UNIFIED FACILITIES GUIDE SPECIFICATIONS

References are in agreement with UMRL dated January 2021
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02/11

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-- End of Section Table of Contents --

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USACE / NAVFAC / AFCEC / NASA | **UFGS-08 13 73 (February 2011)**

Preparing Activity: USACE | **Superseding**
UFGS-08 13 73 (May 2009)

UNIFIED FACILITIES GUIDE SPECIFICATIONS

References are in agreement with UMRL dated January 2021

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SECTION 08 13 73

SLIDING METAL DOORS
02/11

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NOTE: This guide specification covers the requirements for horizontal sliding steel doors used primarily for fire rated application and electrically operated horizontal and biparting sliding doors.

Adhere to UFC 1-300-02 Unified Facilities Guide Specifications (UFGS) Format Standard when editing this guide specification or preparing new project specification sections. Edit this guide specification for project specific requirements by adding, deleting, or revising text. For bracketed items, choose applicable item(s) or insert appropriate information.

Remove information and requirements not required in respective project, whether or not brackets are present.

Comments, suggestions and recommended changes for this guide specification are welcome and should be submitted as a Criteria Change Request (CCR).

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PART 1 GENERAL

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NOTE: This guide specification is intended to cover horizontal sliding steel doors used primarily for fire rated applications. Use a center parting door at locations where an overhead monorail passes through the opening or where there is limited side room due to the lack of unobstructed wall space adjacent to the opening.

The following information should be indicated on the project drawings:

a. Size of door openings.

b. Fire rating classification for each door.

c. Type of door operation.

d. Type of power operators and service characteristics, and emergency/safety controls.

e. Location and type of power operator controls.

f. Type of closing system required.

****

1.1 REFERENCES

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NOTE: This paragraph is used to list the publications cited in the text of the guide specification. The publications are referred to in the text by basic designation only and listed in this paragraph by organization, designation, date, and title.

Use the Reference Wizard's Check Reference feature when you add a Reference Identifier (RID) outside of the Section's Reference Article to automatically place the reference in the Reference Article. Also use the Reference Wizard's Check Reference feature to update the issue dates.

References not used in the text will automatically be deleted from this section of the project specification when you choose to reconcile references in the publish print process.

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The publications listed below form a part of this specification to the extent referenced. The publications are referred to within the text by the basic designation only.

ASTM INTERNATIONAL (ASTM)

ASTM A36/A36M	(2019) Standard Specification for Carbon Structural Steel
ASTM A307	(2014; E 2017) Standard Specification for Carbon Steel Bolts, Studs, and Threaded Rod 60 000 PSI Tensile Strength
ASTM A325	(2014) Standard Specification for Structural Bolts, Steel, Heat Treated, 120/105 ksi Minimum Tensile Strength
ASTM A325M	(2014) Standard Specification for Structural Bolts, Steel, Heat Treated, 830 MPa Minimum Tensile Strength (Metric)
ASTM A653/A653M	(2020) Standard Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by

	the Hot-Dip Process
ASTM A924/A924M	(2020) Standard Specification for General Requirements for Steel Sheet, Metallic-Coated by the Hot-Dip Process
ASTM B136	(1984; R 2013) Standard Method for Measurement of Stain Resistance of Anodic Coatings on Aluminum
ASTM B137	(1995; R 2014) Standard Test Method for Measurement of Coating Mass Per Unit Area on Anodically Coated Aluminum
ASTM B209	(2014) Standard Specification for Aluminum and Aluminum-Alloy Sheet and Plate
ASTM B209M	(2014) Standard Specification for Aluminum and Aluminum-Alloy Sheet and Plate (Metric)
ASTM E330/E330M	(2014) Structural Performance of Exterior Windows, Doors, Skylights and Curtain Walls by Uniform Static Air Pressure Difference

NATIONAL ELECTRICAL MANUFACTURERS ASSOCIATION (NEMA)

NEMA ICS 2	(2000; R 2005; Errata 2008) Industrial Control and Systems Controllers, Contactors, and Overload Relays Rated 600 V
NEMA ICS 6	(1993; R 2016) Industrial Control and Systems: Enclosures
NEMA MG 1	(2018) Motors and Generators

NATIONAL FIRE PROTECTION ASSOCIATION (NFPA)

