SECTION 081173 - SLIDING METAL FIRE DOORS

1. GENERAL
   * + 1. SUMMARY
          1. Section Includes:

Single-leaf, sliding fire door; manually operated.

Single-leaf, sliding fire door; power operated.

Biparting, sliding fire door; manually operated.

Biparting, sliding fire door; power operated.

Multiple-leaf (telescoping), single fire door; manually operated.

Multiple-leaf (telescoping), single fire door; power operated.

Multiple-leaf (telescoping), biparting fire door; manually operated.

Multiple-leaf (telescoping), biparting fire door; power operated.

* + - 1. SUBMITTALS
         1. Submittals for this section are subject to the re-evaluation fee identified in Article 4 of the General Conditions.
         2. Manufacturer’s installation instructions shall be provided along with product data.
         3. Submittals shall be provided in the order in which they are specified and tabbed (for combined submittals).
         4. Product Data: For each type of product.

Include construction details, material descriptions, dimensions of individual components, and finishes.

Manufacturer’s installation instructions.

Retain first subparagraph below for power-operated doors.

Include rated capacities, operating characteristics, electrical characteristics, and furnished accessories.

Include description of automatic closing device and testing and resetting instructions.

* + - * 1. Shop Drawings:

Include plans, elevations, sections, and mounting details.

Include details of equipment assemblies. Indicate dimensions, required clearances, method of field assembly, components, and location and size of each field connection.

Walls must be designed to support door and imposed load. Retain first subparagraph below unless design calculations have already been determined and do not need to be confirmed.

Include points of attachment and their corresponding static and dynamic loads imposed on structure.

Show locations of controls, locking devices, detectors or replaceable fusible links, and other accessories.

Include diagrams for power, signal, and control wiring.

* + - * 1. Quality Control Submittals:

Coordinate "Qualification Data" paragraph below and as may be supplemented in "Quality Assurance" Article.

Qualification Data: For [Installer] [and] [testing and inspecting agency].

Retain one of or both "Fire-Rated Door Inspector" and "Egress Door Inspector" subparagraphs below, or delete both subparagraphs and retain third subparagraph. First subparagraph applies to the BCNYS and NFPA 101. Second subparagraph applies to NFPA 101. Certification in third subparagraph should be acceptable by all authorities having jurisdiction. See the Evaluations.

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's Fire and Egress Door Assembly Inspector (FDAI) certificate.

Retain "Product Certificates" paragraph below to require submittal of product certificates from manufacturers.

Product Certificates: For each type of sliding metal fire door.

Retain "Oversized Special-Purpose Fire Door Assembly Certification" paragraph below for testing agency certification of oversize fire-rated sliding doors.

Oversized Special-Purpose Fire Door Assembly Certification: For door assemblies required to be fire rated and that exceed size limitations of labeled assemblies, signed by authorized representative of testing agency.

Retain "Field quality-control reports" paragraph below if Contractor is responsible for field quality-control testing and inspecting.

Field quality-control reports.

* + - * 1. Contract Closeout Submittals:

Operation and Maintenance Data: For sliding metal fire doors to include in emergency, operation, and maintenance manuals.

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

* + - 1. QUALITY ASSURANCE
         1. Installer Qualifications: An entity that employs installers and supervisors who are trained and approved by manufacturer.
         2. Fire-Rated Door Inspector Qualifications: Inspector for field quality-control inspections of fire-rated door assemblies shall comply with qualifications set forth in NFPA 80, Section 5.2.3.1 and the following:

Retain subparagraph below if requiring fire door inspectors to be certified under DHI's certification program. Verify, with authorities having jurisdiction, if other DHI certifications are acceptable, such as Architectural Hardware Consultant (AHC), Certified Door Consultant (CDC), and Architectural Openings Consultant (AOC).

DHI's Fire and Egress Door Assembly Inspector (FDAI) certification.

* + - * 1. Egress Door Inspector Qualifications: Inspector for field quality-control inspections of egress door assemblies shall comply with qualifications set forth in NFPA 101, Section 7.2.1.15.4 and the following:

Retain subparagraph below if requiring egress door inspectors to be certified under DHI's certification program. Verify, with authorities having jurisdiction, if other DHI certifications are acceptable, such as AHC, CDC and AOC.

