

SECTION 08 11 00
METAL DOORS AND FRAMES

PART 1 GENERAL

1.01 REFERENCES

A. The following is a list of standards which may be referenced in this section:

1. American National Standards Institute (ANSI):
 - a. A250.6, Hardware on Standard Steel Doors (Reinforcement - Application).
 - b. A250.8, Recommended Specification for Standard Steel Doors and Frames.
 - c. A250.11, Recommended Erection Instructions for Steel Frames.
2. ASTM International (ASTM):
 - a. A36/36M, Standard Specification for Carbon Structural Steel.
 - b. A653/A653M, Standard Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process.
 - c. A879/879M, Standard Specification for Steel Sheet, Zinc Coated by the Electrolytic Process for Applications Requiring Designation of the Coating Mass on Each Surface.
 - d. A1011/A1011M, Standard Specification for Steel, Sheet and Strip, Hot-Rolled, Carbon, Structural, High-Strength Low-Alloy, High-Strength Low-Alloy with Improved Formability, and Ultra-High Strength.
 - e. A1008/A1008M, Standard Specification for Steel, Sheet, Cold-Rolled, Carbon, Structural, High-Strength Low-Alloy, High-Strength Low-Alloy with Improved Formability, Solution Hardened, and Bake Hardenable.
3. Builders Hardware Manufacturers Association (BHMA): A156.115, Hardware Preparations in Standard Steel Doors and Frames.
4. National Fire Protection Association (NFPA): 80, Standard for Fire Doors and Other Opening Protectives.
5. UL: Building Materials Directory.

1.02 SUBMITTALS

A. Action Submittals:

1. Product data and manufacturer's recommended installation instructions and procedures.

2. Shop Drawings:
 - a. Applicable information for each type of door and frame, including:
 - 1) Dimensioned door and frame elevations, sections, and details.
 - 2) Schedule of opening descriptions including locations, material thickness, and anchor. Relate to door numbers as shown.
 - 3) Glass and louver opening sizes and locations in doors.
 - 4) Clearly identify modifications for labeled fire doors and frames.
 - 5) Anchorage and bracing drawings, and/or catalog information, as required by Section 01 88 15, Anchorage and Bracing, for loads provided in General Structural Notes as shown.

B. Informational Submittals:

1. Anchorage and bracing calculations as required by Section 01 88 15, Anchorage and Bracing, for loads provided in General Structural Notes as shown. Submit with Action Submittal for the same item.
2. Certificate of Proper Installation as specified in Section 01 67 00, Product Requirements.
3. Sustainable Design: In accordance with Section 01 81 13, Sustainable Design Requirements for Non-LEED™ Projects, document sustainability performance for items listed below.
 - a. Product Data for Recycled Materials:
 - 1) A complete list of materials and quantities.
 - 2) Percentage of post-consumer and preconsumer recycled content of all materials.

1.03 QUALIFICATIONS

- A. Fabricator: Company specializing in performing the work of this section with minimum 5 years documented experience.
- B. Installer: Experienced and trained personnel with successful installations of similar size and scope with minimum 5 years documented experience.

1.04 DESIGN REQUIREMENTS

- A. Installed Exterior Door and Frame Assemblies: Capable of resisting wind load of 30 pounds per square foot.

1.05 DELIVERY, STORAGE, AND HANDLING

- A. Properly identify each item with number as shown.
- B. Comply with HMMA 840 for handling and storage of doors and frames before installation.
- C. Protect doors, panels, and frames with resilient packaging, sealed with heat-shrunk plastic. Break seal on site to permit ventilation.
- D. Store metal doors, frames, and panels within the building in space designated by Contracting Officer and protected from damage.

1.06 COORDINATION

- A. Coordinate work in this section with door hardware sizes, types, and installation.

PART 2 PRODUCTS

2.01 MANUFACTURERS

- A. Materials, equipment, and accessories specified in this section shall be products of:
 - 1. Curries Manufacturing.
 - 2. Or equal.

2.02 GENERAL MATERIAL CHARACTERISTICS

- A. Physical Characteristics:
 - 1. Basic Metal Material:
 - a. ASTM A36/36M, for reinforcement steel.
 - b. ASTM A653/A653M, Sheet steel hot dipped galvanized, A60 zinc-iron alloy coating.
 - c. ASTM A879/879M, Steel Sheet, Electrolytic Zinc-Coated.
 - d. ASTM A924/A924M, Hot-Dipped Zinc Coated Steel.
 - e. ASTM A1008/A1008M; cold-rolled, stretcher level sheet steel for doors.
 - f. ASTM A1011/A1011M, hot-rolled carbon steel for frames.
- B. Functional Characteristics: As specified for each item below.