NFPA 70	(2020; ERTA 20-1 2020; ERTA 20-2 2020; TIA 20-1; TIA 20-2; TIA 20-3; TIA 20-4) National Electrical Code
NFPA 80	(2019) Standard for Fire Doors and Other Opening Protectives

SOCIETY FOR PROTECTIVE COATINGS (SSPC)

SSPC Paint 28	(1991; E 2004) Water-Borne Epoxy Primer for Steel Surfaces
SSPC Paint 36	(2006) Two-Component Weatherable Aliphatic Polyurethane Topcoat, Performance-Based

U.S. DEPARTMENT OF DEFENSE (DOD)

MIL-A-8625	(1993; Rev F; Am 1 2003) Anodic Coatings, for Aluminum and Aluminum Alloys

UNDERWRITERS LABORATORIES (UL)

UL 10A	(2009; Reprint Jul 2018) UL Standard for Safety Tin-Clad Fire Doors
UL 14B	(2008; Reprint Jul 2017) UL Standard for Safety Sliding Hardware for Standard, Horizontally Mounted Tin-Clad Fire Doors
UL 506	(2017) UL Standard for Safety Specialty Transformers

1.2 SYSTEM DESCRIPTION

****

NOTE: For exterior doors, use wind load values selected from the tables below; the first table is metric units, the second table shows I-P units. The applicable basic wind speed and importance factor will be selected in accordance with ASCE 7-16, Minimum Design Loads For Buildings and Other Structures. Design wind loads may be reduced by 10 percent when the roof slope is equal to or less than 10 degrees. Delete this paragraph if exterior doors are not specified.

Design Wind Load +/- Pa psf					
Basic Wind	Importance Factor				
Speed m/s mph	0.95	1.00	1.05	1.07	1.11
31 70	720 15	765 16	860 18	910 19	960 20
36 80	910 19	1005 21	1100 23	1150 24	1245 26
40 90	1150 24	1295 27	1435 30	1485 31	1580 33
45 100	1435 30	1580 33	1770 37	1820 38	1965 41
49 110	1725 36	1915 40	2105 44	2200 46	2395 50
54 120	2060 43	2300 48	2540 53	2635 55	2825 59

****

Provide fire doors conforming to NFPA 80 and the requirements specified herein. Fire doors shall bear the Underwriters Laboratories, Warnock Hersey, Factory Mutual, or other nationally recognized testing laboratory label for the required fire rating class and temperature rise classification if applicable. Provide each door with a permanent label showing the manufacturer's name and address and the model number of the door. Doors in excess of the labeled size will be deemed oversize and provided with a certificate signed by an official of the company, certifying that the door and operator have been designed to meet the specified requirements. Provide each door complete with operating devices, hardware, and accessories. Minimum design wind load is [_____] Pa

psf. Construct doors to sustain a superimposed load, both inward and outward, equal to 1.5 times the minimum design wind load and not to deflect more than 1/120 of the door width and height. When tested in accordance with the static air pressure test procedure of ASTM E330/E330M, the door shall support the superimposed loads for a minimum period of 10 seconds without evidence of serious damage and be operable after conclusion of the tests. As an option, conduct the tests using an equivalent uniform static load. The uniform static load test specimen shall be supported using rollers and track as required for project installation. Recovery shall be at least three-fourths of the maximum deflection within 24 hours after the test load is removed.

1.2.1 Performance Requirements

Design Analysis and Calculations, equipment and performance data for Sliding Door Assemblies, and Hardware and Accessories shall meet design specifications as required by referenced standards within this section.

1.2.1.1 Door Performance

Provide [[an electrically operated door with manual override mechanism] [a manually operated door], industrial type constructed of ASTM A36/A36M [structural steel sections] [formed plates] sized for loads specified.] [doors of the [one-way sliding] [and] [biparting double-leaf] type as indicated [supported on recessed rails set in floor with top guides]]. Furnish doors complete with hardware, tracks, guides, and accessories.

