

**SECTION 08 11 13**  
**HOLLOW METAL DOORS AND FRAMES**

**PART 1 - GENERAL**

**1.1 SUMMARY**

- A. Section Includes:
  - 1. Hollow metal doors hung in hollow metal frames at interior locations.
  - 2. Hollow metal door frames for wood doors at interior locations.
  - 3. Glazed openings in hollow metal doors.

**1.2 RELATED REQUIREMENTS**

- A. Frames fabricated of structural steel: Section 05 50 00, METAL FABRICATIONS.
- B. Forced Entry and Ballistic Resistant doors: Section 08 34 53, SECURITY DOORS AND FRAMES.
- C. Aluminum frames entrance work: Section 08 41 13, ALUMINUM-FRAMED ENTRANCES AND STOREFRONTS.
- D. Door Hardware: Section 08 71 00, DOOR HARDWARE.
- E. Glazing: Section 08 80 00, GLAZING.
- F. Card Readers and Biometric Devices: Section 28 13 00, PHYSICAL ACCESS CONTROL SYSTEM.
- G. Intrusion Alarm: Section 28 16 00, INTRUSION DETECTION SYSTEM.
- H. Security Monitors: Section 28 23 00, VIDEO SURVEILLANCE.

**1.3 APPLICABLE PUBLICATIONS**

- A. Comply with references to extent specified in this section.
- B. American National Standard Institute (ANSI):
  - 1. A250.8-2014 - Standard Steel Doors and Frames.
- C. ASTM International (ASTM):
  - 1. A240/A240M-15b - Chromium and Chromium-Nickel Stainless Steel Plate, Sheet, and Strip for Pressure Vessels and for General Applications.
  - 2. A653/A653M-15 - Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip.
  - 3. A1008/A1008M-15 - Steel, Sheet, Cold-Rolled, Carbon, Structural, High Strength Low Alloy and High Strength Low Alloy with Improved Formability, Solution Hardened, and Bake Hardenable.
  - 4. B209-14 - Aluminum and Aluminum-Alloy Sheet and Plate.
  - 5. B209M-14 - Aluminum and Aluminum-Alloy Sheet and Plate (Metric).

6. B221-14 - Aluminum and Aluminum-Alloy Extruded Bars, Rods, Wire, Profiles, and Tubes.
7. B221M-13 - Aluminum and Aluminum-Alloy Extruded Bars, Rods, Wire, Profiles, and Tubes (Metric).
8. D3656/D3656M-13 - Insect Screening and Louver Cloth Woven from Vinyl Coated Glass Yarns.
9. E90-09 - Laboratory Measurement of Airborne Sound Transmission Loss of Building Partitions and Elements.
- D. Federal Specifications (Fed. Spec.):
  1. L-S-125B - Screening, Insect, Nonmetallic.
- E. Master Painters Institute (MPI):
  1. No. 18 - Primer, Zinc Rich, Organic.
- F. National Association of Architectural Metal Manufacturers (NAAMM):
  1. AMP 500-06 - Metal Finishes Manual.
- G. National Fire Protection Association (NFPA):
  1. 80-16 - Fire Doors and Other Opening Protectives.
- H. UL LLC (UL):
  1. 10C-09 - Positive Pressure Fire Tests of Door Assemblies.
  2. 1784-15 - Air Leakage Tests of Door Assemblies and Other Opening Protectives.

#### **1.4 SUBMITTALS**

- A. Submittal Procedures: Section 01 33 23, SHOP DRAWINGS, PRODUCT DATA, AND SAMPLES.
- B. Submittal Drawings:
  1. Show size, configuration, and fabrication and installation details.
- C. Manufacturer's Literature and Data:
  1. Description of each product.
  2. Include schedule showing each door and frame requirements fire label and smoke control label for openings.
  3. Installation instructions.
- D. Sustainable Construction Submittals:
  1. Recycled Content: Identify post-consumer and pre-consumer recycled content percentage by weight.
- E. Test reports: Certify each product complies with specifications.
  1. Sound rated door.
- F. Qualifications: Substantiate qualifications comply with specifications.
  1. Manufacturer.

## **1.5 QUALITY ASSURANCE**

- A. Manufacturer Qualifications:
  - 1. Regularly manufactures specified products.
  - 2. Manufactured specified products with satisfactory service on five similar installations for minimum five years.

## **1.6 DELIVERY**

- A. Fasten temporary steel spreaders across the bottom of each door frame before shipment.
- B. Deliver products in manufacturer's original sealed packaging.
- C. Mark packaging, legibly. Indicate manufacturer's name or brand, type, production run number, and manufacture date.
- D. Before installation, return or dispose of products within distorted, damaged, or opened packaging.

## **1.7 STORAGE AND HANDLING**

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

## **1.8 WARRANTY**

- A. Construction Warranty: FAR clause 52.246-21, "Warranty of Construction."

# **PART 2 - PRODUCTS**

## **2.1 SYSTEM PERFORMANCE**

- A. Design hollow metal doors and frames complying with specified performance:
  - 1. Fire Doors and Frames: UL 10C; NFPA 80 labeled.
    - a. Fire Ratings: See drawings.
  - 2. Smoke Control Doors and Frames: UL 1784; NFPA 80 labeled, maximum 0.15424 cu. m/s/sq. m (3.0 cfm/sf) at 24.9 Pa (0.10 inches water gage) pressure differential.
  - 3. Sound Rated Doors and Frames: Minimum 45 sound transmission class (STC) when tested according to ASTM E90.

## **2.2 MATERIALS**

- A. Stainless Steel: ASTM A240/A240M; Type 304.
- B. Sheet Steel: ASTM A1008/A1008M, cold-rolled.
- C. Galvanized Sheet Steel: ASTM A653.

- D. Aluminum Sheet: ASTM B209M (ASTM B209).
- E. Aluminum Extrusions: ASTM B221M (ASTM B221).

### **2.3 PRODUCTS - GENERAL**

- A. Basis of Design: REFERENCE DRAWINGS.
- B. Provide hollow metal doors and frames from one manufacturer.
- C. Sustainable Construction Requirements:
  - 1. Steel Recycled Content: 30 percent total recycled content, minimum.
  - 2. Stainless Steel Recycled Content: 70 percent total recycled content, minimum.
  - 3. Aluminum Recycled Content: 50 percent total recycled content, minimum.

### **2.4 HOLLOW METAL DOORS**

- A. Hollow Metal Doors: ANSI A250.8; 44 mm (1-3/4 inches) thick. See drawings for sizes and types.
  - 1. Interior Doors: Level 1 and Physical Performance Level C, standard duty; Model 2, seamless at all locations.
- B. Door Faces:
  - 1. Interior Doors: Stainless steel Z120 or ZF120 (G40 or A40).
- C. Door Cores:
  - 1. Interior Doors: Kraft paper honeycomb.
  - 2. Fire Doors: Manufacturer's standard complying with specified fire rating performance.

### **2.5 HOLLOW METAL FRAMES**

- A. Hollow Metal Frames: ANSI A250.8; Knock-down. See drawings for sizes and types.
  - 1. Interior Frames:
    - a. Level 1 Hollow Metal Doors: 1.0 mm (0.042 inch) thick.
    - b. Wood Doors: 1.0 mm (0.042 inch) thick.
- B. Frame Materials:
  - 1. Interior Frames: Stainless steel Z120 or ZF120 (G40 or A40).

### **2.6 FABRICATION**

- A. Hardware Preparation: ANSI A250.8; for hardware specified in Section 08 71 00, DOOR HARDWARE.
- B. Hollow Metal Door Fabrication:
  - 1. Close top edge of exterior doors flush and seal to prevent water intrusion.

2. Fill spaces between vertical steel stiffeners with insulation.

C. Fire and Smoke Control Doors:

1. Close top and vertical edges flush.
2. Apply steel astragal to active leaf at pair and double egress doors.
  - a. Exception: Where vertical rod exit devices are specified for both leaves swinging in same direction.
3. Fire and Smoke Control Door Clearances: NFPA 80.

D. Custom Metal Hollow Doors:

1. Provide custom hollow metal doors where nonstandard steel doors are shown on drawings.
  - a. Provide door sizes, design, materials, construction, gages, and finish as specified for standard steel doors.

E. Sound Rated Doors:

1. Seals: Integral spring type automatic door bottom seal.
2. Fabricate vision panel cutouts and frames to receive double glazing as shown on drawings.

F. Hollow Metal Frame Fabrication:

1. Fasten mortar guards to back of hardware reinforcements, except on lead-lined frames.
2. Concealed Closers in Head Frame: 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.
3. Terminated Stops: ANSI A250.8.
4. Two Piece Frames:
  - a. One piece unequal leg finished rough buck sub-frames as shown, drilled for anchor bolts.
  - b. Unequal leg finished frames formed to fit subframes and secured to subframe legs with countersunk, flat head screws, spaced 300 mm (12 inches) on center at head and jambs on both sides.
  - c. Preassemble at factory for alignment.
5. Frame Anchors:
  - a. Floor anchors:
    - 1) Provide extension type floor anchors to compensate for depth of floor fills.
    - 2) Provide 1.3 mm (0.053 inch) thick steel clip angles welded to jamb and drilled to receive floor fasteners.

- 3) Provide 50 mm by 50 mm by 9 mm (2 inch by 2 inch by 3/8 inch) clip angle for lead lined frames, drilled for floor fasteners.
  - 4) Provide mullion 2.3 mm (0.093 inch) thick steel channel anchors, drilled for two floor fasteners and frame anchor screws.
  - 5) Provide continuous 1 mm (0.042 inch) thick steel rough bucks drilled for floor fasteners and frame anchor screws for sill sections.
    - a) Space floor bolts 50 mm (2 inches) on center.
- b. Jamb anchors:
- 1) Place anchors on jambs:
    - a) Near top and bottom of each frame.
    - b) At intermediate points at maximum 600 mm (24 inches) spacing.
  - 2) Form jamb anchors from steel minimum 1 mm (0.042 inch) thick.
  - 3) Anchors set in masonry: Provide adjustable anchors designed for friction fit against frame and extended into masonry minimum 250 mm (10 inches). Provide one of following types:
    - a) Wire Loop Type: 5 mm (3/16 inch) diameter wire.
    - b) T-Shape type.
    - c) Strap and stirrup type: Corrugated or perforated sheet steel.
  - 4) Anchors for stud partitions: Provide tabs for securing anchor to sides of studs. Provide one of the following:
    - a) Welded type.
    - b) Lock-in snap-in type.
  - 5) Anchors for frames set in prepared openings:
    - a) Steel pipe spacers 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.
    - b) Drill jamb stop and strap spacers for 6 mm (1/4 inch) flat head bolts to pass through frame and spacers.
    - c) Two piece frames: Subframe or rough buck drilled for 6 mm (1/4 inch) bolts.
  - 6) Anchors for observation windows and other continuous frames set in stud partitions.

