SECTION 08110

STEEL DOORS AND FRAMES

PART GENERAL

SECTION INCLUDES

Steel doors.

Steel frames.

RELATED SECTIONS

Section 08210 - Wood Doors.

Section 08220 - Plastic Doors.

Section 08710 - Door Hardware.

Section 08800 - Glazing.

Section 09900 - Paints and Coatings.

REFERENCES

ANSI/SDI 100 - Recommended Specifications for Standard Steel Doors & Frames; Steel Door Institute.

ANSI A224.1 - Test Procedure and Acceptance Criteria for Prime Painted Steel Surfaces for Steel Doors and Frames.

ANSI A250.3 - Test Procedure and Acceptance Criteria for Factory-Applied Finish Painted Steel Surfaces for Steel Doors and Frames.

ASTM A 366/A 366M - Standard Specification for Steel, Sheet, Carbon, Cold-Rolled, Commercial Quality.

ASTM A 653/A 653M - Standard Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process.

ASTM A 666 - Standard Specification for Austenitic Stainless Steel Sheet, Strip, Plate, and Flat Bar.

NFPA 80 - Standard for Fire Doors and Windows.

SDI 105 - Recommended Erection Instructions for Steel frames.

SDI 111 - Recommended Standard Details for Steel Doors & Frames.

UL - Building Materials Directory; Underwriters Laboratories Inc.

WH - Certification Listings; Warnock Hersey International Inc.

SUBMITTALS

Submit under provisions of Section 01300.

Product Data: Manufacturer's standard details and catalog data indicating compliance with referenced standards, and manufacturer's installation instructions.

Certificates:

Manufacturer's certification that products comply with referenced standards.

Evidence of manufacturer's membership in the Steel Door Institute.

Shop Drawings: Door, frame, and hardware schedule in accordance with SDI 111D.

Samples: 6 x 6 inch (150 by 150 mm) samples of each color of factory finish specified.

QUALITY ASSURANCE

Manufacturer Qualifications: Member of the Steel Door Institute, and National Association of Architectural Metal Manufacturers.

Installer: Minimum five (5) years documented experience installing products specified this Section.

DELIVERY, STORAGE, AND HANDLING

Protect products from moisture, construction traffic, and damage.

Store products under cover on 4 inch (100 mm) high wood sills to prevent rust or damage.

Do not use non-vented plastic or canvas shelters.

Should wrappers become wet, remove immediately.

Provide 1/4-inch (6 mm) space between doors to promote air circulation.

PART PRODUCTS

MANUFACTURERS

Acceptable Manufacturer: Steelcraft; 9017 Blue Ash Road, Cincinnati OH 45242; Telephone (513) 745-6400; http://www.steelcraft.com.

Requests for substitutions will be considered in accordance with provisions of Section 01600.

Substitutions: Not permitted.

MANUFACTURED UNITS

Flush Doors:

- Acceptable Product: Steelcraft ___ Series.
- Performance:
  - Thermal Insulation: 'R' factor ___.
  - Sound Attenuation: STC 35.
  - Meet requirements of ANSI A 151.1 testing.
- Door Thickness: 1-3/4 inches (45 mm).
- Door Thickness: 1-3/8 inches (35 mm).
- Face Sheets: Cold-rolled steel, ASTM A 366, ____ gage (___ mm).
- Face Sheets: Hot-dip galvanized steel, ASTM A 653, Class A60, ____ gage (___ mm).
- Face Sheets: Stainless steel, ASTM A 666, Type ____, 18 gage (1.0 mm); No. 4 finish.
- Face Sheets: Cold-rolled steel, ASTM A 366, 20 gage (0.8 mm); textured finish, EP-1 embossed.
- Face Sheets: Cold-rolled steel, ASTM A 366, 20 gage (0.8 mm); textured finish, EP-3 etched.
- Face Sheets: Cold-rolled steel, ASTM A 366, ____ gage (___ mm); embossed woodgrain pattern finish 0.035 inch (0.89 mm) deep.
- Core: Impact resistant, resin impregnated, honeycomb core, capable of resisting force of 1,147 pounds per square foot (549

