SECTION 08 12 13

HOLLOW METAL FRAMES

PART 1 GENERAL

1.1 SUMMARY

A. Section Includes:
1. [Non-fire-rated steel frames.]
2. [Fire-rated steel frames.]
3. [Existing Frames to be reused.]
4. [Interior glazed light frames.]
5. [Interior glazed partitions with louver blinds.]
6. [Cased openings.]
7. [Lead lined steel frames]

B. Related Sections:
1. Section 08 71 00 - Door Hardware: Hardware including weatherstripping and silencers.
2. Section 08 80 00 - Glazing: Glass for interior glazed light frames.
3. Section 09 91 00 - Painting: Field painting.
4. [Section 12 21 13 - Horizontal Louver Blinds: Louver blinds, including attachments, integral in double glazed partition frames.]

1.2 REFERENCE STANDARDS

A. American National Standards Institute:
1. ANSI A250.3 - Test Procedure and Acceptance Criteria for Factory Applied Finish Painted Steel Surfaces for Steel Doors and Frames.
2. ANSI A250.8 - Recommended Specifications for Standard Steel Door and Frames.
3. ANSI A250.10 - Test Procedure and Acceptance Criteria for Prime Painted Steel Surfaces for Steel Doors and Frames.
4. ANSI A250.11 - Recommended Erection Instructions for Steel Frames.

B. ASTM International:
1. [ASTM A167 - Standard Specification for Stainless and Heat-Resisting Chromium-Nickel Steel Plate, Sheet, and Strip.]
2. ASTM A653/A653M - Standard Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process.
3. ASTM A1008/A1008M - Standard Specification for Steel, Sheet, Cold-Rolled, Carbon, Structural, High-Strength Low-Alloy, High-Strength Low-Alloy with Improved Formability, Solution Hardened, and Bake Hardenable.

C. CBC - California Building Code.

D. Door and Hardware Institute:
1. DHI A115 Series - Specifications for Steel Doors and Frame Preparation for Hardware.

E. National Association of Architectural Metal Manufacturers:
1. NAAMM HMMA 840 - Guide Specifications for Installation and Storage of Hollow Metal Doors and Frames.

F. National Fire Protection Association:
1. [NFPA 105 - Standard for the Installation of Smoke Door Assemblies and Other Opening

Protectives.]

G. Underwriters Laboratories Inc.:
1. [UL 10C - Standard for Positive Pressure Fire Tests of Door Assemblies.]
2. [UL 63 - Fire Door Frames.]
3. [UL 1784 - Standard for Air Leakage Tests of Door Assemblies.]

1.3 ADMINISTRATIVE REQUIREMENTS

A. Coordination:
1. Coordinate hollow metal frame details with work supporting or adjoining steel frames.
2. Coordinate hollow metal frame work with hardware installation.
3. [Coordinate installation of glazing.]
4. [Coordinate installation of electrical connections to electrical hardware items.]

B. [Preinstallation Meeting:]

C. [Sequencing:]
1. [Install welded hollow metal frames before construction of adjacent [walls][walls, except at concrete and masonry construction].]
2. [Sequence fabrication and installation to ensure wire connections for electrified door hardware and security devices are achieved in an orderly and expeditious manner.]

D. Scheduling:
1. Deliver frames only after proper facilities are available.

1.4 [SUSTAINABLE CHARACTERISTICS]

A. Section 01 35 63 - Sustainability Project Requirements: Requirements for sustainable design compliance.

B. Materials and Resources Characteristics:
1. [Recycled Content Materials: Furnish materials with maximum available recycled content including:

SPEC NOTE ***List materials specified in this section required to have recycled content.***

a. [_____.]
2. [Regional Materials: Furnish materials extracted, processed, and manufactured within 500 miles of Project site.]

SPEC NOTE ***List materials specified in this section required to be regional materials.***

a. [_____.]

1.5 SUBMITTALS

A. See Section 01 33 00 - Submittal Procedures for submittal procedures.

B. Product Data: Materials and details of design and construction, hardware locations, reinforcement type and locations, anchorage and fastening methods, and finishes; and one copy of referenced grade standard.

C. Shop Drawings:
1. Reference each door using Door Number and hardware group.
2. Show each opening indicating opening criteria, frame type, elevation, frame profiles, dimensions, fire-resistive rating, details including anchors and attachment to adjacent structure, machining criteria for hardware and identifying location of different finishes, if any.

D. Samples: Only as requested.

E. Installation Instructions: Manufacturer's published instructions, including any special installation instructions relating to this project.

F. Certificates:
   1. Manufacturer's certification that it meets requirements of this Section.
   2. Manufacturer's certification that products meet or exceed specified requirements.

1.6 [SUSTAINABLE DESIGN SUBMITTALS]

A. Section 01 35 63 - Sustainability Project Requirements: : Requirements for sustainable design submittals.

B. Manufacturer's Certificate: Certify products meet or exceed specified sustainable design requirements.
   1. Materials Resources Certificates:
      a. Certify source and origin for [salvaged] [and] [reused] products.
      b. Certify recycled material content for recycled content products.
      c. Certify source for regional materials and distance from Project site.

