

SECTION 081213 - HOLLOW METAL FRAMES

PART 1 - GENERAL

1.1 SUMMARY

- A. Section includes hollow metal door frames.
 - 1. The integration of a security system into the hollow metal door frame work is required. The Contractor shall be responsible for the total and complete coordination of the security system components into the Work.

1.2 ACTION SUBMITTALS

- A. Product Data: Submit product data for each product indicated. Include material descriptions, core descriptions, label compliance, sound and fire-resistance ratings, and finishes for each type of door frame specified.
- B. Shop Drawings: Submit door and frame schedule using same reference designations indicated on Drawings. Include opening size(s), handing of doors, frame throat dimensions, details of each frame type, elevations of door design types, details of construction, location and installation requirements of door hardware and reinforcements, hardware group numbers, details of joints and connections, fire label requirements including fire rating time duration, maximum temperature rise requirements, and smoke label requirements.
 - 1. Indicate routing of electrical conduit and dimensions and locations of cutouts in door frames to accept electric hardware devices.
- C. Stainless Steel Samples: Submit of each type of exposed finish required, prepared on samples not less than 12 by 12 inches and of same thickness and material indicated for the Work.

1.3 INFORMATIONAL SUBMITTALS

- A. Certificate of Compliance for Fire Rated Doors: Provide copies of Certificate of Compliance for all fire rated door assemblies, all smoke and draft control door assemblies, and all temperature rise rated door assemblies.

1.4 QUALITY ASSURANCE

- A. Hollow Metal Door Frame Standard: Comply with the applicable provisions and recommendations of the following publications by Hollow Metal Manufacturers Association (HMMA) Div. of National Association of Architectural Metal Manufacturers (NAAMM), unless more stringent requirements are indicated in the Contract Documents:
1. HMMA "Hollow Metal Manual."
 2. HMMA 861 "Guide Specifications for Commercial Hollow Metal Doors and Frames."
 3. HMMA 866 "Guide Specifications for Stainless Steel Hollow Metal Doors and Frames."
- B. Manufacturer Qualifications: A firm experienced in manufacturing hollow metal doors and frames similar to those indicated for this Project and with a record of successful in-service performance, as well as sufficient production capacity to produce required units.
- C. Fire-Rated Door Assemblies: Assemblies complying with NFPA 80 that are listed and labeled by a testing and inspecting agency acceptable to authorities having jurisdiction, for fire-protection ratings indicated, based on testing according to NFPA 252 or UL 10C "Standard for Positive Pressure Fire Tests of Door Assemblies." Fire classification labels at all doors with fire ratings greater than 20 minutes shall indicate the temperature rise developed on the unexposed surface of the door after the first 30 minutes of fire exposure.
1. Provide metal labels permanently fastened on each door frame which is within the size limitations established by the labeling authority having jurisdiction.
 2. Temperature-Rise Rating: Where indicated, provide doors that have a temperature-rise rating of 450 deg F maximum in 30 minutes of fire exposure.
 3. Positive Pressure Rated Door Assemblies: Where indicated provide positive pressure rated fire rated door assemblies. Sizes and configurations as shown on the Drawings. Installed door assemblies shall be in accordance with door manufacturer's certified assemblies.
 - a. Test Pressure: Test according to NFPA 252 or UL 10C. After 5 minutes into the test, neutral pressure level in furnace shall be established at 40 inches or less above the sill.

1.5 DELIVERY, STORAGE, AND HANDLING

- A. Deliver door frames palleted, wrapped, or crated to provide protection during transit and Project site storage.

- B. Inspect door frames, on delivery, for damage. Tool marks, rust, blemishes, and other damage on exposed surfaces will not be acceptable. Remove and replace damaged items as directed by Architect. Store door frames at building site in a dry location, off the ground, and in such a manner as to prevent deterioration.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

- A. Manufacturers: Subject to compliance with requirements, provide doors and frames by one of the following:
1. Hollow Metal Door Frames:
 - a. Ceco Door Products; an Assa Abloy Group Company.
 - b. Curries Company; an Assa Abloy Group Company.
 - c. Steelcraft; an Allegion Company.
 2. Stainless-Steel Door Frames:
 - a. Ceco Door Products; an Assa Abloy Group Company.
 - b. Fleming Limited, an Assa Abloy Group Company.
 - c. Steelcraft; an Allegion Company.

