SECTION 08 11 13
HOLLOW METAL DOORS AND FRAMES

PART 1 – GENERAL

1.1 SUMMARY

A. Furnish the following products to be installed under the designated Sections:

1. Hollow metal frames for doors, UL-Labeled and non-labeled, complete with internal reinforcing, installed under Section 06 10 00 - ROUGH CARPENTRY.
2. Glazing beads, loosely attached to hollow metal frames and doors, where so indicated, for removal and permanent installation during glazing operations; installed by Section 08 80 00 - GLAZING.

1.2 RELATED REQUIREMENTS

A. Section 06 10 00 - ROUGH CARPENTRY:

1. Wood blocking and nailers.
2. Installation of hollow metal door frames.

B. Section 07 92 00 - JOINT SEALERS.

C. Section 08 71 00 - DOOR HARDWARE: Furnishing finish hardware, and installation templates for hardware cut-outs and reinforcing.

D. Section 08 80 00 - GLAZING: Furnishing and installing glass located in doors and frames.

E. Division 26 – ELECTRICAL: Wiring connections for electrified door hardware.

F. Building-in of frame anchors to wall and partition construction: By trade responsible for wall and partition erection.

1.3 REFERENCES

A. Reference Standards: Comply with applicable requirements of the following standards and those others referenced in this Section, under the provisions of Section 01 42 00 - REFERENCES. Where these standards conflict with other specified requirements, the most restrictive requirements shall govern.

1. ANSI A 117.1 - Specifications for Making Buildings and Facilities Accessible to and Usable by Physically Handicapped People.
2. ANSI/SDI A250.4 - Test Procedure and Acceptance Criteria for Physical Endurance for Steel Doors, Frames, Frame Anchors and Hardware Reinforcing.
3. ANSI/SDI A250.8 – *R2008* (formerly SDI 100) - Recommended Specifications for Standard Steel Doors and Frames.
4. ANSI/SDI A250.11 – Recommended Erection Instructions for Steel Frames.
5. SDI 111 Series (111A-111F): Recommended Details, Steel Doors and Frames.
6. SDI 117-93: Manufacturing Tolerances for Standard Steel Doors and Frames.
7. NFPA publication 80 - Fire Doors and Windows.
8. NFPA publication 105 – Standard for the Installation of Smoke Door Assemblies.

9. UL publication 10B - Fire Tests of Door Assemblies.
10. UL publication 10C – Positive Pressure Fire Tests of Door Assemblies.
11. UL 1784 – Air Leakage Tests of Door Assemblies.
12. All applicable federal, state and municipal codes, laws and regulations for exits.

1.4 ADMINISTRATIVE REQUIREMENTS

A. Coordination:

1. General: Coordinate the work of this Section with the respective trades responsible for installing anchorages furnished by this Section; make arrangements for delivery, receipt and installation of inserts and anchorages to prevent delay of the Work.
2. Coordinate the work of this Section with the respective trades responsible for furnishing hardware and installing doors and frames.
3. Ensure that the work performed hereunder is coordinated with issued templates authorized by the hardware supplier.
4. Do not fabricate doors or frames before receiving a copy of the approved hardware schedule, submitted by the hardware supplier, reviewed by the Contractor and accepted by the Architect. Verify that issued templates are coordinated with the approved schedule; immediately notify the Architect, in writing, of any conflicts.

B. Sequencing:

1. Field Measurements:
   a. Take field measurements before preparation of shop drawings and fabrication of frames scheduled for existing openings, to ensure proper fitting of Work.
   b. Allow for adjustments within specified tolerances wherever taking of field measurements before fabrication might delay Work.

1.5 SUBMITTALS

A. Information and Review Submittals: Submit the following under provisions of Section 01 33 00 - SUBMITTAL PROCEDURES:

1. Product Data: Manufacturer's product data sheets, specifications, for doors, frames and shop applied finishes.
2. Shop Drawings:
   a. Door and Frame Schedule: A complete schedule coordinated with the door and frame schedule contained in the Contract Drawings.
   b. Large scale details of each type door and frame construction, indicating all gages, reinforcing, and anchorage.
      1) Indicated cutouts for glazing.
      2) Indicate cut-outs for louvers.
3. Certificates: Manufacturer's written certification stating that doors, frames, and all related items to be furnished hereunder, meet or exceed the requirements specified under this Section; that specified galvanized and shop priming has been performed; and that all U.L. fire-resistive requirements for the indicated Labels have been met.

