site in original sealed packages or containers; labeled for identification with the manufacturer's name and brand.

#### **1.6 STORAGE**

Store materials in weather tight and dry storage facility. Protect from damage from handling, weather and construction operation before, during and after installation. Store sheet flooring on end.

#### **1.7 PROJECT CONDITIONS**

- A. Maintain temperature of sheet flooring above 65 degrees F, for 48 hours before installation.
- B. Maintain temperature of rooms where sheet flooring work occurs above 65 degrees F, for 48 hours, before installation and during installation. After installation, maintain temperature at or above 55 degrees F.
- C. Wet construction in or near areas to receive sheet flooring shall be complete, dry and cured.

#### **1.8 APPLICABLE PUBLICATIONS**

The publications listed below form a part of this specification to the extent referenced. The publications are referenced in the text by basic designation only.

- A. Federal Specifications (Fed. Spec.):  
L-F-475A(1).....Floor Covering, Vinyl, Surface (Tile And Roll)
- B. American Society for Testing and Materials (ASTM):  
E84-81.....Surface Burning Characteristics of Building Materials
- C. Resilient Floor Covering Institute (RFCI):  
Cleaners for Use in Resilient Floor Covering - Revised 12-78  
Concrete Curing Compound and Parting Agents - Published 7-77

### **PART 2 - PRODUCTS**

#### **2.1 SHEET FLOORING**

Fed. Spec. L-F-475, Type II (roll), grade A, 6 feet minimum width.

- A. Flame spread - 75 maximum; smoke developed - 450 maximum (tested in accordance with ASTM E84).
- B. Each color and pattern of sheet flooring shall be of the same production run.

#### **2.2 ADHESIVES**

Type recommended by the sheet flooring manufacturer for the conditions of use.

### **2.3 PRIMER (For Concrete Subfloors)**

As recommended by the adhesive or sheet flooring manufacturer.

### **2.4 CAP STRIP**

Extruded vinyl, flanged zero edge vinyl reducer strip approximately one inch with one half inch flange, 2-3/4 inch radius fillet strips compatible with the sheet flooring.

### **2.5 MASTIC UNDERLAYMENT (For Concrete Floors)**

Provide products with latex or polyvinyl acetate resins in the mix. The condition to be corrected shall determine the type of underlayment selected.

### **2.6 POLISH**

Non-buffable metal cross link polymer type.

## **PART 3 - EXECUTION**

### **3.1 SUBFLOOR PREPARATION**

- A. Examine surfaces on which sheet flooring is to be installed. Correct conditions which will impair proper installation.
  - 1. Trowel marks, pits, dents, protrusions, cracks or joints are unacceptable and shall be corrected.
- B. Fill cracks, joints and other irregularities in concrete with mastic underlayment.
  - 1. Do not use adhesive for filling or leveling purposes.
  - 2. Do not use mastic to correct imperfections which can be corrected by spot grinding.
- C. Preparation shall include the removal of existing resilient floor and existing adhesive. Do not use solvents to remove adhesives.
- D. Clean floor of oil, paint, dust and deleterious substances, floor shall be dry and cured.
- E. Concrete Subfloor Testing:
  - 1. Apply a three foot square prime coat patch to the prepared concrete subfloor in each room or area to receive sheet flooring.
  - 2. The Project Engineer may require additional patches as follows:
    - a. Area configuration such as long corridors or large rooms.
    - b. Slab conditions such as oil or fuel spillage which may have leached into the slab, questionable curing or release agents used on the slabs.

3. The Project Engineer may waive any or all patch tests.
  4. Patches shall have adhered after 24 hours for the subfloor to be accepted. Project Engineer will be present when the patches are scraped to check adherence.
- F. In the event that curing agents or parting agents used on the concrete slabs are the type which will inhibit bond, harm adhesive or the resilient material, detection and removal shall be in accordance with RFCI Concrete Curing Compound and Parting Agents.
- G. Prime the concrete subfloor if the primer will seal slab conditions that would inhibit bonding, or if priming is recommended by the adhesive manufacturer.

### **3.2 FLOORING INSTALLATION**

- A. Method of installation shall be full coverage adhesives.
1. Air pockets or loose edges will not be accepted.
  2. Trim sheet materials to touch in the length of intersection at pipes and vertical projections, seal, joints at pipe with waterproof cement.
- NOTE: Where manufacturer has developed an edge and seam cement down method, the Project Engineer may consider accepting this form of application if presented as part of the manufacturers literature and is fully described. The finished floor shall conform to the specification for fully cemented sheets.
- B. Joints shall be held to a minimum; avoid small filler pieces or strips.
- C. Joints shall be butted and shall be solvent welded, open joints will not be accepted. Joints shall not be readily visible from a standing position.
- D. Match patterns at joints exactly, reverse sheets as required to obtain the optimum color and pattern match.
- E. Installation at Edges:
1. Where sheet edge abuts vinyl tile provide a flush tight connection.
  2. Locate sheet edges under center line of doors or as directed by the Project Engineer.

### **3.3 INTEGRAL COVE BASE INSTALLATION**

- A. Set performed fillet strip to receive base. Install the base with adhesive, terminate expose edge with the cap strip.
- B. Form internal and external corners to the geometric shape generated by the cove at either straight or radius corners.
- C. Solvent weld joints specified for the flooring. Seal cap strip to wall with an adhesive type sealant.

### 3.4 CLEANING AND PROTECTION

- A. From exposed surfaces, clean small adhesive marks during the application of sheet flooring and base before adhesive sets, excessive adhesive smearing will not be permitted.
- B. Keep traffic off sheet flooring for 24 hours after installation.
- C. Clean and polish materials in the following order:
  - 1. For the first two weeks after installation sweep and damp mop only.
  - 2. After two weeks, scrub sheet flooring and base with a minimum amount of water and a mild detergent.
  - 3. Apply polish to the floor in accordance with the polish manufacturer's instructions.
- D. Where construction traffic is anticipated, cover sheet flooring with reinforced kraft paper properly secured and maintained until removal is ordered by the Project Engineer.
- E. Where protective materials are removed and immediately prior to acceptance, repair any damage, re-clean sheet flooring, lightly re-apply polish and buff floor.

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**SECTION 09 65 19**

**RESILIENT TILE FLOORING**

**PART 1 - GENERAL**

**1.1 DESCRIPTION**

This section specifies the installation of vinyl tile flooring, vinyl composition tile flooring, rubber tile flooring, and accessories.

**1.2 RELATED WORK**

- A. Color and pattern and location in room finish schedule: Refer to Drawings.
- B. Resilient Base: Refer to Drawings.

**1.3 SUBMITTALS**

- A. Submit in accordance with Section 01 33 23, SAMPLES AND SHOP DRAWINGS.
- B. Manufacturer's Literature and Data:
  - 1. Description of each product.
  - 2. Resilient material manufacturer's recommendations for adhesives, underlayment, primers and polish.
  - 3. Application and installation instructions.
- C. Samples:
  - 1. Tile: 300 mm by 300 mm (12 inches by 12 inches) for each type, pattern and color.
  - 2. Edge Strips: 150 mm (Six inches) long, each type.
  - 3. Feature Strips: 150 mm (Six inches) long.
- D. Shop Drawings:
  - 1. Layout of patterns shown on the drawings.
  - 2. Edge strip locations showing types and detail cross sections.
- E. Test Reports:
  - 1. Abrasion resistance: Depth of wear for each tile type and color and volume loss of tile, certified by independent laboratory.
  - 2. Tested per ASTM F510.