- a) Weld clip anchors to sills and heads of continuous frames over 1200 mm (4 feet) long.
  - b) Space maximum 600 mm (24 inches) on centers.
  - 7) Modify frame anchors to fit special frame and wall construction.
  - 8) Provide special anchors where shown on drawings and where required to suit application.
- G. Sound Rated Door Frames:
- 1. Seals: Integral continuous gaskets on frames.
- H. Louver Fabrication:
- 1. Fabricate louvers as complete units.
  - 2. Weld stationary blades to frames.
  - 3. Factory install louvers in door cutouts, welded to door.
- I. Louver Screen Fabrication:
- 1. Fabricate frame to hold wire fabric in channel with retaining bar anchor and to mount on surface of door with screws.
  - 2. Do not lap frame over louver opening.
  - 3. Miter frame corners and join by concealed mechanical fastenings extending about 57 mm (2-1/4 inches) into ends of each member.
  - 4. Drill frame and doors for screw attachment:
    - a. Space screws 50 mm (2 inches) from end of each leg of frame and maximum 300 mm (12 inches) on center.
  - 5. Insect Screens: Fasten insect screens to interior side of doors with retaining bar against door and not exposed to view.
  - 6. Wire Guards: Fasten wire guard to exterior side of door with retaining bar against door and not exposed to view.

## **2.7 FINISHES**

- A. Steel: ANSI A250.8; shop primed.
- B. Stainless Steel: NAAMM AMP 500; No. 4 polished finish.
  - 1. Blend welds to match adjacent finish.
- C. Finish exposed surfaces after fabrication.
- D. Aluminum Anodized Finish: NAAMM AMP 500.
  - 1. Clear Anodized Finish: AA-C22A41; Class I Architectural, 0.018 mm (0.7 mil) thick.
  - 2. Color Anodized Finish: AA-C22A42 or AA-C22A44; Class I Architectural, 0.018 mm (0.7 mil) thick.

3. Clear Anodized Finish: AA-C22A31; Class II Architectural, 0.01 mm (0.4 mil) thick.
4. Color Anodized Finish: AA-C22A32 or AA-C22A34; Class II Architectural, 0.01 mm (0.4 mil) thick.

## **2.8 ACCESSORIES**

- A. Primers: ANSI A250.8.
- B. Barrier Coating: ASTM D1187/D1187M.
- C. Welding Materials: AWS D1.1/D1.1M, type to suit application.
- D. Clips Connecting Members and Sleeves: Match door faces.
- E. Fasteners: Galvanized steel.
  1. Metal Framing: Steel drill screws.
  2. Masonry and Concrete: Expansion bolts and power actuated drive pins.
- F. Anchors: Galvanized steel.
- G. Galvanizing Repair Paint: MPI No. 18.
- H. Insulation: Unfaced mineral wool.

## **PART 3 - EXECUTION**

### **3.1 PREPARATION**

- A. Examine and verify substrate suitability for product installation.
- B. Protect existing construction and completed work from damage.
- C. Apply barrier coating to metal surfaces in contact with cementitious materials to minimum 0.7 mm (30 mils) dry film thickness.

### **3.2 INSTALLATION - GENERAL**

- A. Install products according to manufacturer's instructions and approved submittal drawings.
  1. When manufacturer's instructions deviate from specifications, submit proposed resolution for Contracting Officer's Representative consideration.
  2. Install fire doors and frames according to NFPA 80.
  3. Install smoke control doors and frames according to NFPA 105.

### **3.3 FRAME INSTALLATION**

- A. Apply barrier coating to concealed surfaces of frames built into masonry.
- B. Plumb, align, and brace frames 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 when shipping spreader is removed.
  3. Where construction permits concealment, leave shipping spreaders in place after installation, otherwise remove spreaders when frames are set and anchored.
  4. Remove wood spreaders and braces when walls are built and jamb anchors are secured.
- C. Floor Anchors:
1. Anchor frame jambs to floor with two expansion bolts.
    - a. Lead Lined Frames: Use 9 mm (3/8 inch) diameter bolts.
    - b. Other Frames: Use 6 mm (1/4 inch) diameter bolts.
  2. Power actuated drive pins are acceptable to secure frame anchors to concrete floors.
- D. Jamb Anchors:
1. Masonry Walls:
    - a. Embed anchors in mortar.
    - b. Fill space between frame and masonry with grout or mortar as walls are built.
  2. Metal Framed Walls: Secure anchors to sides of studs with two fasteners through anchor tabs.
  3. Prepared Masonry and Concrete Openings:
    - a. Direct Securement: 6 mm (1/4 inch) diameter expansion bolts through spacers.
    - b. Subframe or Rough Buck Securement:
      - 1) 6 mm (1/4 inch) diameter expansion bolts on 600 mm (24 inch) centers.
      - 2) Power activated drive pins on 600 mm (24 inches) centers.
    - c. Secure two-piece frames to subframe or rough buck with machine screws on both faces.
- E. Frames for Sound Rated Doors: Fill frames with insulation.
- F. Touch up damaged factory finishes.
1. Repair galvanized surfaces with galvanized repair paint.
  2. Repair painted surfaces with touch up primer.

### **3.4 DOOR INSTALLATION**

- A. Install doors plumb and level.
- B. Adjust doors for smooth operation.
- C. Touch up damaged factory finishes.

1. Repair galvanized surfaces with galvanized repair paint.
2. Repair painted surfaces with touch up primer.

**3.5 CLEANING**

- A. Clean exposed door and frame surfaces. Remove contaminants and stains.

**3.6 PROTECTION**

- A. Protect doors and frames from construction operations.
- B. Remove protective materials immediately before acceptance.
- C. Repair damage.

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**SECTION 08 14 00**  
**INTERIOR WOOD DOORS**

**PART 1 - GENERAL**

**1.1 SUMMARY**

- A. Section Includes:
  - 1. Interior flush wood doors painted finish.
    - a. Fire rated doors.
    - b. Smoke rated doors.
    - c. Acoustical doors.
    - d. Dutch doors.
  - 2. Interior stile and rail wood doors transparent finish.

**1.2 RELATED REQUIREMENTS**

- A. Paints and Coatings and Composite Wood and Agrifiber VOC Limits:  
Section 01 81 13, SUSTAINABLE CONSTRUCTION REQUIREMENTS.
- B. Door Hardware including hardware location (height): Section 08 71 00,  
DOOR HARDWARE.
- C. Installation of Doors and Hardware: Section 08 11 13, HOLLOW METAL  
DOORS AND FRAMES, Section 08 71 00, DOOR HARDWARE.
- D. Door Finish: "Madera CECO metal wood grain, CS-6 Nutmeg is Basis of  
Design."

**1.3 APPLICABLE PUBLICATIONS**

- A. Comply with references to extent specified in this section.
- B. American National Standards Institute/Window and Door Manufacturers  
Association (ANSI/WDMA):
  - 1. I.S. 1A-13 - Architectural Wood Flush Doors.
  - 2. I.S. 6A-13 - Interior Architectural Stile and Rails Doors.
- C. ASTM International (ASTM):
  - 1. E90-09 - Laboratory Measurements of Airborne Sound Transmission Loss  
of Building Partitions and Elements.
- D. National Fire Protection Association (NFPA):
  - 1. 80-16 - Fire Doors and Other Opening Protectives.
  - 2. 252-12 - Fire Tests of Door Assemblies.
- E. UL LLC (UL):
  - 1. 10C-09 - Positive Pressure Fire Tests of Door Assemblies.
- F. Window and Door Manufacturers Association (WDMA):
  - 1. TM 7-14 - Cycle-Slam Test.
  - 2. TM 8-14 - Hinge Loading Test.

3. TM 10-14 - Screw Holding Capacity.

#### 1.4 SUBMITTALS

- A. Submittal Procedures: Section 01 33 23, SHOP DRAWINGS, PRODUCT DATA, AND SAMPLES.
- B. Submittal Drawings:
  1. Show size, configuration, and fabrication and installation details.
  2. Include details of glazing AND louvers.
  3. Indicate project specific requirements not included in Manufacturer's Literature and Data submittal.
- C. Manufacturer's Literature and Data:
  1. Description of each product.
- D. 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 by 275 mm (8 inch by 11 inch) showing specified wood species sanded to receive a transparent finish. Factory finish veneer sample where the prefinished option is accepted.
- E. Sustainable Construction Submittals:
  1. Low Pollutant-Emitting Materials:
    - a. Show volatile organic compound types and quantities.
- F. Test Reports: Indicate each product complies with specifications.
  1. Screw Holding Capacity Test.
  2. Cycle-Slam Test.
  3. Hinge-Loading Test.
- G. Operation and Maintenance Data:
  1. Care instructions for each exposed finish product.

#### 1.5 QUALITY ASSURANCE

- A. Manufacturer Qualifications:
  1. Regularly and presently manufactures specified products.
  2. Manufactures specified products with satisfactory service on five similar installations for minimum five years.

#### 1.6 DELIVERY

- A. Deliver products in manufacturer's original sealed packaging.
  1. Minimum 0.15 mm (6 mil) polyethylene bags or cardboard packaging to remain unbroken during delivery and storage.

- B. Mark packaging, legibly. Indicate manufacturer's name or brand, type, color, and manufacture date.

