

**SECTION 08114 - STAINLESS STEEL DOOR AND WINDOW FRAMES****PART 1 - GENERAL****1.1 RELATED DOCUMENTS**

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 1 Specification Sections, apply to this Section.

**1.2 SUMMARY**

- A. This Section includes the following:
  - 1. Custom hollow-metal stainless steel door, window and stick light frames.
- B. Related Sections include the following:
  - 1. Division 4 Section "Unit Masonry Assemblies" for building anchors into and grouting custom steel frames in masonry construction.
  - 2. Division 8 Section "Hollow Metal Doors and Frames" for hollow-metal doors and frames manufactured from steel.
  - 3. Division 8 Section "Glazing" for glazed lites in custom steel doors and frames.
  - 4. Division 8 Sections for door hardware for stainless steel doors.

**1.3 DEFINITIONS**

- A. Minimum Thickness: Minimum thickness of base metal without coatings.

**1.4 SUBMITTALS**

- A. Product Data: Include construction details, material descriptions, core descriptions, label compliance, fire-resistance rating, and finishes for each type of custom steel door and frame specified.
- B. Shop Drawings: In addition to requirements below, provide a schedule of custom steel doors and frames using same reference numbers for details and openings as those on Drawings:
  - 1. Elevations of each door frame and window design.
  - 2. Frame details for each frame type, including dimensioned profiles.
  - 3. Details and locations of reinforcement and preparations for hardware.
  - 4. Details of each different wall opening condition.
  - 5. Details of anchorages, accessories, joints, and connections.
  - 6. Details of glazing frames and stops showing glazing.
- C. Construction Certification: For custom window assemblies required to be fire rated; include statement that frames comply with requirements of design, materials, and construction but have not been subjected to fire test.

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- A. Source Limitations: Obtain stainless steel doors and frames through one source from a single manufacturer.

**1.6 DELIVERY, STORAGE, AND HANDLING**

- A. Deliver doors and frames palletized, wrapped, or crated to provide protection during transit and Project-site storage. Do not use nonvented plastic.
1. Provide additional protection to prevent damage to finish of factory-finished doors and frames.
- B. Deliver welded frames with two removable spreader bars across bottom of frames, tack welded to jambs and mullions.
- C. Store doors and frames under cover at Project site. Place units in a vertical position with heads up, spaced by blocking, on minimum 4-inch-high, wood blocking. Avoid using non-vented plastic or canvas shelters that could create a humidity chamber.
1. If wrappers on doors become wet, remove cartons immediately. Provide minimum 1/4-inch space between each stacked door to permit air circulation.

**1.7 PROJECT CONDITIONS**

- A. Field Measurements: Verify openings by field measurements before fabrication and indicate measurements on Shop Drawings.
1. Established Dimensions: Where field measurements cannot be made without delaying the Work, establish opening dimensions and proceed with fabricating custom steel frames without field measurements. Coordinate wall construction to ensure that actual opening dimensions correspond to established dimensions.

**1.8 COORDINATION**

- A. Coordinate installation of anchorages for custom steel frames. Furnish setting drawings, templates, and directions for installing anchorages, including sleeves, concrete inserts, anchor bolts, and items with integral anchors, that are to be embedded in masonry. Deliver such items to Project site in time for installation.

**PART 2 - PRODUCTS****2.1 MANUFACTURERS**

- A. Available Manufacturers: Subject to compliance with requirements, manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:
1. Amweld Building Products, LLC.
  2. Ceco Door Products; an ASSA ABLOY Group Company.
  3. Steelcraft; an Ingersoll-Rand Company.

**2.2 MATERIALS**

- A. Cold-Rolled Stainless Steel Sheet: Type 304 and finish shall be #4.

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- B. Supports and Anchors: Stainless steel.
- C. Grout: Comply with Division 4 Section "Unit Masonry Assemblies."
- D. Glazing: Comply with requirements in Division 8 Section "Glazing."
- E. Bituminous Coating: Cold-applied asphalt mastic, SSPC-Paint 12, compounded for 15-mil dry film thickness per coat. Provide inert-type noncorrosive compound free of asbestos fibers, sulfur components, and other deleterious impurities.