**1.4 DELIVERY**

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

**1.5 STORAGE**

- A. Store materials in weathertight and dry storage facility.
- B. Protect from damage from handling, water, and temperature.

**1.6 APPLICABLE PUBLICATIONS**

- A. The publications listed below form a part of this specification to the extent referenced. The publications are referenced in the text by the basic designation only.
- B. American Society for Testing and Materials (ASTM):
  - D4078-87.....Water Emulsion Floor Finish
  - D3564-88.....Application of Floor Polishes to Maintain Vinyl Asbestos Tile or Flooring
  - F510-81.....Resistance to Abrasion of Resilient Floor Coverings Using an Abrader with a Grit Feed Method
  - F710-92.....Preparing Concrete Floors and other Monolithic Floors to Receive Resilient Flooring
  - F1066-87.....Vinyl Composition Floor Tile
  - F1344-91.....Rubber Floor Tile
- C. Federal Specifications (Fed. Spec):
  - SS-T-312B.....Tile, Floor: Asphalt, Rubber, Vinyl, and Vinyl
  - INT AMD 2.....Composition
  - MMM-A-115C-79.....Adhesive, Asphalt, Water Emulsion Type (For Asphalt And Vinyl Composition Tiles)
- D. National Fire Protection Association (NFPA):
  - NFPA 253-90.....Standard Method of Test for Critical Radiant Flux of Floor Covering Systems Using Radiant Heat Energy Source
- E. Resilient Floor Covering Institute (RFCI):
  - ADH-1.....Vinyl Composition Tile Adhesive

- ID-2.....Concrete Treating Compounds Installation  
Specifications for Vinyl Composition,  
Solid Vinyl and Asphalt Tile Floorings
- CL-1.....Cleaners for Use on Resilient Floor  
Coverings (Revised 1988)
- TM-6.....Determination of Quality of Cut (Joint  
Tightness and Corner Openings) of  
Resilient Tile

## **PART 2 - PRODUCTS**

### **2.1 GENERAL**

- A. Furnish product type, materials of the same production run.
- B. Use adhesives, underlayment, primers and polish recommended by the floor resilient material manufacturer.
- C. Interior Floor Finisher For Corridors, Stairs, and Halls: Class I, critical radiant flux minimum of 0.45 watts per square centimeter as determined by NFPA 253.
- D. Interior Floor Finishes For Remaining Areas: Class II, Critical radiant flux minimum of 0.22 watts per square centimeter as determined by NFPA 253.

### **2.2 VINYL COMPOSITION TILE**

- A. ASTM F1066, Class 2, Type IV, Composition 1, non-asbestos, 300 mm (12 inches) square, 3.2 mm (1/8-inch) thick.
- B. Color and pattern uniformly distributed throughout thickness.

### **2.3 ADHESIVES**

- A. Water emulsion asphalt: Fed. Spec. MMM-A-115.
- B. Latex type adhesives RFC ADH-1, Type III, Water based latex as recommended by tile manufacturer.
- C. Use only adhesive approved for flooring material applied to wood, plywood or particleboard underlayment.

### **2.4 PRIMER (FOR CONCRETE SUBFLOORS)**

Asphaltic type as recommended by the adhesive and tile manufacturer.

### **2.5 LEVELING COMPOUND (For Concrete Floors)**

- A. Provide products with latex or polyvinyl acetate resins in the mix.
- B. Determine the type of underlayment selected for use by the condition to be corrected.

### **2.6 POLISH AND CLEANERS**

- A. Cleaners RFCI CL-1.

- B. Polish: ASTM D4078.

## **2.7 EDGE STRIPS**

- A. 28 mm (1-1/8 inch) wide unless shown otherwise.
- B. Bevel from maximum thickness to minimum thickness for flush joint unless shown otherwise.
- C. Extruded aluminum, mill finish, mechanically cleaned.
  - 1. Drill and counter sink edge strip for flat head screws.
  - 2. Space holes near ends and approximately nine inches on center between.
- D. Resilient Edge Strip or Reducer Strip: Fed. Specs. SS-T-312, Solid vinyl.

## **2.8 SCREWS**

Stainless steel flat head screw.

## **2.9 FEATURE STRIPS**

- A. Use same material as floor tile.
- B. Sizes and shapes as shown.

# **PART 3 - EXECUTION**

## **3.1 PROJECT CONDITIONS**

- A. Maintain temperature of materials a minimum of 22 degrees C (70 degrees F,) for 48 hours before installation.
- B. Maintain temperature of rooms where work occurs between 21 degrees and 27 degrees C 70 degrees and 80 degrees F, for at least 48 hours, before, during and after installation.
- C. Do not install flooring until building is permanently enclosed and wet construction in or near areas to receive tile materials is complete, dry and cured.

## **3.2 SUBFLOOR PREPARATION**

- A. Examine surfaces on which resilient flooring is to be installed.
- B. Correct conditions which will impair proper installation.
- C. Fill cracks, joints and other irregularities in concrete with leveling compound and level floors for a maximum wave variation of 1:1000 (1/8-inch in 10 feet) (non-accumulative).
  - 1. Do not use adhesive for filling or leveling purposes.
  - 2. Do not use leveling compound to correct imperfections which can be corrected by spot grinding.
  - 3. Trowel to smooth surface free of trowel marks, pits, dents, protrusions, cracks or joints.



- D. Clean floor of oil, paint, dust, and deleterious substances:  
Leave floor dry and cured free of residue from existing curing or cleaning agents.
- E. Concrete Subfloor Testing:
  - 1. Apply a 1 meter (three foot) square test patch to the prepared concrete subfloor in room or area to be tiled in accordance with RFCI ID-2.
  - 2. After the test patches have remained on the floor for a period of 72 hours, check adherence to surface by scraping test patches for ease of removal in the presence of the Project Engineer.
  - 3. In the event that test patch is easily removed the Project Engineer may require additional test patches as follows:
    - a. Area configuration such as long corridors or large rooms.
    - b. Slab conditions such as oil or fuel spillage which may have leached into the slab, and presence of questionable curing or release agents used on the slabs.
    - c. Retesting after additional subfloor preparation.
- F. Perform additional subfloor preparation to obtain satisfactory adherence of flooring if subfloor test patches allows easy remove of tile.
- G. Prime the concrete subfloor if the primer will seal slab conditions that would inhibit bonding, or if priming is recommended by the tile or adhesive manufacturers.

### **3.3 INSTALLATION**

- A. Install in accordance with RFCI INS-87 and manufacturer's instructions for application and installation unless specified otherwise.
- B. Mix tile from at least two containers. An apparent line either of shades or pattern variance will not be accepted.
- C. Tile Layout:
  - 1. If layout is not shown on drawings, lay tile symmetrically about center of room or space with joints aligned.
  - 2. No tile shall be less than 6-inches and of equal width at walls.
  - 3. Place tile pattern in the same direction; do not alternate tiles.
- D. Trim tiles to touch for the length of intersections at pipes and vertical projections, seal joints at pipes with waterproof cement.
- E. Application:

1. Apply adhesive uniformly with no bare spots.
    - a. Conform to RFC1-TM-6 for joint tightness and for corner intersection unless layout pattern shows random corner intersection.
    - b. More than 5 percent of the joints not touching or any joint more than 0.0051-inch wide will not be accepted.
  2. Roll tile floor with a minimum 100 pound roller. No exceptions.
  3. The Project Engineer may have test tiles removed to check for non-uniform adhesion, spotty adhesive coverage, and ease of removal. Install new tile for broken removed tile.
- F. Installation of Edge Strips:
1. Locate edge strips under center line of doors unless otherwise shown.
  2. Set resilient edge strips in adhesive. Anchor metal edge strips with anchors and screws specified.
  3. Where tile edge is exposed, butt edge strip to touch along tile edge.
  4. Where thin set ceramic tile abuts resilient tile, set edge strip against floor file and against the ceramic tile edge.

