# SECTION 08 11 13

# HOLLOW METAL DOORS AND FRAMES

## PART 1 - GENERAL

### 1.1 DESCRIPTION

A. This section specifies steel doors, steel frames and related components.

B. Terms relating to steel doors and frames as defined in ANSI A123.1 and as specified.

### 1.2 RELATED WORK

A. Aluminum frames entrance work: Section 08 41 13, ALUMINUM-FRAMED ENTRANCES AND STOREFRONTS.

B. Door Hardware: Section 08 71 00, DOOR HARDWARE.

C. Glazing: Section 08 80 00, GLAZING.

### 1.3 TESTING

A. An independent testing laboratory shall perform testing.

### 1.4 SUBMITTALS

A. Submit in accordance with Section 01 33 23, SHOP DRAWINGS, PRODUCT DATA, AND SAMPLES.

B. Manufacturers Literature and Data:

1. Fire rated doors and frames, showing conformance with NFPA 80 and Underwriters Laboratory, Inc., or Intertek Testing Services or Factory Mutual fire rating requirements.

### 1.5 SHIPMENT

A. Prior to shipment label each door and frame to show location, size, door swing and other pertinent information.

B. Fasten temporary steel spreaders across the bottom of each door frame.

## 1.6 STORAGE AND HANDLING

A. Store doors and frames at the site under cover.

B. Protect from rust and damage during storage and erection until completion.

## 1.7 APPLICABLE PUBLICATIONS

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

B. Federal Specifications (Fed. Spec.):

L-S-125B.....Screening, Insect, Nonmetallic

C. Door and Hardware Institute (DHI):

A115 Series.....Steel Door and Frame Preparation for Hardware, Series A115.1 through A115.17 (Dates Vary)

D. Steel Door Institute (SDI):

113-01.....Thermal Transmittance of Steel Door and Frame Assemblies
128-1997.....Acoustical Performance for Steel Door and Frame Assemblies
A250.8-03.....Standard Steel Doors and Frames

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

A167-99(R2004).....Stainless and Heat-Resisting Chromium-Nickel Steel Plate, Sheet, and Strip
A568/568-M-07.....Steel, Sheet, Carbon, and High-Strength, Low-alloy, Hot-Rolled and Cold-Rolled
A1008-08.....Steel, sheet, Cold-Rolled, Carbon, Structural, High Strength Low Alloy and High Strength Low Alloy with Improved Formability

B209/209M-07.....Aluminum and Aluminum-Alloy Sheet and Plate

B221/221M-08.....Aluminum and Aluminum-Alloy Extruded Bars, Rods, Wire, Profiles and Tubes

D1621-04.....Compressive Properties of Rigid Cellular Plastics

D3656-07.....Insect Screening and Louver Cloth Woven from Vinyl Coated Glass Yarns

E90-04.....Laboratory Measurement of Airborne Sound Transmission Loss of Building Partitions

F. The National Association Architectural Metal Manufactures (NAAMM):

Metal Finishes Manual (1988 Edition)

G. National Fire Protection Association (NFPA):

80-09.....Fire Doors and Fire Windows

H. Underwriters Laboratories, Inc. (UL):

Fire Resistance Directory

I. Intertek Testing Services (ITS):

Certifications Listings…Latest Edition

J. Factory Mutual System (FM):

Approval Guide

**PART 2 - PRODUCTS**

**2.1 MATERIALS**

A. Stainless Steel: ASTM A167, Type 302 or 304; finish, NAAMM Number 4.

B. Sheet Steel: ASTM A1008, cold-rolled for panels (face sheets) of doors.

C. Anchors, Fastenings and Accessories: Fastenings anchors, clips connecting members and sleeves from zinc coated steel.

D. Aluminum Sheet: ASTM B209/209M.

E. Aluminum, Extruded: ASTM B221/221M.

F. Prime Paint: Paint that meets or exceeds the requirements of A250.8.

## 2.2 FABRICATION GENERAL

A. GENERAL:

1. Follow SDI A250.8 for fabrication of standard steel doors, except as specified otherwise. Doors to receive hardware specified in Section 08 71 00, DOOR HARDWARE. Tolerances as per SDI A250.8. Thickness, 1-3/4 inches, unless otherwise shown.
2. Close top edge of exterior doors flush and seal to prevent water intrusion.
3. When vertical steel stiffeners are used for core construction, fill spaces between stiffeners with mineral fiber insulation.

