

## SECTION 08110

### HOLLOW METAL DOORS AND FRAMES

#### PART 1 GENERAL

##### 1.1 SUMMARY

A. Section Includes:

1. Pressed steel hollow metal doors and frames.
2. Metal louvers in hollow metal doors.
3. Rough bucks, frame reinforcing, door reinforcing, door insulation, closer reinforcements, clip angles and anchorage.
4. Factory prime paint finish.
5. Grouting of hollow metal frames with masonry mortar where not covered under other Sections.

B. Related Sections:

1. Section 08710 – Hardware: Finish hardware, weather-stripping and sound-stripping.
2. Section 09900 – Painting: Finish painting

##### 1.2 REFERENCES

- A. ANSI A250.8-1998/SDI-100 - Recommended Specifications - Standard Steel Doors and Frames, Steel Door Institute, unless herein specified.
- B. ANSI A250.13-2003 – Standard procedures for component testing to Florida Building Code
- C. NFPA-101-2001 – Life Safety Code.
- D. ASTM-A 366-95A – Specification for Steel, Sheet, Carbon, Cold-Rolled, Commercial Quality.
- E. ASTM-A 568-95 – Specification for Steel, Sheet, Carbon, and High Strength, Low-Alloy, Hot-Rolled, and Cold-Rolled.
- F. ASTM-A 569-91a – Specification for Steel, Carbon, (0.15 maximum percent), Hot-Rolled Sheet and Strip Commercial Quality.
- G. ASTM-A 924-95 – General Requirements for Steel Sheet, Metallic Coated by the Hot-Dip Process.
- H. SDI-105-92 – Recommended Erection Instructions for Steel Frames.
- I. ANSI A115.1-18 - Specification for Door and Frame Preparation for Hardware.
- J. ANSI A156.7 - Standard Template Hinge Dimensions.

##### 1.3 SUBMITTALS

- A. Shop Drawings: Submit in accordance with Section 01300. Indicate general construction, configurations, jointing methods, reinforcements, and location of hardware and cutouts for glass and louvers.

##### 1.4 QUALITY ASSURANCE

- A. Applicable Standards: Specifications and standards of SDI 100-98.
- B. Wind Load Performance Requirements: All exterior doors and frames must meet Florida Windstorm Requirements.
- C. Supplier Qualification: Qualified direct distributor of products to be furnished. The distributor shall have in their regular employment an A.H.C./C.D.C. or person of equivalent experience who will be available at reasonable times to consult with the Architect, Construction Manager and/or Owner regarding any matters affecting the total door and frame openings.
- D. Installer Qualification: Experience with installation of similar materials.

## **1.5 PRODUCT HANDLING**

- A Deliver hollow metal doors in manufacturer's protective covering. Handle hollow metal with care to prevent damage.
- B Door Storage: Store doors in upright position, under cover. Place doors on at least 4 inch (101.6) high wood sills or on floors in manner that will prevent rust and damage. Do not use non-vented plastic or canvas shelters which create humidity chamber and promote rusting. If corrugated wrapper on door becomes wet, or moisture appears, remove wrapping immediately. Provide 1/4 inch (6.3) space between doors to promote air circulation
- C Frame Storage: Store frames under cover on 4 inch wood sills on floors in manner that will prevent rust and damage. Do not use non-vented plastic or canvas shelters which create humidity chamber and promote rusting. Store assembled frames in vertical position, 5 units maximum in stack. Provide 1/4 inch space between frames to promote air circulation.

## **1.6 SEQUENCING AND SCHEDULING**

- A. Deliver doors and frames to the jobsite in a timely manner so as not to delay progress of other trades.

## **PART 2 PRODUCTS**

### **2.1 ACCEPTABLE MANUFACTURERS**

- A. Ceco Door Products
- B. Curries Company
- C. Deansteel Manufacturing Co.
- D. Pioneer Industries, Inc.

### **2.2 HOLLOW METAL**

- A. Acceptable Manufacturers: (providing the products supplied comply with the provisions of this specification) Curries.
- B. Cold Rolled Steel Sheets: Commercial quality, stretcher leveled flatness, cold-rolled steel, free from scale, pitting or other surface defects, complying with ASTM A366 and A568 general requirements.
- C. Galvannealed Steel Sheets: ASTM A924, A60 zinc coating. Use galvannealed steel sheets for exterior hollow metal doors, door frames and door louvers. Internal reinforcing may be manufactured of hot rolled pickled and oiled steel per ASTM-A569.
- D. Minimum gauges of hollow metal are specified below. Provide heavier gauge if required by details or specific condition. Entire frame and sidelight shall be of same gauge.
  - 1. 16 gauge: Interior door frames.
  - 2. 16 gauge: Labeled frames (or heavier if required by label).
  - 3. 16 gauge (or as required to meet Florida Building Code): Exterior door frames.
  - 4. 16 gauge (or as required to meet Florida Building Code): Exterior doors.
  - 5. 20 gauge: Trim members.
- E. Coating Materials, primer: Use manufacturer's standard rust inhibiting primer conforming to ANSI-A224.1-1990.