### **3.4 CLEANING AND PROTECTION**

- A. Clean adhesive marks on exposed surfaces during the application of resilient materials before the adhesive sets. Exposed adhesive is not acceptable.
- B. Keep traffic off resilient material 72 hours after installation.
- C. Clean and polish materials in the following order:
  1. For the first two weeks sweep and damp mopped only.
  2. After two weeks, scrub resilient materials with a minimum amount of water and a mild detergent. Leave surface clean and free of detergent residue.
  3. Apply polish to the floors in accordance with the polish manufacturer's instructions.
- D. When construction traffic occurs over tile, cover resilient materials with reinforced kraft paper properly secured and maintained until removal is directed by Project Engineer. At entrances and where wheeled vehicles or carts are used, cover tile with plywood, hardboard, or particle board over paper, secured and maintained until removal is directed by the Project Engineer.
- E. When protective materials are removed and immediately prior to acceptance, replace any damage tile, re-clean resilient materials, lightly re-apply polish and buff floors.

**3.5 LOCATION**

- A. Unless otherwise specified or shown, install tile flooring, on floor under areas where casework, laboratory and pharmacy furniture and other equipment occurs, except where mounted in wall recesses.
- B. Extend tile flooring for room into adjacent closets and alcoves.

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**SECTION 09652**

**LINOLEUM**

**PART 1 GENERAL**

**1.1 SUMMARY**

- A. Furnish and install linoleum as indicated on the drawings and specified.

**1.2 SUBMITTALS**

- A. Submit samples for selection.
- B. Submit the manufacturer's specifications and other data needed to prove compliance with the specified requirements;

**1.3 QUALITY ASSURANCE**

- A. Linoleum shall be installed by trained personnel who have participated in a technical seminar given, at no cost to the Contractor, by materials manufacturer.

**PART 2 PRODUCTS**

**2.1 LINOLEUM**

- A. Products: Linoleum shall be Farbo Marmoleum, or equal, and as indicated on the drawings.
- B. "Or equal" linoleum by Gerbert Ltd., Glenstar Corp., Azrock Tile, or Ken Tile Floors Inc. will also be acceptable subject to the approval of the Architect.
- C. Linoleum shall be comprised of all natural ingredients (asbestos free), linseed oil, cork, wood flour, resin binders, gum and dry pigments. The ingredients shall be mixed and calendared onto a natural jute backing.
- D. Physical Characteristics:

|                        |                                   |
|------------------------|-----------------------------------|
| Thickness              | 0.079 inch (minimum)              |
| Residual Indentation   | Meets FS LLL-F-1238A, Short Term. |
| Load Limit             | 125 psi                           |
| Impact Sound Reduction | 6 dB                              |
| Slip Resistance        | SRT 90 - 110.                     |
| Smoke Density          | Meets NFPA, Below 450°            |
| Fire Resistance        | Meets NFPA 258, Class 1.          |
- E. Colors and Patterns: As selected by the Architect, and as indicated on the drawings.

## **2.2 ACCESSORY MATERIALS**

- A. Adhesive: As recommended by the manufacturer of the linoleum materials. Adhesive shall be waterproof and stabilized type. Asphalt emulsions and other non-waterproof type adhesives will not be acceptable.
- B. Reducing Strips: Vinyl floor reducer, thickness to suit abutting floor covering material, 1 1/4 inches wide, Johnsonite, Flexco, or equal, in color to match that of linoleum.
- C. Concrete Slab Primer: A non-staining type as recommended by the manufacturer of the linoleum to be applied over it.
- D. Wax: Federal Specification P-W-155, 16% Concentration, water emulsion base.
- E. Other Materials: All other materials, not specifically described but required for a complete installation of the work shall be as recommended by the manufacturer of the linoleum and approved by the Architect.

## **PART 3 EXECUTION**

### **3.1 INSTALLATION**

- A. Install linoleum as recommended by its manufacturer. Substrate shall be smooth, level at required finish elevation and without more than 1/8" in 10 feet variation from slopes or levels indicated on the Drawing. Fill cracks or irregularities with plastic filler as recommended by manufacturers of linoleum materials.
- B. Bond to floor surfaces with adhesive in compliance with manufacturer's recommendations. Tightly butt linoleum to vertical surfaces, edgings and thresholds, and where the material of one color abuts material of another color. Scribe as necessary around obstructions to produce neat joints. Place linoleum tightly laid, even and in straight parallel lines. Extend units into toe spaces, door reveals and into closets and similar spaces.
- C. Continuity Through Doorways: Join flooring from hallways to linoleum of adjacent rooms appropriately through doorways, to provide continuous floor covering, as approved by the Architect. Install reducing strips where linoleum is at one side of doorways and bare concrete on other side.
- D. Reducing Strips: Provide at unprotected exposed edges of linoleum or at doorways.
  - 1. Provide in single lengths full width of and at centerline of doors. Adhesively bond in place with floor covering manufacturer's approved adhesive and tightly abut exposed edges of linoleum.

2. Fit end edges to door frames and abutting surfaces. Make top surface flush with adjoining floor covering.

### **3.2 CLEANING AND PROTECTING**

- A. Cleaning: After completion of work of this Section and just prior to inspection, clean and remove excess adhesive and other blemishes from exposed surfaces, using neutral cleaner and wax and buff as recommended by the manufacturer of the linoleum materials.
- B. Protecting: Protect finished work from damage by subsequent construction operations as directed by the Architect until completion of Contracted Work. Where possible, lock rooms following installation of linoleum and cleaning operations.

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**SECTION 09 68 00**

**CARPETING**

**PART 1 - GENERAL**

**1.1 DESCRIPTION**

Section specifies carpet, edge strips, adhesives, and other items required for complete installation.

**1.2 RELATED WORK**

- A. Color and texture of carpet and edge strip: Section 09 06 00, SCHEDULE FOR FINISHES.
- B. Resilient wall base: Section 09 65 13, RESILIENT BASE AND ACCESSORIES.

**1.3 QUALITY ASSURANCE**

- A. Carpet installed by mechanics certified by the Floor Covering Installation Board.
- B. Certify and label the carpet that it has been tested and meets criteria of CRI IAQ Carpet Testing Program for indoor air quality.

**1.4 SUBMITTALS**

- A. Submit in accordance with Section 01 33 23, SHOP DRAWINGS, PRODUCT DATA, AND SAMPLES.
- B. Product Data:
  - 1. Manufacturer's catalog data and printed documentation stating physical characteristics, durability, resistance to fading and flame resistance characteristics for each type of carpet material and installation accessory.
  - 2. Manufacturer's printed installation instructions for the carpet, including preparation of installation substrate, seaming techniques and recommended adhesives and tapes.
  - 3. Manufacturer's certificate verifying carpet containing recycled materials include percentage of recycled materials as specified.
- C. Samples:
  - 1. Carpet: "Production Quality" samples of carpet, showing quality, pattern and color specified in Section 09 06 00, SCHEDULE FOR FINISHES.
  - 2. Floor Edge Strip (Molding): 150 mm (6 inches) long of each color and type specified.
  - 3. Base Edge Strip (Molding): 150 mm (6 inches) long of each color specified.