B. Standard Duty Doors: SDI A250.8, Level 1, Model 2 of size and design shown. Use for interior locations only. Do not use for stairwell doors, security doors and detention doors.

C. Heavy Duty Doors: SDI A250.8, Level 2, Model 2 of size and design shown. Core construction types a, d, or f, for interior doors, and, types b, c, e, or f, for exterior doors.

D. Fire Rated Doors (Labeled):

1. Conform to NFPA 80 when tested by Underwriters Laboratories, Inc., Inchcape Testing Services, or Factory Mutual for the class of door or door opening shown.
2. Fire rated labels of metal, with raised or incised markings of approving laboratory shall be permanently attached to doors.
3. Close top and vertical edges of doors flush. Vertical edges shall be seamless. Apply steel astragal to the meeting stile of the active leaf of pairs of fire rated doors, except where vertical rod exit devices are specified for both leaves swinging in the same direction.
4. Construct fire rated doors in stairwell enclosures for maximum transmitted temperature rise of 450 °F above ambient temperature at

end of 30 minutes of fire exposure when tested in accordance with ASTM E152.

## 2.3 METAL FRAMES

A. General:

1. SDI A250.8, 0.053 inch thick sheet steel, types and styles as shown or scheduled.
2. Frames for exterior doors: Fabricate from 0.067 inch thick galvanized steel conforming to ASTM A525.
3. Frames for labeled fire rated doors.

   a. Comply with NFPA 80. Test by Underwriters Laboratories, Inc., Inchcape Testing Services, or Factory Mutual.
   b. Fire rated labels of approving laboratory permanently attached to frames as evidence of conformance with these requirements. Provide labels of metal or engraved stamp, with raised or incised markings.

4. Knocked-down frames are not acceptable.

B. Reinforcement and Covers:

1. SDI A250.8 for, minimum thickness of steel reinforcement welded to back of frames.
2. Provide mortar guards securely fastened to back of hardware reinforcements except on lead-lined frames.

C. Terminated Stops: SDI A250.8.

D. Glazed Openings and Panel Opening:

1. Integral stop on exterior, corridor, or secure side of door.
2. Design rabbet width and depth to receive glazing material or panel shown or specified.

E. Two piece frames:

1. One piece unequal leg finished rough buck sub-frames as shown, drilled for anchor bolts.

2. Unequal leg finished frames formed to fit subframes and secured to subframe legs with countersunk, flat head screws, spaced 12 inches on center at head and jambs on each side.
3. Preassemble at factory for alignment.

F. Frame Anchors:

1. Floor anchors:

   a. Where floor fills occur, provide extension type floor anchors to compensate for depth of fill.
   b. At bottom of jamb use 0.053 inch thick steel clip angles welded to jamb and drilled to receive two 1/4 inch floor bolts. Use 2 inch by 2 inch by 3/8 inch clip angle for lead lined frames, drilled for 3/8 inch floor bolts.
   c. Where mullions occur, provide 0.093 inch thick steel channel anchors, drilled for two 1/4 inch floor bolts and frame anchor screws.
   d. Where sill sections occur, provide continuous 0.042 inch thick steel rough bucks drilled for 1/4 inch floor bolts and frame anchor screws. Space floor bolts at 24 inches on center.

