

**SECTION 08 11 13
HOLLOW METAL DOORS AND FRAMES**

SPEC WRITER NOTES:

1. Use this section only for NCA projects.
2. Delete between //---// if not applicable to project. Also delete any other item or paragraph not applicable in the section and insert additional items required by project and renumber paragraphs. Identify all frames by types. Verify that drawings show the required doors and frames.

PART 1 - GENERAL

1.1 DESCRIPTION

- A. This section specifies steel doors, steel frames and related components.
- B. Terms relating to steel doors and frames as defined in ANSI/SDI A250.7 and as specified.
- C. //This section includes custom pre-finished doors and frames at Committal Shelter.//

1.2 RELATED WORK

- A. Frames fabricated of structural steel: Section 05 50 00, METAL FABRICATIONS.
- B. Aluminum frames entrance work: Section 08 41 13, ALUMINUM-FRAMED ENTRANCES AND STOREFRONTS.
- C. Overhead doors including loading docks: Section 08 33 00, COILING DOORS AND GRILLES.
- D. Door Hardware: Section 08 71 00, DOOR HARDWARE.

1.3 TESTING

- A. Perform testing with an independent testing laboratory.

1.4 SUSTAINABILITY REQUIREMENTS

- A. Materials in this section may contribute towards contract compliance with sustainability requirements. See Section 01 81 11, SUSTAINABLE DESIGN REQUIREMENTS, for project // local/regional materials, // low-emitting materials, // recycled content, // certified wood // _____// requirements.
- B. Biobased Material: For products designated by the USDA's BioPreferred® program, provide products that meet or exceed USDA recommendations for biobased content, subject to the products compliance with performance requirements in this Section. For more information regarding the

product categories covered by the BioPreferred® program, visit <http://www.biopreferred.gov>.

1.5 SUBMITTALS

- A. Submit in accordance with Section 01 33 23, SHOP DRAWINGS, PRODUCT DATA, AND SAMPLES.
- B. Manufacturers Literature and Data:
 - 1. 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.
 - 2. Fire rated doors and frames, showing conformance with NFPA 80 and Underwriters Laboratory, Inc., or Intertek Testing Services or Factory Mutual fire rating requirements // and temperature rise rating for stairwell doors. Submit proof of temperature rating //.
- C. Shop Drawings: Details of each opening, showing elevations, glazing, frame profiles, and identifying location of different finishes, if any.
- D. Schedule: Provide a schedule prepared by or under the supervision of supplier, using same reference numbers for details and openings as those on drawings; coordinate with final door hardware schedule.

1.6 SHIPMENT

- A. Prior to shipment label each door and frame to show location, size, door swing and other pertinent information.
- B. Fasten temporary steel spreaders across the bottom of each door frame.

1.7 STORAGE AND HANDLING

- A. Store doors and frames at the site under cover.
- B. Protect from rust and damage during storage and erection until completion.

1.8 APPLICABLE PUBLICATIONS

- A. Publications listed below form a part of this specification to extent referenced. Publications are referenced in text by the basic designation only. Comply with applicable provisions and recommendations of the following, except as otherwise shown or specified.

SPEC WRITER NOTES:

- 1. Remove reference citations that do not remain in Part 2 or Part 3 of edited specification.
- 2. Verify and make dates indicated for remaining citations the most current at date of submittal; determine changes from date indicated on the TIL download of the section and modify requirements impacted by the changes.

B. American Society for Testing and Materials (ASTM):

ASTM A653/A653M-22	Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process
A1008/A1008M-21a	Steel, sheet, Cold-Rolled, Carbon, Structural, High Strength Low Alloy and High Strength Low Alloy with Improved Formability, Solution Hardened, and Bake Hardened
C665-17	Mineral-Fiber Blanket Thermal Insulation for Light Frame Construction and Manufactured Housing
E136-22	Behavior of Materials in a Vertical Tube Furnace at 750 degrees C

C. Builders Hardware Manufacturers Association (BHMA):

ANSI/BHMA A156.115-14	American National Standard for Hardware Preparation in Steel Doors and Steel Frames
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D. FM Global:

Approval Guide

E. Intertek Testing Services (ITS):

Certifications Listings Latest Edition

F. National Fire Protection Association (NFPA):

80-10	Fire Doors and Fire Windows
105-13	Standard for the Installation of Smoke Door Assemblies and Other Opening Protectives.