C. Product Cost Data: Submit cost of products to verify compliance with Project sustainable design requirements. Exclude cost of labor and equipment to install products.
   1. Provide cost data for the following products:
      a. Salvage products.
      b. Reused products/
      c. Products with recycled material content.
      d. Regional products.

1.7 QUALITY ASSURANCE

A. Manufacturer: Company specializing in manufacturing the products specified in this section with minimum three years of documented experience.

1.8 DELIVERY, STORAGE, AND PROTECTION

A. Store in accordance with NAAMM HMMA 840.

B. Prior to delivery to site, identify each frame with individual Door Number, type, and size in way markings will not show through finish painting.

C. Deliver, store, and handle frames to prevent damage or deformation.

D. Accept frames on site in manufacturer’s packaging. Inspect for damage.

E. Storage and Protection:
   1. Protect frames with resilient packaging; avoid humidity build-up under coverings; prevent corrosion.
   2. Provide clean, dry surfaces, or platforms as required, and protect from deterioration and foreign matter.
   3. Do not store on ground.

PART 2 PRODUCTS

2.1 MANUFACTURERS

A. Steel Frames:
   1. Republic Doors and Frames.
   2. Steelcraft.
   3. Curries.
   4. or equal.

2.2 STEEL FRAME TYPES

A. Welded Door Frames (Non-Fire Rated):
   1. Location: Typical unless otherwise noted.
   2. One-piece welded construction, fabricated to profiles shown on the Drawings and in accordance with requirements of this Section.
   3. Grade: Comply with frame requirements specified in ANSI A250.8 for Level 1, 16 gage

B. [Fire-Resistive Rated Door Frames, 20 Minute or Longer Fire Rating:]
   1. Fabricate in accordance with welded frame type as noted above and in accordance with UL 63 for fire-resistive rating as required.
   2. Grade: Comply with frame requirements specified in ANSI A250.8 for Level 1, 16 gage
   3. [Frames with 20 Minute Fire Rating: Meet requirements of CBC Section 715 and UL 10C without hose stream test.]
   4. [Frames with 3/4 Hour or Longer Fire Rating: Meet requirements of CBC Section 715 and UL 10C.]
   5. [Frames in smoke and draft control assembly shall meet requirements of UL 1784 and installed in accordance with NFPA 105.]
   6. Attach label from agency acceptable to authority having jurisdiction to identify each fire rated door frame.

C. Frames for [Interior Glazing Lights][and][Cased Opening]:
   1. Construction and face dimensions to match door frames, and as indicated on Drawings and in accordance with requirements of this Section.
   2. Provide non-removable stops on non-secure side; sizes and configurations as indicated on Drawings.

D. Existing Frames: Patch all holes and blemishes. Prep frame to receive paint.

2.3 MATERIALS

A. Sheet Steel: Cold-rolled, commercial quality; ASTM A1008/A1008M.

B. Galvanized Sheet Steel: Zinc-iron alloy finish (galvannealed) to meet requirements of ASTM A653/A653M, coating designation A60.

C. [Stainless Sheet Steel: ASTM A167, Type 302 or 304.].

D. Factory Applied Primer: Provide primer compatible with paint systems specified in Section 09 91 00 - Painting and meeting the requirements of ANSI A250.10.

2.4 ACCESSORY MATERIALS

A. Temporary Frame Spreaders: Provide for all factory- or shop-assembled frames.

B. Inserts, Bolts, and Fasteners: Manufacturer’s standard units.

2.5 FABRICATION

A. Fabricate frames in accordance with ANSI A250.8 unless otherwise indicated.

B. Preparation:
   1. Verify partition dimension and door details; obtain reviewed hardware schedule, templates, and other information.
   2. Verify fire-resistive rating, size, and design of each opening.

C. Material Usage:
   1. Fabricate interior frames from sheet steel.
   2. [Fabricate exterior frames from galvanized sheet steel.]
   3. [Use stainless sheet steel where specifically noted.]

D. Welded Door Frames:
   1. Fabricate steel frames as rigid units, neat in appearance and free from defects, warp, or buckle**.** Accurately press-brake profiles as detailed.
   2. Weld continuous to full depth of frame. Grind welds smooth, dress, and make smooth, flush and invisible. Filler to conceal welds or manufacturing defects is not acceptable.
   3. Miter corners of frames unless otherwise noted.
   4. Preassemble frames in shop and deliver to job with spreader bar at sill; or tie frames in pairs to form box.
   5. Anchors:
      a. Fabricate from minimum 12 gauge by 1-1/4 inch strap as detailed.
      b. Provide minimum four per side and two per head.
      c. Space side anchors evenly at maximum 28 inches on center with top and bottom anchors at minimum distance from top and bottom hinges.
   6. Floor Anchor at Metal Studs:
      a. Fabricate from minimum 12 gauge, 2-1/2 by 2 inch angle equal in length to stud width.
      b. Drill for two floor fasteners, except frames with a throat opening of less than 3 inches, use one floor fastener.
      c. Weld to frames.
   7. [Anchors in Masonry Walls:]
      a. Fabricate from minimum 18 gauge, 10 by 2-1/2 inches corrugated or perforated steel.
      b. Provide at least three adjustable anchors per jamb for frame up to 7 feet high and four anchors per jamb for frames of greater height.]