- 1. Identify door opening corresponding to Door Schedule.

- C. Before installation, return or dispose of products within distorted, damaged, or opened packaging.

#### **1.7 STORAGE AND HANDLING**

- A. Store products indoors in dry, weathertight, conditioned facility.

- 1. Store doors according to ANSI/WDMA I.S. 1A.

- B. Protect products from damage during handling and construction operations.

#### **1.8 FIELD CONDITIONS**

- A. Environment:

- 1. Product Temperature: Minimum 21 degrees C (70 degrees F) for minimum 48 hours before installation.
  - 2. Work Area Ambient Temperature Range: 21 to 27 degrees C (70 to 80 degrees F) continuously, beginning 48 hours before installation.
  - 3. Install products when building is permanently enclosed and when wet construction is completed, dried, and cured.
    - a. Comply with door manufacturer's instructions for relative humidity.

#### **1.9 WARRANTY**

- A. Construction Warranty: FAR clause 52.246-21, "Warranty of Construction."

- B. Manufacturer's Warranty: Warrant interior factory finished flush wood doors against material and manufacturing defects.

- 1. Warranty Period: Lifetime of original installation.

### **PART 2 - PRODUCTS**

#### **2.1 PRODUCTS - GENERAL**

- A. Basis of Design: Section 09 06 00, SCHEDULE FOR FINISHES.

- B. Provide each product from one manufacturer.

- C. Sustainable Construction Requirements:

- 1. Low Pollutant-Emitting Materials: Comply with VOC limits specified in Section 01 81 13, SUSTAINABLE CONSTRUCTION REQUIREMENTS for the following products:
    - a. Paints and coatings.
    - b. Composite wood and agrifiber.

## 2.2 FLUSH WOOD DOORS

### A. General:

1. ANSI/WDMA I.S. 1A, Extra Heavy Duty.
2. Adhesive: Type II.
3. Core: Structural composite lumber, except when mineral core is required for fire rating.
4. Thickness: 35 mm (1-3/8 inch) unless otherwise shown or specified.

### B. Faces:

1. ANSI/WDMA I.S. 1A.
2. One species throughout project unless scheduled or otherwise shown.
3. Transparent Finished Faces: Premium Grade. Rotary cut; "Madera CECO metal wood grain, CS-6 Nutmeg is Basis of Design."
  - a. A Grade face veneer.
  - b. Match face veneers for doors for uniform effect of color and grain at joints.
  - c. Door Edges: Same species as door face veneer, except maple is acceptable for stile face veneer on birch doors.
  - d. In existing buildings, where doors are required to have transparent finish, use wood species, grade, and assembly of face veneers to match adjacent existing doors.
4. Painted Finishes: Custom Grade, mill option close grained hardwood, premium or medium density overlay.
5. Factory sand doors for finishing.

### C. Wood For Stops, Louvers, Muntins and Moldings For Flush Doors Required to Have Transparent Finish:

1. Solid wood of same species as face veneer, except maple is acceptable on birch doors.
2. Glazing:
  - a. On non-fire-rated doors, use applied wood stops nailed tightly on room side and attached on opposite side with flathead, countersunk wood screws, spaced approximately 125 mm (5 inches) on center.
3. Wood Louvers:
  - a. Door manufacturer's standard product, fabricated of solid wood sections.
  - b. Wood Slats: minimum 5 mm (3/16 inch) thick.
  - c. Stiles routed out to receive slats.
  - d. Secure louvers in prepared cutouts with wood stops.

D. Fire-Rated Wood Doors:

1. Fire Resistance Rating:
  - a. B Label: 1-1/2 hours.
  - b. C Label: 3/4 hour.
2. Labels:
  - a. Comply with NFPA 252, UL 10C, and labeled by qualified testing and inspection agency showing fire resistance 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 TM 8. Average of 10 test samples for Extra Heavy Duty doors.
  - b. Direct Screw Withdrawal: WDMA TM 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 according to WDMA TM 7.
4. Hardware Reinforcement:
  - a. Provide fire and smoke rated doors with hardware reinforcement blocking.
  - b. Size of lock blocks as required to secure hardware specified.
  - c. Top, Bottom and Intermediate Rail Blocks: Minimum 125 mm (5 inches) by full core width.
  - d. Reinforcement blocking in compliance with labeling requirements.
  - e. Mineral material similar to core is not acceptable.
5. Other Core Components: Manufacturer's standard as allowed by labeling requirements.
6. Glazed Vision Panel Frame: Steel approved for use in labeled doors.
7. Astragal: Steel type for pairs of doors.

E. Smoke Barrier Doors:

1. Glazed Vision Panel Frame: Steel approved for use in labeled doors.
2. Astragal: Steel type for pairs of doors, including double egress doors.

F. Sound Rated Doors:

1. Fabricated as specified for flush wood doors with additional construction requirements to comply with specified sound transmission class (STC).

2. STC Rating of door assembly in place when tested according to ASTM E90 by independent acoustical testing laboratory minimum 35.

3. Accessories:

- a. Frame Gaskets and Automatic Door Bottom Seal: As specified in Section 08 71 00, DOOR HARDWARE.

G. Dutch Doors:

1. Consist of two sections, each fabricated as specified for flush doors.
2. Construct shelf as detailed, from clear hardwood stock of 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.

**2.3 FABRICATION**

- A. Factory machine interior wood doors to receive hardware, bevels, undercuts, cutouts, accessories and fitting for frame.
  1. Factory fit fire rated doors according to NFPA 80.
- B. Rout doors for hardware using templates and location heights specified in Section 08 71 00, DOOR HARDWARE.
- C. Factory fit doors to frame, bevel lock edge of doors 3 mm (1/8 inch) for each 50 mm (2 inches) of door thickness undercut where shown.
- D. Clearances between Doors and Frames and Floors:
  1. Fire Rated Doors: Comply with NFPA 80.
    - a. Doors with Automatic Bottom Seal: Maximum clearance 10 mm (3/8 inch) at threshold.
    - b. Other Door Bottoms: 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. Door Jambs, Heads, and Meeting Stiles: Maximum 3 mm (1/8 inch).
- E. Provide cutouts for glazed and louver openings.
- F. Finish surfaces, including both faces, top and bottom and edges of the doors smooth to touch.
- G. Identify each door on top edge.
  1. Mark with stamp, brand or other indelible mark, giving manufacturer's name, door's trade name, construction of door, date of manufacture and quality.



2. Mark door or provide separate certification including name of inspection organization.
3. Identify door manufacturing standard, including glue type.
4. Identify veneer and quality certification.
5. Identification of preservative treatment for stile and rail doors.

## **2.4 FINISHES**

- A. Madera CECO metal wood grain, CS-6 Nutmeg.

## **PART 3 - EXECUTION**

### **3.1 PREPARATION**

- A. Examine and verify substrate suitability for product installation.
  1. Verify door frames are properly anchored.
  2. Verify door frames are plumb, square, in plane, and within tolerances for door installation.
- B. Protect existing construction and completed work from damage.
- C. Install astragal on active leaf of pair of smoke doors and one leaf of double egress smoke doors.

### **3.2 INSTALLATION**

- A. Install products according to manufacturer's instructions and approved submittal drawings.
  1. Install fire rated doors according to NFPA 80.
  2. When manufacturer's instructions deviate from specifications, submit proposed resolution for Contracting Officer's Representative consideration.

### **3.3 PROTECTION**

- A. After installation, place shipping container over door and tape in place.
  1. Do not apply tape to door faces and edges.
- B. Provide protective covering over exposed hardware in addition to covering door.
- C. Maintain covering in good condition until removal is directed by Contracting Officer's Representative.

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**SECTION 08 17 10**  
**INTEGRATED DOOR ASSEMBLIES**

**PART 1 - GENERAL**

**1.1 SUMMARY**

- A. Section Includes:
  - 1. Integrated door assemblies including metal door frame, door, and hardware, unless specified in another Section, installed at cross-corridor locations.
- B. Smoke and draft control seals, unless specified in another Section.

**1.2 RELATED REQUIREMENTS**

- A. Non-Flooring Adhesives and Sealants and Paints and Coatings VOC Limits: Section 01 81 13, SUSTAINABLE CONSTRUCTION REQUIREMENTS.
- B. Lock Cylinders: Section 08 71 00, DOOR HARDWARE.
- C. Automatic Door Operators: Section 08 71 13, AUTOMATIC DOOR OPERATORS.
- D. Door and Frame Color: REF DRAWINGS.
- E. Electrical Power: DIVISION 26, ELECTRICAL.

**1.3 APPLICABLE PUBLICATIONS**

- A. Comply with references to extent specified in this section.
- B. Builders Hardware Manufacturers Association (BHMA):
  - 1. A156.3-14 - Exit Devices.
  - 2. A156.26-06 - Continuous Hinges.
  - 3. A156.32-14 - Integrated Door Opening Assemblies.
- C. ASTM International (ASTM):
  - 1. A1011/A1011M-14 - Steel, Sheet and Strip, Hot-Rolled, Carbon, Structural, High-Strength Low-Alloy, High-Strength Low-Alloy with Improved Formability, and Ultra-High Strength.
  - 2. E2180-07(2012) - Determining the Activity of Incorporated Antimicrobial Agents in Polymeric or Hydrophobic Materials.
- D. Door and Hardware Institute (DHI):
  - 1. Recommended Locations for Architectural Hardware for Standard Doors & Frames (2004).
  - 2. Recommended Locations for Builders' Hardware Custom Steel Doors & Frames (1996).
- E. National Fire Protection Association (NFPA):
  - 1. 105-16 - Smoke Door Assemblies and Other Opening Protectives.
  - 2. 252-12 - Fire Tests of Door Assemblies.
- F. Steel Door Institute (SDI):

1. A250.3-11 - Test Procedure and Acceptance Criteria for Factory Applied Finish Coatings for Steel Doors and Frames.
2. A250.8-14 - Specifications for Standard Steel Doors and Frames.
3. A250.10-11 - Test Procedure and Acceptance Criteria for Prime Painted Steel Surfaces for Steel Doors and Frames.