2.2 MATERIALS

- A. Hot-Rolled Steel Sheets: ASTM A 1011/A 1011M, CS (commercial steel), Type B, free from scale, pitting, or surface defects; pickled and oiled.
- B. Cold-Rolled Steel Sheets: ASTM A 1008/A 1008M, CS (commercial steel), Type B; free of scale, pitting, coil breaks, surface blemishes, buckles, waves, or other defects, exposed (matte) dull finish, suitable for exposed applications.
- C. Stainless-Steel Sheets: ASTM A 666, austenitic stainless steel, Type 304.
- D. Inserts, Bolts, and Fasteners: Galvanized steel.
1. Expansion Bolts and Shields: FS FF-S-325, Group III, Type 1 or 2.
 2. Machine Screws: FS FF-S-92, carbon steel, Type III cross recessed, design I or II recess, style 2C flat head.
- E. Filler: Sound deadening and heat retarding mineral fiber insulating material.

- F. Glass and Glazing: Refer to Section 088000 "Glazing."

2.3 FRAMES

- A. Fabricate hollow metal frames, formed to profiles indicated, with full 5/8 inch stops, and of the following minimum thicknesses.
1. For interior use, form frames from cold-rolled steel sheet of the following thicknesses:
 - a. Openings up to and Including 48 Inches Wide: 16 gauge.
 - b. Openings More Than 48 Inches Wide: 14 gauge.
 2. Form stainless-steel door frames from 16 gauge thick, stainless-steel sheets.
- B. Provide frames either saw mitered and full (continuously) profile welded, or machine mitered and full profile welded, on back side at frame corners and stops with edges straight and true. Grind welds smooth and flush on exposed surfaces.
1. At stainless steel door frames provide a machined mitered, faces only welded on back side of frame face, combined with interlocked tab construction with edges straight and true to eliminate weld bleed through at the exposed rabbet and stops. Grind welds smooth and flush on exposed surfaces.
- C. Hardware Reinforcement: Fabricate reinforcements from same material as frame to comply with the following. Offset reinforcement so that faces of mortised hardware items are flush with surface of the frame.
1. Hinges and Pivots: 7 gauge thick by 1-1/4 inches wide by 10 inches.
 2. Strike, Surface Mounted Hold Open Arms, and Flushbolt Reinforcements: 12 gauge thick by size as required by hardware manufacturer.
 3. Closer Reinforcements: 12 gauge thick one piece channel by size as required by hardware manufacturer.
 4. Other Hardware Reinforcements: As required for adequate strength and anchorage.
- D. Electrical Requirements: Make provisions for installation of electrical items specified elsewhere; arrange so wiring can be readily removed and replaced.
1. Provide all cutouts and reinforcements required for steel frames to accept security system components.
 2. Frames with Electric Hinges and Pivots: Provide welded on UL listed back boxes with metal conduit or raceway to permit wiring from electric hinge or pivot to other electric door hardware.