B. Closeout Submittals: Submit the following under provisions of Section 01 78

00 - CLOSEOUT SUBMITTALS.

1. Bonds and Warranty Documentation: Manufacturer's standard warranty.

1.6 QUALITY ASSURANCE

A. General: Notify the Architect where conflicts apply between referenced standards and existing materials, and existing methods of construction.

B. Sole Source: Obtain doors and frames specified in this Section from a single manufacturer.

1.7 DELIVERY, STORAGE AND HANDLING

A. Delivery and Acceptance Requirements:

1. Prior to shipping, identify each frame and door with a removable metal or plastic label which corresponds with door schedule identifying opening number and location.
2. Do not deliver items to the site, until all specified submittals have been submitted to, and approved by, the Architect.
3. Deliver doors and frames boxed or crated to provide protection during transit and job storage.
4. Inspect doors and frames upon delivery for damage. Minor damage may be repaired provided the refinished items are equal in respects to new work and acceptable to the Architect; otherwise remove and replace damaged items.

B. Storage and Handling Requirements:

1. Store and handle materials following manufacturer's recommended procedures.
2. Store doors and frames at the building site upright and under cover. Place the units on wood dunnage and cover in a manner that will prevent rust and damage.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. Acceptable Manufacturers: Subject to compliance with the requirements specified herein, manufacturers offering products which may be incorporated in the work include the following, or approved equal:

1. Amweld Building Products, Inc., (A Division of Amweld International, LLC), Coppell TX.
2. Ceco Door Products (A Division of Assa Abloy Group Company), Milan TN.
3. Curries Company (A Division of Assa Abloy Group Company), Mason City IA.
4. Republic Doors and Frames, McKenzie TN.
5. Steelcraft (A Division of Ingersoll-Rand Company), Cincinnati OH.

2.2 DESCRIPTION

A. Regulatory Requirements:

1. Fire rated door construction shall conform to UL publications 10B and 10C.
2. Install fire rated door assemblies in compliance with NFPA 80.
3. Corridor door assemblies shall be tested and listed per UL 1784.

2.3 DOORS

A. General: Refer to the Drawings for design of doors, sizes, glazing cut-outs in doors, and details.

B. Construction: Full flush commercial type, 1-3/4 inches thick, unless noted otherwise, meeting or exceeding the materials, gages, construction, and testing requirements of the referenced ANSI and SDI publications.

1. Exterior Door Core Construction: Manufacturer's standard kraft-paper honeycomb, polystyrene or polyurethane core (at non-rated doors only). Fabricate exterior doors with specified R-value when tested according to ASTM C1363.
    a. Exterior Fire Door Core: As required to provide fire-protection and temperature-rise ratings indicated.
    b. Core construction:
        1) Manufacturer’s standard polyurethane complying with ASTM C 578
    c. Thermal properties when tested in accordance with ASTM C 1363:
        1) R-value: 10.0 (polyurethane core).
2. Interior Door Core Construction: Manufacturer's standard 99-pound (basis weight) kraft-paper honeycomb core.
    a. Interior Fire Door Core: As required to provide fire-protection and temperature-rise ratings indicated.

C. Interior Doors 1-3/4 inch thick (44.4 mm): ANSI 250.8, Level 2, Model 1 (Full Flush), ANSI A250.4 Physical Performance Level B, (Heavy Duty) having 18-gage, minimum 0.042 inch (1.0 mm) steel faces, with a minimum STC rating of 32.

1. Fire-rated doors: Modify specified construction to meet all construction requirements required for fire-resistive rating.
    a. Affix appropriate UL, FM or Warnock Hersey labels to each rated door, indicating applicable rating.

D. Interior temperature-rise-rated door: ANSI 250.8, Level 3, Model 1 (Full Flush), ANSI A250.4 Physical Performance Level B, (Extra-Heavy Duty) having 16-gage steel faces, Temperature-rise-rated type door, UL Class A.

1. Fire-rating: UL rated Class A having a tested fire resistance rating of up to 3 hours. Refer to Door Schedule on Drawings for specific ratings required. Modify specified construction to meet all construction requirements required for scheduled fire-resistive rating.
    a. Affix UL, label to door indicating applicable rating.
2. Temperature rise rating: Door shall be capable of withstanding a 250 degree Fahrenheit temperature rise for a minimum period of 30 minutes.
3. Core: Solid slab fire rated gypsum core, permanently bonded to the inside face of each face sheet.