- D. Shop Drawings: Installers layout plan showing seams and cuts for sheet carpet and carpet module.
- E. Maintenance Data: Carpet manufacturer's maintenance instructions describing recommended type of cleaning equipment and material, spotting and cleaning methods and cleaning cycles.

#### **1.5 DELIVERY AND STORAGE**

- A. Deliver carpet in manufacturer's original wrappings and packages clearly labeled with manufacturer's name, brand, name, size, dye lot number and related information.
- B. Deliver adhesives in containers clearly labeled with manufacturer's name, brand name, number, installation instructions, safety instructions and flash points.
- C. Store in a clean, dry, well ventilated area, protected from damage and soiling. Maintain storage space at a temperature above 16 degrees C (60 degrees F) for 2 days prior to installation.

#### **1.6 ENVIRONMENTAL REQUIREMENTS**

Areas in which carpeting is to be installed shall be maintained at a temperature above 16 degrees C (60 degrees F) for 2 days before installation, during installation and for 2 days after installation. A minimum temperature of 13 degrees C (55 degrees F) shall be maintained thereafter for the duration of the contract. Traffic or movement of furniture or equipment in carpeted area shall not be permitted for 24 hours after installation. Other work which would damage the carpet shall be completed prior to installation of carpet.

#### **1.7 WARRANTY**

Carpet and installation subject to terms of "Warranty of Construction" FAR clause 52.246-21, except that warranty period is extended to two years.

#### **1.8 APPLICABLE PUBLICATIONS**

- A. Publication listed below form a part of this specification to extent referenced. Publications are referenced in text by basic designation only.
- B. American National Standards Institute (ANSI):  
  
ANSI/NSF 140-07.....Sustainable Carpet Assessment Standard
- C. American Association of Textile Chemists and Colorists (AATCC):  
  
AATCC 16-04.....Colorfastness to Light  
  
AATCC 129-05.....Colorfastness to Ozone in the Atmosphere  
under High Humidities  
  
AATCC 134-06.....Electric Static Propensity of Carpets  
  
AATCC 165-99.....Colorfastness to Crocking: Textile Floor  
Conerings-AATCC Crockmeter Method



- D. American Society for Testing and Materials (ASTM):
- ASTM D1335-05.....Tuft Bind of Pile Yarn Floor Coverings
  - ASTM D3278-96 (R2004)...Flash Point of Liquids by Small Scale Closed-Cup Apparatus
  - ASTM D5116-06.....Determinations of Organic Emissions from Indoor Materials/Products
  - ASTM D5252-05.....Operation of the Hexapod Tumble Drum Tester
  - ASTM D5417-05.....Operation of the Vettermann Drum Tester
  - ASTM E648-06.....Critical Radiant Flux of Floor-Covering Systems Using a Radiant Heat Energy Source
- E. The Carpet and Rug Institute (CRI):
- CRI 104-02.....Installation of Commercial Carpet

## **PART 2 - PRODUCTS**

### **2.1 CARPET**

- A. Subject to compliance with specified requirements, carpet shall be the products of Milliken & Company, or "Or Equal" products by one of the following manufacturers will also be acceptable:
- 1. Couristan Inc.
  - 2. Mohawk Carpet Co.
  - 3. Lees Commercial Carpet.
  - 4. Bentley Mills Inc.
- B. Physical Characteristics:
- 1. Carpet free of visual blemishes, streaks, poorly dyed areas, fuzzing of pile yarn, spots or stains and other physical and manufacturing defects, not less than 27 oz/sq/yd.
  - 2. Manufacturers standard construction commercial carpet:
    - a. Broadloom; maximum width to minimum use.
    - b. Modular Tile: Square tile as standard with the manufacturer.
  - 3. Provide static control to permanently control static build upto less than 2.0 kV when tested at 20 percent relative humidity and 21 degrees C (70 degrees F) in accordance with AATCC 134.
  - 4. Pile Height: Maximum 3.25 mm (0.10 inch).
  - 5. Pile Fiber: Nylon with recycled content 25 percent minimum branded (federally registered trademark).
  - 6. Pile Type: Tufted Level Loop.

7. Backing materials: Manufacturer's unitary backing designed for glue-down installation using recovered materials.
  8. Appearance Retention Rating (ARR): Carpet shall be tested and have the minimum 3.5-4.0 Severe ARR when tested in accordance with either the ASTM D 5252 (Hexapod) or ASTM D 5417 (Vettermann) test methods using the number of cycles for short and long term tests as specified.
  9. Tuft Bind: Minimum force of 40 N (10 lb) required to pull a tuft or loop free from carpet backing. Test per ASTM D1335.
  10. Colorfastness to Crocking: Dry and wet crocking and water bleed, comply with AATCC 165 Color Transference Chart for colors, minimum class 4 rating.
  11. Colorfastness to Ozone: Comply with AATCC 129, minimum rating of 4 on the AATCC color transfer chart.
  12. Delamination Strength: Minimum of 440 N/m (2.5 lb/inch) between secondary backing.
  13. Flammability and Critical Radiant Flux Requirements:
    - a. Test Carpet in accordance with ASTM E 648.
    - b. Class I: Not less than 0.45 watts per square centimeter.
    - c. Class II: Not less than 0.22 watts per square centimeter.
    - d. Carpet in corridors, exits and Medical Facilities: Class I.
  14. Density: Average Pile Yarn Density (APYD):
    - a. Corridors, lobbies, entrances, common areas or multipurpose rooms, open offices, waiting areas and dining areas: Minimum APYD 6000.
    - b. Other areas: Minimum APYD 4000.
  15. VOC Limits: Use carpet and carpet adhesive that comply with the following limits for VOC content when tested according to ASTM D 5116:
    - a. Carpet, Total VOCs: 0.5 mg/sq.m x hr.
    - b. Carpet, 4-PC (4-Phenylcyclohexene): 0.05 mg/sq.m x hr.
    - c. Carpet, Formaldehyde: 0.05 mg/sq.m x hr.
    - d. Carpet, Styrene: 0.4 mg/sq.m x hr.
    - e. Adhesive, Total VOCs: 10.00 mg/sq.m x hr.
    - f. Adhesive, Formaldehyde: 0.05 mg/sq.m x hr.
    - g. Adhesive, 2-Ethyl-1-Hexanol: 3.00 mg/sq.m x hr.
- B. Shall meet platinum level of ANSI/NSF 140.

- C. Color, Texture, and Pattern: As specified in Section 09 06 00, SCHEDULE FOR FINISHES, and as selected by the Architect.

## **2.2 ADHESIVE AND CONCRETE PRIMER**

- A. Waterproof, resistant to cleaning solutions, steam and water, nonflammable, complies with air-quality standards as specified. Adhesives flashpoint minimum 60 degrees C (140 degrees F), complies with ASTM D 3278.
- B. Seam Adhesives: Waterproof, non-flammable and non-staining.

## **2.3 SEAMING TAPE**

- A. Permanently resistant to carpet cleaning solutions, steam, and water.
- B. Recommended by carpet manufacturer.

