

## SECTION 08110 - STEEL DOORS AND FRAMES

### PART 1 - GENERAL

#### 1.1 WORK

- A. Work under this section comprises of furnishing and installing hollow metal frames for doors, windows and hollow metal doors and panels.

#### 1.2 RELATED DOCUMENTS

- A. Drawings and general provisions of contract, including General and Supplementary conditions and Division 1 specifications sections apply to this section.

#### 1.3 RELATED WORK

- A. Related work specified elsewhere that should be examined for its effect upon this section:
  - 1. Division 8 Section “Door Hardware for Door Hardware and Weatherstripping”.
  - 2. Division 8 Section “Glazing” for glass in glazed openings in door and frames.
  - 3. Division 9 Section “Painting for Field Painting Factory-Primed Door and Frames”.
  - 4. Division 13 Section “Radiation Protection” for lead-lined flush wood doors.
  - 5. Division 16 Electrical for power to door hardware installed in steel doors and frames.

#### 1.4 REFERENCES SPECIFIED in this section subject to compliance as directed:

- A. UL 10C/UBC7-2-97 Fire Tests of Door Assemblies Positive Pressure
- B. ASTM-A366-95A - Specification for Steel, Sheet, Carbon, Cold-Rolled, Commercial Quality.
- C. ASTM-A 568-95 - Specification for Steel, Sheet, Carbon, and High Strength, Low-Alloy, Hot-Rolled and Cold-Rolled.
- D. ASTM-A 569-91a - Specification for Steel, Carbon, (0.15 Maximum Percent), Hot-Rolled Sheet and Strip Commercial Quality.
- E. ASTM-A924-95 - General Requirements for Steel Sheet, Metallic Coated by the Hot-Dip Process.
- F. ANSI A250.8-1998/SDI 100 - Recommended Specifications for Standard Steel Doors and Frames
- G. SDI -105-92 - Recommended Erection Instructions for Steel Frames

- H. ANSI/SDI A250.6-1997-92- Hardware on Steel Doors (reinforcement-application)
- I. NFPA-80-1995 - Standard for Fire Doors and Windows.
- J. NFPA-101-1997 - Life Safety Code.
- K. ANSI-A250.4-1994 - Test Procedure and acceptance criteria for physical endurance, steel doors and frames.
- L. ANSI-A224.1-1980 Test Procedure and acceptance criteria for prime painted steel surfaces for steel doors and frames.
- M. ADA, The Americans with Disabilities Act - Title III - Public Accommodations
- N. ANSI-A117.1-1992 - American National Standards Institute - Accessible and Usable Buildings and Facilities.
- O. U. L. - Underwriter's Laboratories
- P. WHI - Warnock Hersey International, Division of Inchcape Testing Services
- Q. State and Local codes including Authority Having Jurisdiction

#### 1.5 SUBMITTALS

- A. Shop Drawings: Indicate door and frame elevations and sections, materials, gauges and finishes, fabrication and erection details, locations of finish hardware by dimension and locations/details of all openings and louvers. Do not proceed with any fabrication until all details are approved.
- B. Certification of Compliance: Submit any information necessary to indicate compliance to these specifications.
- C. Submit any samples as requested.

#### 1.6 QUALITY ASSURANCE

- A. Certification of label construction: For components exceeding Underwriters Laboratories, Inc. (UL)- furnish inspection certificate stating that component construction conforms to UL rating requirements only if Architect is aware of such a limitation and has allowed the non-labeled unit.
- B. Hollow metal supplier shall be a qualified direct distributor of products to be furnished. In addition 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/Contractor and/or Owner regarding any matters affecting the total door and frame openings.

