SECTION 084229.23 - SLIDING AUTOMATIC ENTRANCES

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

Sliding automatic entrances.

* + - * 1. Related Requirements:

Retain subparagraphs below to cross-reference requirements Contractor might expect to find in this Section but are specified in other Sections.

Section 033000 "Cast-in-Place Concrete" for [**installing recessed metal frames for control mats in concrete**] [**and**] [**forming recesses in concrete for recessed thresholds**].

Section 084243 "Intensive Care Unit/Critical Care Unit (ICU/CCU) Entrances" for swinging-sliding, manual ICU/CCU entrance door assemblies.

Section 087113 "Power Door Operators" for automatic door operators furnished separately from doors and frames.

* + - 1. DEFINITIONS

Retain terms that remain after this Section has been edited for a project.

* + - * 1. AAADM: American Association of Automatic Door Manufacturers.
        2. Activation Device: A control that, when actuated, sends an electrical signal to the door operator to open the door.
        3. Safety Device: A control that, to avoid injury, prevents a door from opening or closing.
        4. For automatic door terminology, refer to BHMA A156.10 for definitions of terms.
      1. COORDINATION

Retain applicable requirements in this article to suit Project.

* + - * 1. Coordinate sizes and locations of recesses in concrete floors for [**recessed sliding tracks**] [**and**] [**recessed control mats**] that control automatic entrances. Concrete, reinforcement, and formwork requirements are specified elsewhere.
        2. Templates: Distribute for doors, frames, and other work specified to be factory prepared for installing automatic entrances.
        3. Coordinate hardware with doors, frames, and related work to ensure proper size, thickness, hand, function, and finish. Coordinate hardware for automatic entrances with hardware required for rest of Project.
        4. Electrical System Roughing-in: Coordinate layout and installation of automatic entrances with connections to power supplies[ and access-control system] [**and remote activation devices**] [**and remote monitoring systems**].
        5. System Integration: Integrate sliding automatic entrances with other systems as required for a complete working installation.

Retain applicable subparagraphs below or indicate additional systems for doors with access control integrated with other systems.

Provide electrical interface control capability for activation of sliding automatic entrances by security access system on doors with electric locking.

Provide electrical interface to deactivate door operators on activation of fire alarm system.

Provide electrical interface to allow for remote monitoring of automatic entrance door panel status.

* + - 1. PREINSTALLATION MEETINGS

Retain "Preinstallation Conference" Paragraphparagraph below if Work of this Section is extensive or complex enough to justify a conference.

* + - * 1. Preinstallation Conference: Conduct conference at [Project site] <**Insert location**>.

If needed, insert list of conference participants not mentioned in Section 013100 "Project Management and Coordination."

* + - 1. ACTION 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. Waiver of Submittals: The "Waiver of Certain Submittal Requirements" in Section 013300 does not apply to this Section.
         5. Submittals Package: Submit the shop drawings, product data, and samples specified below at the same time as a package.
         6. Product Data: For each type of product.

Include construction details, material descriptions, dimensions of individual components and profiles, and finishes for automatic entrances.

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

Include manufacturer’s installation instructions.

* + - * 1. Sustainable Design Submittals:
        2. Shop Drawings: For sliding automatic entrances.

If custom components are required and detailed or isometric Shop Drawing are acceptable, insert provisions in applicable subparagraphs below. If Drawings are insufficient, insert provisions for samples in "Samples for Verification" Paragraph below to indicate details of assembly.

Include plans, elevations, sections, hardware mounting heights, and attachment details.

Indicate dimensions, weights, loads, required clearances, method of field assembly, components, and location and size of each field connection.

Include diagrams for power, signal, and control wiring.

Indicate locations of activation and safety devices.

Include hardware schedule and indicate hardware types, functions, quantities, and locations.

Retain Samples for door systems with anodized color selection. Delete if door system is clear anodized. Retain "Samples for Initial Selection" and "Samples for Verification" paragraphs below for two-stage Samples.

* + - * 1. Samples for Initial Selection: For units with factory-applied [color ] [**and**] [**metal-clad**] finishes.

