SECTION 081113 - HOLLOW METAL DOORS AND FRAMES

GENERAL

SUMMARY

Provide the requirements of this Section in accordance with requirements of the Contract Documents.

Section includes:

- Interior standard steel doors and frames.
- Exterior standard steel doors and frames.
- Interior custom hollow-metal doors and frames.
- Exterior custom hollow-metal doors and frames.

Related Requirements:

- Division 03 Section "Cast-In-Place Concrete" for building anchors into and grouting hollow metal frames in cast-in-place concrete construction.
- Division 04 Section "Unit Masonry" for building anchors into and grouting hollow metal frames in masonry construction.
- Division 07 Section "Joint Sealants" for joint sealants.
- Division 08 Section "Stainless-Steel Doors and Frames" for hollow-metal doors and frames manufactured from stainless steel.
- Division 08 Section "Metal Sound Control Door Assemblies" for packaged, acoustically rated hollow-metal door and frame assemblies.
- [Division 08 Section "Door Hardware"] [Division 08 Section "Door Hardware (Descriptive Specification)"] for door hardware for hollow-metal doors.
- Division 09 Section "Gypsum Board Assemblies" for building anchors into and grouting hollow metal frames in gypsum board and metal stud framing construction.
- Division 09 Section "Painting" for field painting of hollow metal doors and frames.
- Division 11 Section "Detention Doors and Frames" for hollow-metal doors and frames for detention facilities.
- Division 13 Section "Radiation Protection" for lead-lined, hollow-metal doors and frames.

DEFINITIONS

Steel Sheet Thickness: Thickness dimensions, including those referenced in ANSI A250.8, are minimums as defined in referenced ASTM standards for both uncoated steel sheet and the uncoated base metal of metallic-coated steel sheets.

Minimum Thickness: Minimum thickness of base metal without coatings in accordance with NAAMM-HMMA 803 or ANSI/SDI A250.8.

Standard Hollow Metal Work: Hollow metal work fabricated according to ANSI/SDI A250.8

COORDINATION

Coordinate anchorage installation for hollow-metal 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 concrete or masonry. Deliver such items to Project site in time for installation.

Coordinate requirements for installation of door hardware, electrified door hardware, and access control and security systems.

PREINSTALLATION MEETINGS

Preinstallation Conference: Conduct conference at Project site in accordance with requirements of Division 01 Section "Project Management and Coordination".

Attendees: Prior to commencing work of this Section, arrange pre-installation conference to be attended by the Owner, Architect, Owner's insurer if applicable, hollow metal door and frames Installer, hollow metal doors and frames manufacturer's representative and installers whose work interfaces with or affects hollow metal doors and frames installations.
Agenda: Pre-installation conference agenda shall include but not limited to; installation procedures to be adopted, interfaces with adjacent work of other Sections, conditions under which the work of this Section will be done, inspection of surfaces and substrates to receive hollow metal doors and frames indicated in order that alternate recommendations may be made should adverse conditions exist.

ACTION SUBMITTALS

Product Data: For each type of product.

Include construction details, material descriptions, core descriptions, [**fire-resistance ratings,**] [**temperature-rise ratings,**] and finishes.
Submit evidence that the proposed hollow metal door and frame assemblies meet the requirements of the Florida Building Code and have been tested and approved by the Florida Building Commission and the Miami-Dade County Protocols.

Sustainable Design Submittals:

Building Product Disclosure and Optimization:

Leadership Extraction Practices

Extended Producer Responsibility (EPR): Submit documentation indicating that manufacturers have a take back or recycling program for the product purchased.
Recycled Content: For products having recycled content, indicate percentages by weight of post-consumer and pre-consumer recycled content.

Include statement indicating costs for each product having recycled content.

Sourcing of Raw Materials: For products that are required to comply with requirements for regional materials, indicating location of material manufacturer and point of extraction, harvest, or recovery for each raw material.

Include statement indicating distance to Project, cost for each regional material and the fraction by weight that is considered regional.

Indoor Environmental Quality, Low Emitting Materials: Building Products must be tested and compliant with the California Department of Public-Health (CDPH) Standard Method V1.1-2010, using the applicable exposure scenario.

For paints, and coatings, wet applied, include printed statement of VOC content, showing compliance with the applicable VOC limits of the California Air Resources Board (CARB) 2007, Suggested Control Measure for Architectural Coatings or the South Coast Air Quality Management District (SCAQMD) Rule 113-2011.
Alternative tests for VOC above include ASTM D2369-10; ISO 11890 part 1; ASTM D6886-03; or ISO 11890-2.
Methylene Chloride and perchloroethylene may not be added to paints, coating, adhesive or sealants

Product Data: For recycled content, indicating postconsumer and preconsumer recycled content and cost.
Environmental Product Declaration: For each product.
Health Product Declaration: For each product.
Sourcing of Raw Materials: Corporate sustainability report for each manufacturer.

Shop Drawings: Include the following:

Elevations of each door type.
Details of doors, including vertical- and horizontal-edge details and metal thicknesses.
Frame details for each frame type, including dimensioned profiles and metal thicknesses.
Locations of reinforcement and preparations for hardware.
Details of each different wall opening condition.
Details of electrical raceway and preparation for electrified hardware, access control systems, and security systems.
Details of anchorages, joints, field splices, and connections.
Details of accessories.
Details of moldings, removable stops, and glazing.

Coordination Drawings: Drawings of each opening, including door and frame, drawn to scale and coordinating door hardware. Show elevations of each door design type, showing dimensions, locations of door hardware, and preparations for power, signal, and **[electrified] [and] [pneumatic]** control systems

Samples for Initial Selection: For hollow-metal doors and frames with factory-applied color finishes.