1.2.1.2 Biparting Doors

Provide doors requiring operating personnel to walk with leaf as it moves. Each door leaf shall have separate drive units, [driving one or more wheels]. Each leaf shall have [motor-mounted, spring-set,] [_____] [solenoid-released] motor brake. Each leaf shall move independently from other leaves. Design leaves of biparting doors as follows:

a. Exterior windload of [2400] [_____] pascal [50] [_____] psf

b. Windload deflection not to exceed [_____] [the door height in mm inches divided by 120] [_____].

c. Interior horizontal sliding doors to withstand an internal pressure of [500] [_____] pascal [10] [_____] psf, both directions.

d. Door operating speed shall be [0.15] [_____] meter per second [30] [_____] feet per minute (fpm) maximum and [0.08] [_____] meter per second [15] [_____] fpm minimum.

1.2.2 Seal Performance

When pressure is applied to the OPEN button, seals shall automatically deflate before doors open. Upon deflation of pressure in each seal, switches [connected in series] shall energize door-open controller. Every seal shall deflate properly before permitting doors to move. Coordinate controls with this operating sequence for seals and door movement. Pressure shall keep doors closed and hold center seals tight. When power fails, a braking device will hold each door shut and maintain seals. [Personnel door shall be interlocked to prevent movement of the leaf, or group in which it is located, when the personnel door is open.]

1.3 SUBMITTALS

****

NOTE: Review submittal description (SD) definitions in Section 01 33 00 SUBMITTAL PROCEDURES and edit the following list, and corresponding submittal items in the text, to reflect only the submittals required for the project. The Guide Specification technical editors have classified those items that require Government approval, due to their complexity or criticality, with a "G." Generally, other submittal items can be reviewed by the Contractor's Quality Control System. Only add a "G" to an item, if the submittal is sufficiently important or complex in context of the project.

For Army projects, fill in the empty brackets following the "G" classification, with a code of up to three characters to indicate the approving authority. Codes for Army projects using the Resident Management System (RMS) are: "AE" for Architect-Engineer; "DO" for District Office (Engineering Division or other organization in the District Office); "AO" for Area Office; "RO" for Resident Office; and "PO" for Project Office. Codes following the "G" typically are not used for Navy, Air Force, and NASA projects.

The "S" classification indicates submittals required as proof of compliance for sustainability Guiding Principles Validation or Third Party Certification and as described in Section 01 33 00 SUBMITTAL PROCEDURES.

Choose the first bracketed item for Navy, Air Force and NASA projects, or choose the second bracketed item for Army projects.

****

Government approval is required for submittals with a "G" or "S" classification. Submittals not having a "G" or "S" classification are [for Contractor Quality Control approval.][for information only. When used, a code following the "G" classification identifies the office that will review the submittal for the Government.] Submit the following in accordance with Section 01 33 00 SUBMITTAL PROCEDURES:

SD-02 Shop Drawings

Sliding Metal Doors

SD-07 Certificates

Fire Doors
Fabrication Drawings
Installation Drawings
Design Analysis and Calculations
Sliding Door Assemblies
Hardware and Accessories
Doors

Flush Doors
Rails
Paint

1.4 QUALITY ASSURANCE

Submit Fabrication Drawings with framing member details, welding details, and finish and painting details for sliding door assemblies. Include in the drawings elevations of each door type, details of anchorage, details of construction, location and installation of hardware, shape and thickness of materials, details of joints and connections, and details of tracks, rollers, power operators, controls, and fittings. Include a schedule showing the location of each door with the drawings, and the manufacturer's catalog data. Provide Installation Drawings with type and location of hardware, framing details, and rough opening dimensions and details for horizontal door and biparting door systems.

a. Section 26 20 00 INTERIOR DISTRIBUTION SYSTEM applies to work specified in this section.

b. Conform to the requirements of Underwriters Laboratories, Inc., for motors, wiring and controls.

1.5 DELIVERY, STORAGE, AND HANDLING

Deliver doors to the jobsite wrapped in a protective covering, with the brands and names clearly marked thereon. Store doors in an adequately ventilated, dry location that is free from dust, water, or other contaminants and in a manner that permits access for inspection and handling. Handle doors carefully to prevent damage to the faces, edges, and ends. Replace damaged items that cannot be restored to like-new condition.

1.6 WARRANTY

Provide manufacturer's standard performance guarantees or warranties that extend beyond a 1 year period.

1.7 MAINTENANCE

Provide manufacturer's installation, operation, and maintenance instructions for sliding metal doors.