## 1.7 DELIVERY, STORAGE AND HANDLING

- A. Deliver doors and frames cardboard wrapped, crated, palletized or otherwise protected during transit and site storage.
- B. Inspect doors and frames upon delivery for damage. Minor damages may be repaired provided refinished items are equal in all respects to new work and accepted by the Architect. Otherwise remove and replace damaged items.
- C. Store doors and frames at the building site in a dry, secure place.
  - 1. Place units on minimum 4 inches high wood blocking.
  - 2. Avoid use of non-vented plastic or canvas shelters that could create a humidity chamber.
  - 3. If cardboard wrapper/packaging on door becomes wet, remove packaging materials immediately.
  - 4. Provide 1/4 inch spaces between stacked doors to promote air circulation.

## 1.8 SEQUENCING AND SCHEDULING

- A. Deliver all doors and frames to the jobsite in a timely manner so as not to delay progress of other trades.
- B. Issue purchase orders to frame, door and other hardware suppliers early so as not to interfere with normal quoted delivery of materials.

## 1.9 WARRANTY

- A. Hollow metal doors and frames shall be supplied with a one (1) year warranty against defects in materials and workmanship.
- B. Warranty to commence with substantial completion of the job.

## PART 2 - PRODUCTS

### 2.1 ACCEPTABLE MANUFACTURERS

- A. CURRIES Co., Mason City, Iowa
- B. Philipps Manufacturing
- C. Ceco Manufacturing

## 2.2 MATERIALS

- A. Steel requirements, all doors and frames shall be manufactured of commercial quality, stretcher leveled flatness, cold rolled steel per ASTM-A366 and A-568 general requirements, galvanealed to 'A-60' minimum coating weight standard per ASTM-A924, G90 Where indicated. Internal reinforcing may be manufactured of hot rolled pickled and oiled steel per ASTM-A569.
- B. Coating Materials, primer, Use manufacturer's standard rust inhibiting primer conforming to ANSI-A-224.1-1990.
- C. Glass lite frames in doors fabricated of not less than 18 gauge galvanealed steel with attachment screws allowed only on the non-secure side, screws not visible when viewing door lite frame face. 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.
- D. 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.
- E. Composite Core Interior Doors (Typical): Polystyrene core completely filling inside of center panel and permanently laminated to inside face sheets.
- F. 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 specified in U.B.C. Standard No. 43-2.
- G. 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.
- H. Typical Reinforcement: Provide as required for hardware items. Lock edge reinforcing provide continuous reinforcing minimum 12 gauge full height of the door. Lock reinforcing provide minimum of 16 gauge. Hinge reinforcing, provide continuous reinforcing minimum 12 gauge full height of the door. 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.
- I. 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.

## 2.3 FABRICATION

### A. General:

1. Doors to be 707 Series as manufactured by CURRIES Company, Mason City, Iowa.
2. Fabricate all doors and frames in accordance with ANSI A250.8-1998/SDI 100 except where more stringent requirements are specified.
3. Prepare doors to receive finish hardware per approved schedule. Include all thru-bolting holes as required per hardware templates. Do not include unnecessary cutouts in door faces unless required by hardware templates.
4. Supply only doors and frames manufactured by one (1) of the acceptable and approved manufacturers listed in this specification.

### B. Doors:

1. All doors conform to A.N.S.I.-A 250.4-1994 Level 'A' criteria and be tested to 1,000,000 operating cycles and 23 twist tests. Certification of Level 'A' doors is to be submitted with approval drawings by the distributor. Do not bid or supply any type or gauge of door not having been tested and passed this criteria.
2. Face sheets formed of a minimum of 18 gauge cold rolled steel for interior.
3. Face sheets formed of a minimum 16 gauge A60 or G90 galvanized steel for exterior.
4. Minimum 14 gauge continuous reinforcing on both the hinge and lock edges of doors.
5. Seams allowed only on the edges of doors.
6. Vertical lock edges beveled 1/8 inch in 2 inches.
7. Top and bottom channels
  - a. Not less than 16 gauge - flush or inverted
  - b. Welded to the face sheets.
  - c. Close tops of out-swinging exterior doors flush by the addition of steel top channel fillers necessary.
8. Astragals: Where called for to be flat security type or 'Z' as called for in drawings or specifications.