Include Samples of hardware and accessories involving color or finish selection.

If Samples of custom components are required, insert provisions in "Samples for Verification" Paragraph below for Samples to indicate details of assembly.

* + - * 1. Samples for Verification: For each type of exposed finish required, in manufacturer's standard sizes.

Retain "Delegated Design Submittal" Paragraphparagraph below if design services have been delegated to Contractor.

* + - * 1. Delegated Design Submittal: For automatic entrances.
        2. INFORMATIONAL Quality Control Submittals:

Coordinate "Qualification Data" Paragraph below with qualification requirements in Section 014000 "Quality Requirements" and as may be supplemented in "Quality Assurance" Article.

Qualification Data: For [Installer] [**manufacturer**] and [Certified Inspector].

Retain "Product Certificates" Paragraphparagraph below to require submittal of product certificates from manufacturers. Retain option if applicable to Project.

Product Certificates: For each type of automatic entrance.[ Include emergency-exit features of automatic entrances serving as a required means of egress.]

Generally retain "Product Test Reports" Paragraphparagraph below for windborne-debris impact-resistance testing if required.

Product Test Reports: For each type of automatic entrance, for tests performed by a qualified testing agency.

Sample Warranties: For manufacturer's special warranties.

* + - * 1. Contract Closeout Submittals:

Operation and Maintenance Data: For automatic entrances, safety devices, and control systems to include in operation and maintenance manuals.

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

Field quality-control reports.

* + - 1. QUALITY ASSURANCE

Retain "Manufacturer Qualifications" Paragraphparagraph below if AAADM Company Certificate is required. Default manufacturer qualifications are specified in Section 014000 "Quality Requirements."

* + - * 1. Manufacturer Qualifications: A manufacturer with Company Certificate issued by AAADM indicating that manufacturer has a Certified Inspector on staff.
        2. Installer Qualifications: Manufacturer's authorized representative who is trained and approved for installation and maintenance of units required for this Project**[ and who employs a Certified Inspector]**.

Retain "Maintenance Proximity" Subparagraphsubparagraph below if retaining "Maintenance Service" Article.

Maintenance Proximity: Not more than [**two**] <**Insert number**> hours' normal travel time from Installer's place of business to Project site.

Retain "Certified Inspector Qualifications" Paragraphparagraph below if retaining "Manufacturer Qualifications" Paragraphparagraph above, option in "Installer Qualifications" Paragraphparagraph above, "Certified Inspector" Paragraphparagraph in "Field Quality Control" Article, or "Maintenance Service" Article.

* + - * 1. Certified Inspector Qualifications: Certified by AAADM.
      1. WARRANTY

When warranties are required, verify with OwnerDirector’s Representative's counsel that special warranties stated in this article are not less than remedies available to OwnerDirector’s Representative under prevailing local laws.

* + - * 1. Special Warranty: Manufacturer agrees to repair or replace components of automatic entrances that fail in materials or workmanship within specified warranty period.

Failures include, but are not limited to, the following:

Structural failures including, but not limited to, excessive deflection.

Faulty operation of operators, controls, and hardware.

Deterioration of metals, metal finishes, and other materials beyond normal weathering and use.

Verify available warranties and warranty periods for units and components.

Warranty Period: [**Two**] <**Insert number**> years from date of Substantial Completion.

Verify available special finish warranties with manufacturers. Extended 20-year finish warranties are sometimes available for 70 percent fluoropolymer coatings.

* + - * 1. Special Finish Warranty: Manufacturer agrees to repair or replace components on which finishes fail in materials or workmanship within specified warranty period.

Deterioration includes, but is not limited to, the following:

Color fading more than 5 Hunter units when tested in accordance with ASTM D2244.

Chalking in excess of a No. 8 rating when tested in accordance with ASTM D4214.

Cracking, checking, peeling, or failure of paint to adhere to bare metal.

AAMA 2604 represents a five-year set of tests; AAMA 2605 represents a 10-year set. Warranty periods offered by manufacturers vary depending on finish. Verify available warranties and warranty periods for units and components.

