

## SECTION 08 11 00

### METAL DOORS AND FRAMES

#### PART 1 - GENERAL

##### 1.01 SECTION INCLUDES

- A. Metal doors.
- B. Lights and vision panels.
- C. Louvers.
- D. Fire-rated doors.
- E. Acoustical doors.
- F. Metal frames.
- G. Door seals and weatherstripping.
- H. Door silencers.

##### 1.02 MEASUREMENT AND PAYMENT

- A. General: Steel Doors and Frames will not be measured separately for payment but will be paid for as part of the Contract lump sum price for Architectural Work.

##### 1.03 REFERENCES

- A. American National Standards Institute (ANSI):
  - 1. ANSI A123.1 Nomenclature for Steel Doors and Steel Door Frames
  - 2. ANSI A224.1 Test Procedure and Acceptance Criteria for Prime Painted Steel Surfaces for Steel Doors and Frames
  - 3. ANSI A250.5 Accelerated Physical Endurance Test Procedure for Steel Doors, Frames, and Frame Anchors
- B. American Society for Testing and Materials (ASTM):
  - 1. ASTM E90 Test Method for Laboratory Measurement of Airborne Sound Transmission Loss of Building Partitions
  - 2. ASTM E152 Methods of Fire Tests of Door Assemblies
- C. Door & Hardware Institute (DHI):
  - 1. DHI A115 Series for Steel Door Preparation Standards

D. National Fire Protection Association (NFPA):

1. NFPA 80 Fire Doors and Windows

E. Steel Door Institute (SDI):

1. SDI 100 Recommended Specifications for Standard Steel Doors and Frames
2. SDI 105 Recommended Erection Instructions for Steel Frames
3. SDI 107 Door Hardware on Steel Doors (Reinforcement-Application)
4. SDI 110 Standard Steel Doors and Frames for Modular Masonry Construction
5. SDI 111 Recommended Standard Details, Steel Doors and Frames
6. SDI 114 Test Procedure and Acceptance Criteria for Acoustical Performance for Steel Door and Frame Assemblies
7. SDI 117 Manufacturing Tolerances, Standard Steel Doors and Frames
8. SDI 118 Basic Fire Door Requirements

**1.04 SUBMITTALS**

- A. General: Refer to Section 01 33 00 - Submittal Procedures, and Section 01 33 23 - Shop Drawings, Product Data, and Samples, for submittal requirements and procedures. For Shop Drawings and other submittals, employ terms as specified in ANSI A123.1.
- B. Shop Drawings: Submit Shop Drawings for hollow metal doors and frames showing size, location, and elevation of each metal door and frame, gage and type of material, details for fabrication of each door and frame, including size and location of each mortise, penetration, reinforcement, sound seal, light, louver, and anchoring device. Indicate the quantity of each size and type of door and frame. Comply with applicable requirements of SDI 100 and SDI 111 Series Drawings.
- C. Product Data: Submit manufacturer's product data of each type of door and frame and certification that materials meet Specification requirements.
- D. Reports and Certificates:
  1. Submit certified test reports from an independent testing laboratory of sound transmission class (STC) ratings for acoustical door assemblies.
  2. Submit certificates of inspection as required for fire-rated doors.

**1.05 QUALITY ASSURANCE**

- A. Manufacturing Standards: Comply with applicable requirements of SDI 100.
- B. Manufacturing Tolerances: Comply with applicable requirements of DHI A115 and SDI 117.
- C. Fire-Rated Doors and Frames: Comply with applicable requirements of DHI A115, SDI 100, and SDI 118. Classification shall be based on door-and-frame assemblies tested in accordance with ASTM E152.
- D. Acoustical Doors and Frames: Comply applicable requirements of DHI A115, SDI 100 and SDI 114. Sound transmission class (STC) ratings shall be based on door-and-frame assemblies tested in accordance with ASTM E90.

## **PART 2 - PRODUCTS**

### **2.01 DOORS**

- A. Classification: Grade and model shall conform with SDI 100 as follows:
  - 1. Doors for Public Use: Grade III - Extra Heavy Duty, Model 2, Seamless, hollow steel construction, internally reinforced with minimum 22 gage continuous vertical formed steel sections spanning the full thickness of the interior space between door faces, securely attached to face sheets by spot welds spaced maximum 5-inches on center. Minimum face gage shall be 16-gage. Spaces between internal stiffeners shall be filled to full height of door with chemically inert, noncombustible moisture-resistant mineral fiber. Sizes and thicknesses as indicated. Doors shall be fabricated from Type 304 stainless steel. Surfaces exposed to view shall be polished to a number 4 satin finish.
  - 2. Doors for District Personnel Use Only: Grade II-Heavy-Duty, Model 1 or 2, full flush type, hollow steel or composite construction, of sizes and thicknesses indicated.
- B. Doors shall be prepared and reinforced for installation of hardware in accordance with DHI A A115 and SDI 107.
- C. Lights and Vision Panels: Comply with glazing requirements of SDI 100. Provide for glazing with synthetic rubber gaskets. Coordinate with Section 08 80 00 - Glazing. Glass shall not contact metal.
- D. Louvers: Comply with louvered-door requirements of SDI 100 and SDI 111. Provide Inverted "V" Blade, "Z" Blade, or Inverted "Y" Blade inserted louvers as indicated, complete with frame and moldings. For exterior doors, provide "Z" Blade or Inverted "Y" Blade louvers. For fire-rated doors, provide Fusible Link louvers in accordance with requirements of SDI 111 and SDI 118. Louvers shall be a minimum of 16 gage cold rolled steel. All louvers shall be vandal proof with pinned stainless steel flat head security screws and single sided mounting for stainless steel doors. Provide stainless steel louvers for stainless steel doors.
- E. Fire-Rated Doors: Where indicated to be fire doors (fire-rated), or where class of opening requires fire door, provide fire doors and frames in accordance with requirements of DHI A115, SDI 100 and SDI 118, of full flush type (Model 1 or 2). Provide each door with label of Underwriters Laboratories Inc. (UL) or Warnock Hersey (WH) for class of opening as indicated in accordance with SDI 118. Labels shall be metal, fastened to hinge stile edge of door.