C. Performance Characteristics:

1. Sustainable Material Requirements:

- a. Recycled Content of Steel Products: Provide products with a minimum combined recycled content of 70 percent and a minimum post-consumer recycled content of 50 percent.

2.03 HOLLOW METAL FRAMES:

A. Physical Characteristics:

- 1. Steel Type: Zinc-iron alloy-coated, A60.
- 2. Interior Door Frames: 16 gauge/0.053 inch.
- 3. Exterior Door Frames: 14 gauge/0.067 inch, with thermal break.
- 4. Finished size, shape, and profile of frame members as shown.
- 5. Identification: Stamp opening number, as shown, on center hinge reinforcement of each frame.

B. Functional Characteristics:

- 1. Products of hollow metal door manufacturer.
- 2. Continuously welded type.
- 3. Prepare floor and wall anchors, reinforcement, and cutouts for hardware to meet requirements of BHMA A156.115 and ANSI A250.6.
- 4. Concealed fasteners or welding are preferred to through-the-face fasteners.

C. Performance Characteristics: ANSI A250.8, except as modified herein.

2.04 HOLLOW METAL DOORS:

A. Physical Characteristics:

- 1. Steel Type: Zinc-iron alloy-coated, A60.
- 2. Interior:
 - a. Flush Panel Doors: 18 gauge/0.042 inch, Level 2, Model 2.
 - b. Core Type: Manufacturer's standard.
 - c. End Closures: Channel, 0.04 inch thick, flush at door top and inverted at door bottoms with welded seamless edge.
 - d. Nominal Thickness: 1-3/4 inches.
 - e. Door Louvers: Manufacturer's standard fixed blade, double-zee louver, minimum 16 gauge with vertical slat reinforcement at 12-inch centers, and minimum 30 percent free area, factory installed, size as shown.

3. Exterior:
 - a. Flush Panel Doors: 16 gauge/0.053 inch, Level 3, Model 2.
 - b. Core Type: Polyurethan fill material, having no formaldehyde resins.
 - c. End Closures: Channel, 0.04 inch thick, flush at door top and inverted at door bottoms with welded seamless edge.
 - d. Nominal Thickness: 1-3/4 inches.

B. Functional Characteristics:

1. Double Doors: Overlapping astragals for active leaf, except as noted or detailed otherwise.
2. Glazing:
 - a. Doors: Furnish with formed flush-type glazing strips with butt corner joints to permit selection of secure side in field.
 - b. Glazing Arrangements: Accommodate glass of type and thickness indicated and as specified in Section 08 80 00, Glazing.

C. Performance Characteristics:

1. ANSI A250.8, except as modified herein. BHMA A156.115 and ANSI A250.6 to receive hardware specified in Door and Hardware Schedule as shown on the Drawings.
2. Exterior Doors: R-Value of 8 minimum.

2.05 LABELED FIRE DOORS AND FRAMES:

A. Physical Characteristics:

1. Steel Type: Zinc-iron alloy-coated, A60.
2. Interior:
 - a. Flush Panel Doors: 18 gauge/0.042 inch, Level 2, Model 2.
 - b. Core Type: Manufacturer's standard temperature rise core.
 - c. End Closures: Channel, 0.04 inch thick, flush at door top and inverted at door bottoms with welded seamless edge.
 - d. Nominal Thickness: 1-3/4 inches.

B. Functional Characteristics:

1. Glazing:
 - a. Doors: Furnish with formed flush-type glazing strips with butt corner joints to permit selection of secure side in field.
 - b. Glazing Arrangements: Accommodate fire rated glass of type and thickness indicated and as specified in Section 08 80 00, Glazing.

C. Performance Characteristics:

1. ANSI A250.8, except as modified herein. BHMA A156.115 and ANSI A250.6 to receive hardware specified in Door and Hardware Schedule as shown on the Drawings.
2. Conform to listing requirements of UL.
3. Label each door and frame for class of rating required in accordance with NFPA Pamphlet No. 80.
4. Maximum temperature rise of 450 degrees F for stairway enclosures.

2.06 MISCELLANEOUS ITEMS

A. Filler or Transom Panels: Furnish of same construction and finish as door.

B. Furnish manufacturer's standard fasteners and other ancillary items unless specified herein.

C. Jamb Anchors:

1. ASTM A153/A153M zinc coated steel.
2. Furnish frames with minimum of three anchors per jamb-using manufacturer's standard anchors as appropriate for indicated wall construction. Locate anchors at a maximum of 18 inches from top and bottom of frame, spaced at maximum 32 inches on center. Fabricate anchors of not less than 0.53-inch thick steel or 0.156-inch diameter wire.
3. Furnish tee-shaped corrugated or perforated metal anchors in adjoining masonry of concrete construction. Use adjustable anchors with friction fit for frames set in concrete.
4. For doors installed in existing concrete or masonry openings, provide surface installed anchors in accordance with SDI 111 Subsection F. Use flat head expansion bolts with expansion shields set in countersunk holes.