Samples for Verification:

Finishes: For each type of exposed finish required, prepared on Samples of not less than 3 by 5 inches (75 by 127 mm).
Fabrication: Prepare Samples approximately [**12 by 12 inches (305 by 305 mm)**] [**8 by 10 inches (203 by 254 mm)**] <**Insert dimension**> to demonstrate compliance with requirements for quality of materials and construction:

Doors: Show vertical-edge, top, and bottom construction; core construction; and hinge and other applied hardware reinforcement. Include separate section showing glazing if applicable.
Frames: Show profile, corner joint, floor and wall anchors, and silencers. Include separate section showing fixed hollow-metal panels and glazing if applicable.

Product Schedule: For hollow-metal doors and frames, 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.

INFORMATIONAL SUBMITTALS

Qualification Data: For door manufacturer, door installer, and door inspector.

Fire-Rated Door Inspector: Submit documentation of compliance with NFPA 80, Section 5.2.3.1.
Egress Door Inspector: Submit documentation of compliance with NFPA 101, Section 7.2.1.15.4.
Submit copy of DHI Fire and Egress Door Assembly Inspector (FDAI) certificate.

Product Test Reports: For each type of [fire-rated hollow-metal door and frame assembly] [fire-rated borrowed-lite assembly] [windborne-debris impact resistance door] [and] [thermally rated door assemblies] for tests performed by a qualified testing agency indicating compliance with performance requirements.

LEED Informational Submittals:

Building Product Disclosure and Optimization - Environmental Product Declarations

Submit product specific type III EPDs or Industry wide (generic) EPDs, USGBC approved program declaration or products with a publicly available, critically reviewed life-cycle assessment conforming to ISO 14044 that have at least a cradle to gate scope.

Building Product Disclosure and Optimization - Sourcing of Raw Materials:

Raw Material Sources and Extraction Reporting: Submit Raw materials supplier corporate Sustainability Reports (CSRs); documenting responsible extraction; including extraction locations,

long term ecologically responsible land use, commitment to reducing environmental harms from extraction and manufacturing processes, and a commitment to meeting applicable standards or programs that address responsible sourcing criteria

Submit manufacturers' self-declared reports
Submit third party verified corporate sustainability reports (CSR) using one of the following frameworks"

Global Reporting Initiative (GRI) Sustainability Report
Organization for Economic Co-operation and Development (OECD) Guidelines for Multinational Enterprises
UN Global Compact
ISO 26000
USGBC approved program.

Building Product Disclosure and Optimization - Material Ingredients

Material Ingredient Optimization: Submit manufacturer's Environmental Product Declaration (EPD) and at least one of the following:

GreenScreen V1.2 Benchmark: Third party report prepared by a licensed GreenScreen List Translator, or a full GreenScreen Assessment.
Cradle to Cradle: Manufacturer's published literature for the product bearing the Cradle to Cradle logo.
International Alternative Compliance Path - REACH Optimization
Declare: Manufacturer's completed Product Declaration Form
Other programs approved by USGBC

Product Manufacturer Supply Chain Optimization: Submit documentation from manufacturers for products that go beyond material ingredient optimization as follows:

Are sourced from product manufacturers who engage in validated and robust safety, health, hazard, and risk programs which at a minimum document at least 99% (by weight) of the ingredients used to make the building product or building material, and
Are sourced from product manufacturers with independent third party verification of their supply chain that at a minimum verifies:

Processes are in place to communicate and transparently prioritize chemical ingredients along the supply chain according to available hazard, exposure and use information to identify those that require more detailed evaluation
Processes are in place to identify, document, and communicate information on health, safety and environmental characteristics of chemical ingredients
Processes are in place to implement measures to manage the health, safety and environmental hazard and risk of chemical ingredients
Processes are in place to optimize health, safety and environmental impacts when designing and improving chemical ingredients
Processes are in place to communicate, receive and evaluate chemical ingredient safety and stewardship information along the supply chain
Safety and stewardship information about the chemical ingredients is publicly available from all points along the supply chain.

Oversize Construction Certification: For assemblies required to be fire-rated and exceeding limitations of labeled assemblies.

Field quality control reports.

CLOSEOUT SUBMITTALS

Record Documents: For fire-rated doors, list of door numbers and applicable room name and number to which door accesses.

QUALITY ASSURANCE

Manufacturer Qualifications: A member of the Steel Door Institute (SDI). Manufacturer shall have minimum 10 year experience in fabricating these types of products. Provide list of at least ten completed projects including names of owners, architects and the numbers and types of hollow metal doors and frames required for each of these projects

Installer Qualifications: A firm experienced in installing hollow metal doors and frames similar in material, design, and extent to that indicated for this Project, whose work has resulted in applications with a record of successful in-service performance, and that employs workers trained and approved by manufacturer. Installer shall have minimum 10 year experience in installing these types of products. Provide list of at least ten completed projects including names of owners, architects and the numbers and types of hollow metal doors and frames for each of these projects.

Installers shall be an employer of workers trained and approved by manufacturer.
Installer shall have a full time, senior, qualified foreman at the Project site to direct the work of this Section.

Fire-Rated Door Inspector Qualifications: Inspector for field quality control inspections of fire-rated door assemblies shall meet the qualifications set forth in NFPA 80, section 5.2.3.1 and the following:

Door and Hardware Institute Fire and Egress Door Assembly Inspector (FDAI) certification.

Egress Door Inspector Qualifications: Inspector for field quality control inspections of egress door assemblies shall meet the qualifications set forth in NFPA 101, Section 7.2.1.15.4 and the following:

Door and Hardware Institute Fire and Egress Door Assembly Inspector (FDAI) certification.

DELIVERY, STORAGE, AND HANDLING

Deliver hollow-metal doors and frames palletized, packaged, or crated to provide protection during transit and Project-site storage. Do not use nonvented plastic.