G. Steel Door Institute (SDI):

ANSI/SDI A250.6-2015(R09)	Recommended Practice for Hardware Reinforcing on Standard Steel Doors and Frames
ANSI/SDI A250.7-2002	Nomenclature for Standard Steel Doors and Steel Frames
ANSI/SDI A250.8-2017(R08)	Recommended Specifications for Standard Steel Doors and Frames
ANSI/SDI A250.11-2012	Recommended Erection Instructions for Steel Frames

H. Underwriters Laboratories, Inc. (UL):

Fire Resistance Directory

PART 2 - PRODUCTS

SPEC WRITER NOTES:

1. Make material requirements agree with applicable requirements specified in

the referenced Applicable Publications. Update and specify only that which applies to the project.

2.1 MATERIALS

- A. Metallic-Coated Steel Sheet: ASTM A653, Commercial Steel (CS), Type B.
- B. Sheet Steel: ASTM A1008, cold-rolled for panels (face sheets) of doors.
- C. Anchors, Fastenings and Accessories: Fastenings anchors, clips connecting members and sleeves from zinc coated steel.
- D. Prime Paint: Paint that meets or exceeds the requirements of A250.8.
- E. Grout: Portland cement grout of maximum 4-inch slump for hand troweling; thinner pumpable grout is prohibited.
- F. Bituminous Coating: Cold-applied asphalt mastic, compounded for 15-mil dry film thickness per coat; provide inert-type noncorrosive compound free of asbestos fibers, sulfur components, and other deleterious impurities.
- G. Mineral-Fiber Insulation: ASTM C665, Type I (blankets without membrane facing); consisting of fibers manufactured from slag or rock wool; with maximum flame-spread and smoke-developed indexes of 25 and 50, respectively; passing ASTM E136 for combustion characteristics.

2.2 FABRICATION GENERAL

- A. General:
 - 1. Follow ANSI A250.8 for fabrication of steel doors, except as specified otherwise. Doors to receive hardware specified in Section 08 71 00, DOOR HARDWARE. Tolerances must comply to SDI A250.8. Thickness, 44 mm (1-3/4 inches), unless otherwise shown.
 - 2. Close top edge of exterior doors flush and seal to prevent water intrusion.
 - 3. When vertical steel stiffeners are used for core construction, fill spaces between stiffeners with mineral fiber insulation.
- B. Smoke Doors and Frames:
 - 1. Close top and vertical edges flush.
 - 2. Provide seamless vertical edges.
 - 3. Provide clearance at head, jamb and sill as specified in NFPA 80.
- C. Fire Rated Doors and Frames (Labeled):
 - 1. Conform to NFPA 80 when tested by Underwriters Laboratories, Inc., Inchcape Testing Services, or Factory Mutual for the class of door or door opening shown.
 - 2. Permanently attach metal fire rated labels to doors, with raised or incised markings of approving laboratory.