DHI's Fire and Egress Door Assembly Inspector (FDAI) certification.

* + - 1. FIELD CONDITIONS

Usually delete this article. Retain for specialties that are custom-made to fit openings in other work.

* + - * 1. Field Measurements: Indicate measurements on Shop Drawings.

1. PRODUCTS
   * + 1. MANUFACTURERS

Review manufacturer’s products and confirm products available suit project requirements.

* + - * 1. [Manufacturers:](http://www.specagent.com/Lookup?ulid=416) Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to the following:

[ASI Technologies, Inc](http://www.specagent.com/Lookup?uid=123457118153).

[Chase Doors](http://www.specagent.com/Lookup?uid=123457118154).

[Door Engineering and Manufacturing, LLC](http://www.specagent.com/Lookup?uid=123457118152).

[Shure Star](http://www.specagent.com/Lookup?uid=123457118156).

Or equal.

* + - * 1. Source Limitations: Obtain sliding metal fire doors from single source from single manufacturer.
      1. PERFORMANCE REQUIREMENTS

Retain "Fire-Rated Door Assemblies" paragraph below if required.

* + - * 1. 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 indicated on Drawings, based on testing at as close to neutral pressure as possible according to NFPA 252 or UL 10B.

Retain "Oversize Fire-Rated Door Assemblies" subparagraph below if required by authorities having jurisdiction. Horizontal sliding fire doors are labeled by UL for sizes not exceeding 152 sq. ft., with no dimension exceeding 13 feet 6 inches.

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.

Fire-Rated Swinging Pass Door Assemblies: Based on testing as a component of sliding metal fire door assembly.

Retain "Temperature-Rise Limit" subparagraph below if required. The Uniform Code allows an exception for buildings equipped throughout with fire-suppression sprinklers. Insert the required temperature-rise value in "Sliding Metal Fire Door" Article.

Temperature-Rise Limit: Where indicated on Drawings, provide doors that have a maximum transmitted temperature end point of not more than indicated temperature above ambient after 30 minutes of standard fire-test exposure.

* + - * 1. Structural Performance, Exterior Doors: Capable of withstanding the design wind loads.

Second option in "Design Wind Load" subparagraph below is one design pressure advertised by a manufacturer. Usually indicate on Drawings the design wind loads, as determined by Project's structural engineer. Verify requirements of authorities having jurisdiction. See the Evaluations.

Design Wind Load: [**As indicated on Drawings**] [**Uniform pressure (velocity pressure) of 20 lbf/sq. ft., acting inward and outward**] <**Insert loads**>.

Retain "Testing" subparagraph below if required by authorities having jurisdiction. Consult manufacturers for availability of tested assemblies.

Testing: According to [**ASTM E330**] <**Insert requirement**>.

"Operability under Wind Load" subparagraph below is an uncommon requirement; verify availability with manufacturer. See "Wind Loads" Article in the Evaluations.

Operability under Wind Load: Design overhead coiling doors to remain operable under [**design**] [**uniform pressure (velocity pressure) of 20 lbf/sq. ft.**] <**Insert load**> wind load, acting inward and outward.

Retain "Electrical Components, Devices, and Accessories" paragraph below for motorized operator.

* + - * 1. Electrical Components, Devices, and Accessories: Listed and labeled as defined in NFPA 70, by a qualified testing agency, and marked for intended location and application.
      1. SLIDING METAL FIRE DOOR <**Insert drawing designation**>

Copy this article and re-edit for each product.

Insert drawing designation. Use these designations on Drawings to identify each product.

Retain "Fire-Protection Rating" paragraph below unless rating is indicated on Drawings.

* + - * 1. Fire-Protection Rating: [**4 hours**] [**3 hours**] [**1-1/2 hours**] [**3/4 hour**] [**As indicated**] <**Insert requirement**>.

Retain "Temperature-Rise Limit" subparagraph below if required. The Uniform Code allows an exception for buildings equipped throughout with fire-suppression sprinklers.