## **2.4 EDGE STRIPS (MOLDING)**

- A. Metal:
  - 1. Hammered surface aluminum, pinless, clamp down type designed for the carpet being installed.
  - 2. Floor flange not less than 38 mm (1-1/2 inches) wide, face not less than 16 mm (5/8 inch) wide.
  - 3. Finish: Clear anodic coating unless specified otherwise in Section 09 06 00, SCHEDULE FOR FINISHES.
- B. Vinyl Edge Strip:
  - 1. Beveled floor flange minimum 50 mm (2 inches) wide.
  - 2. Beveled surface to finish flush with carpet for tight joint and other side to floor finish.
  - 3. Color as specified in Section 09 06 00, SCHEDULE FOR FINISHES.
- C. Carpet Base Top Edge Strip:
  - 1. Vinyl "J" strip wall flange minimum of 38 mm (1-1/2 inches) wide with cap beveled from wall to finish flush with carpet being installed.
  - 2. Color as specified in Section 09 06 00, SCHEDULE FOR FINISHES.

## **2.5 LEVELING COMPOUND (FOR CONCRETE FLOORS)**

- A. Provide Portland cement bases polymer modifier with latex or polyvinyl acetate resin manufactured specifically for resurfacing and leveling concrete floors. Products containing gypsum are not acceptable.

- B. Determine the type of underlayment selected for use by condition to be corrected.

### **PART 3 - EXECUTION**

#### **3.1 SURFACE PREPARATION**

- A. Examine surfaces on which carpeting is to be installed.
- B. Clean floor of oil, waxy films, paint, dust and deleterious substances that prevent adhesion, leave floor dry and cured, free of residue from curing or cleaning agents and existing carpet materials.
- C. Correct conditions which will impair proper installation, including trowel marks, pits, dents, protrusions, cracks or joints.
- D. Fill cracks, joints depressions, and other irregularities in concrete with leveling compound.
  - 1. Do not use adhesive for filling or leveling purposes.
  - 2. Do not use leveling compound to correct imperfections which can be corrected by spot grinding.
  - 3. Trowel to smooth surface free of trowel marks, pits, dents, protrusions, cracks or joint lines.
- E. Test new concrete subfloor prior to adhesive application for moisture and surface alkalinity per CRI 104 Section 6.3.1 or per ASTM E1907.

#### **3.2 CARPET INSTALLATION**

- A. Do not install carpet until work of other trades including painting is complete and dry.
- B. Install in accordance with CRI 104 direct glue down installation.
  - 1. Relax carpet in accordance with Section 6.4.
  - 2. Comply with indoor air quality recommendations noted in Section 6.5.
  - 3. Maintain temperature in accordance with Section 15.3.
- C. Secure carpet to subfloor of spaces with adhesive applied as recommended by carpet manufacturer.
- D. Follow carpet manufacturer's recommendations for matching pattern and texture directions.
- E. Cut openings in carpet where required for installing equipment, pipes, outlets, and penetrations.
  - 1. Bind or seal cut edge of sheet carpet and replace flanges or plates.

2. Use additional adhesive to secure carpets around pipes and other vertical projections.
- G. Broadloom Carpet:
1. Install per CRI 104, Section 8.
  2. Lay broadloom carpet lengthwise in longest dimension of space, with minimum seams, uniformly spaced to provide a tight smooth finish, free from movement when subjected to traffic.
  3. Use tape-seaming method to join sheet carpet edges. Do not leave visible seams.
- H. Carpet Modules:
1. Install per CRI 104, Section 13, Adhesive Application.
  2. Lay carpet modules with pile in same direction unless specified other wise in Section 09 06 00, SCHEDULE FOR FINISHES.
  3. Install carpet modules so that cleaning methods and solutions do not cause dislocation of modules.
  4. Lay carpet modules uniformly to provide tight flush joints free from movement when subject to traffic.

### **3.3 EDGE STRIPS INSTALLATION**

- A. Install edge strips over exposed carpet edges adjacent to uncarpeted finish flooring.
- B. Anchor metal strips to floor with suitable fasteners. Apply adhesive to edge strips, insert carpet into lip and press it down over carpet.
- C. Anchor vinyl edge strip to floor with adhesive apply adhesive to edge strip and insert carpet into lip and press lip down over carpet.
- D. Carpet Base Top Edge Strip Installation:
  1. Place carpet molding at top edge of carpet where turned up as base.
  2. Install molding in accordance with manufacturer's instructions.

### **3.4 PROTECTION AND CLEANING**

- A. Remove waste, fasteners and other cuttings from carpet floors.
- B. Vacuum carpet and provide suitable protection. Do not use polyethylene film.
- C. Do not permit traffic on carpeted surfaces for at least 48 hours after installation. Protect the carpet in accordance with CRI 104.

- D. Do not move furniture or equipment on unprotected carpeted surfaces.
- E. Just before final acceptance of work, remove protection and vacuum carpet clean.

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**SECTION 09 91 00**

**PAINTING**

**PART 1 - GENERAL**

**1.1 DESCRIPTION**

- A. Work to be painted:
  - 1. Painting and finishing of interior work, and painting of mechanical and electrical systems, except as specified under Article, WORK NOT TO BE PAINTED.
  - 2. Painting and finishing of existing work as specified under Article, REFINISHING.
- B. Work NOT to be Painted:
  - 1. Prefinished items: Casework, doors, equipment, and similar items specified under other sections.
  - 2. Concealed surfaces: Above ceilings, except as otherwise specified.
  - 3. Finished surfaces: Anodized aluminum, stainless steel, chromium plating, copper, brass, except as otherwise specified.
  - 4. Moving and operating parts: Mechanical and electrical parts such as valve stems, operators, linkages, sprinkler heads, sensing devices.
  - 5. Labels: Any code required label such as Underwriters Laboratories Inc., or Factory Mutual Research Corporation, identification plates, instruction plates, performance rating, nomenclature.
  - 6. Hot-dip galvanized metal, except where specifically specified to be painted.
  - 7. Surfaces concealed behind permanently installed equipment.

**1.2 QUALITY CONTROL**

- A. Paint Color:
  - 1. In general, color and texture of finish coats, shall match existing.
  - 2. For additional requirements regarding color, see Articles, REFINISHING AND FIELD PAINTING OF MECHANICAL AND ELECTRICAL SYSTEM.
  - 3. Color of priming coat shall be lighter than body coat.
  - 4. Color of body coat shall be lighter than finish coat.

5. Color prime and body coats as required so as to not show through the finish coat and to mask surface imperfections.
- B. Color Cards: Sets of color cards are to be provided upon submittal of product to be used.

### **1.3 SUBMITTALS**

In accordance with Section 01 33 23, SAMPLES AND SHOP DRAWINGS, furnish the following:

- A. Manufacturer's Literature and Data:
  1. Before any work is done, submit manufacturer's literature, indicating brand names, kind, color, texture, composition of vehicle and pigment, and certificates as specified.
  2. Submit a certificate attesting that the epoxy paint complies with specified requirements.

### **1.4 DELIVERY, AND STORAGE**

- A. Delivery:
  1. All materials shall be delivered to the site in the manufacturer's sealed container marked to show the following:
    - a. Name of manufacturer
    - b. Kind of paint
    - c. Batch number
    - d. Instruction for use
    - e. Safety precautions
  2. In addition to the manufacturer's label, each container shall bear a label upon which is legibly printed the following:
    - a. Federal Specification Number (where applicable) and name of material.
    - b. Surface upon which material is to be applied.
    - c. If paint or other coating, the coat (prime, body or finish) for which it is to be used.
- B. Storage:
  1. Maintain space for storage, and handling of painting materials and equipment in a neat and orderly condition.
  2. Store all materials at the site at least 24 hours before using in order to bring their temperature between 65 and 85 degrees F.