Warranty Period: [**Five**] [**10**] [**20**] <**Insert number**> years from date of Substantial Completion.

1. PRODUCTS

Manufacturers and products listed in this Section are neither recommended nor endorsed by the AIA or Deltek. Before selecting manufacturers and products, verify availability, suitability for intended applications, and compliance with minimum performance requirements. For definitions of terms and requirements for Contractor's product selection, see Section 016000 "Product Requirements."

Product options commonly available from manufacturers are included in square brackets throughout the Section Text. Not every manufacturer listed can provide every option offered; verify availability with manufacturers. For definitions of terms and requirements for Contractor's product selection, see Section 016000 "Product Requirements."

* + - 1. AUTOMATIC ENTRANCE ASSEMBLIES

Retain "Source Limitations" Paragraphparagraph below only if more than one automatic entrance is required. Verify availability of different types of automatic entrances with manufacturers and with Sections where these entrance types are specified, if any. Consider inserting other door types, specified in other Sections, if identical finishes are required. Verify availability with manufacturers.

* + - * 1. Source Limitations: Obtain sliding [**folding**] [**and**] [**swinging**] automatic entrances from single source from single manufacturer.
        2. 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.
        3. Power-Operated Door Standard: BHMA A156.10.
      1. PERFORMANCE REQUIREMENTS

Retain "Delegated Design" Paragraphparagraph below if Contractor is required to assume responsibility for design.

* + - * 1. Delegated Design: Engage a qualified professional engineer, as defined in Section 014000 "Quality Requirements," to design automatic entrances.
        2. Structural Performance: Automatic entrances shall withstand the effects of gravity loads and the following loads and stresses within limits and under conditions indicated in accordance with [**ASCE/SEI 7**] <**Insert requirement**>.

Consult a Structural Engineer, experienced in engineering building entrances of type indicated, to quantify design loads applicable to Project. Verify compliance with codes.

Retain "Seismic Loads" and "Wind Loads" subparagraphs below if design loads and load combinations are not indicated on Drawings.

Seismic Loads: <**Insert loads**>.

Wind Loads: <**Insert loads**>.

Retain "Windborne-Debris Impact Resistance" Paragraphparagraph below to suit Project. The IBC BCNYS establishes criteria for buildings in hurricane-prone locations. In paragraph, "enhanced" option applies to essential facilities and has additional requirements. Verify requirements of authorities having jurisdiction. Verify which manufacturers have tested products and can demonstrate compliance.

* + - * 1. 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.

Insert increased heights if different from those in "Large-Missile Test" and "Small-Missile Test" subparagraphs below. For enhanced protection, delete "Small-Missile Test" Subparagraphsubparagraph.

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

Small-Missile Test: For glazing located between 30 feet (9.1 m) and [**60 feet (18.3 m)**] <**Insert dimension**> above grade.

* + - * 1. Thermal Movements: Allow for thermal movements from ambient and surface temperature changes.

Differential values in "Temperature Change" Subparagraphsubparagraph below (for aluminum in particular) are suitable for most of the United States.

Temperature Change: [**120 deg F (67 deg C), ambient; 180 deg F (100 deg C), material surfaces**] <**Insert temperature change**>.

* + - * 1. Operating Temperature Range: Automatic entrances shall operate within [**minus 20 to plus 122 deg F (minus 29 to plus 50 deg C)**] <**Insert temperature range**>.

First option in "Air Infiltration" Paragraphparagraph below at a static-air-pressure difference of 1.57 lbf/sq. ft. (75 Pa) complies with ASHRAE/IESNA 90.1. ASTM E283 requires using a static-air-pressure difference of 1.57 lbf/sq. ft. (75 Pa) unless otherwise indicated, which is equivalent to a 25-mph (40-km/h) wind. Static-air-pressure difference of 6.24 lbf/sq. ft. (300 Pa) is equivalent to a 50-mph (80-km/h) wind.