E. [Fire-Resistive Rated Door Frames: Fabricate to meet requirements of Frame Types Article.]

F. Frames for [Interior Glazing Lights][and][Cased Opening]:
   1. Fabricate similar to welded door frames.
   2. Where frames occur in fire-resistive rated partitions, fabricate to meet requirements of fire-resistive door frames.
   3. Wherever practical, fit and assemble glazed partitions in the manufacturing plant. Clearly identify work that cannot be permanently factory-assembled before shipment, to assure proper assembly at the project site.
   4. [Fabricate glazed partition frames without visible stops. Design stops integral with frame profile as shown.]
   5. [Coordinate fabrication of glazed partitions with louver blinds.]

G. [Cut-Off (Terminated) Stops: Terminate door stops 6 inches above finished floor except at [fire rated double egress,] [lead-lined,] [lightproof,] [and] [soundproof] openings unless otherwise noted. Cut stops at 45 degrees and close.]

H. Provisions for Hardware and Security Devices:

1. Prepare frames for hardware in accordance with DHI A115 Series, with reinforcement welded in place, in addition to other requirements specified in door grade standard.
2. Factory machine frames for finish hardware and security devices in accordance with templates.
3. Provide reinforcing and cutouts as required to receive hardware and security devices.
4. Factory machine as required for sensors, contacts, and similar devices as indicated on the Drawings.
5. Mortise Hardware and Security Devices: Provide cutouts with drilled and tapped minimum 10 gauge steel reinforcement.
6. Other Hardware: Make total thickness of areas requiring reinforcement equal to nominal thickness of fastener required by hardware item.
7. Provide 24 gauge plaster shields to protect reinforced points of frames in plaster or poured concrete walls.
8. Prepare frames for [silencers.][silencers, except at [lead-lined,] [lightproof,] [or] [soundproof] openings.] Drill three holes in strike jamb of single-leaf openings and two holes in frame head of double-leaf openings.
9. [Use minimum 3/16 inch or 8 gauge steel reinforcement at lead-lined frames.]

2.6 FINISHES

A. Preparation: Thoroughly clean surfaces of rust, grease, and other impurities. Grind smooth edges, welds, and rough spots.

B. [Interior Frames: After fabrication, chemically etch and apply one baked-on prime coat.]

C. [Exterior Frames: After fabrication, touch up abraded galvanizing, chemically etch, and apply one baked-on prime coat.]

D. [Stainless Steel Frames: Manufacturer's No. 4 finish.]

PART 3 EXECUTION

3.1 EXAMINATION

A. Verify proper coordination of frames with doors and hardware.

B. Examine wall locations and verify following:
   1. Correctness of dimensions, backing, or support conditions.
   2. Absence of defects that would adversely affect frame or door installation.

C. Examine floor conditions and verify following:
   1. Floor surface is level and will allow full swing of door.
   2. Adjacent frames can be installed with heads at same elevation.

D. Verify that building is secured and free from weather elements prior to installing interior door hardware.

E. [Verify electric power is available to power operated devices and is of correct characteristics.]

F. Replace with good material any part or item found damaged, defective, or inadequate before installation.

G. Correct unacceptable conditions before proceeding with installation.

H. Do not start work until unsatisfactory conditions are corrected.

3.2 INSTALLATION

A. Install frames in accordance with the requirements of the specified frame grade and ANSI A250.11.
   1. Install fire rated units in accordance with CBC Section 715 and requirements for fire rating as indicated on Drawings.
   2. [Install smoke and draft control assembly in accordance with NFPA 105.]

B. Install frames in accordance with final shop drawings and manufacturer's data, except where requirements that are more stringent are specified herein.

C. Set welded frames accurately in position, aligned and braced securely until permanent anchors are set. After wall construction is complete, remove temporary braces and spreaders leaving surfaces smooth and undamaged.

D. Set frames with heads of adjacent frames aligned.

E. Jambs Anchors: Secure each anchor to metal studs with two screw fasteners.

F. Floor Anchors: Secure each anchor to concrete floor as indicated on Drawings.

G. Protect frames from damage to surface or profile.

H. Touch up damaged factory finishes.

3.3 ERECTION TOLERANCES

A. Maximum Diagonal Distortion: 1/16 inch measured with straight edges, crossed corner to corner.

END OF SECTION