**2.3 STAINLESS STEEL FRAMES**

- A. General: Fabricate frames of construction indicated, with faces of corners mitered and contact edges closed tight.
  - 1. Frames for Doors: 16 gauge welded.
  - 2. Window and Borrowed-Light Frames: 16 gauge welded.
  - 3. Door Frames for Openings 48 Inches Wide or Less: Fabricated from 16 gauge thick stainless steel sheet.
  - 4. Borrowed-Light Frames: Fabricated from 0.053-inch-thick steel sheet.
- B. Interior Window Frames: Formed from 16 gauge cold-rolled stainless steel sheet, unless otherwise indicated.
- C. Hardware Reinforcement: Fabricate reinforcement plates from same material as frames to comply with the following minimum sizes:
  - 1. Hinges: Minimum 0.167 inch thick by 1-1/4 inches wide by 10 inches long, secured by not less than 6 spot welds.
  - 2. Strikes and Closers: Minimum 0.093 inch thick.
  - 3. Surface-Mounted Hardware: Minimum 0.093 inch thick.
- D. Head Reinforcement: Minimum 0.093-inch-thick, steel channel or angle stiffener.
- E. Fire ratings may require additional anchors.
- F. Jamb Anchors:
  - 1. Masonry Type: Adjustable strap-and-stirrup or T-shaped anchors to suit frame size, not less than 0.053 inch thick, with corrugated or perforated straps not less than 2 inches wide by 10 inches long; or wire anchors not less than 0.156 inch thick.
  - 2. Postinstalled Expansion Type for In-Place Concrete or Masonry: Minimum 3/8-inch-diameter bolts with expansion shields or inserts. Provide pipe spacer from frame to wall, with throat reinforcement plate, welded to frame at each anchor location.
- G. Floor Anchors: Formed from same material as frames, not less than 0.067 inch thick, and as follows:
  - 1. Monolithic Concrete Slabs: Clip-type anchors, with two holes to receive fasteners.

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2. Separate Topping Concrete Slabs: Adjustable-type anchors with extension clips, allowing not less than 2-inch height adjustment. Terminate bottom of frames at finish floor surface.
- H. Plaster Guards: Formed from same material as frames, not less than 0.016-inch thick.

**2.4 STOPS AND MOLDINGS**

- A. Moldings for Glazed Lites in Doors: Minimum 0.032 inch thick, fabricated from same material as door face sheet in which they are installed.
- B. Fixed Frame Moldings: Formed integral with custom steel frames, minimum 5/8 inch high, unless otherwise indicated.
- C. Loose Stops for Glazed Lites in Frames: Minimum 0.032 inch thick, fabricated from same material as frames in which they are installed.

**2.5 FABRICATION**

- A. General: Fabricate custom steel doors and frames to be rigid and free of defects, warp, or buckle. Accurately form metal to required sizes and profiles, with minimum radius for thickness of metal. Where practical, fit and assemble units in manufacturer's plant. To ensure proper assembly at Project site, clearly identify work that cannot be permanently factory assembled before shipment.
- B. Custom Steel Frames: Weld flush face joints continuously; grind, fill, dress, and make smooth, flush, and invisible. Where frames are fabricated in sections due to shipping or handling limitations, provide alignment plates or angles at each joint, fabricated of same thickness metal as frames.
1. Window and borrowed light Frames: Provide closed tubular members with no visible face seams or joints. Fasten members at crossings and to jambs by butt welding according to joint designs in HMMA 820.
  2. Provide countersunk, flat- or oval-head exposed screws and bolts for exposed fasteners, unless otherwise indicated.
  3. Floor Anchors: Weld anchors to bottom of jambs and mullions with at least four spot welds per anchor.
  4. Jamb Anchors: Provide number and spacing of anchors as follows:
    - a) Masonry Type: Locate anchors not more than 18 inches from top and bottom of frame. Space anchors not more than 32 inches o.c. and as follows:
      - 1) Two anchors per jamb up to 60 inches in height.
      - 2) Three anchors per jamb from 60 to 90 inches in height.
      - 3) Four anchors per jamb from 90 to 96 inches in height.
      - 4) Four anchors per jamb plus 1 additional anchor per jamb for each 24 inches or fraction thereof more than 96 inches in height.
    - b) Postinstalled Expansion Type: Locate anchors not more than 6 inches from top and bottom of frame. Space anchors not more than 26 inches o.c.
  5. Head Reinforcement: For frames more than 48 inches wide, provide continuous head reinforcement for full width of opening, welded to back of frame at head.