- a. Hinge Location: Center for doors less than 90 inches tall or second hinge from door bottom for doors greater than 90 inches; top or bottom electric hinge locations shall not be permitted.
- E. Jamb Anchors: Locate jamb anchors above hinges and directly opposite on strike jamb as required to secure frames to adjacent construction. At metal stud partitions locate the additional jamb anchor below the top hinge.
1. Metal-Stud Partitions: Metal channel stud zee anchor sized to match stud width, welded to back of frames, formed of same material and gauge thickness as frame. Provide at least the number of anchors for each jamb according to the following heights:
 - a. Three anchors per jamb up to 60 inches in height.
 - b. Four anchors per jamb from 60 to 90 inches in height.
 - c. Five anchors per jamb from 90 to 96 inches in height.
 - d. One additional anchor per jamb for each 24 inches or fraction thereof more than 96 inches in height.
- F. Floor Anchors: Provide floor anchors for each jamb and mullion that extends to floor, formed of same material as frame, 12 gauge thick, and punched with two holes to receive two (2) 0.375 inch fasteners. Where floor fill or setting beds occur support frame by adjustable floor anchors bolted to the structural substrate. Terminate bottom of frames at finish floor surface. Weld floor anchors to frames with at least 4 spot welds per anchor.
- G. Head Strut Supports: Provide 3/8-by-2-inch vertical steel struts extending from top of frame at each jamb to supporting construction above. Bend top of struts to provide flush contact for securing to supporting construction above by bolting, welding, or other suitable anchorage. Provide adjustable wedged or bolted anchorage to frame jamb members to permit height adjustment during installation. Adapt jamb anchors at struts to permit adjustment.
- H. Head Reinforcement: For frames more than 48 inches wide in masonry wall openings, provide continuous steel channel or angle stiffener, 12 gauge thick for full width of opening, welded to back of frame at head. Head reinforcements shall not be used as a lintel or load-bearing member for masonry.
- I. Spreader Bars: Provide removable spreader bar across bottom of frames, attached to jambs and mullions to serve as bracing during shipment and handling and to hold frames in proper position until anchorage and adjacent construction have been completed.
- J. Door Silencer Holes: Drill strike jamb stop to receive three silencers on single door frames and for two silencers on double door frames. Insert plastic plugs in holes to keep holes clear during installation.

- K. Plaster Guards and Removable Access Plates: Provide 26 gauge thick plaster guards or dust-cover boxes of same material as frame, welded to frame at back of hardware cutouts to close off interior of openings and prevent mortar or other materials from obstructing hardware operation. Provide removable access plates in the heads of frames to receive overhead concealed door closers.

2.4 STOPS AND MOLDINGS

- A. Provide continuous stops and moldings around solid, and glazed, panels where indicated.
- B. Form fixed stops and moldings integral with frame, on the exterior (non-secured) side of the frame.
- C. Provide removable stops and moldings formed of 20 gauge thick steel sheets matching hollow metal frames. Secure with countersunk oval head machine screws spaced uniformly not more than 12 inches o.c. Form corners with butted or mitered hairline joints.
- D. Coordinate rabbet width between fixed and removable stops with type of glass or panel and type of installation indicated.

2.5 FABRICATION

- A. Fabricate door frames rigid, neat in appearance, and free of defects, warp, wave, and buckle. Accurately form metal to sizes and profiles indicated. Accurately machine, file, and fit exposed connections with hairline joints. Weld exposed joints continuously; grind, fill, dress, and make smooth, flush, and invisible.
- B. Exposed Fasteners: Provide countersunk flat heads for exposed screws and bolts, unless otherwise indicated.
- C. Hardware Preparation: Prepare door frames to receive hardware, including cutouts, reinforcement, mortising, drilling, and tapping, according to final hardware schedule and templates provided by hardware supplier. Secure reinforcement by spot welding. Comply with applicable requirements of ANSI/BHMA A156.115 and A156.115W specifications for door and frame preparation for hardware. Factory-reinforce door frames to receive surface-applied hardware. Factory drill and tap for surface-applied hardware.,
 - 1. Locate hardware as indicated on the Drawings or in Section 087100 "Door Hardware" or, if not indicated, according to HMMA 831, "Recommended Hardware Locations for Custom Hollow Metal Doors and Frames."