Temperature-Rise Limit: [**250 deg F**] [**450 deg F**] [**650 deg F**].

Retain one option in "Door Type" paragraph below. Verify door construction with manufacturers.

* + - * 1. Door Type: [**Overhead supported from wall-mounted track**] [**Bottom supported on floor track with top guide**], with hidden reinforcements for mounting- and hardware-attachment locations, and with attached armor edges and astragals.

Configuration: [**Single-leaf**] [**Biparting**] [**Multiple-leaf (telescoping)**].

Retain "Door Construction," "Hollow-Metal Construction," or "Tubular-Frame Construction" subparagraph below. First subparagraph offers the greatest competition. Bottom-supported doors are typically tubular-frame doors.

Door Construction: Manufacturer's standard for opening size and required performance.

Retain option in "Hollow-Metal Construction" subparagraph below if available; temperature-rise-rated doors may require exposed fasteners. Consult manufacturers for recommendations.

Hollow-Metal Construction: Facing material bonded to both sides of core and with perimeter steel channels as reinforcing and to enclose the core material. Splice panel sections of wide leaves with a manufacturer's continuous, steel H column splice kit with surface-applied splice plate or otherwise reinforce panels at connecting joints to provide a solid one-piece door. Weld and fill joints and grind exposed welds smooth and flush.[**Splice plate shall have no visible fasteners.**]

Tubular-Frame Construction: Facing material welded to both sides of steel-tube perimeter frame and internal stiffeners, with mitered corner joints in frame and welded frame and stiffener joints; joints in face sheets located over stiffeners. Splice panel sections of wide leaves with a manufacturer's continuous, surface-applied, through-bolt splice plate or otherwise reinforce panels at connecting joints to provide a solid one-piece door. Weld and fill joints and grind exposed welds smooth and flush.

* + - * 1. Operating System: [**Counterbalanced**] [**Power operated**].
        2. Facing Material:

Retain material and thickness in "Steel Sheet," "Metallic-Coated Steel Sheet," and "Stainless Steel Sheet" subparagraphs below. First option in each subparagraph is standard, but thicker sheets may be required to prevent damage from abuse.

Steel Sheet: [**0.033-inch**] [**0.043-inch**] [**0.053-inch**] [**0.067-inch**] minimum thickness.

Metallic-Coated Steel Sheet: [**0.040-inch**] [**0.052-inch**] [**0.064-inch** ] [**0.079-inch**] nominal thickness.

Stainless Steel Sheet: [**0.038-inch**] [**0.050-inch**] [**0.062-inch**] [**0.078-inch**] nominal thickness.

Retain one or more options in "Core Material" paragraph below; retain only first option for maximum competition.

* + - * 1. Core Material: Provide [**manufacturer's standard**] [**resin-impregnated honeycomb**] [**mineral-fiber board**] [**mineral wool**] [**urethane**] [**fiberglass**] [**calcium silicate**] [**or**] [**inorganic mineral**] <**Insert requirement**> core material according to fire-protection-rating[**and temperature-rise**] requirements.
        2. Operating Hardware: Manufacturer's standard, labeled, automatic-closing-type, sliding fire door hardware complete with track, roller assemblies, adjustable roller guides, binders, floor stops, cables, counterbalance, or motorized operator system as required, and fusible links. Furnish necessary hangers, fittings, and fasteners required for attaching hardware to door and for door sliding operation, including latch or handle for manual operation.

Retain "Counterweight System" paragraph below only for a counterbalanced door.

* + - * 1. Counterweight System: Cable-and-pulley system powered by weights that move within a formed-metal safety enclosure.

Safety Enclosure: Continuous, 0.064-inch- thick, metallic-coated steel sheet; size as required for counterweights and clearance.

* + - * 1. Crush Plates: Continuous 3/16-inch-thick by 6-inch-wide steel-bearing plates on hollow concrete masonry walls to bridge wall cavities and prevent through-wall bolts from crushing the masonry units.

Retain "Track Hood" paragraph below for exterior doors and for doors in other locations exposed to water and dirt or if appearance or safety is critical.