Provide additional protection to prevent damage to factory-finished units.

Deliver welded frames with two removable spreader bars across bottom of frames, tack welded to jambs and mullions.

Store hollow-metal doors and frames vertically under cover at Project site with head up. Place on minimum 4-inch-(102-mm-) high wood blocking. Provide minimum 1/4-inch (6-mm) space between each stacked door to permit air circulation.

PROJECT CONDITIONS

Field Measurements: Verify openings by field measurements before fabrication and indicate measurements on Shop Drawings.

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.

PRODUCTS

MANUFACTURERS

Manufacturers: Subject to compliance with requirements, provide products by one of the following:

Ceco Door; ASSA ABLOY.
Curries Company; ASSA ABLOY.
Deansteel Manufacturing Company, Inc.
L.I.F. Industries, Inc.
Mesker Door Inc.
Pioneer Industries.
Republic Doors and Frames.
Steelcraft; an Allegion brand.

Source Limitations: Obtain hollow-metal work from single source from single manufacturer.

PERFORMANCE REQUIREMENTS

Fire-Rated Door Assemblies: Assemblies complying with NFPA 80 that are listed and labeled by a qualified testing agency acceptable to authorities having jurisdiction for fire-protection ratings[**and temperature-rise limits**] indicated on Drawings, based on testing at positive pressure in accordance with NFPA 252 or UL 10C.

Smoke- and Draft-Control Door Assemblies: Listed and labeled for smoke and draft control by a qualified testing agency acceptable to authorities having jurisdiction, based on testing in accordance with UL 1784 and installed in compliance with NFPA 105.
Oversize Fire-Rated Door Assemblies: For units exceeding sizes of tested assemblies, provide certification by a qualified testing agency that doors comply with standard construction requirements for tested and labeled fire-rated door assemblies except for size.
Temperature-Rise Limit: At vertical exit enclosures and exit passageways and where shown, provide doors that have a maximum transmitted temperature end point of not more than 450 deg F (250 deg C) above ambient after 30 minutes of standard fire-test exposure.

Fire-Rated, Borrowed-Lite Assemblies: Assemblies complying with NFPA 80 and listed and labeled by a qualified testing agency acceptable to authorities having jurisdiction, for fire-protection ratings indicated, based on testing in accordance with NFPA 257 or UL 9.

Windborne-Debris Impact Resistance: Passes ASTM E1886 missile-impact and cyclic-pressure tests in accordance with ASTM E1996 for Wind Zone [**1**] [**2**] [**3**] [**4**] for [**basic**] [**enhanced**] protection.

Large-Missile Test: For glazed openings located within [**30 feet (9.1 m)**] <**Insert dimension**> of grade.

System Design: Provide hollow metal door and frame assemblies that have been successfully tested by a qualified testing and inspecting agency to resist wind pressures calculated as follows.

The proposed hollow metal door and frame assemblies shall meet the requirements of the Florida Building Code and shall have been tested and approved by the Florida Building Commission and the Miami-Dade County Protocols. These requirements are minimum standards and no work shall commence without written documentation of hollow metal door and frame assemblies' compliance, as required in the "Submittals" article of this specification.

Windborne-Debris-Impact-Resistance-Test Performance: Provide exterior hollow metal door and frame assemblies that pass large and small missile-impact tests and cyclic-pressure tests according to requirements established by Florida Building Code and the Miami-Dade County Protocols.

Thermally Rated Door Assemblies: Provide door assemblies with U-factor of not more than [**0.50 deg Btu/F x h x sq. ft. (2.84 W/K x sq. m)**] [**0.40 deg Btu/F x h x sq. ft. (2.27 W/K x sq. m)**] [**0.38 deg Btu/F x h x sq. ft. (2.16 W/K x sq. m)**] <Insert U-factor> when tested in accordance with ASTM C518.

INTERIOR STANDARD STEEL DOORS AND FRAMES

Construct interior hollow-metal doors and frames to comply with standards indicated for materials, fabrication, hardware locations, hardware reinforcement, tolerances, and clearances, and as specified.

Standard-Duty Doors and Frames: ANSI/SDI A250.8, Level 1; ANSI/SDI A250.4, Level C. At locations indicated in the Door and Frame Schedule. Typical uses include apartment-unit entrances, dormitory rooms, hotel/motel rooms, individual offices in commercial buildings, and closets in most buildings.

Doors:

Type: As indicated in the Door and Frame Schedule.
Thickness: [**1-3/4 inches (44.5 mm)**] [**1-3/8 inches (34.9 mm)**].
Face: Metallic-coated steel sheet, minimum thickness of 0.032 inch (0.8 mm).
Edge Construction: Model 2, Seamless.
Edge Bevel: [Bevel lock and hinge edges **1/8 inch in 2 inches (3.2 mm in 51 mm)**] [Bevel lock edge **1/8 inch in 2 inches (3.2 mm in 51 mm)**] [Provide manufacturer's standard beveled or square edges].
Core: Vertical steel stiffener.
Fire-Rated Core: Manufacturer's standard vertical steel stiffener and mineral core filler or laminated mineral board core for fire-rated doors.

Frames:

Materials: Metallic-coated steel sheet, minimum thickness of 0.042 inch (1.0 mm).
[**Sidelite**] [**and**] [**Transom**] Frames: Fabricated from same thickness material as adjacent door frame.
Construction: Full profile welded.

Exposed Finish: [**Prime**] [**Factory**].

Heavy-Duty Doors and Frames: ANSI/SDI A250.8, Level 2; ANSI/SDI A250.4, Level B. At locations indicated in the Door and Frame Schedule. Typical uses include stairwells, toilet rooms, school classrooms and cafeterias, hospital patient and operating rooms and kitchens, and entrances to apartments and hotel/motel rooms.

