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HOLLOW METAL

PART 1 - GENERAL

1.01 SCOPE:

A. Provide all labor, materials, equipment and services to furnish and install the hollow metal work.

1.02 REFERENCES

A. American Society for Testing and Materials
1. ASTM B 117 - Standard Practice for Operating Salt Spray (Fog) Apparatus
2. ASTM E 152 – Standard Methods of Fire Tests of Door Assemblies
3. ASTM E 283 – Standard Test Method for Determining the Rate of Air Leakage Through Exterior Windows, Curtain Walls, and Doors Under Specified Pressure Differences Across the Specimen
4. ASTM A 568 & A 569 – Standard Specification for Steel, Sheet, Carbon, Hot-Rolled, Commercial Quality.
5. ASTM A 653 – Standard Specification for Steel, Sheet, Zinc-Coated (Galvannealed) by the Hot-Dip Process
6. ASTM A 924 – Standard Specification for General Requirements for Steel, Sheet, Metallic Coated by the Hot-Dip Process
7. ASTMD 1735 – Standard Practice for Testing Water Resistance of Coating Using Water Fog Apparatus

B. American National Standards Institute
1. ANSI/UL 10B Fire Tests of Door Assemblies
2. ANSI/NFPA 80 Standards for Fire Doors and Fire Windows
3. ANSI/NFPA252 Fire Tests of Door Assemblies
4. ANSI A250.3 – Test Procedure and Acceptance Criteria for Factory Applied Finish Painted Steel Surfaces for Steel Doors and Frames
5. ANSI A250.4 – Test Procedure and Acceptance Criteria for Physical Endurance for Steel Doors and Hardware Reinforcing
6. ANSI A250.6 (SDI 107) – Hardware on Standard Steel Doors (Reinforcement-Application)
7. ANSI A250.7 – Nomenclature for Steel Doors and Steel Door Frames
8. ANSI A250.8 (SDI-100) – Recommended Specifications for Steel Doors &Frames
9. ANSI A250.10 – Test Procedure and Acceptance Criteria for Prime Painted Steel Surfaces for Steel Doors and Frames
10. ANSI/DHI A115 Specifications for Hardware Preparations in Standard Steel Doors and Frames
11. ANSI/DHI A115.IG Installation Guide for Doors and Frames

C. Steel Door Institute
1. SDI 105 – Recommended Erection Instructions for Steel Frames
2. SDI 106 – Recommended Standard Door Type Nomenclature
3. SDI 108 – Recommended Selection and Usage Guide for Standard Steel Doors
4. SDI 109 – Hardware for Standard Steel Doors &Frames
5. SDI 110 – Standard Steel Doors & Frames for Modular Masonry Construction
6. SDI 111 – Recommended Standard Details for Steel Doors and Frames
7. SDI 112 – Zinc-Coated (Galvanized/Galvannealed) Standard Steel Doors & Frames
8. SDI 122 – Installation and Troubleshooting Guide for Standard Steel Doors and Frames
9. SDI 124 – Maintenance of Standard Steel Doors and Frames

D. Fire Protection
   1. UL 10B Fire Tests of Door Assemblies (Neutral test pressure)
   2. UL 10C Standard for Safety for Positive Pressure Fire Tests of Door Assemblies
   3. NFPA 252 Fire Tests of Door Assemblies (Neutral test pressure)
   4. UBC 7-2-1997 Positive Pressure Fire Tests of Door Assemblies
   5. NFPA 80 Standard for Fire Doors and Fire Windows

1.03 QUALITYASSURANCE

A. Conform to requirements of ANSI A250.8-1998 (SDI-100), ANSI A151.1, and other specifications herein named. Test reports shall be submitted upon request.

B. Acoustical qualities: Doors shall have a minimum sound transmission classification of 28 as tested under ASTM designation E490 and ASTM designation E413.