G. UL LLC (UL):

1. 10C-09 - Positive Pressure Fire Tests of Door Assemblies.
2. 1784-15 - Air Leakage Tests of Door Assemblies and Other Opening Protectives.

**1.4 PREINSTALLATION MEETINGS**

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

**1.5 SUBMITTALS**

- A. Submittal Procedures: Section 01 33 23, SHOP DRAWINGS, PRODUCT DATA, AND SAMPLES.
- B. Submittal Drawings:
  1. Show size, configuration, and fabrication and installation details.
  2. For each opening, list finish hardware items included in assembly, finish, degree of opening, and electrical rough-in requirements according to Door Schedule.

3. Submit templates to door and frame manufacturers to ensure proper size and location of hardware.
- C. Manufacturer's Literature and Data:
  1. Description of each product.
  2. Installation instructions.
- D. Sustainable Construction Submittals:
  1. Recycled Content: Identify post-consumer and pre-consumer recycled content percentage by weight.
  2. Low Pollutant-Emitting Materials:
    - a. Show volatile organic compound types and quantities.
- E. Certificates: Indicate integrated door assemblies comply with specifications.
  1. Show fire rated integrated door assembly is UL Listed for specified application.
- F. Qualifications: Substantiate qualifications comply with specifications.
  1. Installer.
- G. Operation and Maintenance Data:
  1. Care instructions for each exposed finish product.
  2. Maintenance and adjustment instructions for integrated door assemblies.

#### **1.6 QUALITY ASSURANCE**

- A. Installer Qualifications:
  1. Regularly installs specified products.
  2. Installed specified products with satisfactory service on five similar installations for minimum five years.
    - a. Provide contact names and addresses for completed projects when requested by Contracting Officer's Representative.

#### **1.7 DELIVERY**

- A. Deliver products in manufacturer's original sealed packaging.
- B. Mark packaging, legibly. Indicate manufacturer's name.
- C. Before installation, return or dispose of products within distorted, damaged, or opened packaging.

#### **1.8 STORAGE AND HANDLING**

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

## **1.9 FIELD CONDITIONS**

- A. Field Measurements: Verify field conditions affecting integrated door assembly fabrication and installation. Show field measurements on Submittal Drawings.
  - 1. Coordinate field measurement and fabrication schedule to avoid delay.
  - 2. Coordinate electrical work for electrified hardware installation.

## **1.10 WARRANTY**

- A. Construction Warranty: FAR clause 52.246-21, "Warranty of Construction."
- B. Manufacturer's Warranty: Warrant door closers and hinges against material and manufacturing defects.
  - 1. Warranty Periods:
    - a. Door Closers: 10 years.
    - b. Steel Pinned Continuous Hinges: 10 years.

## **PART 2 - PRODUCTS**

### **2.1 SYSTEM PERFORMANCE**

- A. Design integrated door assemblies complying with specified performance:
  - 1. BHMA A156.32: Grade 1: 1,000,000 cycles.
- B. Fire Rated Doors:
  - 1. Fire Resistance Rating: As shown in Door Schedule.
  - 2. Label: Comply with NFPA 252, UL 10C, and labeled by qualified testing and inspection agency showing fire resistance rating.
- C. Smoke Rated Doors:
  - 1. Smoke Resistance Rating: As shown in Door Schedule.
  - 2. Label: Comply with NFPA 105, UL 1784, and labeled by qualified testing and inspection agency showing smoke resistance rating.

### **2.2 PRODUCTS - GENERAL**

- A. Basis of Design: Section 09 06 00, SCHEDULE FOR FINISHES.
- B. Provide each integrated door assembly from one manufacturer.
- C. Sustainable Construction Requirements:
  - 1. Steel Recycled Content: 30 percent total recycled content, minimum.
  - 2. Low Pollutant-Emitting Materials: Comply with VOC limits specified in Section 01 81 13, SUSTAINABLE CONSTRUCTION REQUIREMENTS for the following products:
    - a. Non-flooring adhesives and sealants.

- b. Paints and coatings.

## 2.3 INTEGRATED DOOR ASSEMBLY

- A. Metal Doors: SDI A250.8; Level 2 and Physical Performance Level B, heavy duty; Model 2 seamless.
  - 1. Face: ASTM A1011/A1011M; cold rolled steel, 1.0 mm (0.04 inches) thick, minimum.
  - 2. Core: Kraft paper honeycomb or polystyrene.
  - 3. Thickness: 44 mm (1-3/4 inch).
  - 4. Reinforce door for hardware installation.
- B. Metal Frames: SDI A250.8 Level 2.
  - 1. Metal: ASTM A1011/A1011M; cold rolled steel, 1.3 mm (0.05 inches) thick, minimum.
  - 2. Construction: Continuously welded.
  - 3. Reinforce frame for hardware.
    - a. Continuous Hinges: 2.3 mm (0.09 inches) thick.
    - b. Other Hardware: Comply with SDI A250.8.
  - 4. Frame Anchors: Provide adjustable type anchors coordinated with wall construction, minimum 4 per jamb.
- C. Integrated Hardware:
  - 1. Exit Device: BHMA A156.3; Grade 1, passage function, inset in door face, clean and unobtrusive in design.
    - a. Push Bar End Caps: Metal, plated satin nickel (BHMA 619) finish.
    - b. Exit Device Trim: Lever matching door hardware specified in Section 08 71 00, DOOR HARDWARE.
  - 2. Continuous Hinges: BHMA A156.26.
    - a. Plastic Laminate Clad Doors: Wrap-around style hinge guards and provide stainless steel wrap-around edge guards at strike edge of door.
  - 3. Other Hardware: As scheduled in this section.

## 2.4 FINISHES

- A. Hardware Finish Symbols:

Table 1 Hardware Finish Symbols

US	BHMA 156.18	Description
USP	600	Primed for field painting
US15	619	Dull Nickel Plated
US26D	626/652	Satin Chrome Plated

US28	628	Satin Aluminum
US32	629	Bright Stainless
US32D	630	Satin Stainless
N/A	689	Aluminum Painted

**B. Finish Requirements:**

1. Door Faces: Factory Pre-Finished, SDI A250.3.
2. Frames: Factory Pre-Finished, SDI A250.3.
3. Door Hardware:
  - a. Continuous Hinges: BHMA 630.
  - b. Push Bar: BHMA 630 clad with BHMA 619 end caps.
  - c. Exit Device Trim: BHMA 630.
  - d. Push/Pull Trim: BHMA 626.
  - e. Door Closers: BHMA 689.
  - f. Miscellaneous: To match other finishes.
4. Anti-Microbial Coating: ASTM E2180; ionic silver coating.
5. Apply coating to hand-operated hardware including levers, pulls, push bars, push plates, and paddles.

**PART 3 - EXECUTION**

**3.1 PREPARATION**

- A. Examine and verify substrate suitability for product installation.
- B. Protect existing construction and completed work from damage.

**3.2 INSTALLATION - INTEGRATED DOOR ASSEMBLIES**

- A. Install products according to manufacturer's instructions and approved submittal drawings.
- B. Install door hardware at locations indicated in DHI Recommended Locations for Architectural Hardware for Standard Steel Doors & Frames and DHI Recommended Locations for Builders' Hardware Custom Steel Doors & Frames, unless otherwise indicated, or to comply with requirements of governing regulations, or if otherwise directed by Contracting Officer's Representative.
- C. Install door hardware in compliance with manufacturers' instructions, and templates. Comply with specified degree of opening for doors with automatic operators and overhead door closers. Securely fasten hardware. Confirm operating parts move freely and smoothly without binding, sticking, and excessive clearance.

- D. Coordinate installation and interface wiring with fire alarm and smoke detection systems. Provide auxiliary contacts, relays, and interface for fire alarm and security systems.
- E. Remove or protect door hardware, before painting and finishing performed after integrated door assembly installation.
- F. Adjust and check door assembly and each operating hardware item to ensure correct operation and function. Replace products which cannot be adjusted to operate as intended.
- G. Final Adjustment: Perform final hardware check and adjustment maximum one month before building acceptance or partial building occupancy.

### 3.3 CLEANING

- A. Clean exposed surfaces, including hardware. Do not use cleaners that will harm finishes.

### 3.4 PROTECTION

- A. Protect integrated door assemblies from construction operations.

### 3.5 SCHEDULES

- A. The following is a general listing of the Integrated Door Assembly requirements and is not intended for use as a final door submittal. Provide hardware items required by established standards and practices, and to meet IBC and NFPA 101 whether specified or not in the following listed groups.

HW-SH-4	
Each [AC, EL, REX, DPS]Integrated Door to Have:	RATED
1 Steel Frame	
1 Integrated Door w/Elec. Exit Device	Q2131 x TYPE 8 ELECTRIC DEVICE (E01, E05/E06-VERIFY)x F13 LEVER
1 Continuous Transfer Hinge	A51031B x 4-THRUWIRE TRANSFER x IN-HINGE ACCESS PANEL
1 Power Supply	REGULATED, FILTERED, 24VDC, AMPERAGE AS REQUIRED
1 Closer	C02021 (PT4D, PT4F, PT4H)
1 Armor Plate	J101 x 1.275 mm (0.050 inch) THICKNESS
1 Floor Stop	L02121 x 3 FASTENERS



**Renovate SPS**

**JLM Memorial Veterans Hospital**

**598-18-108**

02-01-16

Construction Documents Submission

2019.07.15

1	Set Self-Adhesive Seals	R0E154
1	Alarm Contact	

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

CARD READER BY DIVISION 28.

LOCK CYLINDER BY SECTION 08 71 00, DOOR HARDWARE.

- - E N D - -

**SECTION 08 31 13**  
**ACCESS DOORS AND FRAMES**

**PART 1 - GENERAL**

**1.1 SUMMARY**

- A. Section Includes:
  - 1. Access doors and panels installed in walls and ceilings.

**1.2 RELATED REQUIREMENTS**

- A. Wire Mesh and Screen Access Doors: Section 05 50 00, METAL FABRICATIONS.
- B. Lock Cylinders: Section 08 71 00, DOOR HARDWARE.
- C. Field Painting: Section 09 91 00, PAINTING.
- D. Finish Color: Via Submittal Approval
- E. Locations of Access Doors for Ductwork Cleanouts: Section 23 31 00, HVAC DUCTS AND CASINGS.