PART 2 PRODUCTS

2.1 DOORS

Leaf sections shall be welded construction. Provide joints to develop 100 percent of the strength of the framing members. Members may be prefabricated for field assembly. When using bolts, conform to ASTM A325M ASTM A325 for fastening main members. Bolts conforming to ASTM A307 are permitted for fastening secondary members.

a. Make vertical members continuous throughout the height of the door. Members adjoining each other at splices shall be made to facilitate field assembly. Framing members shall be true to dimensions and square in all directions. No leaf shall be out of line in vertical or horizontal plane of the door opening by [3 mm in 6100 mm 1/8 inch in 20 feet] [_____] maximum.

b. Provide [full-depth members] [gusset plates at the one-third points] for lateral support to all main vertical members. Diagonal bracing shall support the leaf assembly to withstand shipping, assembly, and operational loads. Provide ground smooth welds.

c. Fabricate cover sheets from [1.2] mm [0.050] inch [_____] thick (minimum) [aluminum] [_____] facing, [Alloy 3003] [_____], meeting ASTM B209M ASTM B209 requirements. Provide [ribbed] [fluted] finish. Provide joints of the [butt] [_____] type showing a minimum crack. Reinforce to ensure rigid construction and prevent warping and sagging.

d. Seal cover sheets with an approved caulking compound. Fasten to frame with corrosion-resistant [steel] [_____] fasteners [230] mm [9] inch [_____] on center. Where flat sheets are attached as either covering or linear sheets, do not exceed [2.3] square meter [25] square feet [_____] for unsupported areas.

2.2 PERSONNEL DOORS

****

NOTE: Delete this paragraph when personnel doors are not required.

****

Provide manufacturer's standard flush doors of [aluminum type,] [_____] size as indicated, complete with hardware and airtight seals.

2.3 SLIDING DOORS

****

NOTE: Types of doors should be specified optionally where a fire rating is required unless appearance is a factor. Manufacturer's catalogs should be consulted before a selection is made. If doors are not fire rated, the hollow metal and flush tubular frame doors should be specified for interior use, and the insulated door should be specified for exterior use.

Composite doors are available in 3 or 4 hour models and may be specified with or without a temperature rise rating. Hollow metal doors are available up to a 4 hour rating; however, they are not available with a temperature rise rating. The maximum size available with a UL listing and a FM approval is 3.6 m by 3.6 m 12 foot by 12 foot for the composite and hollow metal doors. Tin-clad doors are available as 2-ply and 3-ply types. The 2-ply door is available with 3/4 and 1-1/2 hour rating. The 3-ply door is available with a 3/4, 1-1/2, and 3 hour rating. Tin-clad doors with a 1-1/2 or 3 hour rating have a maximum temperature rise limitation.

In highly corrosive environments, recommend using FRP doors and frames for improved corrosion resistance. Refer to UFGS 08 22 20 for standard specifications.

Edit the following paragraphs to meet project requirements.
****

Provide sliding doors of the following types:

[2.3.1 Steel-Covered Composite

Composite fire doors shall be [[3 hour] [4 hour] [_____] rated] [as shown on drawings]. Doors shall be flush panel consisting of a manufactured core material, such as calcium silicate block or mineral fiberboard insulation, covered on both faces with a bonded steel sheet not lighter than 1.0 mm 20 gauge and covered on edges with a steel perimeter channel not lighter than 1.3 mm 18 gauge. Doors may be fabricated using several panels, with panel edges encased in a steel channel not lighter than 1.9 mm 14 gauge. Joints in panels shall be joined or backed by an interior steel H column and covered with a steel-surface applied face plate. Fire-rated doors shall have a [maximum temperature rise rating of 121 degrees C 250 degrees F at 30 minutes] [non-temperature rise rating].

][2.3.2 Hollow Metal

Provide[[non] [3 hour] [4 hour] [_____] rated] doors [as shown on drawings]. Doors shall be flush panel consisting of a resin impregnated Kraft honeycomb core covered on both faces with a bonded steel sheet not lighter than 1.0 mm 20 gauge and covered on edges with a steel perimeter channel not lighter than 1.3 mm 18 gauge. Doors may be fabricated using several panels, with panel edges encased in a steel channel not lighter than 1.9 mm 14 gauge. Back joints in face sheets by an interior steel H column and covered with a steel surface applied face plate.