* + - * 1. Air Infiltration: Maximum air leakage through fixed glazing and framing areas of [**1.25 cfm/sq. ft. (6.4 L/s x sq. m)**] <**Insert value**> of fixed entrance-system area when tested in accordance with ASTM E283 at a minimum static-air-pressure difference of [**1.57 lbf/sq. ft. (75 Pa)**] [**6.24 lbf/sq. ft. (300 Pa)**] <**Insert value**>.
        2. Opening Force:

Requirements in "Power-Operated Doors" Subparagraphsubparagraph below are in accordance with the IBC BCNYS and NFPA 101 for power-operated, means-of-egress doors. The IBC BCNYS also requires compliance with BHMA A156.10. Verify requirements of authorities having jurisdiction.

Power-Operated Doors: Not more than 50 lbf (222 N) required to manually set door in motion if power fails, and not more than 15 lbf (67 N) required to open door to minimum required width.

Requirement in "Breakaway Device for Power-Operated Doors" Subparagraphsubparagraph below is in accordance with BHMA A156.10.

Breakaway Device for Power-Operated Doors: Not more than 50 lbf (222 N) required for a breakaway door or panel to open.

* + - * 1. Entrapment-Prevention Force:

Requirement in "Power-Operated Sliding Doors" Subparagraphsubparagraph below is in accordance with BHMA A156.10. Verify requirements of authorities having jurisdiction.

Power-Operated Sliding Doors: Not more than 30 lbf (133 N) required to prevent stopped door from closing.

* + - 1. SLIDING AUTOMATIC ENTRANCES
         1. General: Provide manufacturer's standard automatic entrances, including doors, sidelites, framing, headers, carrier assemblies, roller tracks, door operators, controls, and accessories required for a complete installation.

See the table at the end of the Evaluations for a list of manufacturers' products. Use this table in combination with manufacturers' catalogs or product data to insert series, type, model, and designations of other characteristics.

Copy "(All-Glass) (Sliding) (Telescoping) Automatic Entrance" Paragraphparagraph below and re-edit for each product.

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

Review products availability and usage. Revise as necessary to suit project requirements. Below are acceptable manufacturers. Stanley’s Dura-Glide and H

* + - * 1. [All-Glass] [Sliding] [**Telescoping**] Automatic Entrance <**Insert drawing designation**>:

[**Single-**] [**and**] [**Biparting-**]Sliding Units:

[Basis-of-Design Product: Manufacturer’s](http://www.specagent.com/Lookup?ulid=12807) Subject to compliance with requirements, provide [Stanley Access Technologies](http://www.specagent.com/Lookup?uid=123457195541); Dura-Glide 2000/3000 or a comparable product by one of the following:

[Besam Entrance Solutions; an ASSA ABLOY Group Company](http://www.specagent.com/Lookup?uid=123457195535).

[DORMA USA, Inc](http://www.specagent.com/Lookup?uid=123457195543).

[Horton Automatics; a division of Overhead Door Corporation](http://www.specagent.com/Lookup?uid=123457195537).

[NABCO Entrances, Inc](http://www.specagent.com/Lookup?uid=123457195539).

Or equal.

[**Single-**] [**and**] [**Biparting-**]Telescoping-Sliding Units:

Retain "Configuration, Single-Sliding"; and/or "Configuration, Biparting-Sliding"; or "Configuration, Telescoping" Subparagraphsubparagraphs below. Indicate arrangement and location of doors, sidelites, and transoms on Drawings. Pocketed sidelites in first two subparagraphs are discussed in "Safety Considerations" Article in the Evaluations.

Configuration, Single-Sliding: Single-sliding door with one sliding leaf[**, transom,**] [**and**] [**pocketed**] sidelite.

Traffic Pattern:: [**One**] [Two ] way.

Emergency Breakaway Capability: [**As indicated on Drawings**] [**Sliding leaf only**] [**Sliding leaf and sidelite**].

Mounting: [**Between jambs**] [**Surface**].

Configuration, Biparting-Sliding: Biparting-sliding doors with two sliding leaves[**, transom,**] [**and**] [**pocketed**] sidelites on each side.