Doors:

Type: As indicated in the Door and Frame Schedule.
Thickness: 1-3/4 inches (44.5 mm).
Face: Metallic-coated steel sheet, minimum thickness of 0.042 inch (1.0 mm).
Edge Construction: Model 2, Seamless.
Edge Bevel: [Bevel lock and hinge edges **1/8 inch in 2 inches (3.2 mm in 51 mm)**] [Bevel lock edge **1/8 inch in 2 inches (3.2 mm in 51 mm)**] [Provide manufacturer's standard beveled or square edges].
Core: Vertical steel stiffener.
Fire-Rated Core: Manufacturer's standard vertical steel stiffener and mineral filler or laminated mineral board core for fire-rated doors.

Frames:

Materials: Metallic-coated steel sheet, minimum thickness of 0.053 inch (1.3 mm).
[**Sidelite**] [**and**] [**Transom**] Frames: Fabricated from same thickness material as adjacent door frame.
Construction: Full profile welded.

Exposed Finish: [**Prime**] [**Factory**].

Extra-Heavy-Duty Doors and Frames: ANSI/SDI A250.8, Level 3; ANSI/SDI A250.4, Level A. At locations indicated in the Door and Frame Schedule. Typical uses include schools, hospital patient and operating rooms and kitchens, commercial and industrial buildings except closets, and entrance and stairwell doors in most buildings.

Doors:

Type: As indicated in the Door and Frame Schedule.
Thickness: 1-3/4 inches (44.5 mm).
Face: Metallic-coated steel sheet, minimum thickness of 0.053 inch (1.3 mm).
Edge Construction: [Model 2, Seamless] [Model 3, Stile and Rail].

Edge Bevel: [Bevel lock and hinge edges **1/8 inch in 2 inches (3.2 mm in 51 mm)**] [Bevel lock edge **1/8 inch in 2 inches (3.2 mm in 51 mm)**] [Provide manufacturer's standard beveled or square edges].
Core: Vertical steel stiffener.
Fire-Rated Core: Manufacturer's standard vertical steel stiffener with mineral filler or laminated mineral board core for fire-rated doors.

Frames:

Materials: Metallic-coated steel sheet, minimum thickness of 0.053 inch (1.3 mm).
[**Sidelite**] [**and**] [**Transom**] Frames: Fabricated from same thickness material as adjacent door frame.
Construction: Full profile welded.

Exposed Finish: [**Prime**] [**Factory**].

Maximum-Duty Doors and Frames: ANSI/SDI A250.8, Level 4; ANSI/SDI A250.4, Level A. At locations indicated in the Door and Frame Schedule. Typical uses include school gymnasiums and main entrances to schools, dormitories, and industrial buildings.

Doors:

Type: As indicated in the Door and Frame Schedule.
Thickness: 1-3/4 inches (44.5 mm).
Face: Metallic-coated steel sheet, minimum thickness of 0.067 inch (1.7 mm).
Edge Construction: Model 2, Seamless.
Edge Bevel: [Bevel lock and hinge edges **1/8 inch in 2 inches (3.2 mm in 51 mm)**] [Bevel lock edge **1/8 inch in 2 inches (3.2 mm in 51 mm)**] [Provide manufacturer's standard beveled or square edges].
Core: Vertical steel stiffener.
Fire-Rated Core: Manufacturer's standard vertical steel stiffener with mineral filler or laminated mineral board core for fire-rated doors.

Frames:

Materials: Metallic-coated steel sheet, minimum thickness of 0.067 inch (1.7 mm).
[**Sidelite**] [**and**] [**Transom**] Frames: Fabricated from same thickness material as adjacent door frame.
Construction: Full profile welded.

Exposed Finish: [**Prime**] [**Factory**].

EXTERIOR STANDARD STEEL DOORS AND FRAMES

Construct hollow-metal doors and frames to comply with standards indicated for materials, fabrication, hardware locations, hardware reinforcement, tolerances, and clearances, and as specified.

Heavy-Duty Doors and Frames: ANSI/SDI A250.8, Level 2; ANSI/SDI A250.4, Level B. At locations indicated in the Door and Frame Schedule.

Doors:

Type: As indicated in the Door and Frame Schedule.
Thickness: 1-3/4 inches (44.5 mm).
Face: Metallic-coated steel sheet, minimum thickness of 0.042 inch (1.0 mm), with minimum A60 (ZF180) coating.
Edge Construction: Model 2, Seamless.
Edge Bevel: [Bevel lock and hinge edges **1/8 inch in 2 inches (3.2 mm in 51 mm)**] [Bevel lock edge **1/8 inch in 2 inches (3.2 mm in 51 mm)**] [Provide manufacturer's standard beveled or square edges].

Top Edge Closures: Close top edges of doors with flush closures of same material as face sheets. Seal joints against water penetration.
Bottom Edges: Close bottom edges of doors[**where required for attachment of weather stripping**] with end closures or channels of same material as face sheets. Provide weep-hole openings in bottoms of exterior doors to permit moisture to escape.
Core: Vertical steel stiffener with insulating filler.
Fire-Rated Core: Manufacturer's standard vertical steel stiffener with insulation or laminated mineral board core for fire-rated doors.

Frames:

Materials: Metallic-coated steel sheet, minimum thickness of 0.053 inch (1.3 mm), with minimum A60 (ZF180) coating.
Construction: Full profile welded.

Exposed Finish: [**Prime**] [**Factory**].

Extra-Heavy-Duty Doors and Frames: ANSI/SDI A250.8, Level 3; ANSI/SDI A250.4, Level A. At locations indicated in the Door and Frame Schedule.