E. Exterior Doors: ANSI 250.8, Level 3, Model 2 (Seamless), ANSI A250.4 Physical Performance Level B, (Extra Heavy Duty) having 16-gage, 0.058 inch thick (1.46 mm) A60 galvannealed steel faces, with a minimum core R-value of 6.25.

1. Visible edge seams: Epoxy fill edge seams and finish for seamless appearance (Model 2).

F. Louvers, non-rated doors: Sight-proof type fixed louver with inverse Y shape blades having an approximate free air area of 43 percent. Frame and core fabricated from 20 gage steel, minimum 0.032 inch (0.8 mm) thick.

1. Provide insect screen of 18 by 16 aluminum mesh, mounted on inside face of louver.

G. Louvers in rated doors: Extruded aluminum fusible link louver, UL and Warnock Hersey International approved, maximum size 24 by 24 inches.

1. Fabricated from 6063-T5 alloy aluminum, 0.05 inches (1.3 mm) thick, furnished with adjustable trim.
2. Fasteners: High strength aluminum or stainless steel, countersunk into trim.
3. Finish: Factory primed with baked enamel ready receive field applied finish.

H. Hardware reinforcing: Welded in place steel reinforcement, hot rolled pickled and oiled steel per ASTM A569. Provide G-60, hot-dipped galvanized reinforcing for all exterior openings, and locations where galvanized doors and frames are scheduled. Reinforcing shall be not less than the following minimum steel thicknesses:

1. Hinges: 7 gage, minimum 0.167 inch (4.2 mm) thick.
2. Closers: Box/channel-shape reinforcing, 12 gage, minimum 0.093 inch (2.3 mm) thick.
3. Locks: Box/channel-shape reinforcing,
   a. Cylindrical locks: 16 gage, minimum 0.053 inch (1.3 mm) thick.
   b. Mortise locks: 14 gage, minimum 0.067 inch (1.6 mm) thick.
4. Kick plates: 18 gage, minimum 0.042 inch (1.0 mm) thick.
5. All other hardware: 14 gage, minimum 0.067 inch (1.6 mm) thick.
6. Locations for reinforcing shall be determined from information and templates provided under Section 08 71 00 - DOOR HARDWARE.

I. Provide UL approved welded steel astragal at each UL pair of fire doors.

J. Fabrication

1. Fabricate exposed faces of door panels from cold-rolled steel only.
2. Fabricate concealed stiffeners, reinforcement, edge channels, louvers and moldings from either cold-rolled or hot-rolled steel (at manufacturer's option).
3. Fabricate doors with hardware reinforcement welded in place.
4. Attach fire rated label to each door unit.
5. Close top and bottom edge of exterior doors with flush end closure. Seal joints watertight.

2.4 HOLLOW METAL FRAMES

A. General: Refer to the Drawings for various types of frames, sizes, and profiles, UL fire- resistive Label frames, and other characteristics of frames and related items.

1. Frame type (all frames): Shop welded frames with mitered joints arc-welded, reinforced and ground smooth.

B. Materials for frames, reinforcement, anchors, anchor clips and related items: commercial grade cold-rolled steel conforming to ASTM A109 or commercial grade hot-rolled and pickled steel conforming to ASTM A415.

1. Frame gage:
   a. Interior frames for Level 2 and 3 doors: 16-gage, 0.053 inch thick (1.3 mm), except as otherwise required for specific U.L. Label.
   b. Exterior frames: 14-gage, 0.067 inch thick (1.7 mm), with an A60 zinc coating supplied by the hot-dip process conforming to ASTM A653, Grade 37, with coating applied in accordance with A 924.
2. Hinge reinforcement: 7 gage, minimum 0.167 inch (4.2 mm) thick.