C. Insulation properties: Doors shall have a U factor .363 (R factor of 2.85) for honeycomb core, U factor for polystyrene core of .263 (R factor of 3.8), U factor for polyurethane core of 0.09 (R factor of 11.1).

D. Underwriters' Laboratories and Warnock Hersey, labeled fire doors and frames:
   1. All labeled fire doors and frames shall be of a type which has been investigated and tested in accordance with either UL-10(b), ASTM E-152, NFPA 252, ANSI A2.2, or UL-10(c), UBC 7-2-1997.
   2. Underwriters' Laboratories labeled doors and frames shall be manufactured under the UL factory inspection program and in strict compliance to UL procedures, and shall provide the degree of fire protection, heat transmission and panic loading capability indicated by the opening class.
   3. Warnock Hersey labeled doors and frames shall be manufactured to meet the specific requirements of that labeling agency's current procedure for the tested hourly rating designated and shall be subject to inspection by representatives of the labeling agency.
   4. A physical label or approved marking shall be affixed to the fire door or fire door frame, at an authorized facility as evidence of compliance with procedures of the labeling agency.

1.04 REGLATORY REQUIREMENTS

A. Doors and frames shall conform to applicable codes for fire ratings. All interior vertical stairwell doors shall carry a minimum 250°F temperature rise rating in addition to the required fire rating.

1.05 SUBMITTALS

A. Indicate frame configuration, anchor types and spacings, location of cutouts for hardware, reinforcement, and finish.

B. Indicate door elevations, internal reinforcement, closure method, and cutouts for (glazing) (louvers).

C. Submit manufacturer's installation instructions under provisions of Section (01300) (01340).

1.06 DELIVERY, STORAGE ANDPROTECTION

A. Storage of Doors:
   1. Doors shall be stored in an upright position under cover. Place the units on at least 4" (101.6 mm) wood sills on floors in a manner that will prevent rust and damage. Do not

use non-vented plastic or canvas shelters which create humidity chamber and promote rusting. If the corrugated wrapper on the door becomes wet, or moisture appears, remove the wrapper immediately. Provide a 1/4" (6.35 mm) space between the doors to promote air circulation.

B. Storage of Frames:

1. Frames shall be stored under cover on 4" (101.6 mm) wood sills on floors in a manner that will prevent rust and damage. Do not use non-vented plastic or canvas shelters, which create a humidity chamber and promote rusting. Assembled frames shall be stored in a vertical position, five units maximum in a stack. Provide a 1/4" (6.35 mm) space between frames to promote air circulation.

PART 2 - PRODUCTS

2.01 MATERIALS

A. Frames and frame components shall be manufactured from commercial quality carbon steel conforming to ASTM designation A568 and A569 or hot-dipped galvannealed steel having an A60 zinc-iron alloy coating conforming to ASTM designation A653. Galvannealed steel shall be treated to insure proper paint adhesion. All steel component parts used in galvannealed doors and/or frames shall meet the galvanized specification.

B. All doors, frames and frame components shall be cleaned, phosphatized and finished as standard with one coat of rust inhibiting prime paint in accordance with ANSI A250.10.

C. Finish painted doors and frames shall be cleaned, phosphatized and finished with a rust-inhibiting paint in accordance with ANSIA250.3.

2.02 DOORS

A. Acceptable Manufacturer: Steelcraft – No Substitution

B. Exterior doors shall be 18-gauge hot dipped galvannealed steel, with closed tops.

C. Interior doors shall be 18-gauge commercial quality carbon steel or galvannealed steel

D. Construction of Doors:

1. Flush Doors
   a. Laminated core doors
      (1) L-Series Doors shall be full-flush or full-flush seamless construction, fabricated from commercial quality carbon steel or hot-dipped galvannealed steel (see Section 2.01A), 18 gage for 1-3/4" doors.