### **2.3 RELATED MATERIALS**

- A. Steel Reinforcing: ASTM A36.
- B. Door Bumpers or Silencers: Per ANSI A156.16.

### **2.4 HOLLOW METAL FRAMES**

- A. General: Form to profiles indicated. Where necessary, alternate details will be considered provided design intent is maintained. Consider and provide for erection methods.
- B. Typical Reinforcing: Provide minimum hinge reinforcement 3/16 inch by 1-1/2 inch by 10 inch. Provide similar reinforcement for hardware items as required to adequately withstand stresses, minimum 12

gauge, including channel reinforcement for door closers and closer arms, door holders and similar items. Provide reinforcement and clearances for concealed in-head door closers and for mortise locks.

- C Cover Plates: For hinge and strike plate cutouts, provide fully enclosed pressed steel cover boxes spot welded to frames behind mortises.
- D Hardware: Mortise, reinforce, drill and tap for mortise hardware, except drilling and tapping for surface door closers, door closer brackets and adjusters shall be done in field.
- E Anchorage: Provide standard and special anchorage items as required. Provide formed steel channel spreader at bottom of frames, removable without damaging frame. At masonry, provide anchors (about 2 inch by 10 inch) approximately 24 inches on center.
- F Silencers: Provide specified silencers, except where stop does not occur and at smoke gasketed openings, 3 per jamb at single door and one for each door at double doors.
- G Extensions: Reinforce transom bars or mullions as necessary to provide rigid installation. Where required (as at multiple openings) to stabilize large frames, provide frame or mullion extensions to anchor to structure above, proper size to fit within overhead construction. Provide angle clips to fasten to structure.
- H Mullions: Provide mullions, straight and without twist, of tubular design. For removable mullions provide reinforcing at frame head.
- I Clearances: Provide and be responsible for proper clearances at metal frames, including for weather-stripping, sound stripping and smoke gasketing. Glass clearance shall be thickness of glass plus clearance each side (1/8 inch minimum exterior - 1/16 inch minimum interior), adjust for installation, glass thickness to allow for glazing and sealant. Where sealed double glazing is indicated, provide rebates minimum of 3/4 inch and provide 1/4 inch clearance at glass edges. Where units fit around concrete blocks (blocks built into frames) obtain actual dimensions of blocks being used to establish minimum clearances.
- J Drip Cap: Galvanized steel field painted per 09900. Secure to frame at exterior doors
- K Stops: Set with countersunk or Jackson head screws.
- L Joinings: At frames with equal width jambs and head, neatly miter on face (except locations as at transom bars and at frames with large head members). Cope and butt stops. Weld length of entire joint, including face and flat intersections. Grind smooth, at other frames, provide same mitered joint wherever possible (at intersection of jamb-head or jamb-sill) and at other locations butt metal neatly and full weld. If tight butt joints are utilized, joints shall be neatly caulked smooth.
- M Workmanship: Fabricate so no grind marks, hollow or other out-of-plane areas are visible. At joints of intermediate members (such as mullions and transom bars), provide tight joining, neatly accomplished without holes, burned out spots, weld build up or other defacing work. Fill to close cracks and to preserve shapes. Tightly fit loose stops, to hairline joints.
- N Finish: Clean frames by degreasing process and apply thorough coating of baked-on primer, covering inside as well as outside surfaces. At galvanealed frames, coat welds and other disrupted surface with zinc-rich paint containing not less than 90 percent zinc dust by weight.

## 2.5 HOLLOW METAL DOORS

- A Provide to design indicated including: Flush panel doors, flush panel with cut-out as indicated, stile and rail type, stile and rail with door louver. Use galvanealed steel at exterior doors.
- B Flush Doors: Reinforce, stiffen and sound deaden. Provide cut-outs for glass and louvers with stops as shown. Provide flush steel closure at top of exterior and interior doors and at bottom of exterior doors with drain holes in bottom closure. Provide seamless edge. Following door construction types are acceptable.
  - I Door Construction as required to meet Florida Building Code for Wind Load requirements: Manufacturer's standard polystyrene, polyurethane foamed in place, vertical steel stiffeners, or rigid mineral fiber core with internal sound deadener on inside of face sheets where appropriate in accordance with SDI standards.