][2.3.3 Flush Steel Tubular Frame

Provide flush steel tubular frame doors that are [[non] [3 hour] [4 hour] [_____] rated] [as shown]. Doors shall be flush panel consisting of a 1.6 mm (16 gauge) 16 gauge steel tubing frame with 1.3 mm (18 gauge) 18 gauge face sheets with fiberglass core. Provide intermediate stiffeners at 600 mm 24 inches on center maximum. Spot weld the face sheets to the frame and stiffeners. Door may be fabricated using several panels, with 3.1 mm (11 gauge) 11 gauge steel splice plates full height on both sides. Fire rated doors shall have a [maximum temperature rise rating of 121 degrees C 250 degrees F at 30 minutes] [non-temperature rise rating].

][2.3.4 Tin-Clad

Tin-clad doors shall be [[2-ply [3/4] [1-1/2]] [3-ply [3/4] [1-1/2] [3]] hour rated] [as shown], conforming to UL 10A. Hardware shall conform to UL 14B. Provide doors having a core made up of layers of 19 mm 3/4 inch thick wooden boards nailed to each other and encased in tern or zinc plates that are jointed together at their edges with nails through the joints into the core. Doors with 1-1/2 hour and 3 hour rating shall have a maximum temperature rise rating of 121 degrees C 250 degrees F at 30 minutes.

][2.3.5 Insulated

****
NOTE: Doors with a thermal conductance (U-value) of 0.85 W/square meter times K 0.15 btu/hr times sq f

times f are readily available. Specify and indicate on the drawings all doors with a lower thermal conductance (U-value) where indicated by the energy budget analysis. Review manufacturer's literature to verify the availability of doors with lower thermal conductance (U-values).
****

[Non-labeled insulated doors shall be flush panel consisting of a urethane, polystyrene, or fiberglass insulation core covered on both faces with a bonded steel sheet not lighter than 1.3 mm (18 gauge) 18 gauge and covered on the edges with a steel perimeter channel not lighter than 1.3 mm (18 gauge)18 gauge.] [Provide flush panel labeled [3/4] [1-1/2] [3] [4] hour rated doors consisting of fiberglass insulation core covered on both faces with a bonded steel sheet not lighter than 1.3 mm (18 gauge) 18 gauge and covered on the edges with a steel perimeter channel not lighter than 1.3 mm (18 gauge) 18 gauge. Fire rated doors shall have a [maximum temperature rise rating of 121 degrees C 250 degrees F at 30 minutes] [non-temperature rise rating] [rating as shown]]. Perform door construction to provide a thermal conductance (U-value) of [0.85 W/square meter times K 0.15 btu/hr times sq f times f] [_____]. Doors may be fabricated using several panels. Encase panel edges in a steel channel not lighter than 1.9 mm (14 gauge)14 gauge. Back joints in face sheets by an interior steel H column and covered with a steel surface-applied face plate. Comply with EPA requirements in accordance with Section 01 33 29 SUSTAINABILITY REQUIREMENTS AND REPORTING.

]2.4 OPERATION

****
NOTE: Edit this paragraph to agree with type of operation indicated on the drawings. Tin-clad doors are available with inclined tops.
****

Doors shall be [single-slide] [center-parting] on [level] [inclined] tracks and designed to normally remain in the [open position and close automatically in case of fire] [or] [closed position but permit normal operation for passage]. Doors shall be [manually] [power] operated. Automatic closing system shall be a [labeled automatic reel type closer] [or] [weight type closer with a weight box fabricated of steel not lighter than 1.6 mm (16 gauge) 16 gauge]. Provide fusible links as required by NFPA 80 and activate at 71 degrees C 160 degrees F.

2.4.1 Power Operators

****
NOTE: Power operators should be specified for sliding doors which are subject to heavy usage and are required to remain closed. Also use power operated sliding doors between heated production areas and unheated storage areas where there is a frequent traffic flow between the two areas. This paragraph applies to both pneumatic and electric operated doors.
****

Provide [pneumatic] [electric] type operator specified herein. Provide both the door and the power actuating device with a UL or FM listed

releasing mechanism that will permit the required self-closing feature to function and close the door automatically in case of fire irrespective of power failure or manual operation. Provide readily adjustable limit switches to automatically stop the door in its full open or closed position. All operating devices shall be suitable for the Class, Division, and Group shown and as defined in NFPA 70.