kPa) in shear, and force of 5,126 pounds per square foot (2454 kPa) in compression; inside door faces coated with waterproof adhesive for bond strength and rust prevention.
Core: Full 1-3/4 inches (45 mm) thick rigid polystyrene, adhered to inside door faces with waterproof adhesive for bond strength and rust prevention.
Core: Full 1-3/4 inches (45 mm) thick rigid polyurethane, adhered to inside door faces with waterproof adhesive for bond strength and rust prevention.
Core: Vertical stiffeners, hat-shaped, minimum 20 gage (0.8 mm) steel, type same as face sheet material, spaced 6 inches (150 mm) apart and spot-welded to face sheets at 6 inches (150 mm) on center; full-thick glass fiber insulation between stiffeners.
Vertical Edges: Continuous vertical mechanical interlocking joint with internal epoxy seal.
Vertical Edges: Continuous vertical mechanical interlocking joint; edge seams tack welded, filled, and ground smooth.
Provide following reinforcement and accessories, fabricated as specified in article "FABRICATION" below:
Recessed top and bottom closure channels.
Flush top and bottom closure channels.
Hinge preparation for 4-1/2 inches (114 mm) high full mortise hinges, 0.134 inch (3.4 mm) or 0.180 inch (4.6 mm) leaf thickness.
Closer Preparation.
Lockset preparation for mortise lockset.
Lockset preparation for cylindrical lockset.
Glazing Bead: Formed aluminum sheet or snap-in "Dezigner" trim.
Fire Rated Doors: Supply door units bearing UL Class Labels for fire ratings indicated and 250 degree F temperature rise where indicated.
Finish: Factory primer finish.
Finish: Factory baked enamel finish; _____ color.

Embossed Panel Doors:
Acceptable Product: Steelcraft CE Series.
Performance:
Thermal Insulation: 'R' factor 7.7 (1.36 metric).
Sound Attenuation: STC __.
Meet requirements of ANSI A 151.1 testing.
Door Thickness: 1-3/4 inches (45 mm).
Face Sheets: Hot-dip galvanized steel, ASTM A 653, Class A60, ____ gage (___ mm); embossed with indicated pattern.
Core: Full 1-3/4 inches (45 mm) thick rigid polystyrene,

adhered to inside door faces with waterproof adhesive for bond strength and rust prevention.
Vertical Edges: Continuous vertical mechanical interlocking joint with internal epoxy seal.
Vertical Edges: Continuous vertical mechanical interlocking joint; edge seams tack welded, filled, and ground smooth.
Provide following reinforcement and accessories, fabricated as specified in article "FABRICATION" below:
Recessed top and bottom closure channels.
Hinge preparation for 4-1/2 inches (114 mm) high full mortise hinges, 0.134 inch (3.4 mm) or 0.180 inch (4.6 mm) leaf thickness.
Closer preparation.

Lockset preparation for mortise lockset.
Lockset preparation for cylindrical lockset.
Glazing Bead: Extruded aluminum or snap-in "Dezigner" trim.
Fire Rated Doors: Supply door units bearing UL Class Labels for fire ratings indicated.
Finish: Factory primer finish.
Finish: Factory baked enamel finish; _____ color.

Stile and Rail Doors:
Acceptable Product: Steelcraft ___ Series.
Performance: Meet requirements of ANSI A 151.1 testing.
Door Thickness: 1-3/4 inches (45 mm).
Stiles and Rails: Cold-rolled steel, ASTM A 366, 16 gage (1.3 mm); formed to rectangular tube shape.
Stiles and Rails: Hot-dip galvanized steel, ASTM A 653, Class A60, 16 gage (1.3 mm); formed to rectangular tube shape.
Hinge Stile and Lock Stile: 5-1/2 inches by 1-3/4 inch (140 by 45 mm).
Top Rail: 5-1/2 inches by 1-3/4 inch (140 by 45 mm).
Bottom Rail: 8 inches by 1-3/4 inch (200 by 45 mm).
Hinge Stile and Lock Stile: 5-1/4 inches by 1-3/4 inch (133 by 45 mm).
Top Rail: 5 inches by 1-3/4 inch (127 by 45 mm).
Intermediate Rails: 5 inches by 1-3/4 inch (127 by 45 mm).
Bottom Rail: 7-5/8 inches by 1-3/4 inch (149 by 45 mm).
Hinge Stile and Lock Stile: 3 inches by 1-3/4 inch (75 by 45 mm).
Top Rail: 3 inches by 1-3/4 inch (75 by 45 mm).
Intermediate Rails: 3 inches by 1-3/4 inch (75 by 45 mm).
Bottom Rail: 5-5/8 inches by 1-3/4 inch (143 by 45 mm).
Panels:

Face Sheets: Hot-dip galvanized steel, ASTM A 653, Class A60, 18 gage (1.0 mm).

Core: Impact resistant, resin impregnated, honeycomb core, capable of resisting force of 1,147 pounds per square foot (549 kPa) in shear, and force of 5,126 pounds per square foot (2454 kPa) in compression; inside door faces coated with waterproof adhesive for bond strength and rust prevention.

Stile and Rail Joints: Mitered and arc welded.

Stile and Rail Joints: Mechanically-fastened hairline flush vertical joints.

Provide following reinforcement and accessories, fabricated as specified in article "FABRICATION" below:

Recessed top and bottom closure channels.

Hinge preparation for 4-1/2 inches (114 mm) high full mortise hinges, 0.134 inch (3.4 mm) or 0.180 inch (4.6 mm) leaf thickness.

Closer preparation.

Lockset preparation for mortise lockset.

Lockset preparation for cylindrical lockset.

Glazing Bead: Aluminum extrusion; snap-in installation.

Finish: Factory primer finish.

Finish: Factory baked enamel finish; _____ color.

Flush Steel Frames:

Acceptable Product: Steelcraft ____ Series.

Frame Material: Cold-rolled steel, ASTM A 366, ____ gage (___ mm).

Frame Material: Hot-dip galvanized steel, ASTM A 653, Class A60, ____ gage (___ mm).

Frame Material: Stainless steel, ASTM A 666, Type _____, 16 gage (1.3 mm); No. 4 finish.

Construction: Three-piece knock-down frames; mitered intersections, with locking tab at each head and jamb intersection.

Construction: Factory-welded frames; mitered intersections, back-welded, and ground smooth.

Profile: ____ inches (___ mm) face dimension, 1/2 inch (13 mm) backbend (7/16 inch (12 mm) backbend for 5-3/4 jamb (147 mm) depth), rabbet for ____ inches (___ mm) thick door, 5/8 inch (16 mm) high stop, types and throat dimensions indicated.

Profile: ____ inches (___ mm) face dimension, 1/2 inch (13 mm) backbend with 5/16 inch (8 mm) return, rabbet for ____ inches (___ mm) thick door, 5/8 inch (16 mm) high stop, types and throat dimensions indicated.

Provide following reinforcement and accessories, fabricated as specified in article "FABRICATION" below:

Hinge Preparation for 4-1/2 inches (114 mm) high, standard weight, full mortise hinges; with plaster guard.

Strike preparation (single doors) for 4-7/8 inch (123 mm) universal strike; with plaster guard.

Silencers.

Fire Rated Frames: Supply frame units bearing UL Class Labels for fire ratings indicated.

Finish: Factory primer finish.

Finish: Factory baked enamel finish; _____ color.

Steel Frames for Drywall:

Acceptable Product: Steelcraft ____ Series.

Frame Material: Cold-rolled steel, ASTM A 366, ____ gage (___ mm).

Frame Material: Hot-dip galvanized steel, ASTM A 653, Class A60, ____ gage (___ mm).

Construction: Three-piece knock-down frames; mitered intersections, with locking tab at each head and jamb intersection.

Profile: 2 inches (50 mm) face dimension, 1/2 inch (13 mm) backbend with 5/16 inch (8 mm) return, rabbet for _____ inches (___ mm) thick door, 5/8 inch (16 mm) high stop, types and throat dimensions indicated.