Doors:

Type: As indicated in the Door and Frame Schedule.
Thickness: 1-3/4 inches (44.5 mm).
Face: Metallic-coated steel sheet, minimum thickness of 0.053 inch (1.3 mm), with minimum A60 (ZF180) coating.
Edge Construction: [Model 2, Seamless] [Model 3, Stile and Rail].
Edge Bevel: [Bevel lock and hinge edges **1/8 inch in 2 inches (3.2 mm in 51 mm)**] [Bevel lock edge **1/8 inch in 2 inches (3.2 mm in 51 mm)**] [Provide manufacturer's standard beveled or square edges].
Top Edge Closures: Close top edges of doors with flush closures of same material as face sheets. Seal joints against water penetration.
Bottom Edges: Close bottom edges of doors[**where required for attachment of weather stripping**] with end closures or channels of same material as face sheets. Provide weep-hole openings in bottoms of exterior doors to permit moisture to escape.
Core: Vertical steel stiffener.
Fire-Rated Core: Manufacturer's standard vertical steel stiffener with insulation or laminated mineral board core for fire-rated doors.

Frames:

Materials: Metallic-coated steel sheet, minimum thickness of 0.053 inch (1.3 mm), with minimum A60 (ZF180) coating.
Construction: Full profile welded.

Exposed Finish: [**Prime**] [**Factory**].

Maximum-Duty Doors and Frames: ANSI/SDI A250.8, Level 4; ANSI/SDI A250.4, Level A. At locations indicated in the Door and Frame Schedule.

Doors:

Type: As indicated in the Door and Frame Schedule.
Thickness: 1-3/4 inches (44.5 mm).
Face: Metallic-coated steel sheet, minimum thickness of 0.067 inch (1.7 mm), with minimum A60 (ZF180) coating.
Edge Construction: Model 2, Seamless.
Edge Bevel: [Bevel lock and hinge edges **1/8 inch in 2 inches (3.2 mm in 51 mm)**] [Bevel lock edge **1/8 inch in 2 inches (3.2 mm in 51 mm)**] [Provide manufacturer's standard beveled or square edges].

Top Edge Closures: Close top edges of doors with flush closures of same material as face sheets. Seal joints against water penetration.
Bottom Edges: Close bottom edges of doors[**where required for attachment of weather stripping**] with end closures or channels of same material as face sheets. Provide weep-hole openings in bottoms of exterior doors to permit moisture to escape.
Core: Vertical steel stiffener.
Fire-Rated Core: Manufacturer's standard vertical steel stiffener with insulation or laminated mineral board core for fire-rated doors.

Frames:

Materials: Metallic-coated steel sheet, minimum thickness of 0.067 inch (1.7 mm), with minimum A60 (ZF180) coating.
Construction: Full profile welded.

Exposed Finish: [**Prime**] [**Factory**].

INTERIOR CUSTOM HOLLOW-METAL DOORS AND FRAMES

Hollow-Metal Doors and Frames: NAAMM-HMMA 860; ANSI/SDI A250.4, Physical Performance Level A. At locations indicated in the Door and Frame Schedule. Suitable in a business or educational occupancy for offices and closets, and in a residential occupancy for closets, cross-corridor doors, mechanical rooms, and offices.

Doors:

Type: As indicated in the Door and Frame Schedule.
Thickness: 1-3/4 inches (44.5 mm).
Face: Metallic-coated steel sheet, minimum thickness of [**0.032 inch (0.8 mm)**] [**0.042 inch (1.0 mm)**] [**0.053 inch (1.3 mm)**].
Edge Construction: [Continuously welded with no] [Projection or tack welded with no] [Interlocking with] [Projection or tack welded with] visible seam.
Core: Steel stiffened.
Fire-Rated Core: Manufacturer's standard vertical steel stiffener or laminated mineral board core for fire-rateddoors.

Frames:

Materials: Metallic-coated steel sheet, minimum thickness of 0.053 inch (1.3 mm).
[**Sidelite**] [**and**] [**Transom**] Frames: Fabricated from same thickness material as adjacent door frame.
Construction: Full profile welded.

Exposed Finish: Prime.

Commercial Doors and Frames: NAAMM-HMMA 861; ANSI/SDI A250.4, Physical Performance Level A. At locations indicated in the Door and Frame Schedule. Suitable for commercial performance-level doors and frames, suitable for most applications in most occupancies.

Doors:

Type: As indicated in the Door and Frame Schedule.
Thickness: 1-3/4 inches (44.5 mm).
Face: Metallic-coated steel sheet, minimum thickness of 0.042 inch (1.0 mm).
Edge Construction: Continuously welded with no visible seam.
Core: Steel stiffened.
Fire-Rated Core: Manufacturer's standard vertical steel stiffener with mineral filler laminated mineral board core for fire-rateddoors.

Frames:

Materials: Metallic-coated steel sheet, minimum thickness of 0.053 inch (1.3 mm), except 0.067 inch (1.7 mm) for openings exceeding 4 feet (1219 mm) wide.
[**Sidelite**] [**and**] [**Transom**] Frames: Fabricated from same material as adjacent door frame.
Construction: Full profile welded.

Exposed Finish: Prime.

Commercial Laminated Doors and Frames: NAAMM-HMMA 867; ANSI/SDI A250.4, Physical Performance Level A. At locations indicated in the Door and Frame Schedule. Suitable for laminated doors and frames, suitable for most applications in most occupancies.

