

**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 and exterior locations.
2. Hollow metal door frames for wood doors at interior locations.
3. Glazed openings in hollow metal doors.

**1.2 RELATED REQUIREMENTS**

- A. Door Hardware: Section 08 71 00, DOOR HARDWARE.
- B. Glazing: Section 08 80 00, GLAZING.
- C. Card Readers and Biometric Devices: Section 28 13 00, PHYSICAL ACCESS CONTROL SYSTEM.
- D. Intrusion Alarm: Section 28 16 00, INTRUSION DETECTION SYSTEM.
- E. 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. Test reports: Certify products comply with specifications.
- E. Qualifications: Substantiate qualifications comply with specifications.
  - 1. Manufacturer with project experience list.

#### **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.
    - a. Project Experience List: Provide contact names and addresses for completed projects.

#### **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. Thermal Transmittance: 0.41 U-value at exterior doors.
  - 3. Thermal Resistance: 2.44 R-value at exterior doors.

**2.2 MATERIALS**

- A. Sheet Steel: ASTM A1008/A1008M, cold-rolled.
- B. Galvanized Sheet Steel: ASTM A653.

**2.3 PRODUCTS - GENERAL**

- A. Provide hollow metal doors and frames from one manufacturer.

**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 2 and Physical Performance Level B, heavy duty; Model 2, seamless at all locations.
  - 2. Exterior Doors: Level 3 and Physical Performance Level A, extra-heavy duty; Model 2, seamless at all locations.
- B. Door Faces:
  - 1. Interior Doors: Galvanized sheet steel minimum Z275 (G90) coating.
  - 2. Exterior Doors: Galvanized sheet steel minimum Z275 (G90) coating.

C. Door Cores:

1. Interior Doors: Kraft paper honeycomb or vertical steel stiffeners.
2. Exterior Doors: Polystyrene or polyurethane.
3. Fire Doors: Manufacturer's standard complying with specified fire rating performance.

**2.5 HOLLOW METAL FRAMES**

A. Hollow Metal Frames: ANSI A250.8; face welded. See drawings for sizes and designs.

1. Interior Frames:

- a. Level 2 and Level 3 Hollow Metal Doors: 1.3 mm (0.053 inch) thick.
  - b. Wood Doors and Borrowed Lights: 1.3 mm (0.053 inch) thick.
2. Interior Borrowed Light Frames: 1.3 mm (0.051 inch) thick.

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B. Frame Materials:

1. Interior Frames: Z180 or ZF180 (G60 or A60) coating.
2. Exterior Frames: Galvanized sheet steel minimum Z275 (G90) coating.

**2.6 LOUVERS - NOT USED**

**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. Hollow Metal Frame Fabrication:

1. Fasten mortar guards to back of hardware reinforcements, except on lead-lined frames.
2. Terminated Stops: ANSI A250.8.
3. Borrowed Light Frames:

- a. Provide integral stop on exterior, corridor, or secure side of door.
  - b. Design rabbet width and depth to receive glazing material or panel shown on drawings.
4. 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 inches 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 jambs stop and strap spacers for 6 mm (1/4 inch) flat head bolts to pass through frame and spacers.
- 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. Steel and Galvanized Steel: ANSI A250.8; shop primed.
- B. Finish exposed surfaces after fabrication.
- C. Primers: ANSI A250.8.
- D. Barrier Coating: ASTM D1187/D1187M.
- E. Welding Materials: AWS D1.1/D1.1M, type to suit application.
- F. Clips Connecting Members and Sleeves: Match door faces.
- G. Fasteners: Galvanized steel.
  - 1. Metal Framing: Steel drill screws.
  - 2. Masonry and Concrete: Expansion bolts and power actuated drive pins.
- H. Anchors: Galvanized steel.
- I. Galvanizing Repair Paint: MPI No. 18.
- J. 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.

### **3.3 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. 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 traffic and construction operations.

B. Remove protective materials immediately before acceptance.

C. Repair damage.

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