Provide reinforcement and accessories as follows, fabricated as specified in article "FABRICATION" below:

Hinge preparation for 4-1/2 inches (114 mm) high, standard weight, full mortise hinges.

Strike preparation (single doors) for 4-7/8 inch (125 mm) universal strike; with plaster guard.

Silencers.

Base Anchors: Lock-in type; adjustable for stud depth.

Base Anchors: Exposed fastener type; recessed hole at base of jamb for countersunk fastener installation.

Fire Rated Frames: Supply frame units bearing UL Class Labels for fire ratings indicated.

Finish: Factory primer finish.

Finish: Factory baked enamel finish; _____ color.

Interior Steel Frames:

Acceptable Product: Steelcraft ____ Series.

Frame Material: Cold-rolled steel, ASTM A 366, 20 gage (0.8 mm).

Frame Material: Cold-rolled steel, ASTM A 366, 18 gage (1.0 mm).

Construction: Three-piece knock-down frames with field-applied head and jamb moldings.
Profile: Rabbet for _____ inches (___ mm) thick door, 5/8 inch (16 mm) high stop, types and throat dimensions indicated.
Provide reinforcement and accessories as follows, fabricated as specified in article "FABRICATION" below:
Hinge preparation for 4-1/2 inches (114 mm) high, standard weight, full mortise hinges.
Strike preparation (single doors) for 4-7/8 inch (125 mm) universal strike; with plaster guard.
Silencers.
Finish: Factory finish, bronze color.
Finish: Factory finish, white color.

Hollow Metal Framing Systems:
Acceptable Product: Steelcraft Architectural Stick Systems.
Frame Material: Cold-rolled steel, ASTM A 366, ____ gage (___ mm).
Frame Material: Hot-dip galvanized steel, ASTM A 653, Class A60, ____ gage (___ mm).
Fabricate perimeter members of open sections having configuration identical to door frame sections.
Fabricate intermediate members of closed sections having jamb depth, face dimension, and stop dimensions identical to open sections.
Flush Sills: ____ inches (___ mm) face dimension, ___ inches (___ mm) height, 5/8 inch (16 mm) high stop, _____; rabbet depth matching adjacent components.
Recessed Sills: 8-1/2 inches (215 mm) face dimension, ___ inches (___ mm) height, 5/8 inch (16 mm) high stop, _____; rabbet depth matching adjacent components.
Profile of All Other Components: ____ inches (___ mm) face dimension, rabbet for ___ inches (___ mm) thick door, 5/8 inch (16 mm) high stop, types and throat dimensions indicated.
Reinforce closed sections with full length 16 gage (1.3 mm) steel reinforcement, spot welded to both soffits at 8 inches (200 mm) on center.
Provide reinforcement and accessories as follows, fabricated as specified in article "FABRICATION" below:
Hinge preparation for 4-1/2 inches (114 mm) high, standard weight, full mortise hinges; with plaster guards on open sections.
Strike preparation (single doors) for 4-7/8 inch (125 mm) universal strike; with plaster guard.
Silencers.
Glazing Bead: Formed steel sheet; screw-attached.

Glazing Bead: Formed steel sheet; snap-in installation.
Fire Rated Units: Supply units bearing UL Class Labels for fire ratings indicated.
Finish: Factory primer finish.

ACCESSORIES

Anchors: Manufacturer's standard framing anchors, specified in manufacturer's printed installation instructions for project conditions.

Astragals for pairs of doors: Manufacturer's standard for labeled and non-labeled openings.

Weatherstrip:
Acceptable Product: Steelcraft PS-074 Weatherstrip.
Characteristics: Elastomeric, continuous strip, self-adhering to stop; dust-proofing, noise-reducing; acceptable for fire-rated frames up to 3 hour rating.

Door Bottom:
Acceptable Product: Steelcraft Fas-Seal Door Bottom.
Characteristics: Elastomeric, continuous strip, screw-attached to recessed bottom door channel for concealed installation; double-sealing; acceptable for fire-rated doors up to 3 hour rating.

Top filler channel: Same material as door components; supply for exterior outswinging doors, and other indicated doors.