## 1.5 JOB CONDITIONS

- A. Safety: Observe all required safety regulations and the manufacturer's warning and instructions during the storage, handling and application of painting materials.
  - 1. Necessary precautions shall be taken to protect personnel and property from hazards due to falls, injuries, toxic fumes, fire, explosion, or other harm.
  - 2. Deposit soiled cleaning rags and waste materials in metal containers approved for that purpose. Dispose of such items off the site at the end of each work day.
- B. Lead-Base Paint: NOT TO BE USED.
- C. Atmospheric and Surface Conditions:
  - 1. No interior painting in foggy, damp or rainy weather. When building is enclosed, interior work may be painted.
  - 2. Paint interior surfaces when the ambient temperature is between 45 and 90 degrees F, except when water thinned paints are used, the ambient temperature shall be between 50 and 90 degrees F, unless otherwise designated in the manufacturer's printed instructions. Maintain these temperatures until the paint dries hard.
  - 3. Apply only on clean, dry and frost free surfaces. Apply water thinned paints to damp (not wet) surfaces where allowed by the manufacturer's printed instructions.

## 1.6 APPLICABLE PUBLICATIONS

The publications listed below form a part of this specification to the extent referenced. The publications are referenced in the text by basic designation only.

- A. Federal Specifications (Fed. Spec.):
  - SS-J-570B.....Joint Compound and Tape, Wallboard For  
Gypsum Wallboard Construction
  - SS-P-00450A(1).....Plaster, Patching, Gypsum (Spackling)
  - TT-F-322D(1).....Filler, Two-Component Type, For Dents,  
Cracks, Small-Holes And Blow-Holes
  - TT-F-340C.....Filler, Wood, Plastic

## PART 2 - PRODUCTS

### 2.1 MATERIALS:

- A. Manufacturer: Subject to compliance with specified requirements, provide the products of Dunn-Edwards, or "or equal" products of one of the following:
  - 1. ICI Dulux
  - 2. Vista

3. Frazee
  4. Sherwin-Williams
  5. Benjamin Moore & Co.
  6. PPG Industries
  7. Kelley-Moore Paint Co.
- B. Interior Latex, Semi Gloss Enamel White and Pastel Base.
- C. Quick Drying Enamel Undercoating
- D. Interior-Exterior Water Base Gloss Enamel, White and Pastel Base
- E. Exterior Semi Gloss House Paint, White and Pastel Tint Base.
- F. Interior Latex primer - Sealer. Use on concrete, masonry, and other cementitious surfaces.
- G. Interior Semi Gloss Enamel White and Tint Base.
- H. Interior Waterborne Epoxy, White and Pastel Base by Rustoleum, Tnemec, Ameron, or equal.
- I. Exterior Latex Flat Masonry Paint Pastel Tint Base.
- J. Rust Inhibitive Waterbase Primer.

## **2.2 PAINT PROPERTIES**

- A. All painting materials shall be ready-mixed (including colors), except two component polyesters, those having metallic powders packaged separately and those paints requiring specified additives.
- B. Materials shall be finely ground, uniform in consistency and readily dispersed to form a smooth and homogeneous fluid.
- C. Where no requirements for pigment and vehicle are given in the referenced specifications for primers, their composition shall be compatible with substrate and finishing coats specified.

## **PART 3 - EXECUTION**

### **3.1 PAINT PREPARATION**

- A. Thoroughly mix all painting materials to ensure uniformity of color, complete dispersion of pigment and uniform composition.
- B. No material shall be thinned, unless necessary for proper application and when finish paint is used for body and prime coats. Materials and the quantities used for thinning shall be in accordance with the manufacturer's printed instructions.
- C. Remove paint skins, then strain paint through commercial paint strainer to remove all lumps and other particles.
- D. Two component and two part paint and those requiring additives shall be mixed in such a manner as to be uniformly blended in accordance with the manufacturer's printed instructions.

- E. For tinting required to produce exact shades specified, use color pigment recommended by the paint manufacturer.

### **3.2 SURFACE PREPARATION**

- A. General: Remove lighting fixtures and similar items for complete painting of such items and adjacent areas.
  - 1. See other sections of the specifications for requirements for surface conditions and prime coat.
  - 2. Surfaces to be finished shall be dry, clean, smooth and prepared as specified.
  - 3. Materials and methods used for cleaning shall be compatible with the substrate and specified finish. Remove any residue remaining from cleaning agents used.
  - 4. Method of surface preparation is optional, provided results of finish painting produce solid even color and texture specified.
  - 5. Remove all cover plates and hardware prior to any wall prep or finishing.
- B. Wood: Sand to a smooth even surface and then dust off.
  - 1. Where transparent finish is specified, finish sanding shall be with 220 grit sandpaper. Wipe surface with a tack rag prior to applying finish.
  - 2. Surface to be painted with an opaque finish shall have all knots, sap and pitch streaks coated with knot sealer before applying any coat of paint. Apply two coats of knot sealer over large knots.
  - 3. Surfaces showing raised grain shall be sanded smooth between each coat.
  - 4. After application of prime or first coat of stain, fill all cracks, nail and screw holes, depressions and similar defects with patching compound. Sand to make smooth and flush with surrounding surface.
  - 5. Before applying finish coat, reapply patching compound if required, and lightly sand surface to remove surface blemishes.
- C. Steel and Iron: Remove oil, grease, soil, drawings and cutting compounds, flux and other detrimental foreign matter by use of solvents, emulsions, cleaning compounds, or by steam cleaning, as defined in SSPC-SP 1.
  - 1. Remove loose mill scale, rust, and paint, by hand or power tool cleaning, as defined in SSPC-SP 2 and SSPC-SP 3.
  - 2. Fill all dents, holes and similar voids and depressions in flat exposed surfaces of hollow steel door and window frames, access panels and similar items specified to have

semi-gloss or gloss finish with patching compound. Finish flush with adjacent surfaces.

3. Spot prime all abraded and damaged areas in shop prime coat which expose the bare metal, with same type of paint used for prime coat. Feather edge of spot prime as required to produce smooth finish coat. Spot prime all abraded and damaged areas which expose the bare metal of factory finished items with paint as recommended by the manufacturer.
- D. Zinc-Coated (Galvanized) Metal: Surfaces specified to be painted shall be cleaned of all grease, oil and other deterrents to paint adhesion, with toluene, xylene or similar solvents in accordance with SSPC-SP 1.
  1. Spot prime all abraded and damaged areas of zinc-coating which expose the bare metal, using zinc rich paint on hot-dip zinc-coated items and zinc dust primer on all others.
- E. Gypsum Drywall: Remove dust, dirt, and other deterrents to paint adhesion.
  1. Fill holes, cracks, and other depressions with patching compound, finished flush with adjacent surface, with texture to match texture of adjacent surface.