2.6 STEEL SHEET FINISHES

- A. General: Clean, treat and prime surfaces of fabricated steel door frame work, inside and out, whether exposed or concealed in the construction.
- B. Surface Preparation: Clean surfaces to comply with SSPC-SP 1, "Solvent Cleaning"; remove dirt, oil, grease, or other contaminants that could impair paint bond. Remove mill scale, shavings, filings, and rust, if present, complying with SSPC-SP 3, "Power Tool Cleaning."
- C. Factory Priming for Field-Painted Finish: Apply shop primer immediately after surface preparation and pretreatment. Apply a sufficient number of coats, baked on, to obtain uniformly smooth exposed surfaces. Touch up surfaces having runs, smears, or bare spots.
 - 1. Shop Primer: Manufacturer's or fabricator's standard, fast-curing, corrosion-inhibiting, lead- and chromate-free, universal primer complying with ANSI A250.10 acceptance criteria; compatible with substrate and field-applied finish paint system indicated.

2.7 STAINLESS-STEEL FINISHES

- A. Remove tool and die marks and stretch lines or blend into finish. Grind and polish surfaces to produce uniform, texture, graining and reflectivity matching Architect's sample.
 - 1. Bright, Directional Polish: NAAMM No. 4 finish.
 - 2. When polishing is completed, passivate and rinse surfaces. Remove embedded foreign matter and leave surfaces chemically clean.

PART 3 - EXECUTION

3.1 INSTALLATION

- A. General: Install door frames according to the referenced standards, the Architect reviewed shop drawings, and manufacturer's written recommendations and installation instructions.
- B. Frames: Install frames where indicated. Extend frame anchorages below fills and finishes. Coordinate the installation of built-in anchors for wall and partition construction as required with other work.
 - 1. Welded Frames:
 - a. Set masonry anchorage devices where required for securing frames to in-place concrete or masonry construction.

- 1) Set anchorage devices opposite each anchor location as specified and anchorage device manufacturer's written instructions. Leave drilled holes rough, not reamed, and free of dust and debris.
- b. Placing Frames: Set frames accurately in position; plumb; align, and brace securely until permanent anchors are set.
 - 1) At concrete or masonry construction, set frames and secure in place with machine screws and masonry anchorage devices. Countersink anchors, and fill and make smooth, flush, and invisible on exposed faces.
 - 2) Anchor bottom of frames to floors through floor anchors with threaded fasteners.
 - 3) Field splice only at approved locations indicated on the shop drawings. Weld, grind, and finish as required to conceal evidence of splicing on exposed faces.
 - 4) Remove spreader bars only after frames are properly set and secured.
2. At fire-rated openings, install frames according to NFPA 80.
- C. Glazing: Comply with installation requirements in Section 088000 "Glazing" and with hollow metal manufacturer's written instructions.
 1. Secure stops with countersunk flat or oval head machine screws spaced uniformly not more than 9 inches² inches
- D. Wood Door Installation: Refer to 08 14 16 "Flush Wood Doors."
- E. Apply hardware in accordance with hardware manufacturer's instructions and Section 087100 "Door Hardware." Drill and tap for machine screws as required. Do not use self tapping sheet metal screws. Adjust door frame installation to provide uniform clearance at head and jambs, and to contact stops uniformly. Adjust hardware items just prior to final inspection. Leave work in complete and proper operating condition.
 1. Field cut existing hollow metal door frames indicated to receive new hardware. Field cutting shall be executed in a workmanlike manner and shall not void the existing door frame labeling.

3.2 ADJUSTING AND CLEANING

- A. Final Adjustments: Check and readjust operating hardware items just before final inspection. Leave work in complete and proper operating condition. Remove and replace defective work, including doors or frames that are warped, bowed, or otherwise unacceptable.

- B. Prime-Coat Touchup: Immediately after erection, sand smooth rusted or damaged areas of prime coat and apply touchup of compatible air-drying primer.
 - 1. Finish Painting: Refer to Section 099123 "Interior Painting."
- C. Stainless-Steel Touchup: Immediately after erection, smooth abraded areas of stainless steel and polish and clean to match undamaged finish.
- D. Remove and replace defective work, including doors or frames that are warped, bowed, or otherwise defective.
- E. Institute protective measures required throughout the remainder of the construction period to ensure that the hollow metal doors and frames will be without damage or deterioration, at time of Substantial Completion.

END OF SECTION