

**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. deleted.
3. deleted.

**1.2 RELATED REQUIREMENTS**

- A. deleted.
- B. deleted.
- C. deleted.
- D. Door Hardware: Section 08 71 00, DOOR HARDWARE.
- E. deleted.
- F. Card Readers and Biometric Devices: Section 28 13 00, PHYSICAL ACCESS CONTROL SYSTEM.
- G. deleted.
- H. deleted.

**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 for openings.
  - 3. Installation instructions.
- D. Sustainable Construction Submittals:
  - 1. Recycled Content: Identify post-consumer and pre-consumer recycled content percentage by weight.
- E. deleted.
- 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 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. Stair Doors: Temperature rise rated fire doors.
  3. 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.
  4. Sound Rated Doors and Frames: Minimum 45 sound transmission class (STC) when tested according to ASTM E90.
  5. deleted.
  6. deleted.

#### **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. Insect Screening: ASTM D3656/D3656M, 18 by 18 aluminum wire mesh.
- E. Aluminum Sheet: ASTM B209M (ASTM B209).
- F. Aluminum Extrusions: ASTM B221M (ASTM B221).

### 2.3 PRODUCTS - GENERAL

- A. Basis of Design: Section 09 06 00, SCHEDULE FOR FINISHES.
- 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 designs.
  - 1. Interior Doors: Level 1 and Physical Performance Level C, standard duty.

SPEC WRITER NOTE: Select face material for each application. Z120 or ZF120 (G40 or A40) galvanized coating is standard. Other coatings provide greater corrosion resistance.

- B. Door Faces:
  - 1. Interior Doors: Galvanized sheet steel minimum Z120 or ZF120 (G40 or A40).
- C. Door Cores:
  - 1. Interior Doors: Kraft paper honeycomb.
  - 2. deleted
  - 3. Fire Doors: Manufacturer's standard complying with specified fire rating performance.

### 2.5 HOLLOW METAL FRAMES

- A. Hollow Metal Frames: ANSI A250.8; See drawings for sizes and designs.
  - 1. Interior Frames:
    - a. Level 1 Hollow Metal Doors: 1.0 mm (0.042 inch) thick.
- B. Frame Materials:
  - 1. Interior Frames: Galvanized sheet steel minimum Z120 or ZF120 (G40 or A40).

**2.6 deleted****2.7 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 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 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. deleted
- F. deleted
- G. deleted
- H. deleted
- I. Hollow Metal Frame Fabrication:
  - 1. Fasten mortar guards to back of hardware reinforcements, except on lead-lined frames.
  - 2. deleted
  - 3. deleted
  - 4. deleted.
  - 5. deleted
  - 6. 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.

## **2.8 FINISHES**

- A. Galvanized Steel: ANSI A250.8; shop primed.

## **2.9 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.
- 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.
  - 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.

### **3.3 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. deleted.
- F. deleted
- G. 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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