Doors:

Type: As indicated in the Door and Frame Schedule.
Thickness: 1-3/4 inches (44.5 mm).
Face: Metallic-coated steel sheet, minimum thickness of [**0.032 inch (0.8 mm)**] [**0.042 inch (1.0 mm)**] [**0.053 inch (1.3 mm)**].
Edge Construction: Continuously welded with no visible seam.
Edge Bevel: [Bevel lock and hinge edges **1/8 inch in 2 inches (3.2 mm in 51 mm)**] [Bevel lock edge **1/8 inch in 2 inches (3.2 mm in 51 mm)**].
Core: Vertical steel stiffener.
Fire-Rated Core: Manufacturer's standard vertical steel stiffener with mineral filler or laminated mineral board core for fire-rateddoors.

Frames:

Materials: Metallic-coated steel sheet, minimum thickness of 0.053 inch (1.3 mm).
[**Sidelite**] [**and**] [**Transom**] Frames: Fabricated from same thickness material as adjacent door frame.
Construction: Full profile welded.

Exposed Finish: [**Prime**] [**Unprimed**].

EXTERIOR CUSTOM HOLLOW-METAL DOORS AND FRAMES

Commercial Doors and Frames: NAAMM-HMMA 861; ANSI/SDI A250.4, Physical Performance Level A. At locations indicated in the Door and Frame Schedule.

Doors:

Type: As indicated in the Door and Frame Schedule.
Thickness: 1-3/4 inches (44.5 mm).
Face: Metallic-coated steel sheet, minimum thickness of 0.053 inch (1.30 mm), with minimum G60 or A60 (ZF180) coating.
Edge Construction: Continuously welded with no visible seam.
Top Edge Closures: Close top edges of doors with flush closures of same material as face sheets. Seal joints against water penetration.
Bottom Edges: Close bottom edges of doors[**where required for attachment of weather stripping**] with end closures or channels of same material as face sheets. Provide weep-hole openings in bottoms of exterior doors to permit moisture to escape.
Core: Steel stiffened.

Frames:

Materials: Metallic-coated steel sheet, minimum thickness of 0.053 inch (1.3 mm), except 0.067 inch (1.7 mm) for openings exceeding 4 feet (1219 mm) wide; with minimum G60 or A60 (ZF180) coating.
Construction: Full profile welded.

Exposed Finish: Prime.

Commercial Laminated Doors and Frames: NAAMM-HMMA 867; ANSI/SDI A250.4, Physical Performance Level A. At locations indicated in the Door and Frame Schedule.

Doors:

Type: As indicated in the Door and Frame Schedule.
Thickness: 1-3/4 inches (44.5 mm).
Face: Metallic-coated steel sheet, minimum thickness of [**0.053 inch (1.3 mm)**] [**0.042 inch (1.0 mm)**], with minimum G60 or A60 (ZF180) coating.
Edge Construction: Continuously welded with no visible seam.
Top Edge Closures: Close top edges of doors with flush closures of same material as face sheets. Seal joints against water penetration.
Bottom Edges: Close bottom edges of doors[**where required for attachment of weather stripping**] with end closures or channels of same material as face sheets. Provide weep-hole openings in bottoms of exterior doors to permit moisture to escape.
Core: Vertical steel stiffener.

Frames:

Materials: Metallic-coated steel sheet, minimum thickness of 0.053 inch (1.3 mm), with minimum G60 or A60 (ZF180) coating.
Construction: Full profile welded.

Exposed Finish: [**Prime**] [**Unprimed**].

BORROWED LITES

Fabricate of [uncoated] [metallic-coated] steel sheet, minimum thickness of [**0.053 inch (1.3 mm)**] [**0.042 inch (1.0 mm)**].

Construction: [Knocked down] [Face welded] [Full profile welded].

Fabricate in one piece except where handling and shipping limitations require multiple sections. Where frames are fabricated in sections due to shipping or handling limitations, provide alignment plates or angles at each joint, fabricated of metal of same or greater thickness as metal as frames.

Provide countersunk, flat- or oval-head exposed screws and bolts for exposed fasteners unless otherwise indicated.

HOLLOW-METAL PANELS

Provide hollow-metal panels of same materials, construction, and finish as adjacent door assemblies.

FRAME ANCHORS

Jamb Anchors:

Type: Anchors of minimum size and type required by applicable door and frame standard, and suitable for performance level indicated.
Quantity: Minimum of three anchors per jamb, with one additional anchor for frames with no floor anchor. Provide one additional anchor for each 24 inches (610 mm) of frame height above 7 feet (2.1 m).
Postinstalled Expansion Anchor: Minimum 3/8-inch- (9.5-mm-) diameter bolts with expansion shields or inserts, with manufacturer's standard pipe spacer.

Floor Anchors: Provide floor anchors for each jamb and mullion that extends to floor.

Monolithic Concrete Slabs: Clip-type anchors, with two holes to receive fasteners.
Floor Anchors for Concrete Slabs with Underlayment: Adjustable-type anchors with extension clips, allowing not less than 2-inch (51-mm) height adjustment. Terminate bottom of frames at top of underlayment.

Material: ASTM A879/A879M, Commercial Steel (CS), 04Z (12G) coating designation; mill phosphatized; same thickness as frames, minimum thickness of 0.042 inch (1.0 mm).

For anchors built into exterior walls, steel sheet complying with ASTM A1008/A1008M or ASTM A1011/A1011M; hot-dip galvanized in accordance with ASTM A153/A153M, Class B.

MATERIALS

Recycled Content of Steel Products: Postconsumer recycled content plus one-half of preconsumer recycled content not less than 50 percent.

Regional Materials: Provide a minimum of 20 percent of building materials (by cost) that are regionally extracted, processed and manufactured materials within a radius of 100 miles.

Cold-Rolled Steel Sheet: ASTM A1008/A1008M, Commercial Steel (CS), Type B; suitable for exposed applications.

Hot-Rolled Steel Sheet: ASTM A1011/A1011M, Commercial Steel (CS), Type B; free of scale, pitting, or surface defects; pickled and oiled.