      (2) Doors shall be reinforced, stiffened, sound deadened and insulated with impregnated Kraft honeycomb core completely filling the inside of the doors and laminated to inside faces of both panels using contact adhesive applied to both panels and honeycomb core.
      (3) Door shall have continuous vertical mechanical interlocking joints at lock and hinge edges with visible edge seams or with edge seam filled and ground smooth. The internal portion of the seam shall be sealed with epoxy. An intermittent fastening along the seam is not permitted. Doors shall have beveled (1/8" in 2") hinge and lock edges. Top and bottom

steel reinforcement channels shall be galvannealed 14 gage and projection welded to both panels.

(4) Hinge reinforcements shall be 7 gage for 1-3/4" doors. Lock reinforcements shall be 16 gage and closer reinforcements 14 gage- box minimum 6” high and 20" long. Hinge and lock reinforcements shall be projection welded to the edge of the door. Galvannealed doors shall have galvannealed hardware reinforcements. Adequate reinforcements shall be provided for other hardware as required.

(5) Glass trim for doors with cutouts shall be 24 gage. steel conforming to [ASTM designation A 366 cold rolled steel. The trim shall be installed into the door as a four sided welded assembly. The trim shall fit into a formed area of the door face, shall not extend beyond the door face and shall interlock into the recessed area from the door face]. The corners of the assembly shall be mitered, reinforced and welded. The trim shall be the same on both sides of the door. Exposed fasteners shall not be permitted. Label and non-label doors shall use the sametrim.

(6) Doors indicating divided glass lites shall bemade using a door with a cutout and trim for one piece of glass. The small lites shall be created by an extruded aluminum grille work mechanically fastened to the glass lite trim on both sides of the door. The grille work sections shall be beveled on the exposed side and shall have a flange on the unexposed side to which glazing tape can be applied. The grille work shall be installed into both sets of glass trim prior to installing into the door. One glass trim and muntin assembly shall be installed into the door prior to glazing. After glazing the other glass trim and muntin assembly shall be installed into the door.

(7) All exterior out swing doors shall have the tops closed to eliminate moisture penetration. Door tops shall not have holes or openings. Top caps are permitted.

(8) All exterior doors shall include a self-adjusting, concealed door sweep installed in the bottom channel. The bottom seal shall not include springs.

2.03 FRAMES

A. Acceptable Manufacturer: Steelcraft – No Substitution

B. Exterior frames shall be 16-gauge hot dipped galvannealed steel.

C. Interior frames shall be 16-gauge commercial quality carbon steel or hot dipped galvannealed steel

D. Construction Frames:
   1. Flush Frames
      a. F-Series flush frames shall be formed from 16-gauge commercial quality carbon steel or galvannealed steel
      b. F-Series frames shall have 2" faces, FN-Series frames shall have 1" faces. F and FN16, gage frames shall be set-up and welded. Miter corners shall have reinforcements with four concealed integral tabs for secure and easy interlocking of jambs to head.
      c. 16-gauge frames shall be supplied with factory installed rubber silencers, (3) per strike jamb and (2) per head for pairs of doors. Stick on silencers shall not be permitted.

d. Frames for 1-3/4" doors shall have 7 gage universal steel hinge reinforcements prepared for 4-1/2" x 4-1/2" standard or heavy weight template hinges. Strike reinforcements shall be 16 gage and prepared for an ANSI-A115.1-2strike.
e. Steel plaster guards shall be provided for all mortised cutouts. All hinge and strike reinforcements shall be projection welded to the door frame. Reinforcements for surface applied door closers shall be 14 gage steel.
f. Galvannealed frames shall have galvannealed hardware reinforcements. Adequate reinforcements shall be provided for other hardware when required. F-Series frames shall be furnished with a minimum of six wall anchors and two adjustable base anchors of manufacturer's standard design. FN-Series frames shall be furnished with a minimum of six wall anchors and two fixed base anchors.
g. Steel plaster guards shall be provided for all mortised cutouts.
h. All hinge and strike reinforcements shall be projection welded to the door frame.
i. Reinforcements for surface closer shall be 14 gage steel. Adequate reinforcements shall be provided for other hardware when specified.
j. Galvannealed frames shall have galvannealed hardware reinforcements.