### C. Frames:

1. Construction: A minimum of 16 gauge cold rolled steel at interior locations and a minimum of 14 gauge galvanized at exterior locations.
2. All frames shall be face welded and ground smooth, and re-primed at the welded area.
3. Provide temporary shipping bars to help protect from damage during transit and handling.
4. Temporary shipping bars to be removed before setting frames.
5. All welds on frames, transoms and sidelights to be flush with neatly mitered or butted material cuts.
6. Frames to be pretreated prior to priming at factory by washing, phosphatizing and by chromic seal. Primer to be baked on.

D. Frame Anchors:

1. Wall anchors for frame attachment to masonry construction: Masonry anchors, adjustable, flat, corrugated or perforated 'T' shaped anchors with leg not less than 2 inches wide by 10 inches long or masonry "wire" type not less than 3/16 inch diameter.
2. Wall anchors for attachment to drywall partitions
3. All frame jamb anchors to be provided; one each jamb per 30 inches of frame height or fraction thereof.
4. Floor anchors: Angle clip type
  - a. 16 gauge minimum.
  - b. To receive 2 fasteners per jamb.
  - c. Welded to the bottom of each jamb.
5. In place masonry or concrete:
  - a. 3/8 inch countersunk flat head stove bolt and expansion shields.
  - b. Weld pipe spacers or other type of spacers per manufacturer's standard design in back of frame soffit to protect frame profile during tightening of bolts and anchors.
6. Head struts: For frames not anchored to masonry or concrete construction provide ceiling struts spot welded to jambs each side extending to building structure where called for on schedule.

E. Preparation For Hardware

1. Reinforcement: Reinforce components for hardware installation in accord with ASNI/SDI Z250.6-1997.
  - a. All lock and closer reinforcements to be "box" or "channel" type.
  - b. All hinge and lock reinforcing on doors is to be channel type, continuous from top to bottom of door welded to face sheets.
2. Punch single leaf frames to receive three (3) silencers. Double leaf frames to receive one silencer per leaf at head.
3. Factory prepared hardware locations to be in accordance with "Recommended Locations for Builders' Hardware for Standard Steel Doors and Frames", as adopted by The Steel Door Institute.
4. Supply welded in mortar guards at all hardware cutouts in frames built into masonry or grouted in full.

## PART 3 - EXECUTION

### 3.1 SETTING FRAMES

- A. Set all frames in accordance with SDI 105-92.

- B. Set welded frames in position prior to beginning partition work. Brace frames until permanent anchors are set.
- C. Set anchors for frames as work progresses. Install anchors at hinge and strike levels.
- D. Use temporary setting spreaders at all locations. Use intermediate spreaders to assure proper door clearances and header braces for grouted frames.
- E. Install frames in prepared openings in concrete and masonry walls using countersunk bolts and expansion shields.
- F. Install all fire rated frames in accord with requirements of N.F.P.A.-80-1995.

### 3.2 DOOR INSTALLATION

- A. Install hollow metal doors in frames using hardware specified in Section 08710 Finish Hardware.
- B. Clearances at edge of doors
  - 1. Between door and frame at head and jambs: 1/8 inch.
  - 2. At meeting edges pairs of doors and at mullions: 1/8 inch.
  - 3. At transom panels, without transom bars: 1/8 inch.
  - 4. At sills without thresholds: 5/8 inch maximum above finish floor.
  - 5. At sills with thresholds: 1/8 inch above threshold.

### 3.3 ADJUSTMENT AND CLEANING

- A. Remove dirt and excess sealants, mortar or glazing compounds from exposed surfaces.
- B. Adjust moving parts for smooth operation. Use shims if necessary to allow for proper closing.
- C. Fill all dents, holes, etc. with metal filler, sand smooth and flush with adjacent surfaces - Reprime/paint to match finish.

END OF SECTION 08110