Metallic-Coated Steel Sheet: ASTM A653/A653M, Commercial Steel (CS), Type B.

Inserts, Bolts, and Fasteners: Hot-dip galvanized in accordance with ASTM A153/A153M.

Power-Actuated Fasteners in Concrete: Fastener system of type suitable for application indicated, fabricated from corrosion-resistant materials, with clips or other accessory devices for attaching hollow-metal frames of type indicated.

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.

Glazing: Comply with requirements in Division 08 Section [**"Glazing,"**] [**"Interior Glazing."**]

Grout: ASTM C476, except with a maximum slump of 4 inches (102 mm), as measured according to ASTM C143/C143M.

Bituminous Coating: Cold-applied asphalt mastic, compounded for 15-mil (0.4-mm) dry film thickness per coat. Provide inert-type noncorrosive compound free of asbestos fibers, sulfur components, and other deleterious impurities.

FABRICATION

General: Fabricate hollow-metal work to be rigid and free of defects, warp, or buckle. Accurately form metal to required sizes and profiles, with minimum radius for metal thickness. 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.

Door Astragals: Provide overlapping astragal on one leaf of pairs of doors where required by NFPA 80 for fire-performance rating or where indicated. Extend minimum 3/4 inch (19 mm) beyond edge of door on which astragal is mounted or as required to comply with published listing of qualified testing agency.

Hollow-Metal Frames: Fabricate in one piece except where handling and shipping limitations require multiple sections. Where frames are fabricated in sections, provide alignment plates or angles at each joint, fabricated of metal of same or greater thickness as frames.

[**Sidelite**] [**and**] [**Transom Bar**] Frames: Provide closed tubular members with no visible face seams or joints, fabricated from same material as door frame. Fasten members at crossings and to jambs by welding. Provide countersunk, flat- or oval-head exposed screws and bolts for exposed fasteners unless otherwise indicated.

Grout Guards: Weld guards to frame at back of hardware mortises in frames to be grouted.

Provide continuous closure plates at hollow metal frame for Concrete or existing masonry openings as required to support mineral wool firestopping and fire rated sealants at rated frames or sealant and backer rods at non rated frames.

Door Silencers: Except on weather-stripped frames, drill stops to receive door silencers as follows. Keep holes clear during construction.

Single-Door Frames: Drill stop in strike jamb to receive three door silencers.

Double-Door Frames: Drill stop in head jamb to receive two door silencers.

Terminated Stops (Hospital Stops): Terminate stops 6 inches (152 mm) above finish floor with a 45-degree angle cut, and close open end of stop with steel sheet closure. Cover opening in extension of frame with welded-steel filler plate, with welds ground smooth and flush with frame.

Hardware Preparation: Factory prepare hollow-metal doors and frames to receive templated mortised hardware, and electrical wiring; include cutouts, reinforcement, mortising, drilling, and tapping in accordance with ANSI/SDI A250.6, the Door Hardware Schedule, and templates.

Reinforce doors and frames to receive nontemplated, mortised, and surface-mounted door hardware. Comply with BHMA A156.115 for preparing hollow-metal doors and frames for hardware.

Glazed Lites: Provide stops and moldings around glazed lites where indicated. Form corners of stops and moldings with mitered hairline joints.

Provide stops and moldings flush with face of door, and with [**beveled**] [**square**] stops unless otherwise indicated.

Multiple Glazed Lites: Provide fixed and removable stops and moldings so that each glazed lite is capable of being removed independently.

Provide fixed frame moldings on outside of exterior and on secure side of interior doors and frames.

Provide loose stops and moldings on inside of hollow-metal doors and frames.

Coordinate rabbet width between fixed and removable stops with glazing and installation types indicated.

Provide stops for installation with countersunk flat- or oval-head machine screws spaced uniformly not more than 9 inches (230 mm) o.c. and not more than 2 inches (51 mm) o.c. from each corner.

STEEL FINISHES

Prime Finish: Clean, pretreat, and apply manufacturer's standard primer.

Shop Primer: Manufacturer's standard, fast-curing, lead- and chromate-free primer complying with ANSI/SDI A250.10; recommended by primer manufacturer for substrate; compatible with substrate and field-applied coatings despite prolonged exposure.

DO NOT PRIME FIRE RATING LABELS.

Factory Finish: Clean, pretreat, and apply manufacturer's standard two-coat, baked-on finish consisting of prime coat and thermosetting topcoat, complying with ANSI/SDI A250.3.

Color and Gloss: [As indicated by manufacturer's designations] [Match Architect's sample] <Insert color and gloss>.

LOUVERS

Provide louvers for interior doors, where indicated, which comply with SDI 111, with blades or baffles formed of 0.020-inch- (0.5-mm-) thick, cold-rolled steel sheet set into 0.032-inch- (0.8-mm-) thick steel frame.

Sightproof Louver: Stationary louvers constructed with inverted-V or inverted-Y blades.

Lightproof Louver: Stationary louvers constructed with baffles to prevent light from passing from one side to the other.

Fire-Rated Automatic Louvers: Louvers constructed with movable blades closed by actuating fusible link, and listed and labeled for use in fire-rated door assemblies of type and fire-resistance rating indicated by same qualified testing and inspecting agency that established fire-resistance rating of door assembly.

Form corners of moldings with hairline joints. Provide fixed frame moldings on outside of exterior and on secure side of interior doors and frames.

Mullions and Transom Bars: Join to adjacent members by welding or rigid mechanical anchors.

Grout Guards: Formed from same material as frames, not less than 0.016 inch (0.4 mm) thick.

EXECUTION

EXAMINATION

Examine substrates, areas, and conditions, with Installer present, for compliance with requirements for installation tolerances and other conditions affecting performance of the Work.