2. Jamb anchors:

   a. Locate anchors on jambs near top and bottom of each frame, and at intermediate points not over 24 inches apart, except for fire rated frames space anchors as required by labeling authority.
   b. Form jamb anchors of not less than 0.042 inch thick steel unless otherwise specified.
   c. Anchors set in masonry: Use adjustable anchors designed for friction fit against the frame and for extension into the masonry not less than 10 inches. Use one of following type:

      1) Wire loop type of 3/16 inch diameter wire.
      2) T-shape or strap and stirrup type of corrugated or perforated sheet steel.

d. Anchors for stud partitions: Either weld to frame or use lock-in snap-in type. Provide tabs for securing anchor to the sides of the studs.

e. Anchors for frames set in prepared openings:

1) Steel pipe spacers with 1/4 inch inside diameter welded to plate reinforcing at jamb stops or hat shaped formed strap spacers, 2 inches wide, welded to jamb near stop.
2) Drill jamb stop and strap spacers for 1/4 inch flat head bolts to pass thru frame and spacers.
3) Two piece frames: Subframe or rough buck drilled for 1/4 inch bolts.

f. Modify frame anchors to fit special frame and wall construction and provide special anchors where shown or required.

## 2.4 TRANSOM PANELS

A. Fabricate panels as specified for flush doors.

B. Fabricate bottom edge with rabbet stop to fit top of door where no transom bar occurs.

## 2.5 LOUVERS

A. General:

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

B. Fabrication:

1. Steel louvers 0.032 inch thick for interior doors, and 0.053 inch thick for exterior doors.

2. Fabricate louvers as complete units. Install in prepared cutouts in doors.
3. Weld stationary blades to frames. Weld louvers into door openings.

C. Screen frames:

1. Frame of either extruded aluminum or tubular aluminum.
2. Fabricate frame to hold wire fabric in a channel with a retaining bar anchor and to mount on surface of door with screws.
3. Do not lap frame over louver opening.
4. Miter corners of frame members and join by concealed mechanical fastenings extending about 2-1/4 inches into ends of each member.
5. Drill frame and doors for screw attachment. Space screws 2 inches from end of each leg of frame and not over 12 inches on center between end screws.
6. Finish: Clear anodized finish, 0.4 mils thick.

**2.6 SHOP PAINTING**

A. SDI A250.8.

**PART 3 - EXECUTION**

**3.1 INSTALLATION**

A. Plumb, align and brace frames securely until permanent anchors are set.

1. Use triangular bracing near each corner on both sides of frames with temporary wood spreaders at midpoint.
2. Use wood spreaders at bottom of frame if the shipping spreader is removed.
3. Protect frame from accidental abuse.
4. Where construction will permit concealment, leave the shipping spreaders in place after installation, otherwise remove the spreaders after the frames are set and anchored.
5. Remove wood spreaders and braces only after the walls are built and jamb anchors are secured.

B. Floor Anchors:

1. Anchor the bottom of door frames to floor with two 1/4 inch diameter expansion bolts. Use 3/8 inch bolts on lead lined frames.
2. Power actuated drive pins may be used to secure frame anchors to concrete floors.

C. Jamb Anchors:

1. Anchors in masonry walls: Embed anchors in mortar. Fill space between frame and masonry wall with grout or mortar as walls are built.
2. Coat frame back with a bituminous coating prior to lining of grout filling in masonry walls.
3. Secure anchors to sides of studs with two fasteners through anchor tabs. Use steel drill screws to steel studs.
4. Frames set in prepared openings of masonry or concrete: Expansion bolt to wall with 1/4 inch expansion bolts through spacers. Where subframes or rough bucks are used, 1/4 inch expansion bolts on 24 inches centers or power activated drive pins 24 inches on centers. Secure two piece frames to subframe or rough buck with machine screws on both faces.

D. Install anchors for labeled fire rated doors to provide rating as required.

## 3.2 INSTALLATION OF DOORS AND APPLICATION OF HARDWARE

A. Only those doors that are indicated to be removed and replaced on Drawings will be required to be installed. Disregard other door materials listed in the specifications but not shown on Drawings.

B. Refer to Drawing Sheets R2.2, R2.3 and R2.4 for door replacement required on the project.

C. Install doors and hardware as specified this section and Section 08 71 00, DOOR HARDWARE.

END OF SECTION 08 11 13