Plaster Guards: Same material as door components; provide for all strike boxes.

Silencers: Resilient rubber, beige color; factory installed.

Glazing: Specified in Section 08800.

FABRICATION

Steel Doors:
Fabricate to conform to ANSI/SDI 100; bevel lock and hinge edge 1/8 inch in 2 inches (3 mm in 50 mm).
Provide reinforcement as specified, projection-welded to door edge to ensure maximum strength and proper position, except on stainless steel doors.
Hinge Preparation: Recess for specified hinges, provide hinge

reinforcement, tap holes for hinge attachment; locations in accordance with ANSI A156.7 template.

Steel doors: 7 gage (4.3 mm) steel, type same as face sheet material.

Stainless steel doors: 1/8 inch (3 mm) thick stainless steel, type same as face sheet material.

Lockset Preparation: Provide cutouts and reinforcement.

For mortise locksets: In accordance with ANSI A115.1, backset 2-3/4 inches (68 mm).

For cylindrical locksets: In accordance with ANSI A115.2, backset 2-3/4 inches (68 mm).

Reinforcement for steel doors: 16 gage (1.3 mm) steel, type same as face sheet material.

Reinforcement for stainless steel doors: 18 gage (1.0 mm) stainless steel, type same as face sheet material.

Closer Preparation: 14 gage (1.7 mm) steel tube, 20-inch (508 mm) long across door width, welded to top channel; except stainless steel doors, laminated within doors.

Closure Channels: 14 gage (1.7 mm) steel, type same as face sheet material, welded to top channel; except stainless steel doors, laminated within doors.

Recessed closure channels: Set flange edges flush with door top/bottom.

Flush closure channels: Set back face of channel web flush with door top/bottom.

Provide cut-outs in doors for lites and louvers in accordance with accepted shop drawings.

Install glazing beads and louvers in doors:

In fire rated doors lite size is not to exceed ASTM E 152 limitations for indicated rating.

In fire rated doors provide operable-blade louvers with fusible-link operator.

Steel Frames:

Three-piece knock-down frames: Head and jamb intersecting corners die-cut, mitered at 45 degrees, with locking tabs for rigid connection when assembled.

Factory-welded frames: Head and jamb intersecting corners mitered at 45 degrees, with back welded joints ground smooth.

Hinge Preparation: Recess for specified hinges, provide 7 gage (4.3 mm) hinge reinforcement of same material and type as frame; tap holes for hinge attachment; locations in accordance with ANSI A156.7 template.

Strike Preparation for Single Doors: Prepare frames for specified strike in accordance with ANSI A115.1 and ANSI A115.2.

Silencers: Factory installed.

At single door frames, provide three silencers on strike side, spaced 6 inches (150 mm) from top and bottom of door opening, and at center of door opening.

At double door frames, provide two silencers in head, spaced 6 inches (150 mm) each way from meeting point of door swings.

FINISHES

Chemical Treatment: Treat steel surfaces to promote paint adhesion.

Factory Primer Finish: Meet requirements of ANSI A224.1.

Factory Baked Enamel Finish: Meet requirements of ANSI A250.3.

PART EXECUTION

EXAMINATION

Have installer verify that project conditions are acceptable before beginning installation of frames.

Verify that completed openings to receive knock-down wrap-around frames are of correct size and thickness.

Verify that completed concrete or masonry openings to receive butt type frames are of correct size.

Correct unacceptable conditions before preceding with installation.

INSTALLATION

Install frames in accordance with SDI 105.

Install doors plumb and in true alignment and fasten to achieve the maximum operational effectiveness and appearance of the unit. Maintain clearances specified in SDI 100 or NFPA 80.

Fill welded wrap-around frames in masonry construction with mortar as masonry is laid-up.

Fill welded wrap-around frames in plaster construction with plaster as work progresses.

If additives are used in masonry or plaster work during cold weather, field coat inside of steel frames with bituminous

compound to prevent corrosion.

ADJUST AND CLEAN

Adjust doors for proper operation, free from binding or other defects.

Clean and restore soiled surfaces. Remove scraps and debris and leave site in a clean condition.

END OF SECTION