

PART 1 – GENERAL

1.1 SUMMARY

- A. Provide steel frames as indicated on drawings and schedules and as conforming to ANSI SDI-100 or NAAMM specifications to meet specified criteria.
- B. Provide acoustical steel doors and frame assemblies where indicated on drawings and schedules. Conform to ASTM E90 and ASTM E413 Certification requirements.
- C. Related Work:
 - 1. Section 08 71 00 “Door Hardware”
 - 2. Section 09 91 23 “Interior Painting”
 - 3. Section 13 49 00 “Radiation Protection” for Lead Lined Hollow Metal Doors and Frames

1.2 REFERENCES

- A. ASTM E152 - Method of Fire Tests of Door Assemblies.
- B. DHI - Installation Guide for Doors and Hardware.
- C. SDI-100-91 -Standard Steel Doors and Frames.
- D. SDI-105 - Recommended Erection Instructions for Steel Frames.
- E. ANSI A151.1 - Endurance Test.
- F. ANSI 115 - Hardware Preparation.
- G. NAAMM - HMMA 802-87 - Manufacturing of Hollow Metal Doors and Frames.

1.3 QUALITY ASSURANCE

- A. Conform to requirements of SDI-100, ANSI A151.1, NAAMM/HMMA 802-87 and other specifications herein named. Test reports shall be submitted upon request.
- B. Qualifications:
 - 1. Manufacturer: Manufacturers named in Part 2 of this section with not less than 5 years' experience in manufacturing commercial doors and frames of the type indicated.
 - 2. Material Supplier:
 - a. A recognized architectural hollow metal door and frame supplier who has been furnishing hollow metal in the same state as the project for a period of not less than 5 years.
 - b. Hardware supplier's organization shall include an experienced Certified Door Consultant (CDC), certified by the Door and Hardware Institute (DHI), who is available, at reasonable times during the course of the work, for consultation about project's opening requirements, to Owner, Architect and Contractor.

- c. The Contractor shall use a hollow metal supplier who shall have warehousing facilities and an Underwriter's Laboratories (UL) or Warnock Hersey (WH) approved fabrication shop for service to the Contractor during the project, and for the warranty period. Supplier will be a factory authorized distributor of all materials specified.
3. Installer: Company specializing in installing work of this section and acceptable to the manufacturer and the door and frame supplier. Maintain regular work force of qualified personnel, trained, skilled, and experienced in installing doors, frames and door hardware if applicable, and constant, competent supervision.

1.4 REGULATORY REQUIREMENTS

- A. Frames shall conform to applicable codes for fire ratings, egress and handicap access. All interior vertical stairwell and exit corridor doors shall carry a minimum 450° temperature rise rating in addition to the required fire rating per the requirements of IBC-2000.
- B. 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 UL-10(c), ASTM E-152, NFPA 252, ANSI A2.2.
 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 a 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. Provide code compliant "S" labels where required by local jurisdiction.

1.5 SUBMITTALS

- A. Submit shop drawings and product data under provisions of Section 01 33 00 - Submittal Procedures.
 1. Elevations of each door type.
 2. Details of doors, including vertical- and horizontal-edge details and metal thicknesses.
 3. Frame details for each frame type, including dimensioned profiles and metal thicknesses.
 4. Locations of reinforcement and preparations for hardware.
 5. Details of each different wall opening condition.
 6. Details of anchorages, joints, field splices, and connections.
 7. Details of accessories.
 8. Details of moldings, removable stops, and glazing.
- B. Indicate frame configuration, anchor types and spacings, location of cutouts for hardware, reinforcement, and finish.
- C. Submit Manufacturer's recommended installation instructions.