**1.3 APPLICABLE PUBLICATIONS**

- A. Comply with references to extent specified in this section.
- B. American Welding Society (AWS):
  - 1. D1.3/D1.3M-08 - Structural Welding Code - Sheet Steel.
- C. ASTM International (ASTM):
  - 1. A653/A653M-15 - Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Sip Process.
  - 2. A1008/A1008M-15 - Steel, Sheet, Cold-Rolled, Carbon, Structural, High-Strength Low-Alloy, High-Strength Low-Alloy with Improved Formability, Solution Hardened, and Baked Hardenable.
  - 3. A666-15 - Annealed or Cold-Worked Austenitic Stainless Steel sheet, Strip, Plate, and Flat Bar.
  - 4. E119-15 - Fire Test of Building Construction and Materials.
- D. National Fire Protection Association (NFPA):
  - 1. 80-16 - Fire Doors and Other Opening Protectives.
  - 2. 251-12 - Fire Tests of Door Assemblies.
- E. National Association of Architectural Metal Manufacturers (NAAMM):
  - 1. AMP 500-06 - Metal Finishes Manual.
- F. UL LLC (UL):
  - 1. Listed - Online Certifications Directory.
  - 2. 10B-08 - Standard for Fire Tests of Door Assemblies.
  - 3. 263-11 - Fire Tests of Building Construction and Materials.

#### **1.4 SUBMITTALS**

- A. Submittal Procedures: Section 01 33 23, SHOP DRAWINGS, PRODUCT DATA, AND SAMPLES.
- B. Submittal Drawings:
  - 1. Show size, configuration, and fabrication and installation details.
- C. Manufacturer's Literature and Data:
  - 1. Description of each product.
  - 2. Installation instructions.
- D. Sustainable Construction Submittals:
  - 1. Recycled Content: Identify post-consumer and pre-consumer recycled content percentage by weight.

#### **1.5 DELIVERY**

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

#### **1.6 STORAGE AND HANDLING**

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

#### **1.7 FIELD CONDITIONS**

- A. Field Measurements: Verify field conditions affecting access door fabrication and installation. Show field measurements on Submittal Drawings.
  - 1. Coordinate field measurement and fabrication schedule to avoid delay.

#### **1.8 WARRANTY**

- A. Construction Warranty: FAR clause 52.246-21, "Warranty of Construction."

### **PART 2 - PRODUCTS**

#### **2.1 MATERIALS**

- A. Steel Sheet: ASTM A1008/A1008M.
- B. Galvanized Steel: ASTM A 653/A 653M.
- C. Stainless Steel: ASTM A666; Type 302 or Type 304.

## **2.2 PRODUCTS - GENERAL**

- A. Basis of Design: REFERENCE DRAWINGS.
- B. Provide each product from one manufacturer.
- C. Sustainable Construction Requirements:
  - 1. Steel Access Doors Recycled Content: 30 percent total recycled content, minimum.
  - 2. Stainless Steel Access Doors Recycled Content: 70 percent total recycled content, minimum.

## **2.3 ACCESS DOORS, FIRE-RATED**

- A. Door Construction:
  - 1. Ceiling Access Door Construction: ASTM E119 or UL 263.
  - 2. Wall Access Doors: NFPA 252 or UL 10B.
- B. Label: Class B opening according to UL 10B or test by another nationally recognized laboratory. 1 hour fire-rated, with maximum temperature rise of 120 degrees C (216 degrees F).
- C. Door Panel: Minimum 0.9 mm (0.0359 inch) thick stainless steel sheet, with mineral-fiber insulation core, insulated sandwich type construction.
- D. Frame: Minimum 1.5 mm (0.0598 inch) thick steel sheet, depth and configuration to suit material and construction type where installed.
  - 1. Frame Flange: Provide at units installed in concrete, masonry, or gypsum board.
  - 2. Exposed Joints in Flange: Weld and grind smooth.
- E. Provide automatic closing device.
- F. Hinge: Continuous stainless steel hinge with stainless steel pin.
- G. Lock: Self-latching, mortise type with provision for fitting flush a standard screw-in type lock cylinder.
  - 1. Lock cylinder specified in Section 08 71 00, DOOR HARDWARE.
  - 2. Latch release device operable from inside of door.
- H. Anchors for Fire-Rated Access Doors: Comply with requirements of applicable fire test.

## **2.4 ACCESS DOORS, FLUSH PANEL, NON-RATED**

- A. Door Panel:
  - 1. 1.5 mm (0.06 inch) thick stainless steel sheet.
  - 2. Reinforce to maintain flat surface.
- B. Frame:

1. 1.5 mm (0.06 inch) thick stainless steel sheet, depth and configuration to suit material and construction type where installed.
2. Frame Flange: Provide at units installed in concrete, masonry, and gypsum board.
3. Exposed Joints in Flange: Weld and grind smooth.

C. Hinge:

1. Concealed spring hinge, 175 degrees of opening.
2. Removable hinge pin to allow removal of door panel from frame.

D. Lock:

1. Flush, screwdriver-operated cam lock.

**2.5 ACCESS DOOR, RECESSED PANEL, NON-RATED**

A. Door Panel:

1. 1.2 mm (0.05 inch) thick stainless steel sheet to form a 25 mm (1 inch) deep recessed pan to accommodate installation of acoustical units and other materials where shown in walls and ceiling.
2. Reinforce to prevent sagging.

B. Frame:

1. 1.5 mm (0.06 inch) thick steel sheet of depth and configuration to suit installation in suspension system of ceiling or wall framing.
2. Extend sides of frame to protect edge of acoustical units when door panel is in open position.
3. Provide shims, bushings, clips and other devices necessary for installation.

C. Hinge: Continuous stainless steel hinge with stainless steel pin, or concealed hinge.

D. Lock:

1. Flush screwdriver-operated cam lock.
2. Plastic sleeve or stainless steel grommet to protect hole made in acoustical unit for screwdriver access to lock.

**2.6 FABRICATION - GENERAL**

- A. Size: Minimum 600 mm (24 inches) square door unless otherwise shown ON DRAWINGS.
- B. Component Fabrication: Straight, square, flat and in same plane where required.
  1. Exposed Edges: Slightly rounded, without burrs, snags and sharp edges.

2. Exposed Welds: Continuous, ground smooth.

3. Welding: AWS D1.3/D1.3M.

- C. Locks and Non-Continuous Hinges: Provide in numbers required to maintain alignment of door panel with frame. For fire-rated doors, provide hinges and locks as required by fire test.
- D. Anchoring: Make provisions in frame for anchoring to adjacent construction. Provide anchors in size, number and location on four sides to secure access door to substrate. Provide anchors as required by fire test.

## **2.7 FINISHES**

A. Steel Paint Finish:

1. Powder-Coat Finish: Manufacturer's standard two-coat finish system consisting of the following:
- a. One coat primer.
  - b. One coat thermosetting topcoat.
  - c. Dry-film Thickness: 0.05 mm (2 mils) minimum.
  - d. Color: Refer to Section 09 06 00, SCHEDULE FOR FINISHES.

B. Stainless Steel Exposed Surfaces: NAAMM AMP 500; No. 4 polished finish.

## **2.8 ACCESSORIES**

A. Fasteners: Type and size recommended by access door manufacturer, to suit application.

1. Stainless Steel Access Doors: Stainless steel fasteners.
2. Other Access Doors: Stainless steel fasteners.

## **PART 3 - EXECUTION**

### **3.1 PREPARATION**

- A. Examine and verify substrate suitability for product installation.
1. Verify access door locations and sizes provide required maintenance access to installed building services components.
- B. Protect existing construction and completed work from damage.

### **3.2 INSTALLATION - GENERAL**

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

- B. Install access doors and panels permitting access to service valves, traps, dampers, cleanouts, and other mechanical, electrical and conveyor control items concealed in walls and partitions, and concealed above gypsum board and plaster ceilings.
- C. Install fire rated access door according to NFPA 80.
- D. Install fire-rated doors in fire-rated partitions and ceilings.
- E. Install flush access panels in partitions and in gypsum board and plaster ceilings.
- F. Install recessed panel access doors in the following locations:
  - 1. GC TO REFERENCE DRAWINGS.

### **3.3 ACCESS DOOR AND FRAME INSTALLATION**

- A. Wall Installations: Install access doors in openings with sides vertical.
- B. Ceiling Installations: Install access doors parallel to ceiling suspension grid or room partitions.
- C. Frames without Flanges: Install frame flush with surrounding finish surfaces.
- D. Frames with Flanges: Overlap opening, with face uniformly spaced from finish surface.
- E. Recessed Panel Access Doors: Install with face of surrounding materials flush with door panel installed finish.
- F. Secure frames to adjacent construction with fasteners.
- G. Install type, size and quantity of anchoring device suitable for material surrounding opening to maintain alignment, and resist displacement, during normal use of access door.
- H. Field Painting Primed Access Doors: Comply with the requirements of Section 09 91 00, PAINTING.

### **3.4 ADJUSTMENT**

- A. Adjust hardware so door panel opens freely.
- B. Adjust door when closed so door panel is centered in frame.

- - E N D - -

**SECTION 08 56 19**  
**PASS WINDOWS**

**PART 1 - GENERAL**

**1.1 SUMMARY**

- A. Section Includes:
  - 1. Factory finished sliding glass, counter mounted pass windows.

**1.2 RELATED REQUIREMENTS**

- A. Window Finish Color: Via submittal approval.
- B. Glass and Glazing: Section 08 80 00, GLAZING.