### 3.3 APPLICATION:

- A. Start of surface preparation or painting will be construed as acceptance of the surface as satisfactory for the application of materials.
- B. Unless otherwise specified, paint shall be applied in three coats; prime, body, and finish. When the two coats succeeding the prime coat are the same, the first coat applied over the primer shall be considered as the body coat, the second coat as the finish coat.
- C. Before application of body and finish coats, surfaces shall be primed, except as otherwise specified. For primers to be used for field application, see Article, PRIMERS.
- D. Additional field applied prime coats over shop or factory applied prime coats are not required, except for structural steel which shall have a field applied prime coat in addition to the shop prime coat.
- E. Retouch damaged and abraded painted surfaces before applying succeeding coats.
- F. Apply each coat evenly and in full covering body.
- G. Not less than 48 hours shall elapse between application of succeeding coats, except as allowed by the manufacturer's printed instructions, and approved by the Engineering Officer.
- H. Finish painted surfaces shall have solid even color, free from runs, lumps, brushmarks, laps, holidays, or other defects.

- I. To prevent the items from sticking in the shut position, operable items such as access doors and similar items shall not be painted when in the closed position.
- J. Painted or otherwise finished surfaces of wood doors, including top and bottom edges, which are cut for fitting or for other reason shall be given two coats of primer.
- K. Paint may be applied by brush or roller, except as otherwise specified.
- L. Spray painting will not be allowed.

### **3.4 PRIMERS**

- A. After surface preparation, apply prime coat to various materials as follows:

NOTE: Prime coat is not required for acrylic emulsion and latex emulsion finish.

- 1. Steel and iron: Primer as per manufacturer.
- 2. Zinc-coated steel and iron: Zinc dust primer.
- 3. Drywall: Latex primer.

### **3.5 INTERIOR FINISHES:**

NOTE: On properly prepared and primed surface, apply the following finish coats.

- A. Metal Work: Apply two coats of 100% Acrylic Semigloss (SG) on exposed surfaces, including surfaces of ferrous metal hardware, except as follows:
  - 1. Omit body and finish coats on surfaces concealed after installation.
- B. Drywall: Three coats, primer, body, finish except as follows:
- C. Wood: One coat of enamel undercoat plus one coat of 100% acrylic semigloss.
- D. All metal work shall be brush finish appearance at finish coat.

### **3.6 REFINISHING**

- A. Existing interior work to be refinished shall include the following:
  - 1. Interior:
    - a. Existing painted surfaces of rooms, areas and spaces in which alterations occur under this contract.
    - b. All other rooms, areas and spaces noted on the drawings to be refinished.

- B. Except as otherwise specified or noted on drawings, refinished rooms, areas and spaces shall be refinished as follows:
  - 1. Patched and damaged surfaces of walls shall receive prime, body and finish coats.
  - 2. Patched and damaged surfaces of ceilings, except prefabricated acoustical unit ceilings shall receive prime and finish coats.
  - 3. Undisturbed surfaces of patched and damaged walls and ceilings, except prefabricated acoustical unit ceilings shall receive body and finish coats.
  - 4. Undisturbed walls and ceilings, except prefabricated acoustical unit ceilings shall receive body and finish coats.
  - 5. In corridors, paint refinished walls and ceilings to the nearest natural break (i.e., corner, reveal, etc.).
  - 6. Painted doors, door frames, and all other previously painted items and trim shall receive body and finish coats.
- C. In existing rooms and areas where new prefabricated acoustical units are required, clean any existing prefabricated acoustical ceiling units free of dust, dirt, grease.
- D. In existing rooms and areas where alterations occur, clean existing stained and natural finished doors; retouch abraded surfaces and then give entire surface one coat of varnish as required to match existing. After the varnish has dried, buff with fine (Grade 4/0) steel wool to eliminate any accumulated dust particles.
- E. Workmanship: Rating work to be refinished shall have surfaces prepared and made smooth before refinishing.
  - 1. Surfaces shall be clean and dry before refinishing.
  - 2. Abraded, peeled and bare spots shall be touched-up before painting or refinishing.
  - 3. Refinishing of existing surfaces shall include preparation of surfaces to receive new finishes including removal of any existing finishes that may preclude application of new finishes. Remove all paint spots from hardware, signs, fixtures, and other similar items not required to be finished.
  - 4. Remove loose particles of dirt, dust, paint film, rust, scale, and similar deterrents to paint adhesion by scraping, brushing, sanding, vacuuming, or other suitable methods.
  - 5. Remove grease, soil, and other deterrents to paint adhesion with a cleaning compound, or solvent compatible with substrate and subsequent coats. Remove any traces of cleaning agents which will affect paint adhesion.

6. Holes, cracks, and other surface indentations shall be neatly filled with patching compound compatible with substrate and subsequent coats, appropriate for the surface texture required and finished to match adjacent surface texture.
7. Knots, pitch streaks, etc. showing through old finish shall be coated with knot sealer before refinishing.
8. Sand or dull glossy surfaces prior to painting. Sand existing paint to a feather edge so that transition between new and existing finish will not show in the finished work.
9. Workmanship and material shall be equal to that specified for new work of similar character as required to match adjoining work.

### **3.7 FIELD PAINTING OF MECHANICAL AND ELECTRICAL SYSTEM**

- A. General: Field painting of mechanical and electrical work, consists of cleaning, touching-up abraded shop prime coats, and applying prime body and finish coats to materials and equipment which are exposed to view in the completed work, and as specified. Furnish painting for various systems as listed:
  1. Interior Plumbing (Division 15 of Specifications).
  2. Air Conditioning, Ventilating, and Heating (Division 15 of Specifications).
  3. Electrical Work (Division 16 of Specifications).
- B. Paint after all tests have been completed.
- C. Omit prime coat from all factory prime-coated mechanical and electrical equipment. Damaged surfaces of factory finished equipment shall be cleaned and refinished as directed by Project Manager.
- D. Omit painting from metal surfaces (except as otherwise specified) and insulation located above suspended ceilings, and in concealed areas such as pipe and electric closets, pipe basements, pipe tunnels and trenches, attics, roof spaces, shafts and furred spaces.
- E. Omit field painting of items of mechanical and electrical equipment as specified in Subparagraph, WORK NOT TO BE PAINTED of Article, GENERAL.
- F. Mechanical and electrical work having no color texture specified herein, shall be painted to match surrounding surfaces.
- G. Apply paint systems on properly prepared and primed surfaces as follows:
  1. Interior Locations:
    - a. Apply two coats of semigloss to the following items:

- 1) Metal under 200 degrees F of items such as bare piping, fittings, hangers and supports.
- 2) Equipment and systems such as hinged covers and frames for control cabinets and boxes, electric conduits and panel boards.
- 3) Heating, ventilating, air conditioning and plumbing equipment and machinery having neither shop prime coat nor factory finish.

### 3.8 IDENTITY PAINTING

A. Exposed piping, piping above removable corridor ceilings, piping concealed in accessible pipe spaces, and piping behind access panels and units shall be identified to designate service as required to match existing similar service.

1. Legend shall be pressure sensitive vinyl markers or stencil applied (painted on). Place legends 40 feet apart on straight runs of piping (20 feet for medical, laboratory and dental compressed air; nitrogen; oxygen; and, nitrous oxide piping), where pipes pass through walls or floors, and adjacent to all operating accessories such as valves, regulators, strainers and cleanouts (except on valves and fittings of plumbing fixtures and equipment). Legends shall be placed to be clearly visible from operating position.
2. Color, width and placement of color band, and size and color of legend shall conform to ANSI A13.1.
3. Legend shall give name in full or in abbreviated form as follows:

Legend.....Abbreviation

Medical Compressed Air.....M.Air

Silver Recovery.....Sil. Rec.