- F. Acoustical Doors: Provide acoustical doors where indicated of full flush type in accordance with DHI A115 and SDI 100. Provide door and frame assembly with sound transmission class (STC) rating as indicated when tested in accordance with SDI 114. Door and frame units shall be complete with necessary seals and rubber gasketing to achieve the rating.

## **2.02 FRAMES**

- A. Frames shall be hollow pressed-steel frames, combination buck, frame, and trim type as indicated, welded frames, conforming to SDI 100. Corners shall be mitered, fully welded, and ground smooth. Integral stops (rabbets) shall be not less than 5/8 inch in depth.
- B. Frames shall be prepared and reinforced for installation of hardware in accordance with DHI A A115 and SDI 107. Steel for frames shall be not lighter than 16 gage. For openings wider than 6 feet, provide 14 gage steel.
- C. Frames for openings in masonry walls shall conform with applicable requirements of SDI 110.
- D. Frames for fire-rated doors and openings shall conform with requirements of DHI A115, SDI 100 and SDI 118 for class of opening indicated. Provide each fire-rated frame with UL or WH label for class of opening, or submit proof of conformance with UL or WH labeling requirements for approval.
- E. Frames for stainless steel doors shall be stainless steel having same finish as doors.

## **2.03 SHOP FINISH**

- A. Doors and frames shall be treated for paint adherence and given a baked-on corrosion-inhibitive prime coat of metallic oxide or synthetic resin primer in accordance with SDI 100 and meeting acceptance criteria of ANSI A224.1.
- B. Finish field painting is specified in Section 09 91 00 - Painting.

## **2.04 DOOR SEALS AND WEATHERSTRIPPING**

- A. Doors and frames shall be fitted with door seals or gaskets where indicated, and exterior doors and frames shall be fitted with applied rain drips and weatherstripping on all four sides (entire perimeter of opening) in accordance with applicable requirements of SDI 111.
- B. Weatherstripping and seals shall be non-ferrous, with synthetic rubber edge seals where indicated or required, of type or style appropriate for the purpose. Drips and visible weatherstripping shall be painted out to match doors and frames.
- C. Door seals or gasketing for fire-rated doors and acoustical doors shall be synthetic rubber of type manufactured and appropriate for the purpose.
- D. Coordinate types and scheduling of door seals and weatherstripping with Contract Specifications 08 71 00 - Door Hardware, and the types of thresholds to be furnished.

**2.05 DOOR SILENCERS**

- A. Provide pneumatic rubber silencers for interior doors, except fire-rated doors. Coordinate with Section 08 71 00 - Door Hardware. Provide as follows:
  - 1. Single-Leaf Doors: Three each lock jamb frame.
  - 2. Double-Leaf Doors: Two each leaf at head frame, plus three each on astragal.
- B. Silencers shall be installed in stops of frames.

**PART 3 - EXECUTION****3.01 INSTALLATION**

- A. Installation Standards: Install door frames and doors in accordance with SDI 100 and SDI 105, meeting the performance and acceptance criteria of ANSI A250.5. Door frames and doors installed in masonry walls shall meet the requirements of SDI 100 and SDI 110.
- B. Frames: Frames shall be set accurately in position, plumbed, aligned, and braced securely until permanent anchors are installed. Where frames require ceiling struts or other structural overhead bracing, they shall be anchored securely to structure above, as required. Where indicated or required by class of opening, frames shall be filled solid with portland cement grout by providing one inch grout holes at top of each door jamb. Provide additional grout holes as required to fill around internal obstructions.
- C. Doors: Doors shall be hung by skilled workers to fit snug against stops. Fit accurately and hang free from hinge bind with uniform clearance of 3/32 inch at heads and jambs. After hanging, make adjustments, and then remove doors and hardware for finish painting and make final adjustments. Verify that direction of swing is as indicated.
- D. Finish Hardware: Coordinate installation with Contract Specifications Section 08 71 00 - Door Hardware.
  - 1. Install accurately and securely without marking or defacing hardware or finish work. Hardware shall be fastened with machine screws or bolts. Sheet metal screws will not be permitted. Test hardware to assure correct alignment and operation. Finish hardware shall be fastened at all points where fasteners are indicated or required.
  - 2. Thresholds shall be embedded in approved sealant, and shall be secured to concrete floors with stainless steel screws in nonferrous expansion shields.
  - 3. Provide hardware in satisfactory working order. Clean and polish.
- E. Door Seals and Weatherstripping: Weatherstripping and seals shall be installed to provide rainproof service and so that there is no air, light, and sound leakage. Stops shall fit tight against doors.
- F. Fire-Rated Doors and Frames: Installation of doors and frames, including hardware and operational characteristics, shall be in accordance with NFPA Standard No. 80, as applicable. Verify that doors and frames are labeled as indicated.

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- G. Prime Paint Touch-Up: Immediately after installation, touch up damaged prime coat with the same primer as was used for the shop finish. Lightly sand and feather out damaged surfaces so that paint touch-up becomes invisible. Spray paint touch-up work.
- H. Temporary Protection: Provide protective facings or coverings for doors and frames to receive continued use during construction.

**END OF SECTION 08 11 00**