**1.3 APPLICABLE PUBLICATIONS**

- A. Comply with references to extent specified in this section.
- B. ASTM International (ASTM):
  - 1. B221-14 - Aluminum and Aluminum-Alloy Extruded Bars, Rods, Wire, Profiles, and Tubes.
  - 2. B221M-13 - Aluminum and Aluminum-Alloy Extruded Bars, Rods, Wire, Profiles, and Tubes (Metric).
  - 3. C509-06(2011) - Elastomeric Cellular Preformed Gasket and Sealing Material.
  - 4. D1187/D1187M-97(2011)e1 - Asphalt-Base Emulsions for Use as Protective Coatings for Metal.
- C. American Society of Mechanical Engineers (ASME):
  - 1. B18.6.4-98(R2005) - Thread Forming and Thread Cutting Tapping Screws and Metallic Drive Screws inch.
- D. National Association of Architectural Metal Manufacturers (NAAMM):
  - 1. AMP 500-06 - Metal Finishes Manual.

**1.4 SUBMITTALS**

- A. Submittal Procedures: Section 01 33 23, SHOP DRAWINGS, PRODUCT DATA, AND SAMPLES.
- B. Submittal Drawings:
  - 1. Show size, configuration, and fabrication and installation details.
- C. Manufacturer's Literature and Data:
  - 1. Description of each product.
  - 2. Installation instructions.
- D. Samples:
  - 1. Exposed Finishes: 50 by 100 mm (2 by 4 inches), each type and color.
- E. Sustainable Construction Submittals:



1. Recycled Content: Identify post-consumer and pre-consumer recycled content percentage by weight.

#### **1.5 DELIVERY**

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

#### **1.6 STORAGE AND HANDLING**

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

#### **1.7 WARRANTY**

- A. Construction Warranty: FAR clause 52.246-21, "Warranty of Construction."
- B. Manufacturer's Warranty: Warrant pass window units against material and manufacturing defects.
  1. Warranty Period: Two years.

### **PART 2 - PRODUCTS**

#### **2.1 MATERIALS**

- A. Aluminum Extrusions:
  1. ASTM B221M (ASTM B221).
  2. Alloy and temper recommended by window manufacturer for strength, corrosion resistance, and application of required finish, but minimum 150 MPa (22,000 psi) ultimate tensile strength, and yield of 110 MPa (16,000 psi).
  3. Aluminum alloy used for colored anodic coating as required to produce specified color.
- B. Glazing Gaskets: ASTM C509.

#### **2.2 PRODUCTS - GENERAL**

- A. Basis of Design: Via submittal approval.
- B. Provide each product from one manufacturer.
- C. Sustainable Construction Requirements:
  1. Aluminum Recycled Content: 80 total recycled content, minimum.

## **2.3 PASS WINDOWS**

- A. Pass Window Units: Factory fabricated and assembled, glazed unit; horizontal sliding type.
  - 1. Frame: Extruded aluminum.
  - 2. Sash: Extruded aluminum.
  - 3. Glass: Safety type specified in Section 08 80 00, GLAZING.
  - 4. Hardware: Manufacturer's standard track, rollers, guides, lock, and keys.

## **2.4 FABRICATION**

- A. Fabricate sliding glass sash and frames of extruded aluminum with corners mitered.
- B. Fabricate sash to receive 6 mm (1/4 inch) thick glass.
- C. Fabricate sliding sash of "H" channel molding at bottom edges including concealed nylon rollers at bottom set on track and guides at top set into track.
- D. Provide sash with pin tumbler lock and two keys.
- E. Provide sash with surface-mounted pull.
- F. Fabricate frame with channel sash slot, bottom roller track, and top guides.
- G. Factory glaze sash using glazing gaskets.
- H. Use concealed fasteners for assembly.

## **2.5 FINISHES**

- A. Aluminum Anodized Finish: NAAMM AMP 500.
  - 1. Clear Anodized Finish: AA-C22A41; Class I Architectural, 0.018 mm (0.7 mil) thick.
  - 2. Color Anodized Finish: AA-C22A42 or AA-C22A44; Class I Architectural, 0.018 mm (0.7 mil) thick.

## **2.6 ACCESSORIES**

- A. Barrier Coating: ASTM D1187/D1187M.
- B. Fasteners: ASME B18.6.4, stainless steel.

## **PART 3 - EXECUTION**

### **3.1 PREPARATION**

- A. Examine and verify substrate suitability for product installation.
  - 1. Verify rough opening is properly sized and located.
- B. Protect existing construction and completed work from damage.

- C. Apply barrier coating to aluminum surfaces in contact with dissimilar metals and cementitious materials to minimum 0.7 mm (30 mils) dry film thickness.

### **3.2 INSTALLATION - PASS WINDOWS**

- A. Install products according to manufacturer's instructions and approved submittal drawings.
- B. Install pass window units level and plumb according to manufacturer's installation instructions and approved submittal drawings.
  - 1. When manufacturer's instructions deviate from specifications, submit proposed resolution for Contracting Officer's Representative consideration.
- C. Secure window with fasteners.
  - 1. Install fasteners within 100 mm (4 inches) of ends.
  - 2. Space fasteners maximum 600 mm (24 inches) on center.
- D. Separate aluminum from sources of corrosion with one coat of ASTM D1187/D1187M at points of contact with other materials.
- E. Adjust pass windows to roll smoothly and stay in position where stopped.
- F. Tag keys to identify associated pass window. Deliver keys to Contracting Officer's Representative.

### **3.3 CLEANING**

- A. Clean exposed window unit surfaces. Remove temporary labels, contaminants, and stains.

### **3.4 PROTECTION**

- A. Protect pass window units from construction operations.
- B. Remove protective materials immediately before acceptance.
- C. Repair damage.
  - 1. Replace glass that has been broken, chipped, cracked, or damaged during construction period.

- - 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 14 00, WOOD DOORS; Section 08 11 13, HOLLOW METAL DOORS AND FRAMES; Section 08 17 10, INTEGRATED DOOR ASSEMBLIES; Section 08 71 13
- C. Finishes: Section 09 06 00, SCHEDULE FOR FINISHES.
- D. Painting: Section 09 91 00, PAINTING.
- E. Card Readers: Section 28 13 11, PHYSICAL ACCESS CONTROL SYSTEMS.
- F. Electrical: Division 26, ELECTRICAL.
- G. Fire Detection: Section 28 31 00, FIRE DETECTION AND ALARM.

**1.3 GENERAL**

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

5. Floor closers.

#### 1.4 WARRANTY

- A. Automatic door operators shall be subject to the terms of FAR Clause 52.246-21, 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. Provide installation instructions with the submittal documentation.

#### 1.6 SUBMITTALS

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

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

- C. Samples and Manufacturers' Literature:

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

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

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

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

#### **1.8 PREINSTALLATION MEETING**

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

#### **1.9 INSTRUCTIONS**

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

number. Each number designates a set of hardware items applicable to a door type.

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

C. Keying: A new Great Grandmaster key shall be established for this project. The key system shall be small format (Best size and profile) removable core type as previously described. The key blanks shall be protected by a utility patent with a minimum seven years remaining on the patent from the start of construction, and protected by contract-controlled distribution. The manufacturer shall furnish code pattern listings in both paper and electronic formats so keys may be reproduced by code.; provide electronic format in file type required by project's key control software. The manufacturer shall design the new key system with the capacity to rekey the existing system and also provide for 25 percent expansion capability beyond this requirement. Submit a keying chart for approval showing proposed keying layout and listing expansion capacity.

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)

A156.5-14.....Cylinders and Input Devices for Locks.

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

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

A156.11-14.....Cabinet Locks

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

A156.36-10.....Auxiliary Locks

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

D. National Fire Protection Association (NFPA):

80-10.....Fire Doors and Other Opening Protectives

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: Steel.
  3. Base Metal for Hinges for Fire-Rated Assemblies: 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 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).

## 2.5 DOOR STOPS

- A. Conform to ANSI A156.16.
- B. Provide door stops wherever an opened door or any item of hardware thereon would strike a wall, column, equipment or other parts of building construction. For concrete, masonry or quarry tile construction, use lead expansion shields for mounting door stops.
- C. Where cylindrical locks with turn pieces or pushbuttons occur, equip wall bumpers Type L02251 (rubber pads having concave face) to receive turn piece or button.
- D. Provide floor stops (Type L02141 or L02161 in office areas; Type L02121 x 3 screws into floor elsewhere. Wall bumpers, where used, must be installed to impact the trim or the door within the leading half of its

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

## **2.6 FLOOR DOOR HOLDERS**

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

## **2.7 LOCKS AND LATCHES**

- A. Conform to ANSI A156.2. Locks and latches for doors 45 mm (1-3/4 inch) thick or over shall have beveled fronts. Lock cylinders shall have not less than six pins. Cylinders for all locksets shall be removable core type. Cylinders shall be furnished with construction removable cores and construction master keys. Cylinder shall be removable by special key or tool. Construct all cores so that they will be interchangeable into the core housings of all mortise locks, rim locks, cylindrical locks, and any other type lock included in the Great Grand Master Key System. Disassembly of lever or lockset shall not be required to remove

core from lockset. All locksets or latches on double doors with fire label shall have latch bolt with 19 mm (3/4 inch) throw, unless shorter throw allowed by the door manufacturer's fire label. Provide temporary keying device or construction core to 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. Provide sectional (lever x rose) lever design matching [\_\_\_\_\_]. 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 A156.36.

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).

## 2.8 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 V.
  4. Residual Magnetism: Not more than 4 lbf (18 N) to separate door from magnet.
- B. Delayed-Egress Locks: BHMA A156.24. Listed under Category G in BHMA's "Certified Product Directory".
  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.