2.3 CLASSIFICATION AND PERFORMANCE

SPEC WRITERS NOTES:

1. When a door level is not required, delete the entire paragraph for that level.
2. Door levels for various locations should be determined in accordance with the following list and sound judgment.
 - Closet doors (without locks): Level 1.
 - Individual offices, storage rooms, individual bathrooms: Level 2.
 - Interior egress doors: Level 3.
 - Exterior Main entrance, circulation doors and other locations: Level 4.
3. Model designations are as follows:
 - Model 1 Full Flush Design
 - Model 2 Seamless Design (where appearance is important and edge seams are objectionable)
 - Model 3 Stile and Rail
4. Core constructions to be at the manufacturer's discretion and are as follows:
 - Kraft/Paper Honeycomb
 - Polyurethane Modified
 - Polyisocyanurate
 - Polystyrene
 - Mineral Board
 - Vertical Steel Stiffeners

- A. Standard Duty Doors: ANSI/SDI A250.8, Level 1, physical performance Level C, Model 2, of size(s) and design(s) indicated and core construction as required by the manufacturer.
 1. Provide // where indicated. // for doors No. _____. //
- B. Heavy Duty Doors: ANSI/SDI A250.8, Level 2, physical performance Level B, Model 2, with core construction as required by the manufacturer // for interior doors // and // for exterior doors, of size(s) and design(s) indicated.
 1. Where vertical stiffener cores are required, the space between the stiffeners to be filled with mineral board insulation.
 2. Provide Level 2 // where indicated. // for doors No. _____. //
- C. Extra Heavy Duty Doors: ANSI/SDI A250.8, Level 3, physical performance Level A, Model 2 with core construction as required by the manufacturer // for interior doors // and // for indicated exterior doors // , of size(s) and design(s) indicated.
 1. Where vertical stiffener cores are required, the space between the stiffeners to be filled with mineral board insulation.

2. Provide Level 3 // where indicated. // for doors No. _____. //
- D. Maximum Duty Doors: ANSI/SDI A250.8, Level 4, physical performance Level A, Model 2 with core construction as required by the manufacturer // for interior doors // and // for indicated exterior doors // , of size(s) and design(s) indicated.
1. Where vertical stiffener cores are required, the space between the stiffeners to be filled with mineral board insulation.
 2. Provide Level 4 // where indicated. // for doors No. _____. //

SPEC WRITER NOTES:

1. Verify all head, jamb and sill profiles are detailed and special conditions are detailed for all frames or specified.

2.4 METAL FRAMES

- A. General: SDI Level // 1 // 2 // 3 // 4 //, formed frames to sizes and shapes indicated.
1. Frames for Labeled Fire Rated Doors:
 - a. Comply with NFPA 80; tested by Underwriters Laboratories, Inc., Intertek Testing Services, or Factory Mutual.
 - b. Fire rated labels of approving laboratory permanently attached to frames as evidence of conformance with these requirements. Provide labels of metal or engraved stamp, with raised or incised markings.
 2. Type: Continuously weld frame faces at corner joints. Mechanically interlock or continuously weld stops and rabbets; grind welds smooth.
- B. Reinforcement and Covers:
1. ANSI/SDI A250.8 for, minimum thickness of steel reinforcement welded to back of frames.
 2. Provide mortar guards securely fastened to back of hardware reinforcements.
 3. Comply with applicable requirements in ANSI/SDI A250.6 and BHMA A156.115 for preparation of hollow-metal work for hardware.
- C. Glazed Openings // and // Panel Opening //:
1. Integral stop on exterior, corridor, or secure side of door.
 2. Design rabbet width and depth to receive glazing material or panel shown or specified.

SPEC WRITER NOTES:

1. Two piece frames are not used except for formed openings where frame is not

pre-set in concrete, masonry walls, or in existing construction, and where sill sections occur under panel or glazed areas. Verify that details do not conflict.

D. Two Piece Frames:

1. One piece unequal leg finished rough buck sub-frames as shown, drilled for anchor bolts.
2. Unequal leg finished frames formed to fit sub-frames and secured to sub-frame legs with countersunk, flat head screws, spaced 300 mm (12 inches) on center at head and jambs on each side.
3. Preassemble at factory for alignment.

E. Anchors: Provide anchors to secure the frame to adjoining

construction; steel anchors, zinc-coated or painted with rust-inhibitive paint, not lighter than 1.2 mm thick (18 gage).