Cold water.....C.W.

Hot Water Supply Domestic.....H.W. Sup. Dom.

Drain Line.....Drain

Oxygen.....Oxygen

Vacuum.....Vac.

Vent Line.....Vent.

### 3.9 PROTECTION

A. Protect all work from paint droppings and spattering by use of masking, drop cloths, removal of items or by other approved methods.



**3.10 CLEAN UP**

- A. Upon completion, clean paint from all hardware, glass and other surfaces and items not required to be painted.
- B. Before final inspection, any work which has become damaged or discolored shall be touched-up or refinished in a manner to produce solid even color and finish texture, free from defects.

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**SECTION 09 95 10**

**VINYL COATED FABRIC WALLCOVERING**

**PART 1 - GENERAL**

**1.1 DESCRIPTION**

Section specifies vinyl coated fabric wallcovering and installation.

**1.2 SUBMITTALS**

- A. Submit in accordance with Section 01340, SAMPLES AND SHOP DRAWINGS.
- B. Samples:
  - 1. Each type and pattern as specified in Section 09050, COLOR DESIGN.
  - 2. Size 1/2 yard, (45.72 m) full width of mill run.
- C. Manufacturer's Certificates:
  - 1. Compliance with CFFA W-101A.
  - 2. Wallcovering manufacture's approval of adhesive.
- D. Manufacturer's Literature and Data:
  - 1. Prime and adhesive.
  - 2. Installation instructions.
  - 3. Maintenance instructions, including recommended materials and methods for maintaining wallcovering with precautions in use of cleaning material.

**1.3 QUALITY ASSURANCE**

- A. Finish one complete space with each type of wallcovering showing specified colors and patterns.
- B. Use sample spaces as a standard for work throughout the project.

**1.4 DELIVERY, STORAGE AND HANDLING**

- A. Deliver in original unopened containers bearing the manufacturer's name, brand name, and product designation.
- B. Store in accordance with manufacturer's instructions.
- C. Handle to prevent damage to material.

**1.5 APPLICABLE PUBLICATIONS**

- A. Publications listed below form a part of this specification to the extent referenced. Publications are referenced in the text by the basic designation only.

- B. Chemical Fabrics and Film Association, Inc., (CFFA):  
W-101-A-84.....Vinyl Coated Fabric Wallcovering
- C. American Society for Testing and Materials (ASTM)  
G-21-90.....Determining Resistance of Synthetic  
Polymeric Materials to Fungi

## **PART 2 - PRODUCTS**

### **2.1 VINYL COATED FABRIC WALLCOVERING**

- A. Comply with CFFA W-101-A, Class A, Type II or 3 as selected by the Resident Engineer.
- B. Fungi Resistance: ASTM G-21, rating of 0.
- C. Factory-applied clear delustered polyvinyl-fluoride (PVF) coating:
  - 1. Minimum 0.0125 mm (1/2 mil) thickness.
  - 2. Do not include PVF coating weight in minimum total coating weight.
  - 3. Fire hazard classification with PVF coating: Class A unless specified otherwise.
  - 4. Do not specify fabric width.

### **2.2 ADHESIVE**

- A. As recommended by the wallcovering manufacturer for use on substrate to receive wallcovering.
- B. Vermin and mildew resistant.

### **2.3 EDGE GUARDS OR TRIM**

- A. "J" shape with groove to receive the wallcovering.
- B. Concealed edge feathered, not less than 19 mm (3/4-inch) wide.
- C. Designed for adhesive attachment.
- D. Use Vinyl anodized extruded aluminum.

## **PART 3 - EXECUTION**

### **3.1 JOB CONDITIONS**

- A. Temperatures:
  - 1. Do not perform work until surfaces and materials have been maintained at minimum of 60 degrees F. for three days before work begins.
  - 2. Maintain minimum temperatures of 60 degrees F. until adhesives are dried or cured.

B. Lighting:

1. Do not proceed unless a minimum lighting level of 15 candlepower per square foot occurs.
2. Measure light level at mid-height of wall.

C. Ventilation:

1. Provide uniform continuous ventilation in space.
2. Ventilate for a time for not less than complete drying or curing of adhesive.

D. Protect other surfaces from damage which may be caused by this work.

E. Remove waste from building daily.

**3.2 SURFACE CONDITION**

A. Inspect surfaces to receive wallcoverings to assure that:

1. Patches and repairs are completed.
2. Surface are clean, smooth and prime painted.

B. Do not proceed until discovered defects have been corrected by other trades and surfaces are ready to receive wallcovering.

C. Carefully remove electrical outlet and switch plates, mechanical diffusers, escutcheons, registers, surface hardware, fittings and fastenings, prior to starting work.

D. Carefully store, items for reinstallation.

**3.3 APPLICATION OF ADHESIVE**

A. Mix and apply adhesives in accordance with manufacturer's directions.

B. Prevent adhesive from getting on face of wallcovering.

C. Apply adhesive to wallcovering back.

**3.4 WALLCOVERING INSTALLATION**

A. Use wallcovering of same batch or run in an area. Use fabric rolls in consecutive numerical sequence of manufacture.

B. Install material completely adhered, smooth, clean, without wrinkles, air pockets, gaps or overlaps.

C. Extend wallcovering continuous behind non-built-in casework and other items which are close to but not bolted to or touching the walls.

D. Install wallcovering before installation of resilient base. Extend wallcovering not more than 1/4-inch below top of resilient base.

- E. Install panels consecutively in order in which they are cut from the roll including filling spaces above or below windows, doors, or similar penetrations.
- F. Do not install horizontal seams.
- G. Except on match patterns, hang fabric by reversing alternate strips, except as recommended by the manufacturer.
- H. Cutting:
  - 1. Cut on a work table with a straight edge.
  - 2. Joints or seams that are not cut clean are unacceptable.
  - 3. Trim additional selvage to achieve a color and pattern match at seams.
  - 4. Do not double cut seams on wall unless specified.
  - 5. If double cutting on the wall is necessary, place a three inch strip of Type I wallcovering under pasted edge.
    - a. Do not cut into wall surface.
    - b. After cutting, remove strip and excess adhesive from seam before proceeding to next seam.
    - c. Smooth down seam in adhesive for tight bond and joint.
- H. Trim strip-matched patterns, which are not factory pre-trimmed.
- I. Inside Corners:
  - 1. Wrap wallcovering around corner.
  - 2. Do not seam within two inches of inside corners.
  - 3. Double cut seam.
- J. Outside Corners:
  - 1. Wrap wallcovering around corner.
  - 2. Do not seam within six inches of outside corners.
  - 3. Double cut seam.

### **3.5 PATCHING**

- A. Replace surface damaged wallcovering in a space as specified for new work.
  - 1. Replace full height of surface.
  - 2. Replace from break in plane to break in plane when same batch or run is not used. Double cut seams.

- 3. Adjoining differential colors from separate batches or runs are not acceptable.
- B. Correct loose or raised seams with adhesives to lay flat with tight bonded joint as specified for new work.

**3.5 CLEANING AND INSTALLING TEMPORARY REMOVED ITEMS**

- A. Remove adhesive from wallcovering as work proceeds.
- B. Remove adhesives where spilled, splashed or splattered on wallcoverings or adjacent surfaces in a manner not to damage surface from which it is removed.
- C. Reinstall previously removed finished hardware, electrical outlet and switch plates, mechanical diffusers, escutcheons, registers, surface hardware, fittings and fastenings.

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