## 2.9 ELECTRIC STRIKES

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

## 2.10 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.

## 2.11 KEY CABINET

- A. ANSI Standard A156.11. Provide key cabinet made of cold rolled, 1.2 mm (0.0478 inch) thick furniture steel electro-welded. Doors shall have "no sag" continuous brass-pin piano type hinge and be equipped with chrome plated locking door handles, hook cam and mechanical pushbutton door lock. Key Cabinet and Key Control System shall accommodate all keys for this project plus 25 percent. Provide minimum number of multiple cabinets where a single cabinet of largest size will not accommodate the required number of keys.
- B. Key tags shall consist of two sets: Permanent self-locking and loan key snaphook type with tag colors as follows: Red fiber marker of the permanent self-locking type approximately 32 mm (1-1/4 inch) in diameter engraved with the legend "FILE KEY MUST NOT BE LOANED." Also furnish for each hook a white cloverleaf key marker with snap-hooks engraved with the legend "LOAN KEY."
- C. The manufacturer of the lock cylinders and locks shall attach a key tag to keys of each lock cylinder and shall mark thereon the respective item number and key change number. Provide each group of keys in a key gathering envelope (supplied by Key Cabinet Manufacturer) in which the lock manufacturer shall include the following information: Item number, key change number and door number. The contractor shall furnish the Key Cabinet Manufacturer the hardware and keying schedules and change keys.
- D. The Key Cabinet Manufacturer shall set up a three-way cross index system, including master keys, listing the keys alphabetically, the hooks numerically and the key changes numerically on different colored index cards. Index cards shall be typewritten and inserted in a durable binder. Attach the keys to the two sets of numbered tags supplied with

the cabinet. (The permanent tag and the loan key tag). Instruct the owner in proper use of the system. Install cabinet as directed by the Resident Engineer.

## **2.12 ARMOR PLATES, KICK PLATES, MOP PLATES AND DOOR EDGING**

- A. Conform to ANSI Standard A156.6.
- B. Provide protective plates as specified below:
  1. Kick plates, mop plates and armor plates of metal, Type J100 series.
  2. Provide kick plates and mop plates where specified. Kick plates shall be 254 mm (10 inches) or 305 mm (12 inches) high. Mop plates shall be 152 mm (6 inches) high. Both kick and mop plates shall be minimum 1.27 mm (0.050 inches) thick. Provide kick and mop plates beveled on all 4 edges (B4E). On push side of doors where jamb stop extends to floor, make kick plates 38 mm (1-1/2 inches) less than width of door, except pairs of metal doors which shall have plates 25 mm (1 inch) less than width of each door. Extend all other kick and mop plates to within 6 mm (1/4 inch) of each edge of doors. Kick and mop plates shall butt astragals. For jamb stop requirements, see specification sections pertaining to door frames.
  3. Kick plates and/or mop plates are not required on following door sides:
    - a. Armor plate side of doors;
    - b. Exterior side of exterior doors;
    - c. Closet side of closet doors;
    - d. Both sides of aluminum entrance doors.
  4. Armor plates for doors are listed under Article "Hardware Sets". Armor plates shall be thickness as noted in the hardware set, 875 mm (35 inches) high and 38 mm (1-1/2 inches) less than width of doors, except on pairs of metal doors. Provide armor plates beveled on all 4 edges (B4E). Plates on pairs of metal doors shall be 25 mm (1 inch) less than width of each door. Where top of intermediate rail of door is less than 875 mm (35 inches) from door bottom, extend armor plates to within 13 mm (1/2 inch) of top of intermediate rail. On doors equipped with panic devices, extend armor plates to within 13 mm (1/2 inch) of panic bolt push bar.
  5. 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.

### **2.13 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.

### **2.14 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).

#### **2.15 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.

#### **2.16 DOOR PULLS WITH PLATES**

- A. Conform to ANSI A156.6. Pull Type J401, 152 mm CTC (6 inches CTC) length by 19 mm (3/4 inches) diameter minimum with plate Type J302, 90 mm by 381 mm (3-1/2 inches by 15 inches), unless otherwise specified. Provide pull with projection of 57.2 mm (2 1/4 inches) minimum and a clearance of 38.1 mm (1 1/2 inches) minimum. Cut plates of door pull plate for cylinders, or turn pieces where required.

#### **2.17 PUSH PLATES**

- A. Conform to ANSI A156.6. Metal, Type J302, 203 mm (8 inches) wide by 406.4 mm (16 inches) high. Provide metal Type J302 plates 102 mm (4 inches) wide by 406.4 mm (16 inches) high where push plates are specified for doors with stiles less than 203 mm (8 inches) wide. Cut plates for cylinders, and turn pieces where required.

#### **2.18 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.

## **2.19 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.

## **2.20 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) beyond face of frame.

## **2.21 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).

## **2.22 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 E07213, conforming to ANSI A156.11. 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. 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.

## **2.23 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.
- 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.

## 2.24 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:
- Exit devices centerline of strike (where applicable) 1024 mm (40-5/16 inches).
  - Locksets and latch sets centerline of strike 1024 mm (40-5/16 inches).
  - Deadlocks centerline of strike 1219 mm (48 inches).
  - Hospital arm pull 1168 mm (46 inches) to centerline of bottom supporting bracket.
  - Centerline of door pulls to be 1016 mm (40 inches).
  - Push plates and push-pull shall be 1270 mm (50 inches) to top of plate.
  - 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	2 butts

or less	
Doors with spring hinges over 1370 mm (4 feet 6 inches)	3 butts

- F. Fastenings: Suitable size and type and shall harmonize with hardware as to material and finish. Provide machine screws and lead expansion shields to secure hardware to concrete, ceramic or quarry floor tile, or solid masonry. Fiber or rawl plugs and adhesives are not permitted. All fastenings exposed to weather shall be of nonferrous metal.
- G. After locks have been installed; show in presence of Resident Engineer that keys operate their respective locks in accordance with keying requirements. (All keys, Master Key level and above shall be sent Registered Mail to the Medical Center Director along with the bitting list. Also a copy of the invoice shall be sent to the Resident Engineer for his records.) Installation of locks which do not meet specified keying requirements shall be considered sufficient justification for rejection and replacement of all locks installed on project.

### 3.3 FINAL INSPECTION

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

### 3.4 DEMONSTRATION

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

### 3.5 HARDWARE SETS

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

ELECTRIC HARDWARE ABBREVIATIONS LEGEND:

ADO = Automatic Door Operator

EMCH = Electro-Mechanical Closer-Holder

MHO = Magnetic Hold-Open (wall- or floor-mounted)

**INTERIOR SINGLE DOORS**

HW-4J

Each Door to Have:

RATED/NON-RATED

Hinges	QUANTITY & TYPE AS REQUIRED
1 Utility Lock	F09
1 Closer (@ Rated Doors)	C02011/C02021
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	R0Y154

HW-5D

Each Door to Have:

NON-RATED

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)	L02101 CONVEX
3 Silencers	L03011



HW-10B

Each Pair to Have:

NON-RATED/RATED

2	Continuous Hinges	x INTEGRAL HINGE GUARD CHANNEL X ADJUSTA-SCREWS
1	Set Auto Flush Bolts	TYPE 25 LESS BOTTOM BOLT
1	Classroom Hospital Lock	F08 x PADDLES POINTING DOWN
1	Overlapping Astragal with Self-Adhesive Seal	R0Y634 x R0Y154 x THRU-BOLTS
1	Closers (@ rated doors)	C02011/C02021
2	Heavy-Duty Armor Plates	J101 x 3.175 MM (0.125 INCH) THICKNESS
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 TRIM.

HW-11B

Each Pair to Have:

RATED

2	Continuous Hinges	x INTEGRAL HINGE GUARD CHANNEL X ADJUSTA-SCREWS
1	Set Auto Flush Bolts	TYPE 25
1	Storeroom Lock	F07
1	Coordinator	TYPE 21A
1	Overlapping Astragal with Self-Adhesive Seal	R0Y634 x R0Y154 x THRU-BOLTS
2	Closers	C02011/C02021
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	R0Y154

HW-SH-4

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

RATED

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

- - - E N D - - -

**SECTION 08 71 13**  
**AUTOMATIC DOOR OPERATORS**

**PART 1 - GENERAL**

**1.1 SUMMARY**

- A. Section Includes:
  - 1. Automatic operators for swinging and sliding doors .

**1.2 RELATED REQUIREMENTS**

- A. Door Hardware: Section 08 71 00, DOOR HARDWARE.
- B. Access Control Devices: Division 28, ELECTRONIC SAFETY AND SECURITY.
- C. Electric General Wiring, Connections and Equipment Requirements:  
Division 26, ELECTRICAL.

**1.3 APPLICABLE PUBLICATIONS**

- A. Comply with references to extent specified in this section.
- B. ASTM International (ASTM):
  - 1. B209-14 - Aluminum and Aluminum-Alloy Sheet and Plate.
  - 2. A1008/A1008M-15 - Steel, Sheet, Cold-Rolled, Carbon, Structural, High-Strength Low-Alloy, High-Strength Low-Alloy with Improved Formability, Solution Hardened, and Baked Hardenable.
- C. Builders Hardware Manufacturers Association (BHMA):
  - 1. BHMA A156.10-11 - Power Operated Pedestrian Doors.
- D. National Fire Protection Association (NFPA):
  - 1. 101-15 - Life Safety Code.
- E. Underwriters Laboratories (UL):
  - 1. 325-13 - Standard for Doors, Drapery, Gate, Louver, and Window Operators and Systems.

**1.4 SUBMITTALS**

- A. Submittal Procedures: Section 01 33 23, SHOP DRAWINGS, PRODUCT DATA, AND SAMPLES.
- B. Submittal Drawings:
  - 1. Show size, configuration, and fabrication and installation details.
- C. Manufacturer's Literature and Data:
  - 1. Description of each product.
  - 2. Installation instructions.
  - 3. Warranty.
- D. Sustainable Construction Submittals:

1. Recycled Content: Identify post-consumer and pre-consumer recycled content percentage by weight.
- E. Test reports: Certify each product complies with specifications.
- F. Qualifications: Substantiate qualifications comply with specifications.
  1. Manufacturer with project experience list.
  2. Installer with project experience list.
- G. Operation and Maintenance Data:
  1. Care instructions for each exposed finish product.
  2. Start-up, maintenance, troubleshooting, emergency, and shut-down instructions for each operational product.

#### **1.5 QUALITY ASSURANCE**

- A. Manufacturer's Qualifications:
  1. Regularly manufactures specified products.
  2. Manufactured specified products with satisfactory service on five similar installations for minimum five years.
    - a. Provide contact names and addresses for completed projects when requested by Contracting Officer's Representative.
- B. Installer's Qualifications: Experienced installer, approved by the manufacturer.