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6. Door Silencers: Except on weather-stripped doors, drill stops to receive door silencers as follows. Provide plastic plugs to keep holes clear during construction.
  - a) Single-Door Frames: Drill stop in strike jamb to receive three door silencers.
- C. Hardware Preparation: Factory prepare custom steel frames to receive templated mortised hardware; include cutouts, reinforcement, mortising, drilling, and tapping, according to the Door Hardware Schedule and templates furnished as specified in Division 8 Section "Door Hardware."
  1. Reinforce doors and frames to receive nontemplated mortised and surface-mounted door hardware.
  2. Locate door hardware as indicated, or if not indicated, according to HMMA 831, "Recommended Hardware Locations for Custom Hollow Metal Doors and Frames."
- D. Stops and Moldings: Provide stops and moldings around glazed lites where indicated. Form corners of stops and moldings with butted or mitered hairline joints.
  1. Single Glazed Lites: Provide fixed stops and moldings welded on secure side of door or frame.
  2. Multiple Glazed Lites: Provide fixed and removable stops and moldings such that each lite is capable of being removed independently.
  3. Coordinate rabbet width between fixed and removable stops with type of glazing and type of installation indicated.

**2.6 STAINLESS STEEL FINISHES**

- A. General: Comply with NAAMM's "Metal Finishes Manual for Architectural and Metal Products" for recommendations for applying and designating finishes.
  1. All exposed stainless steel shall have #4 finish.

**PART 3 - EXECUTION****3.1 EXAMINATION**

- A. Examine substrates, areas, and conditions, with Installer present, for compliance with requirements for installation tolerances and other conditions affecting performance of custom steel doors and frames.
  1. Examine roughing-in for embedded and built-in anchors to verify actual locations of custom steel frame connections before frame installation.
  2. Proceed with installation only after unsatisfactory conditions have been corrected.

**3.2 PREPARATION**

- A. Remove welded-in shipping spreaders installed at factory.
- B. Prior to installation and with installation spreaders in place, adjust and securely brace custom steel door frames for squareness, alignment, twist, and plumb to the following tolerances:
  1. Squareness: Plus or minus 1/16 inch, measured at door rabbet on a line 90 degrees from jamb perpendicular to frame head.

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2. Alignment: Plus or minus 1/16 inch, measured at jambs on a horizontal line parallel to plane of wall.
  3. Twist: Plus or minus 1/16 inch, measured at opposite face corners of jambs on parallel lines, and perpendicular to plane of wall.
  4. Plumbness: Plus or minus 1/16 inch, measured at jambs on a perpendicular line from head to floor.
- C. Drill and tap doors and frames to receive nontemplated mortised and surface-mounted door hardware.

**3.3 INSTALLATION**

- A. General: Provide doors of sizes, thicknesses, and designs indicated. Install custom steel doors and frames plumb, rigid, properly aligned, and securely fastened in place; comply with Drawings and manufacturer's written instructions.
- B. Custom Steel Frames: Install custom steel frames for windows and borrowed lights and other openings, of size and profile indicated.
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-protection-rated openings, install frames according to NFPA 80.
    - b) Where frames are fabricated in sections due to 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 glazing stops located on secure side of opening.
    - d) Install door silencers in frames before grouting.
    - e) Remove temporary braces necessary for installation only after frames have been properly set and secured.
    - f) Check plumb, squareness, 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) Floor anchors may be set with powder-actuated fasteners instead of postinstalled expansion anchors, if so indicated and approved on Shop Drawings.
  3. Masonry Walls: Coordinate installation of frames to allow for solidly filling space between frames and masonry with mortar as specified in Division 4 Section "Unit Masonry Assemblies."
  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. Installation Tolerances: Adjust custom steel door frames for squareness, alignment, twist, and plumb to the following tolerances:
    - a) Squareness: Plus or minus 1/16 inch, measured at door rabbet on a line 90 degrees from jamb perpendicular to frame head.

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- b) Alignment: Plus or minus 1/16 inch, measured at jambs on a horizontal line parallel to plane of wall.
  - c) Twist: Plus or minus 1/16 inch, measured at opposite face corners of jambs on parallel lines, and perpendicular to plane of wall.
  - d) Plumbness: Plus or minus 1/16 inch, measured at jambs at floor.
- C. Glazing: Comply with installation requirements in Division 8 Section "Glazing" and with custom steel door and frame manufacturer's written instructions.
- 1. Secure stops with countersunk flat- or oval-head machine screws spaced uniformly not more than 9 inches o.c., and not more than 2 inches o.c. from each corner.

**3.4 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 custom steel frames that are warped, bowed, or otherwise unacceptable.
- B. Clean grout and other bonding material off custom steel frames immediately after installation.

END OF SECTION 08114