D. Grout: ASTM C476, except with a maximum slump of 4 inches, as measured according to ASTM C143/C143M.

2.07 FABRICATION

A. Fabricate hollow metal work to be rigid and free of defects, warp, or buckle. Accurately form metal to required sizes and profiles, with minimum radius for thickness of metal. Fit and assemble units in manufacturer's plant to greatest extend possible.

B. Hardware Preparation: Mortise, reinforce, drill and tap doors and frames to receive scheduled finish hardware specified in Section 08 71 00, Door Hardware. Prepare doors and frames for hardware in accordance with

applicable requirements of ANSI A250.6, ANSI A250.8 (SDI 100), and ANSI (BHMA) A156.115. Provide internal reinforcement for surface-mounted hardware, which is field-drilled and tapped; steel thickness as required by manufacturer to adequately support door and hardware. Locate hardware in frames in accordance with approved hardware schedule and templates.

- C. Identification: Stamp opening number, as shown, on center hinge reinforcement of each frame.

2.08 FACTORY FINISHING REQUIREMENTS

- A. After fabrication, fill and sand all tool marks and surface imperfections as required to make face sheets, vertical door edges, and frame weld joints free from irregularities and dressed smooth.
- B. Treat exposed metal surface of door and frame product for maximum paint adhesion and coat with factor applied rust-inhibiting direct to metal (DTM) prime coating compatible with finish coating as shown and as specified in Section 09 90 00, Painting and Coating. Primer to meet requirements of ANSI A250.10.
- C. Bituminous Coating:
 - 1. Cold-applied asphalt mastic, SSPC Paint 12, compounded for 15-mil dry film thickness per coat.
 - 2. Coat inside concealed surfaces of door frames in masonry walls as required to be filled with grout.

PART 3 EXECUTION

3.01 INSTALLATION

- A. Frames:
 - 1. Install in accordance with ANSI A250.11 and manufacturer's instructions.
 - a. Maintain scheduled dimensions, hold head level, and maintain jambs plumb and square.
 - b. Secure anchorages and connections to adjacent construction.
 - c. Wherever possible, leave frame spreader bars intact until frames are set perfectly square and plumb and anchors are securely attached.
 - d. Coordinate with masonry, concrete, and wallboard construction for anchor placement.
 - e. Grout frames solid where located in new masonry walls. Provide grout guards to protect hardware mortises and tapped holes from masonry grout.

B. Doors:

1. Install in accordance with ANSI A250.8 and DHI Installation Guide for Doors and Hardware.
2. Hardware: In accordance with manufacturer's templates and instructions.
 - a. Adjust operable parts for correct function.
 - b. Remove hardware, with exception of prime coated items, tag, box, and reinstall after finish paint work is completed.
3. Coordinate installation of glass as specified in Section 08 80 00, Glazing.

3.02 FIELD TOUCH-UP PAINTING

- A. Where prime coat has been damaged, sand smooth and touch up with same primer as applied at shop.
1. Remove rust before painting.
 2. Touch Up: Not obvious.
 3. Perform immediately after door and frame installation.
 4. Meet requirements of specification Section 09 90 00, Painting and Coating.

3.03 INSTALLATION TOLERANCES

- A. Adjust hollow metal door frames for squareness, alignment, twist, and plumb to the following tolerances:
1. Maximum Diagonal Distortion: 0.0625 inch measured with straightedge, corner to corner.
 2. Squareness: Measured at rabbet on a line from jamb, perpendicular to frame head; not to exceed 0.0625 inch.
 3. Alignment: Measured at jambs on a horizontal line parallel to the plan of the face; not to exceed 0.0625 inch.
 4. Twist: Measured at opposite face corners of jambs on parallel lines perpendicular to the plan of the door rabbet; not to exceed 0.0625 inch.
 5. Plumbness: Measured at the jambs on a perpendicular line from the head to the floor; not to exceed 0.0625 inch.

3.04 ADJUSTING AND CLEANING

- A. Adjust for smooth and balanced door movement. Check and readjust operating hardware items immediately before final inspection. Leave work in complete and proper operating condition. Remove and replace defective work,

including hollow metal work that is warped, bowed, or otherwise unacceptable.

- B. Upon completion, clean exposed surfaces of door and frames thoroughly.

3.05 PROTECTION

- A. Protect installed units during construction period. Remove and replace work that displays deterioration, use, or damage at time of Substantial Completion. Provide new units if damage cannot be repaired.

3.06 SCHEDULES

- A. For tabulation of door and frame characteristics, such as size, type, detail, and finish hardware requirements, see Door and Hardware Schedule as shown on the Drawings.

END OF SECTION