3. Lock and strike reinforcement: 12 gage, minimum 0.093 inch (2.3 mm) thick.
4. Door closer reinforcement: 12 gage, minimum 0.093 inch (2.3 mm) thick.
5. Door closer reinforcement: 14 gage, minimum 0.067 inch (1.6 mm) thick.
6. Floor clips: 16 gage, minimum 0.053 inch (1.3 mm) thick.
7. Splice plates or channels: same gage as door frame.
8. Removable Glazing stops: Rectangular channel sections, not less than 20-gage, 0.032 inch thick (0.8 mm) steel; pre-drilled and loosely attached within the glazing cut- outs with countersunk tamper-resistant stainless steel screws; sized to properly accommodate the designated thicknesses of glass and glazing materials; and external edges set flush with, or slightly behind, door face. Modify glazing stops for UL Label doors to conform with UL fire rating requirements.

C. Frame construction:

1. Fire-rated frame assemblies: Modify specified construction to meet all construction requirements required for fire-resistive rating.
   a. Affix appropriate UL, FM or Warnock Hersey labels to each rated frame assembly, indicating applicable rating.
2. Shop-fabricate frames as whole single units per door opening, except when frame size is too large to ship as a single unit. Oversized frames may be shipped in large sections as practicable for field assembly with concealed splice plates or channels.
   a. Frame corner construction: Refer to paragraph A of this Article.
3. Reinforcements, stiffeners, and base angle clips: Welded to interior surfaces of frames to provide a stable base and so as to not interfere with installation of hardware.
4. Appearance of finished frames: Strong, rigid, completely free from warp and buckle, with miters well-formed and in true alignment, and with surfaces smooth and free from defects of any kind.
5. Silencer holes: Prepare frames for silencers at non-gasketed doors, coordinate with Section 08 71 00 – DOOR HARDWARE and Hardware Schedule. Provide three single silencers for single doors, and mullions of double doors on strike side. Provide two single silencers on frame head at double doors without mullions.
6. Glazing beads: Carefully place to properly accommodate the various thicknesses of glass and glazing materials, and loosely-attach to frames with flathead galvanized steel screws through pre-drilled holes having countersunk depressions.

D. Anchorage:

1. Anchor clips for frames in metal stud partitions: 16-gage (minimum 0.053 inch [1.3 mm] thick) steel z-shaped clips factory welded onto frame, 1-1/2 inch upturned and downturned legs, or equivalent type standard with the manufacturer, contained within the frames, for screw attachment to metal studs under Section 09 22 16 - NON- STRUCTURAL METAL FRAMING.
2. Anchors for frames in existing masonry walls: Counter-sunk bolts of minimum 3/8 inch diameter, set into masonry expansion shields.
3. Anchors for fire-resistive rated frames: Conform to all UL requirements for the specific fire-resistive ratings.
4. Provide the following number of anchors, clips, or bolts, per jamb:
   a. For frames 7’-6” in height or less: 3 anchors per jamb.

b. For frames 7’-6” in height or less and having doors exceeding 3’-0” feet width, and for cross corridor frames: 4 anchors per jamb.

c. For frames greater than 7’-6”, up to 10’-0” in height: 4 anchors per jamb.

d. For frames greater than 7’-6”, up to 10’-0” in height, and having doors exceeding 3’-0” feet width, and for cross corridor frames: 5 anchors per jamb.

e. For frames over 10’-0’ in height: 5 anchors per jamb.

2.5 FABRICATION

A. General: Do not fabricate materials until all specified submittals have been submitted to, and approved by, the Architect.

B. Fabrication Tolerances, Maximum variation for doors and frames: Maximum diagonal distortion 1/16 inch measured with straight edge, corner to corner.

2.6 FINISHES

A. Preparation: Pressure-sand all surfaces of all doors, frames, accessory items, anchors, and related items, to remove blemishes and foreign matter and provide paint grip. Spot fill imperfections with metallic filler, and sand smooth. Thoroughly clean the surfaces by applying hot or cold phosphate treatment standard with the manufacturer.

B. Following cleaning apply one dip or spray coat of rust-inhibitive metallic oxide, zinc chromate, or synthetic resin primer to all surfaces, including those which will be concealed after erection. Bake or oven-dry the primer at time and temperature recommended by the manufacturer for developing maximum hardness and resistance to abrasion.

PART 3 - EXECUTION

3.1 ERECTION AND INSTALLATION

A. Installation of frames and doors, including all accessories and related items furnished hereunder, will be performed under Section 06 10 00 - ROUGH CARPENTRY

1. Section 06 10 00 - ROUGH CARPENTRY shall place frames in correct position within specified tolerances.

B. Final installation of loosely-attached glazing stops will be performed under Section 08 80 00
- GLAZING.

END OF SECTION