Examine roughing-in for embedded and built-in anchors to verify actual locations before frame installation.

Prepare written report, endorsed by Installer, listing conditions detrimental to performance of the Work.

Proceed with installation only after unsatisfactory conditions have been corrected.

PREPARATION

Remove welded-in shipping spreaders installed at factory. Restore exposed finish by grinding, filling, and dressing, as required to make repaired area smooth, flush, and invisible on exposed faces.

[Touch up factory-applied finishes where spreaders are removed].

Drill and tap doors and frames to receive nontemplated, mortised, and surface-mounted door hardware.

INSTALLATION

General: Install hollow-metal doors and frames plumb, rigid, properly aligned, and securely fastened in place. Comply with approved Shop Drawings and with manufacturer's written instructions.

Hollow-Metal Frames: Comply with [**ANSI/SDI A250.11**] [**NAAMM-HMMA 840**].

Set frames accurately in position; plumbed, aligned, and braced securely until permanent anchors are set. After wall construction is complete, remove temporary braces without damage to completed Work.

Where frames are fabricated in sections, field splice at approved locations by welding face joint continuously; grind, fill, dress, and make splice smooth, flush, and invisible on exposed faces. Touch-up finishes.

Install frames with removable stops located on secure side of opening.

Install door silencers in frames before grouting.

Remove temporary braces necessary for installation only after frames have been properly set and secured.

Check plumb, square, and twist of frames as walls are constructed. Shim as necessary to comply with installation tolerances.

[Field apply bituminous coating to backs of frames that will be filled with mortar, grout, or plaster.]

Fire-Rated Openings: Install frames in accordance with NFPA 80.
Floor Anchors: Secure with postinstalled expansion anchors.

Floor anchors may be set with power-actuated fasteners instead of postinstalled expansion anchors if so indicated and approved on Shop Drawings.

Solidly pack mineral-fiber insulation inside frames.
Masonry Walls: Coordinate installation of frames to allow for solidly filling space between frames and masonry with grout or mortar.
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.**]
Installation Tolerances: Adjust hollow-metal frames to the following tolerances:

Squareness: Plus or minus 1/16 inch (1.6 mm), measured at door rabbet on a line 90 degrees from jamb perpendicular to frame head.
Alignment: Plus or minus 1/16 inch (1.6 mm), measured at jambs on a horizontal line parallel to plane of wall.
Twist: Plus or minus 1/16 inch (1.6 mm), measured at opposite face corners of jambs on parallel lines, and perpendicular to plane of wall.
Plumbness: Plus or minus 1/16 inch (1.6 mm), measured at jambs at floor.

Hollow-Metal Doors: Fit and adjust hollow-metal doors accurately in frames, within clearances specified below.

Non-Fire-Rated Steel Doors: Comply with [ANSI/SDI A250.8] [NAAMM-HMMA 841 and NAAMM-HMMA guide specification indicated].

Between Door and Frame Jambs and Head: 1/8 inch (3.2 mm) plus or minus 1/32 inch (0.8 mm).
Between Edges of Pairs of Doors: 1/8 inch (3.2 mm) to 1/4 inch (6.3 mm) plus or minus 1/32 inch (0.8 mm).
At Bottom of Door (undercut): 1/2 inch, unless otherwise noted plus or minus 1/32 inch (0.8 mm).
Between Doors Face and Stop: 1/16 inch (1.6 mm) to 1/8 inch (3.2 mm) plus or minus 1/32 inch (0.8 mm).

Fire-Rated Doors: Install doors with clearances in accordance with NFPA 80. For Bottom of Door (Undercut) maximum ½ inch, unless otherwise noted.
Smoke-Control Doors: Install doors in accordance with NFPA 105. For Bottom of Door (undercut) as required to maintain gasketed seal at threshold.

Glazing: Comply with installation requirements in Division 08 Section [**"Glazing"**] [**"Interior Glazing"**]and with hollow-metal manufacturer's written instructions.

Secure stops with countersunk flat- or oval-head machine screws spaced uniformly not more than 9 inches (230 mm) o.c. and not more than 2 inches (51 mm) o.c. from each corner.

FIELD QUALITY CONTROL

Inspection Agency: [**Owner will engage**] [**Engage**] a qualified inspector to perform inspections and to furnish reports to Architect.

Inspections:

Fire-Rated Door Inspections: Inspect each fire-rated door in accordance with NFPA 80, Section 5.2.
Egress Door Inspections: Inspect each door equipped with panic hardware, each door equipped with fire exit hardware, each door located in an exit enclosure, each electrically controlled egress door, and each door equipped with special locking arrangements in accordance with NFPA 101, Section 7.2.1.15.

Repair or remove and replace installations where inspections indicate that they do not comply with specified requirements.

Reinspect repaired or replaced installations to determine if replaced or repaired door assembly installations comply with specified requirements.

Prepare and submit separate inspection report for each fire-rated door assembly indicating compliance with each item listed in [**NFPA 80**] [**and**] [**NFPA 101**].

ADJUSTING AND REPAIR

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 hollow-metal work that is warped, bowed, or otherwise unacceptable.

Remove grout and other bonding material from hollow-metal work immediately after installation.

Prime-Coat Touchup: Immediately after erection, sand smooth rusted or damaged areas of prime coat and apply touchup of compatible air-drying, rust-inhibitive primer.

Metallic-Coated Surface Touchup: Clean abraded areas and repair with galvanizing repair paint according to manufacturer's written instructions.

Factory-Finish Touchup: Clean abraded areas and repair with same material used for factory finish according to manufacturer's written instructions.

Touchup Painting: Cleaning and touchup painting of abraded areas of paint are specified in painting Sections.

END OF SECTION