[2.4.2 Pneumatic Operators

****
NOTE: Edit this paragraph to suit the type of controls required. Insert the air pressure that will be available for the door operation.
****

Provide heavy duty industrial type operator, designed to operate the door at [0.3] [0.6] [0.9] [1.2] m [1] [2] [3] [4] ft per second with air pressure of [_____] kPapsi. The operator shall open, close, start, and stop the door smoothly. Control shall be [[electrical, conforming to NEMA ICS 2, Part 8 and NEMA ICS 6. Provide enclosures which are Type 12 (industrial use), Type 7 or 9 in hazardous locations,] [pneumatic,] with [push button wall switches.] [ceiling pull switches.] [roll-over floor treadle.]] [as indicated on the drawings.]

]2.4.3 Electric Operators

****
NOTE: Edit this paragraph to suit the type of controls required. Insert the electrical characteristics that will be available for the door operation.
****

Provide heavy-duty industrial type operator, designed to operate the door at not less than [0.3] [0.6] [0.9] [1.2] m [1] [2] [3] [4] ft per second. Provide [push button wall switches] [ceiling-pull switches] [roll-over floor treadle] electrical controls as indicated. Provide all electrical power operators complete with electric motor, brackets, controls, limit switches, magnetic reversing starter, and all other accessories necessary. Design the operator so that the motor may be removed without disturbing the limit-switch timing and without affecting the emergency closing system. Provide the power operator with a slipping clutch coupling or torque limiter, as required to prevent stalling of the motor. Provide operators with provisions for immediate emergency manual operation of the door in case of electrical failure. Where control voltages differ from motor voltage, provide an integrated control voltage transformer as part of the starter. Control shall be electrical, conforming to NEMA ICS 2, Part 8 and NEMA ICS 6 with voltage of 120 volts or less. Provide enclosures of the Type 12 (industrial use), Type 7 or 9 in hazardous locations, [with [push button wall switches.] [ceiling pull switches.] [roll-over floor treadle.]] [as indicated on the drawings.]

2.4.3.1 Motors

Drive motors shall conform to NEMA MG 1, have high-starting torque, reversible type, and with sufficient power and torque output to move the door in either direction from any position at the required speed without exceeding the rated capacity. Provide motors suitable for operation on [_____] volts, [60] [_____] hertz, [single] [three] phase, and suitable

for across-the-line starting. Design motors to operate at full capacity over a supply voltage variation of plus or minus 10 percent of the motor voltage rating.

2.4.3.2 Controls

Provide each door motor with thermal overload protection, limit switches, and remote-control switches with control equipment conforming to NEMA ICS 2. Enclosures shall be NEMA ICS 6 Type 12 (industrial use), Type 7 or 9 in hazardous locations, or as otherwise indicated. Each wall control station shall be of the three-button type, with the controls marked "OPEN," "CLOSE," and "STOP." When the door is in motion and the "STOP" control is pressed, the door shall stop instantly and remain in the stop position; from the stop position. Provide doors operable in either direction by the "OPEN" or "CLOSE" controls. Controls shall be of the full-guarded type to prevent accidental operation.

2.4.4 Electrical Work

Provide conduit and wiring necessary for proper operation in accordance with Section 26 20 00 INTERIOR DISTRIBUTION SYSTEM. Make flexible connections between doors and fixed supports with extra flexible type SO cable, except in hazardous locations where wiring conforms to NFPA 70. The cable shall have spring-loaded automatic take-up reel coil cord or an equivalent and approved device.

2.4.5 Transformer

Conform to UL 506 for control transformers.

2.5 HARDWARE

****

NOTE: Door design should eliminate corrosive contaminants collection location. Proper design should include effective drain-to-drain-through requirements. If materials are expected to be exposed to corrosive contaminants, select design geometries, materials, manufacturing processes, and coatings that prevent or control corrosion.

Selected design disciplines should enable designers to evaluate the following general approaches to design: selecting the right materials and manufacturing processes, applying protective coatings as necessary, using proper corrosion preventative and control designs, and modifying the environment.

Avoid materials that are dissimilar and can cause galvanic corrosion. Consider compatibility when using multiple materials. If dissimilar materials cannot be avoided, isolate those materials from each other through the use of sealants, protective coatings, barrier materials, etc.