2. Construction of Architectural Stick Components
a. Architectural stick frame assemblies shall be made of standard frame components, manufactured from 16 gage commercial quality carbon steel or galvannealed steel. Where sticks are used at door openings and frame assemblies, they shall be prepared for hardware as specified. Frame assemblies shall be fabricated from three basic components:
(1) Open sections (perimeter members), closed sections (intermediate members), and sill sections.
(2) Open sections shall be identical in configuration to Steelcraft standard frames.
(3) Closed sections shall have identical jamb depths, face dimensions and stops as open sections. Closed sections shall be factory assembled and shall have full length internal reinforcement of 16 gage steel, factory spot- welded to both soffits at 8" on center.
(4) Sill sections shall be fabricated from galvannealed steel and shall be either flush with both faces of adjacent vertical members or recessed from one face of the adjacent vertical members.
(5) Individual components shall be cut to length and notched to assure square joints and corners. All joints and corners of the frame assembly shall be welded and ground smooth at the face of the sections. Frame assemblies shall be shipped to job site completely welded. Field joints shall be permitted only when the size of the total assembly exceeds

shipping limitations. When frame assemblies are subjected to wind loads, vertical members shall be free of field splices.
(6) When specified, steel panels shall be furnished 3/8" or 1-3/4" thick as required. 3/8" panels shall be made of 18 gage cold-rolled steel faces with a corrugated fiberboard filler. 1-3/4" panels shall be made of 20-gauge cold-rolled steel faces with a honeycomb core. Cores shall be laminated to inside faces of both panels. Stick components and panels shall be furnished as specified in Section 2.01. Steel channel glazing beads shall be provided with assemblies for all areas in which glass or panels are to be installed and shall be pierced and dimpled for oval head sheet metal screws.
(7) All necessary anchors for jambs, heads and sills of assemblies shall be provided. When verification of field dimensions are necessary, they shall

be made by the contractor. Frame fabrication shall not begin until these dimensions have been submitted.

2.04 ACCESSORIES

A. Vision Lites shall be as indicated on the drawings; moldings shall be manufacturer's standard.

B. Louvers shall be as indicated on the drawings; blade and frame configuration shall be manufacturer's standard or as specified elsewhere.

2.05 PROTECTIVE COATINGS

A. The inside of all frames shall be fully grouted or, when an anti-freeze agent is used, shall be coated with a fibered asphalt coating prior to grouting. Coating shall be field applied by the contractor to a minimum 1/16"[1.6mm] thickness.

2.06 FABRICATION

A. Frames shall be supplied

B. Set up and welded with faces welded and ground smooth. Miters of frames shall be back welded. Weld shall penetrate the outside face. Faces shall be dressed smooth and prime painted. Filler materials are not permitted.

2.07 FINISH

A. All doors, frames and frame components shall be cleaned, phosphatized and finished as standard with one coat of rust inhibiting prime paint in accordance with the ANSI A250.10 "Test Procedure and Acceptance Criteria for Prime Painted Steel Surfaces for Steel Doors and Frames".

B. Factory finish painted doors and frames shall be cleaned, phosphatized and finished with rust inhibiting paint capable of passing a 200-hour salt spray and 480-hour humidity test in accordance with ASTM designation B117 and ASTM designation D1735. Finish paint shall be in accordance with ANSI/SDI A250.3, "Test Procedure and Acceptance Criteria for Factory Applied Finish Painted Steel Surfaces for Steel Doors and Frames".

PART 3 - EXECUTION

3.01 INSTALLATION

A. Doors and frames shall be installed in accordance with ANSI/DHI A115.IG Installation Guide for Doors and Frames and/or Steelcraft installation instructions.

B. Label doors and frames shall be installed per NFPA-80 and/or as noted in item number 3.01A.

- END OF SECTION -