1.6 DELIVERY, STORAGE AND PROTECTION

- A. Storage of Frames: 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

2.1 MATERIALS

- A. Manufacturers: Any current member of the Steel Door Institute (SDI) or the National Association on Architectural Metal Manufacturers (NAAMM) conforming to the parameters as established within these specifications.
- B. Frames and frame components shall be manufactured from galvanized steel having an A60 zinc coating conforming to ASTM specification A525, A526, or A642. Galvanized steel shall be treated to insure proper paint adhesion. All component parts used in galvanized frames shall meet the galvanize specification. Frames and frame components shall be cold rolled steel, conforming to these specifications. As an acceptable option, frames and frame components may be supplied with a paintable galvanealed process, which will meet the established criteria for durability and paint adhesion.

2.2 ACOUSTICAL DOOR ASSEMBLIES

- A. Acoustical Door Assembly, including doors, frames, hardware and seals.
- B. Acceptable Manufacturers:
 - 1. Republic Doors and Frames
 - 2. Ceco Corporation
 - 3. Curries Corporation
 - 4. Steelcraft
 - 5. Or Approved Equal.
- C. Assembly Specifications:
 - 1. Sound Transmission Classification (STC): 47 when tested according to ASTM E 90, E413, E1332 and E2235.

2.3 METAL DOORS

- A. Door Construction:
 - 1. Comply with SDI A250.8, Level 2.
 - 2. Thickness: 1-3/4 inch.
 - 3. Construction: full flush seamless, fabricated from cold rolled galvanized steel conforming to ASTM A653 and A924.
 - 4. 16 gauge. Provide continuous boxed header reinforcements for K&M operator for all doors whether or not closers are specified.
 - 5. Core: Manufacturer's proprietary acoustic core, tested in accordance with ASTM E90, E413, E1332, & E2235 to furnish the STC rating specified. Apply physical door label to certify the product and identify the specific rating.

6. Provide continuous vertical mechanical interlocking joints at lock and hinge edges with edge seam filled and ground smooth. Doors shall have beveled (1/8" in 2") hinge and lock edges.
7. Top and bottom steel reinforcement channels: 14 gauge and spot welded to both panels. Completely seal flush top of door.
8. Hinge reinforcements: 8 gauge.
9. Lock reinforcements 16 gauge.
10. Provide appropriate reinforcements for other hardware as required for proper installation.

2.4 HOLLOW METAL FRAMES

A. Frame Construction:

1. Interior frames to 48" wide shall be 14-gauge galvanized steel. All frames shall be set-up and arc-welded.
2. 8 gauge steel hinge reinforcements with manufacturer's standard high frequency hinge reinforcement at all hinge locations.
3. Provide metal plaster guards for all mortised cutouts. Adequate reinforcements shall be provided for other hardware as required for proper installation.
4. Furnish and install a minimum of six wall anchors and two adjustable base anchors of manufacturer's standard design.

2.5 FABRICATION

- A. Supply frames set up with faces at all joints arc-welded and ground smooth and primed with a zinc rich primer. Weld shall penetrate the inside face. Along with the manufacturer's standard mechanical corner attachment, frames shall be spot welded across the full jamb depth for added structural strength.
- B. Provide temporary spreader bars to protect frames during shipping and storage. Tack weld spreader bars as necessary to provide adequate support and to enable easy removal prior to installation without leaving visible blemishes. Spreader bars are for shipping and storage protection only and are to be removed prior to installation.

2.6 FINISH

- A. All frames and frame components shall be cleaned, phosphatized and finished as standard with one coat of baked-on rust inhibiting prime paint in accordance with the ANSI A224.1 "Test Procedure and Acceptance Criteria for Prime Painted Steel Surfaces for Steel Doors and Frames". Primer shall be compatible with finishes as specified in Section 09 91 23 – Interior Painting.

2.7 GROUT

- A. ASTM C 476, except with a maximum slump of 4 inches (102 mm), as measured according to ASTM C 143/C 143M.

PART 3 – EXECUTION

3.1 EXAMINATION

- A. Inspect door frames and doors prior to door installation.

1. Verify that the door frames are properly manufactured, aligned and capable of providing trouble free support for doors throughout the range of door swing.
 2. Do not install damaged or defective materials.
- B. Inspect adjacent substrates, prior to installation, to ensure proper attachment and support for door and borrowed light frames.
- C. Correct unsatisfactory conditions before installing products of this section. Commencement of installation constitutes acceptance of conditions by the Contractor.