1. Wall Anchors: Provide at least three anchors for each jamb. For frames which are more than 2285 mm (7.5 feet) in height, provide one additional anchor for each jamb for each additional 760 mm (2.5 feet) or fraction thereof.
 - a. Masonry: Provide anchors of corrugated or perforated steel straps or 5 mm (3/16 inch) diameter steel wire; adjustable or T-shaped.
 - b. Stud partitions: Weld or otherwise securely fasten anchors to backs of frames. Design anchors to be fastened // to wood studs with nails, // to closed steel studs with sheet metal screws, and to open steel studs by wiring or welding // .
2. Floor Anchors: Provide floor anchors drilled for 10 mm (3/8 inch) anchor bolts at bottom of each jamb member. // Where floor fill occurs, terminate bottom of frames at the indicated finished floor levels and support by adjustable extension clips resting on and anchored to the structural slabs. //

2.5 TRANSOM PANELS

- A. Fabricate panels as specified for flush doors.
- B. Fabricate bottom edge with rabbet stop to fit top of door where no transom bar occurs.

2.6 LOUVERS

- A. Interior Louvers: Stationary // sightproof // and // lightproof // type
 1. Provide detachable moldings on room or non-security side of door; on security side of door, moldings to be integral part of louver.

2. Form louver frames of 0.9 mm thick (20 gage) steel and louver blades of a minimum 0.6 mm (24 gage).
 3. //Louvers for lightproof doors must have minimum of 20 percent net-free opening. //
 4. //Sightproof louvers to be inverted // "V" blade design with minimum 55 // or // inverted "Y" blade design with minimum 40 percent net-free opening. //
- B. Exterior Louvers: Inverted // "Y" // "V" // "Z" // type with minimum of // 30 // 55 // 35 // percent net-free opening.
1. Weld or tenon louver blades to continuous channel frame and weld assembly to door to form watertight assembly.
 2. Form louvers of hot-dip galvanized steel of same gage as door facings.
 3. Provide louvers with steel-framed // insect // bird // screens secured to room side and readily removable. Provide //aluminum wire cloth, 7 by 7 per 10 mm or 7 by 6 per 10 mm (18 by 18 or 18 by 16 inch) mesh, for insect screens // galvanized steel, 13 by 13 mm (1/2 by 1/2 inch) mesh hardware cloth, for bird screens //. Determine net-free louver area before screening.

2.7 HARDWARE PREPARATION

- A. Provide minimum hardware reinforcing gages as specified in SDI A250.6.
- B. Drill and tap doors and frames to receive finish hardware.
- C. Prepare doors and frames for hardware in accordance with the applicable requirements of SDI A250.8 and SDI A250.6; for additional requirements refer to ANSI/BHMA A156.115.
- D. Drill and tap for surface-applied hardware at the project site.
- E. Build additional reinforcing for surface-applied hardware into the door at the factory.
- F. Punch door frames, with the exception of frames that will have weatherstripping or gasketing, to receive a minimum of two rubber or vinyl door silencers on lock side of single doors and one silencer for each leaf at heads of double doors; set lock strikes out to provide clearance for silencers.

2.8 SHOP PAINTING

- A. ANSI/SDI A250.8.

SPEC WRITER NOTES:

1. Edit or delete following subsection as appropriate for project.

2.9 CUSTOM PRE-FINISHED DOORS AND FRAMES AT COMMITTAL SHELTER

SPEC WRITER NOTES:

1. Receive approval from Contracting Officer for use of following paragraph.
- A. Design: Matching or exceeding quality of 5000 Series Swinging Steel Doors manufactured by Hope's Windows, Inc., Jamestown, NY.
 - B. Manufacture door and frames from 12 gauge steel.
 - C. True Divided Lite Muntins:
 1. Manufacture Tee muntins to size determined by design.
 2. Glazing rebate surfaces must be perpendicular to the stem of this section; rebate surfaces that are tapered will not be acceptable.
 - D. Glazing Beads: Extruded aluminum Alloy 6063-T5 with a minimum thickness of 0.062 inches.
 - E. Provide reinforcements of 10 or 12 gage to suit specified hardware.
 - F. All screws to be stainless steel, except glazing bead screws to be plated steel.
 - G. Factory-applied Finish: Electrodeposited epoxy primer and intermediate coats followed by baked polyurethane finish; combined overall finish thickness not less than 4.3 mils.
 - H. Operable Hardware:
 1. Hinges: Full mortise, heavy duty bronze ball-bearing 4-1/2 x 4-1/2 x 0.180 or heavier as required.
 2. Mortise locks with lever handles, thumb turn and key cylinder.
 3. Top and bottom flush bolts with coordinated socket embeds, to maintain doors closed or open.
 - I. Fabrication:
 1. Fabricate steel doors in accordance with approved shop drawings.
 2. Perimeter frame corners must be coped and fully welded for maximum strength and weather tightness with face welds dressed smooth.
 3. Head and jamb door stops to be an integral portion of the frame.
 4. Door leaves must have top and bottom rails coped and welded to the jamb stiles.
 5. Doors and door frames to be mortised, reinforced, drilled and tapped to receive specified mortised hardware; reinforce only for specified surface hardware for which drilling and tapping is performed in the field.

6. Weld true divided lite muntins to the perimeter frame. Provide muntin intersections slotted, cross notched and welded. Face weld and grind smooth interior and exterior muntin joints.
7. Provide anchoring at each hinge for maximum support.
8. Provide replaceable continuous snap-in glazing beads to suit the glass as specified; cut and shop fit glazing beads to each glass lite prior to shipment.

PART 3 - EXECUTION

3.1 INSTALLATION

- A. Plumb, align and brace frames securely until permanent anchors are set, in accordance with SDI A250.11.
 1. Use triangular bracing near each corner on both sides of frames with temporary wood spreaders at midpoint.
 2. Use wood spreaders at bottom of frame if the shipping spreader is removed.
 3. Protect frame from accidental abuse.
 4. Where construction will permit concealment, leave the shipping spreaders in place after installation, otherwise remove the spreaders after the frames are set and anchored.
 5. Remove wood spreaders and braces only after the walls are built and jamb anchors are secured.
- B. Floor Anchors:
 1. Anchor the bottom of door frames to floor with two 6 mm (1/4 inch) diameter expansion bolts.
 2. Power actuated drive pins may be used to secure frame anchors to concrete floors.
- C. Jamb Anchors:
 1. Anchors in Masonry Walls: Embed anchors in mortar. Fill space between frame and masonry wall with grout or mortar as walls are built.
 2. // Coat frame back with a bituminous coating prior to lining of grout filling in masonry walls. // Solidly pack mineral-fiber insulation inside frames in stud partitions. //
 3. Secure anchors to sides of studs with two fasteners through anchor tabs. Use steel drill screws to steel studs.
 4. Frames set in prepared openings of masonry or concrete: Expansion bolt to wall with 6 mm (1/4 inch) expansion bolts through spacers. Where sub-frames or rough bucks are used, 6 mm (1/4 inch) expansion

- bolts on 600 mm (24 inch) centers or power activated drive pins 600 mm (24 inches) on centers. Secure two piece frames to sub-frame or rough buck with machine screws on both faces.
- D. Install anchors for labeled fire rated doors to provide rating as required.
 - E. Hang doors in accordance with clearances specified in SDI/DOOR A250.8.
 - F. Install fire doors and frames, including hardware, in accordance with NFPA 80.
 - G. Install // fire rated // smoke doors // and frames in accordance with // NFPA 80 and // NFPA 105.

3.2 INSTALLATION OF HARDWARE

- A. Install hardware as specified in this Section and Section 08 71 00, DOOR HARDWARE.
- B. After erection and glazing, clean and adjust hardware.

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