****

Provide hardware conforming to NFPA 80, UL 14B and the requirements specified herein. Design tracks, roller assemblies, and installation

hardware to support a dead load equal to 1.5 times the weight of the door and attached hardware without deformation that would interfere with the operation of the door. Form tracks of galvanized G90 steel not lighter than 1.9 mm (14 gauge) 14 gauge. Provide ball or roller bearing wheels or rollers with case hardened races on all devices incorporating wheels or rollers. Attach hardware using zinc plated through bolts, nut plates, or similar devices to ensure adequate fastener strength. Provide recessed steel pulls on both sides of all door leaves. Closing system for [sliding doors] [and] [sliding fire doors] shall be [counterweight closing with weight boxes] [cable reel closer] [controlled speed cable reels].

[2.6 RAILS

Provide [steel] [_____] rails for horizontal sliding doors of [18 kg 40 pound] [as indicated].

]2.7 SAFETY DEVICE

The leading edge of doors shall have a safety device that will immediately reverse the door movement upon contact with an obstruction and cause the door to return to its full open position. The safety device cannot substitute for a limit switch. Provide exterior doors with a combination weather seal and safety device.

2.8 ACCESSORIES

2.8.1 Track Hood

Track hood, for exterior doors mounted on the exterior face of the wall, shall be zinc-coated steel not lighter than 1.3 mm (18 gauge) 18 gauge.

2.8.2 Glass Lights

Provide glass lights of the size indicated, except that in no case can the size be larger than that permitted by the required fire rating. Glass shall be in accordance with Section 08 81 00 GLAZING.

2.8.3 Weatherstripping

Provide weatherstripping on head, jamb, and sills of exterior doors. Weatherstripping shall be 1.6 mm 1/16 inch thick fabric-reinforced neoprene or nylon-brush type, and shall have continuous metal retainers and UL listed.

[2.8.4 Locking Device

****

NOTE: Do not provide locking devices on doors of required exitways unless approval is first obtained from the Fire Protection Engineer. Delete this paragraph if locking devices are not required.

****

[Heavy-duty hasp and staple] [Electric solenoid lock] shall be provided on doors [_____], located on [_____] side.

][2.8.5 Pass Door

Provide a pass door of nominal size [_____] [as shown on the drawings]

complete with an integral frame. Factory install and fit the pass door. The pass door shall be complete with three full mortise spring hinges and a mortise latch set with flush cup and lever handle with US32D finish.

]2.8.6 Top Guide Rollers

Provide top guide rollers of the [horizontal] [_____] type [with single wheel] [as indicated]. Provide rollers of [steel] [malleable iron] [cast iron] and sized for load conditions. Rollers shall have [permanently lubricated] [_____] anti-friction bearings. Construct assemblies allowing removal. Construct top roller assemblies to transmit the load from the door to the building structure.

2.8.7 Bottom Rollers

Provide bottom rollers of [double-flanged cast steel] [welded pressed steel] [_____] having minimum tread diameter of [455] mm [18] inch [_____]. When the door leaf height-to-width exceeds 3, provide adjustable rollers. Construct rollers for removal without removing the door leaf from rail.

a. Provide treads with bearing seats. Horizontal clearance between the wheel and the rail shall be [3] mm [1/8] inch [_____] maximum at the bottom and [6] mm [1/4] inch [_____] maximum at edge of flanges.

b. Provide bearing seats meeting the bearing manufacturer's requirements. Have bearings of [ball] [roller] type arranged to ensure that vertical loads and horizontal wind loads will be transmitted from leaves to wheels. Bearings with seals shall retain grease and prevent the entrance of dirt. Equip bearings with high-pressure grease fittings.

2.8.8 Track Cleaners

Provide door leaves with sweeps to clear debris from the rail head and wheel flange grooves as the leaf is moved.

2.8.9 Toe Guards

Attach an adjustable full-length flexible toe guard reaching to the floor to the exterior bottom edge of each leaf of bi-parting doors.

2.8.10 Warning Device

Provide alarms with each leaf which signals door movements and are [electronically] [electrically] [mechanically] activated.

2.8.11 Track Bumpers

When limit switch fails, bumpers shall limit door travel and automatically stop the door.