* + - * 1. Track Hood: Formed, [**metallic-coated steel**] [**stainless steel**] sheet; shape and size as required for door clearance and to protect tracks; finished to match door.

Retain "Weather Stripping" paragraph below for exterior doors and where control of airflow is required.

* + - * 1. Weather Stripping: Manufacturer's standard [**neoprene**] [**vinyl**] [**or**] [**nylon filament brush-style**] weather stripping around full door perimeter, with concealed attachments for mounting at head, jamb, and bottom edges of door, and acceptable to authorities having jurisdiction.

Retain "Motorized Operator" paragraph below only for power-operated door. Revise if pneumatic operation is available and required.

* + - * 1. Motorized Operator: Adjustable speed operator listed and labeled by a qualified testing agency acceptable to authorities having jurisdiction; with reversing motor of sufficient size to operate door at no more than 75 percent of rated motor capacity, high-starting-torque, and thermal-overload protection. Include fusible-link release to disengage operator and to allow door to close automatically.

Design operator for current characteristics of electrical service supplied.

Retain "Electrical Characteristics" subparagraph below if characteristics are not indicated on Drawings.

Electrical Characteristics:

Consult manufacturers on horsepower requirements for door size and construction. If more than one horsepower value is required, indicate location of each on Drawings or by inserts.

Horsepower: [**1/4**] [**1/2**] <**Insert value**> hp.

Retain one of two "Voltage" subparagraphs below. Coordinate electrical characteristics with electrical engineer.

Voltage: [**115-V ac**] [**208-V ac**], single phase, 60 Hz.

Voltage: [**208-V ac**] [**230-V ac**] [**460-V ac**], three phase, 60 Hz.

Retain options for control equipment in subparagraph below; revise to suit Project. Indicate locations on Drawings.

Equip door for completely automatic operation with clutch, speed reducer, brake, limit switches, sensing edge, brackets, bolts, and release for manual operation. Control equipment includes [**two pull cords**] [**two three-button control stations with push buttons labeled "OPEN," "CLOSE," and "STOP"**] [**two motion detectors**] [**two loop detectors**] [**two photoelectric obstruction detectors**] [**time delay for closing**] [**and**] [**electric interlock for pass door**] <**Insert requirement**>.

* + - * 1. Interconnecting Device: Device that connects fusible links for doors on both sides of wall.

Retain "Door-Release Device" paragraph below if applicable; revise to suit Project.

* + - * 1. Door-Release Device: Electromagnetic release device compatible with [**smoke detectors**] [**and**] [**building's fire-alarm system**].

Retain "Smoke Detectors" paragraph below if release device is connected to smoke detectors provided by door manufacturer.

* + - * 1. Smoke Detectors: Early warning, photoelectric smoke detectors or ionization detectors coupled to electromagnetic door-release device[**and building's fire-alarm system**].

Retain "Door Sill" paragraph below if required for appearance or where floor surface or covering beneath sliding fire door is combustible. See the Evaluations.

* + - * 1. Door Sill: Noncombustible door sill according to [**Section 087100 "Door Hardware"**] unless otherwise indicated.

Retain "Pass Door" paragraph below if required; revise to suit Project.

* + - * 1. Pass Door: Swing door and frame assembly, listed for use in sliding metal fire door.

Pass-Door Hardware: Factory installed in the sliding metal fire door and including one and one-half pairs of mortise [**spring hinges**] [**butt hinges and closer**] and [**mortise latchset**] [**mortise lock**] [**fire-exit device**] <**Insert item**>.

Insert here other hardware or signage items required for pass door.

Retain "Vision Panels" paragraph below for glass lights if required. See the Evaluations for maximum allowable sizes of glass panels.

* + - * 1. Vision Panels: Factory fabricated in door with removable glass stops. Provide glazing product listed and labeled as a component for fire-protection-rated sliding fire door assembly by a qualified testing agency acceptable to authorities having jurisdiction; do not exceed area allowed for door's fire-protection rating.
      1. MATERIALS
         1. Steel Plate, Shapes, and Bars: ASTM A36.
         2. Steel Sheets: [**ASTM A1008, cold rolled**] [**or**] [**ASTM A1011, hot rolled**] Commercial Steel (CS) or Drawing Steel (DS).