#### **1.6 WARRANTY**

- A. Construction Warranty: FAR clause 52.246-21, "Warranty of Construction."
- B. Manufacturer's Warranty: Warrant automatic door operators against material and manufacturing defects.
  1. Warranty Period: Two years.

### **PART 2 - PRODUCTS**

#### **2.1 SYSTEM PERFORMANCE**

- A. Comply with requirements of BHMA A156.10. Unless otherwise indicated on Drawings, provide operators that move doors from fully closed to fully opened position in five seconds maximum time interval, when speed adjustment is at maximum setting.
- B. Equipment: Conforming to UL 325. Provide key operated power disconnect wall switch for each door installation.
- C. Electrical Wiring, Connections and Equipment: Motors, starters, controls, associated devices, and interconnecting wiring required for

installation. Equipment and wiring as specified in Division 26,  
ELECTRICAL.

## 2.2 PRODUCTS - GENERAL

- A. Basis of Design: Section 09 06 00, SCHEDULE FOR FINISHES.
- B. Provide door operators from one manufacturer.
- C. Provide one type of operator throughout project.
- D. Sustainable Construction Requirements:
  - 1. Steel Recycled Content: 30 percent total recycled content, minimum.
  - 2. Aluminum Recycled Content: 80 percent total recycled content, minimum.

## 2.3 SWING DOOR OPERATORS

- A. General:
  - 1. Type: Institutional type.
  - 2. Size: As recommended by manufacturer for door weight and sizes.
- B. Function:
  - 1. Provide operators, enclosed in housing, permitting opening of door by energizing motor and stopped by electrically reducing Voltage and stalling motor against mechanical stop.
  - 2. Door to close by means of spring energy, and closing force controlled by gear system and motor being used as dynamic brake without power, or controlled by hydraulic closer in electro-hydraulic operators.
  - 3. Opening and Closing Speeds: Field adjustable.
  - 4. Operators with checking mechanism providing cushioning action at last part of door travel, in both opening and closing cycle.
  - 5. Operators capable of recycling doors instantaneously to full open position from any point in closing cycle when control switch is activated.
  - 6. When automatic power is interrupted or shut-off, permit doors to easily open manually without damage to automatic operator system.
- C. Connect hardware with drive arm attached to door with pin linkage rotating in a self-lubricating bearing. Prevent doors from pivoting on shaft of operator.
- D. Operator Housing:
  - 1. ASTM B209, Type 6063-T5 aluminum alloy, 112 mm (4-1/2 inches) wide by 140 mm (5.5 inches) high by 3.2 mm (0.125 inch) thick, aluminum

extrusions with enclosed end caps for application to 100 mm  
(4 inches) and larger frame systems.

**E. Power Operator:**

1. Completely assembled and sealed unit including gear drive transmission, mechanical spring and bearings, located in aluminum case and filled with special lubricant for extreme temperature conditions. Rubber mounted units with provisions for easy maintenance and replacement, without removing door from pivots or frame.

**F. Motors:**

1. Provide with interlock to prevent operation when doors are electrically locked from opening.

**G. Electrical Control:**

1. Self-contained electrical control unit, including necessary transformers, relays, rectifiers, and other electronic components for proper operation and switching of power operator.
2. Connecting Harnesses: Interlocking plugs.

**H. Accessories:**

1. Metal mounting supports, brackets and other accessories necessary for installation of operators at head of door frames.

**I. Microprocessor Controls:**

1. Multi-function microprocessor control providing adjustable hold open time (1-30 seconds) with fully adjustable opening speed, LED indications for sensor input signals and operator status and power assist close options. Control capable of receiving activation signals from any device with normally open dry contact output.
2. Hold doors held open by low Voltage applied to the continuous duty motor.
3. Controls:
  - a. Adjustable safety circuit that monitors door operation and stops opening direction of door if obstruction is sensed.
  - b. Recycle feature that reopens door if obstruction is sensed at any point during closing cycle.
  - c. Standard three position key switch with functions for ON, OFF, and HOLD OPEN, mounted on operator enclosure, door frame, or wall, as indicated on drawings.

## **2.4 SLIDING DOOR OPERATORS**

### **A. Operator Function:**

1. Electric motor pulling door from closed to open position, stopping door by electrically reducing Voltage and stalling door against mechanical stop.
2. Opening and Closing Speeds: Field adjustable.
3. System permitting manual control of door in event of power failure.

### **B. Power Operator:**

1. Completely assembled and sealed electromechanical operating unit including 95 W (1/8 hp.) DC shunt-wound permanent magnet motor with sealed bearings, located in aluminum case and filled with special lubricant for extreme temperature conditions. Rubber mount units with provisions for easy maintenance and replacement, without removing door from pivots or frame.
2. Opening and Closing Cycle: Field adjustable.

### **C. Operator Housing:**

1. ASTM B209, Type 6063-T5 aluminum alloy, 150 mm (6 inches) wide by 200 mm (8 inches) high by 3.2 mm (0.125 inch) thick, aluminum extrusions with enclosed end caps for application to 100 mm (4 inches) and larger frame systems.

## **2.5 SLIDING DOOR UNITS**

### **A. Provide door panels in compliance with NFPA 101, allowing "breakout" to full open position to provide instant egress at any point in door's movement.**

1. Door Panels: ASTM A1008/A1008M, steel sheet, Type B, cold-rolled, reinforce frame structure, minimum 1.1-mm (0.043 inch) thick steel shapes.

### **B. Sliding Door Hardware Guide Rollers, Door Carrier:**

1. Rollers: Steel or plastic rollers with sealed bearings with each door having two support rollers and one anti-rise roller.
  - a. Vertical Adjustment: Minimum 9 mm (0.35 inch) with positive mechanical locks.
  - b. Include two urethane covered oil impregnated bearing bottom rollers attached with 5 mm (3/16 inch) thick formed steel guide brackets at each door.

- c. Door Carriers: For each door carrier supporting door leaf, include vertical steel reinforcing member to prevent sagging when door is swung under breakaway conditions.
  - 1) Carbon Steel Brackets And Fittings: Corrosion resistant.
- C. Locking Hardware:
  - 1. Locking hardware at interior doors not requiring physical security is not required.
  - 2. Doors with flush concealed vertical rod panic hardware integrated into doors where physical security is required and free egress is required at all times.
  - 3. Doors with manufacturers' standard hookbolt lock (keyed both sides) where physical security is required and free egress is not required at all times.
    - a. At doors with access control devices specified in Division 28 - ELECTRONIC SAFETY AND SECURITY, provide doors with electronic deadbolt locking to prevent doors from manually sliding open.
- D. Door Closers: Breakout or swing-out panels with door closers concealed in top rail of door.

## **2.6 POWER UNITS**

- A. Self-contained, electric operated and independent of door operator.
  - 1. Capacity and size of power circuits according to automatic door operator manufacturer's specifications and Division 26 - ELECTRICAL.

## **2.7 DOOR CONTROLS**

- A. Control Devices: BHMA A156.10; control opening and closing functions.
- B. Open doors when control device is actuated; hold doors in open positions; then, close doors after a set time period, unless safety device or reactivated control interrupts operation.
- C. Manual Controls:
  - 1. Push Plate Wall Switch: Recessed type, stainless steel push plate minimum 100 mm by 100 mm (4 inch by 4 inch), with 13 mm (1/2 inch) high letters "To Operate Door-Push" engraved on face of plate.
- D. Motion Detector:
  - 1. Mounting: Surface or concealed.
  - 2. Detection Area: 1500 mm (60 inches) deep and 1500 mm (60 inches) across, plus or minus 150 mm (6 inches).
  - 3. Response Time: 25 milliseconds, maximum.
  - 4. Control Power: 24 Volt DC.

5. Design units to be unaffected by cleaning material, solvents, dust, dirt and outdoor weather conditions.

## **2.8 SAFETY DEVICES**

### **A. Sliding Doors:**

1. Two photoelectric beams mounted at heights of 600 mm (24 inches) and 1200 mm (48 inches) in door frame.
2. Overhead safety presence sensors at door head on both sides of opening.
3. Recycle doors to full open position when beams are interrupted.
4. Motion detector mounted on both sides of door for detection of traffic in both direction.

### **B. Swing Doors: Install presence sensor on pull side of door to detect any person standing in door swing path and prevent door from opening.**

1. Time delay Switches: Adjustable between 3 to 60 seconds and control closing cycle of doors.

### **C. Install decal signs with "In" or "Do Not Enter" on both faces of each door where shown.**

## **PART 3 - EXECUTION**

### **3.1 PREPARATION**

#### **A. Examine and verify substrate suitability for product installation.**

1. Verify door opening is correctly sized and within acceptable tolerances.

#### **B. Protect existing construction and completed work from damage.**

### **3.2 INSTALLATION**

#### **A. Install products according to manufacturer's instructions and approved submittal drawings.**

1. When manufacturer's instructions deviate from specifications, submit proposed resolution for Contracting Officer's Representative consideration.

#### **B. Coordinate door installation with other related work.**

#### **C. Install manual controls and power disconnect switches recessed or semi-flush mounted in partitions.**

#### **D. Secure operator components to adjacent construction with suitable fastenings.**

#### **E. Conceal conduits, piping, and electric equipment, in finish work.**

#### **F. Install power units in locations shown.**



1. Where units are mounted on walls, provide metal supports or shelves for units.
  2. Ensure equipment, including time delay switches, are accessible for maintenance and adjustment.
- G. Ensure operators are adjusted and function properly for type of expected traffic.
- H. Synchronize each leaf of pair doors to open and close simultaneously. Permit each door leaf to be opened manually, independent of other door leaf.
- I. Install controls at positions shown and ensuring convenience for expected traffic.
- J. Push Plate Wall Switches Mounting Height: 1000 mm (40 inches) maximum, unless otherwise approved by Contracting Officer's Representative.

### **3.3 DEMONSTRATION AND TRAINING**

- A. Instruct VA personnel in proper automatic door operator operation and maintenance.
1. Trainer: Manufacturer approved instructor.
  2. Training Time: 2 hours minimum.
- B. Coordinate instruction to VA personnel with VA Contracting Officer's Representative.

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