2.8.12 Drive Clutch

When power is not applied, the clutch shall disengage from the door drives.

2.8.13 Manual Operators

Provide a manual [removable crank] [hand wheel] device that open doors.

[Door leaf shall have readily accessible brackets for crank storage.]

2.9 FINISH

2.9.1 Steel Surfaces of Exterior Doors

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NOTE: When increased corrosion protection and coating system durability is needed, a coating system of SSPC Paint 28 primer with a SSPC Paint 36 topcoat applied by spray application can be used. This option is suggested for areas of high corrosion and heavy use.

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Provide galvanized coating conforming to ASTM A653/A653M or ASTM A924/A924M, coating designation G90, for steel sheets on all steel surfaces of exterior doors, after first applying a shop-primed finish. Prior to receiving primer, clean and phosphate-treat all surfaces for maximum paint adherence. Primer shall be metallic oxide or synthetic resin primer of the manufacturer's standard type and applied by dipping or spraying. [For increased corrosion protection and coating system durability apply a coating system of SSPC Paint 28 primer with a SSPC Paint 36 topcoat by spray application.]

2.9.2 Exposed Steel Surfaces of Interior Doors

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NOTE: When increased corrosion protection and coating system durability is needed, a coating system of SSPC Paint 28 primer with a SSPC Paint 36 topcoat applied by spray application can be used. This option is suggested for areas of high corrosion and heavy use.

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Provide exposed steel surfaces of interior doors with a [shop-primed finish] [and] [galvanized coating]. Galvanizing shall conform to ASTM A653/A653M or ASTM A924/A924M, coating designation G90, for steel sheets. Provide primer which is a metallic oxide or synthetic resin primer of the manufacturer's standard type and applied by dipping or spraying. Prior to receiving primer, clean and phosphate treat all surfaces for maximum paint adherence. [For increased corrosion protection and coating system durability apply a coating system of SSPC Paint 28 primer with a SSPC Paint 36 topcoat by spray application.]

[2.10 SPECIAL FINISHES

Provide surfaces of [aluminum] [_____] doors with [an anodic] [_____] coating conforming to [MIL-A-8625, Type II] [_____]; coating shall be sealed. Weight and effectiveness of sealing and coating(s) shall be determined in accordance with [ASTM B137 and ASTM B136] [_____]. Apply [_____] coat(s) of [a clear [methacrylate lacquer] [_____]] to [_____] surfaces prior to shipment.

][2.11 SHOP PAINTING

a. Paint [steel] [_____] portions of doors with [_____] coats of manufacturer's standard [rust-inhibitive] Paint.

b. Paint [aluminum] [_____] surfaces which contact dissimilar metals with bituminous paint.

c. Coat both dissimilar metal surfaces to prevent galvanic corrosion.

d. Submit certificates of inspection from an independent testing laboratory, for oversize fire doors, stating that the doors and hardware are identical in design, materials, and construction to a door that has been tested and meets the requirements for the class indicated.

]PART 3 EXECUTION

3.1 INSTALLATION

Install doors in accordance with NFPA 80, approved detail drawings and manufacturer's instructions. Anchors and inserts for guides, brackets, [motors,] [switches,] hardware, and accessories shall be accurately located. Upon completion, doors shall be free from warp, twist, or distortion. Provide weather tight exterior doors. Doors shall be lubricated, properly adjusted, and demonstrated to operate freely.

[3.2 FIELD FINISHING

Finish doors to receive field finish in accordance with Section 09 90 00 PAINTING, GENERAL. Color shall be [in accordance with Section 09 06 00 SCHEDULES FOR FINISHES] [_____]. For field coatings applied to the exterior and interior of steel doors use coatings described in Paragraphs STEEL SURFACES OF EXTERIOR DOORS and EXPOSED STEEL SURFACES OF INTERIOR DOORS

]3.3 TESTING

Test doors in the presence of a representative of the door manufacturer and the Contracting Officer. Testing shall consist of [10] complete opening and closing cycles for each individual door, each pair of doors, and [three] complete manual cycles. On the fifth and tenth cycles, check, the inflatable seals for wear and leakage. Switches shall function properly, and operation of doors shall be smooth. A successful soap-bubble test made with the doors closed shall show an airtight condition.

-- End of Section --