Retain "Metallic-Coated Steel Sheet" or "Stainless Steel Sheet" paragraph below, or both, for exterior units or if required in high-humidity areas. For stainless steel, Type 304 is usually standard; Type 316 gives better corrosion resistance in coastal environments.

* + - * 1. Metallic-Coated Steel Sheet: ASTM A653, Commercial Steel (CS), with [**G60**] [**G90**] zinc coating[**or A60 zinc-iron-alloy (galvannealed) coating**]; restricted flatness.

In "Stainless Steel Sheet" paragraph below, Type 304 and ASTM A480 No. 4 finish are standard with manufacturers.

* + - * 1. Stainless Steel Sheet: ASTM A240, [**Type 304**] [**Type 316**]; stretcher-leveled standard of flatness; ASTM A480, No. [**4**] [**6**] finish.
        2. Hardware and Fastener Finish: [**Manufacturer's standard**] [**Hot-dip galvanize according to ASTM A153 where units are used on galvanized-steel exterior doors**] [**Stainless steel**] <**Insert requirement**>.
      1. FABRICATION
         1. Fabricate sliding metal fire door assemblies to be rigid and free of defects, warp, or buckle. 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.
         2. Factory prepare sliding metal fire door assemblies and frames to receive hardware and accessories including cutouts, reinforcements, mortising, drilling, and tapping.
      2. METALLIC-COATED STEEL SHEET FINISHES

Retain "Surface Preparation" paragraph below for prime finish or prime plus baked-enamel or powder-coat finish.

* + - * 1. Surface Preparation: Clean surfaces of oil and other contaminants. Use cleaning methods that do not leave residue. After cleaning, apply a conversion coating compatible with the organic coating to be applied over it. Clean welds, mechanical connections, and abraded areas and apply galvanizing repair paint, complying with SSPC-Paint 20, to comply with ASTM A780.

Retain "Factory Prime Finish" paragraph below for field-painted, metallic-coated steel sheet fabrications.

* + - * 1. Factory Prime Finish: After cleaning and pretreating, apply an air-dried primer compatible with the organic coating to be applied over it.

Retain "Baked-Enamel or Powder-Coat Finish" paragraph below for factory-applied, baked-enamel or powder-coat finish for metallic-coated steel sheet fabrications.

* + - * 1. Baked-Enamel or Powder-Coat Finish: After cleaning and pretreating, apply manufacturer's standard two-coat, baked-on finish consisting of prime coat and thermosetting topcoat to a minimum dry film thickness of 2 mils.

Color and Gloss: [**As indicated by manufacturer's designations**] [**Match Director’s Representative's sample**] [**As selected by Director’s Representative from manufacturer's full range**] <**Insert color and gloss**>.

For exact finish, insert names of coating manufacturers and products.

* + - 1. STEEL FINISHES

Retain first option in "Surface Preparation" paragraph below for exterior doors. Retain third option for interior doors. Retain last option if using baked-enamel or powder-coat finish.

* + - * 1. Surface Preparation: Remove mill scale and rust, if present, from uncoated steel, complying with [**SSPC-SP 6/NACE No. 3, "Commercial Blast Cleaning"**] [**or**] [**SSPC-SP 7/NACE No. 4, "Brush-off Blast Cleaning"**] <**Insert surface preparation method**>.[**After cleaning, apply a conversion coating compatible with the organic coating to be applied over it.**]

Retain "Factory Prime Finish" paragraph below for field-painted steel and steel sheet fabrications.

* + - * 1. Factory Prime Finish: After surface preparation and pretreatment, apply manufacturer's standard, fast-curing, lead- and chromate-free, universal primer.

Retain "Baked-Enamel or Powder-Coat Finish" paragraph below for factory-applied, baked-enamel or powder-coat finish for steel and steel sheet fabrications.

* + - * 1. Baked-Enamel or Powder-Coat Finish: After cleaning and pretreating, apply manufacturer's standard two-coat, baked-on finish consisting of prime coat and thermosetting topcoat to a minimum dry film thickness of 2 mils.