3.2 INSTALLATION

- A. General: Install hollow-metal work plumb, rigid, properly aligned, and securely fastened in place. Comply with Drawings and manufacturer's written instructions.
- B. Hollow-Metal Frames: Install hollow-metal frames for doors of size and profile indicated. Comply with SDI A250.11 or NAAMM-HMMA 840 as required by standards specified.
1. Set frames accurately in position; plumbed, aligned, and braced securely until permanent anchors are set. After wall construction is complete, remove temporary braces, leaving surfaces smooth and undamaged.
 - a. At fire-rated openings, install frames according to NFPA 80.
 - b. Where frames are fabricated in sections because of shipping or handling limitations, field splice at approved locations by welding face joint continuously; grind, fill, dress, and make splice smooth, flush, and invisible on exposed faces.
 - c. Install frames with removable stops located on secure side of opening.
 - d. Remove temporary braces necessary for installation only after frames have been properly set and secured.
 - e. Check plumb, square, and twist of frames as walls are constructed. Shim as necessary to comply with installation tolerances.
 2. Floor Anchors: Provide floor anchors for each jamb and mullion that extends to floor, and secure with postinstalled expansion anchors.
 - a. Do not set anchors with power-actuated fasteners unless authorized by Owner.
 3. Metal-Stud Partitions: Solidly pack mineral-fiber insulation inside frames.
 4. In-Place Concrete or Masonry Construction: Secure frames in place with postinstalled expansion anchors. Countersink anchors, and fill and make smooth, flush, and invisible on exposed faces.
 5. In-Place Metal or Wood-Stud Partitions: Secure slip-on drywall frames in place according to manufacturer's written instructions.
 6. Installation Tolerances: Adjust hollow-metal door frames for square, alignment, twist, and plumb to the following tolerances:
 - a. Square: Plus or minus 1/16 inch (1.6 mm), measured at door rabbet on a line 90 degrees from jamb perpendicular to frame head.
 - b. Alignment: Plus or minus 1/16 inch (1.6 mm), measured at jambs on a horizontal line parallel to plane of wall.
 - c. Twist: Plus or minus 1/16 inch (1.6 mm), measured at opposite face corners of jambs on parallel lines, and perpendicular to plane of wall.
 - d. Plumb: Plus or minus 1/16 inch (1.6 mm), measured at jambs at floor.

- C. Hollow-Metal Doors: Fit hollow-metal doors accurately in frames, within clearances as required by manufacturer to achieve STC rating specified. Shim as necessary.

3.3 ADJUSTING AND CLEANING

- A. Final Adjustments: 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. Remove grout and other bonding material from hollow-metal work immediately after installation.
- C. Prime-Coat Touchup: Immediately after erection, sand smooth rusted or damaged areas of prime coat and apply touchup of compatible air-drying, rust-inhibitive primer.

3.4 INSTALLATION

- A. Doors and Frames shall be installed in accordance with "Door and Hardware Institute" publication, "Installation Guide for Doors and Hardware" and/or as recommended by the manufacturer.
- B. Labeled frames shall be installed to comply with requirements of NFPA-80 and as noted in paragraph 2.3. A. 5.
- C. Grout frames as required by manufacturer to achieve STC rating specified.
- D. Bonding material shall be cleaned off frames immediately following installation. Keep surfaces clean of bonding material or sealer.

3.5 ADJUSTING

- A. Adjust doors for proper operation for the full range of swing. Coordinate with the finish hardware application. Replace frames which, when applied with proper finish hardware, cannot be adjusted to perform within required parameters.
- B. Repair and prime finishes damaged during installation in a manner which results in the frame showing no evidence of the restoration. If the repaired frame cannot be finished to the satisfaction of the Owner, the frame shall be replaced at the Contractor's expense.

END OF SECTION