- C. Labeled Doors: Insulate as required by Underwriters Laboratories. Build in special hardware and provide astragals as indicated. At one hour and at 1-1/2 hour doors at enclosures, maximum transmitted temperature end point shall not exceed 450 degrees F above ambient at end of 30 minutes of fire exposure per U.L..
- D. Seamless Vertical Edges: Construct doors with smooth flush surfaces, without visible joints or seams on exposed faces or stile edges. Interior and exterior door edge seams shall be full height wire welded and ground smooth.
- E. Exterior Hollow Metal Door Louvers: Fabricate louver units of 16-gauge galvanized steel sheets with stationary, weatherproof Z-shaped blades and U-shaped frames, not less than 1-3/8 inch thick. Space louver blades not more than 1-1/2 inch o.c. Assemble units by welding. Provide insect screen on interior side of frame, consisting of 14 by 18 wire mesh in rigid, formed metal frame.
  - I. Interior Hollow Metal Door Louvers: Fabricate of 20-gauge cold-rolled steel sheets with stationary sight proof inverted V-shaped blades and U-shaped frames. Space louver blades not more than 3 inches o.c. Assemble units by welding.
- F. Typical Reinforcement: Provide as required for hardware items. For lock reinforcement, provide manufacturer's standard reinforcement. Provide 12 gauge reinforcement for escutcheons or roses with centering clips to hold lock case in alignment. For door checks, provide 3/16 inch channel type reinforcements, 3-1/2 inch deep by 14 inches long, or as required. Hinge reinforcement minimum 7 gauge by 1-1/2 inch by 9 inch bar. Weld reinforcing to door. Reinforce doors for surface items such as surface and semi-concealed closers, brackets, surface holders and door stops. Drilling and tapping installation of these surface items shall be done in field by hardware installer.
- G. Special Reinforcing: At exterior doors, reinforce inside of door on hinge side with high frequency hinge preparation. Weld to door.
- H. Hardware: Mortise, reinforce, drill and tap for hardware furnished under Section 08710 - Hardware, except drilling and tapping for surface door closers, door closer brackets and adjusters shall be done in field. Obtain templates from hardware supplier.
- I. Finish: Provide prime coat finish on doors. Thoroughly clean off rust, grease and other impurities. Grind welds smooth, no marks shall show. Apply metallic filler as required to fill cracks and joints and to level any weld areas or similar imperfections. Sand filler coat smooth.

## 2.6 HOLLOW METAL PANELS

- A. Same materials and constructed and finished in same way as specified for hollow metal doors.

## 2.7 FASTENINGS

- A. Provide fastenings, anchors and clips as required to secure hollow metal work in place. Provide Jackson head screws, or flatter. Dimple metal work to receive screw heads. Set stops and other non-structural fastenings with #6 Jackson head self-tapping screws.

## PART 3 EXECUTION

### 3.1 EXAMINATION

- A. Examine supporting structure and conditions under which hollow metal is to be installed. Do not proceed with installation until unsatisfactory conditions have been corrected.

### 3.2 INSTALLATION

- A. Install hollow metal in accordance with reviewed shop drawings and manufacturer's printed instructions. Securely fasten and anchor work in place without twists, warps, bulges or other unsatisfactory or defacing workmanship. Set hollow metal plumb, level, square to proper elevations, true to line and eye. Set clips and other anchors with Ramset "shot" anchors or drill in anchors as approved. Units and trim shall be fastened tightly together, with neat, uniform and tight joints.
- B. Placing Frames: Set frames accurately in position, plumbed, aligned, and braced securely until permanent anchors are set. After wall construction is complete, remove temporary braces and spreaders leaving surfaces smooth and undamaged. In masonry construction, building-in of anchors and grouting

of frames with mortar is specified in Section 04210 - Unit Masonry. At in-place concrete or masonry construction, set frames and secure in place using countersunk bolts and expansion shields, with bolt heads neatly filled with metallic putty, ground smooth and primed.

- C. Place fire-rated frames in accordance with NFPA Standard #80.
- D. Door Installation: Fit hollow metal doors accurately in their respective frames, within following clearances: Jambs and head  $\frac{3}{32}$  inch, meeting edges pair of doors  $\frac{1}{8}$  inch, sill where no threshold or carpet  $\frac{1}{4}$  inch above finished floor, sill at threshold  $\frac{3}{4}$  inch maximum above finished floor, sill at carpet  $\frac{1}{4}$  inch above carpet. Place fire-rated doors with clearances as specified in NFPA Standard #80.

### 3.3 ADJUSTING AND CLEANING

- A. Prime Coat Touch-Up: Immediately after installation, sand smooth rusted or damaged areas of prime coat and apply touch-up of compatible air-drying primer.
- B. Protection Removal: Immediately before final inspection, remove protective wrappings from doors and frames.

**END OF SECTION**