Color and Gloss: [**As indicated by manufacturer's designations**] [**Match Director’s Representative's sample**] [**As selected by Director’s Representative from manufacturer's full range**] <**Insert color and gloss**>.

For exact finish, insert names of coating manufacturers and products.

* + - 1. STAINLESS STEEL FINISHES
         1. Surface Preparation: Remove tool and die marks and stretch lines, or blend into finish.
         2. Polished Finishes: Grind and polish surfaces to produce uniform finish, free of cross scratches.

Retain first subparagraph below for directional finishes.

Run grain of directional finishes with long dimension of each piece.

When polishing is completed, passivate and rinse surfaces. Remove embedded foreign matter and leave surfaces chemically clean.

Directional Satin Finish: ASTM A480 No. 4.

Dull Satin Finish: ASTM A480 No. 6.

1. EXECUTION
   * + 1. EXAMINATION
          1. Examine substrates, areas, and conditions, with Installer present, for compliance with requirements for installation tolerances and other conditions affecting performance of the Work.

Examine floor under door to confirm that floor is level for the full travel of door.

Examine wall where track assembly mounts and area behind door to confirm that wall is smooth and in same plane for the full travel of door.

* + - * 1. Proceed with installation only after unsatisfactory conditions have been corrected.
      1. INSTALLATION
         1. Install sliding metal fire doors according to NFPA 80 and manufacturer's written instructions for type of door operation indicated and fire-protection rating required.

Connect fire-detection devices with building's fire-alarm system.

Retain "Concrete Masonry" paragraph below if required.

* + - * 1. Concrete Masonry: Install continuous crush plates between concrete masonry walls and tracks and operating mechanisms mounted to the walls.
        2. Drill necessary holes for anchors in concrete and masonry cleanly, with no broken areas or spalls. Remove and replace or repair damaged concrete and masonry as directed.
      1. FIELD QUALITY CONTROL

Retain "Testing Agency" paragraph below to identify who shall perform tests and inspections. If retaining second option below, retain "Field quality-control reports" paragraph in "Informational Submittals" Article.

* + - * 1. Testing Agency: [**Director’s Representative will engage**] [**Engage**] a qualified testing agency to perform tests and inspections and to furnish reports to Director’s Representative.

Retain "Perform the following tests and inspections" paragraph below to require Contractor to perform tests and inspections. NFPA 80 requires testing; verify whether testing is required by authorities having jurisdiction.

* + - * 1. Perform the following tests and inspections[**with the assistance of a Company Service Advisor**]:

Perform acceptance testing according to NFPA 80.

Fire-Rated Door Inspections: Inspect each fire-rated door in accordance with NFPA 80, Section 5.2.

Test door release, closing, and alarm operations when activated by smoke detector or building's fire-alarm system. Test manual operation of closed door[**and pass door**]. Reset door-closing mechanism after successful test.

Operational Test: After electrical circuitry has been energized, operate doors to confirm proper motor rotation and door performance.

Test and adjust controls and safeties. Replace damaged and malfunctioning controls and equipment.

Retain "Egress Door Inspections" subparagraph below for projects under NFPA 101, for Assembly, Educational, Day-Care, and Residential Board and Care occupancies.

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 according to NFPA 101, Section 7.2.1.15.

* + - * 1. Repair or remove and replace installations where inspections indicate that they do not comply with specified requirements.
        2. Reinspect repaired or replaced installations to determine if replaced or repaired door assembly installations comply with specified requirements.
        3. Prepare and submit separate inspection report for each fire-rated door assembly indicating compliance with each item listed in [**NFPA 80**] [**and**] [**NFPA 101**].
      1. ADJUSTING
         1. Adjust hardware and moving parts to function smoothly, and lubricate as recommended by manufacturer.
      2. DEMONSTRATION
         1. [**Engage a Company Service Advisor to train**] [**Train**] Director's Representative’s maintenance personnel to adjust, operate, and maintain sliding metal fire doors.

END OF SECTION 081173