Traffic Pattern:: [**One**] [Two ] way.

Emergency Breakaway Capability: [**As indicated on Drawings**] [**Sliding leaves only**] [**Sliding leaves and sidelites**].

Mounting: [**Between jambs**] [**Surface**].

Configuration, Telescoping: [**Single-telescoping-sliding door with two**] [**Biparting-telescoping-sliding doors with four**] sliding leaves[**, transom,**] and sidelite(s).

Traffic Pattern: [**One**] [**Two**] way.

Emergency Breakaway Capability: [**As indicated on Drawings**] [**Center leaves only**] [**All leaves**].

Mounting: Between jambs.

Operator Features:

Revise list below to suit Project. Consult manufacturers for availability and necessity of adjustability for specific applications. Belt drive system is more typical, however, retain both if either option is acceptable; review with basis-of-design product. Coordinate with hardware specification for key operation.

Power opening and closing.

Drive System: [**Chain**] [**or**] [**belt**].

Adjustable opening and closing speeds.

Adjustable hold-open time between zero and 30 seconds.

Obstruction recycle.

On-off/hold-open switch to control electric power to operator[**, key operated**].

<**Insert features required**>.

Sliding-Door Carrier Assemblies and Overhead Roller Tracks: Carrier assembly that allows vertical adjustment; consisting of nylon- or delrin-covered, ball-bearing-center steel wheels operating on a continuous roller track, or ball-bearing-center steel wheels operating on a nylon- or delrin-covered, continuous roller track. Support doors from carrier assembly by cantilever and pivot assembly.

Rollers: Minimum of two ball-bearing roller wheels and two antirise rollers for each active leaf.

Sliding-Door Threshold: Threshold members and bottom-guide-track system with stainless steel, ball-bearing-center roller wheels.

Retain "Configuration, Threshold" or "Configuration, No Threshold" Subparagraphsubparagraph below, or delete both and indicate sill configuration on Drawings. First subparagraph may be used with or without surface or recessed control mats. Coordinate with control system used.

Configuration, Threshold: Saddle-type threshold across door opening and [**surface-mounted**] [**recessed**] guide-track system at sidelites.

Configuration, No Threshold: No threshold across door opening and [**surface-mounted**] [**recessed**] guide-track system at sidelites.

Controls: Activation and safety devices [**as indicated on Drawings and**]in accordance with BHMA standards.

Retain option in "Controls" Subparagraphsubparagraph above, or retain one activation device and one safety device from subparagraphs below. Consult manufacturers for recommendations; revise to suit Project.

Motion sensor is the most common activation device, and wall push-plate switch or touchless switch is often used for clean rooms. Key switch is usually a supplementary activation device.

Activation Device, Motion Sensor: Mounted on each side of door header to detect pedestrians in activating zone and to open door.

Activation Device, Control Mat: Installed on ingress side of door to detect pedestrians in activating zone and to open door.

Activation Device, Switch: [Push-plate switch] [**Push-button switch**] [**Key switch**] [**Touchless switch**][ on each side of door] to activate door operator.

Retain one safety device subparagraph below with any activation device above.

Safety Device, Photoelectric Beams: Two photoelectric beams mounted in sidelite jambs on each side of door to detect pedestrians in presence zone and to prevent door from closing.

Safety Device, Presence Sensor Under Door Header and Photoelectric Beams: Presence sensor mounted to underside of door header and two photoelectric beams mounted in sidelite jambs on one side of the door to detect pedestrians in presence zone and to prevent door from closing.

Safety Device, Presence Sensor on Sides of Door Header and Photoelectric Beams: Presence sensor mounted on each side of door header and two photoelectric beams mounted in sidelite jambs on one side of the door to detect pedestrians in presence zone and to prevent door from closing.

Safety control mats in "Safety Device, Control Mat(s)" Subparagraph below are typically used only with activation control mats.

Safety Device, Control Mat(s): Control mat(s) installed on egress side of door to detect pedestrians in presence and safety zones and to prevent door from closing.

Presence sensor in "Sidelite Safety Device" Subparagraphsubparagraph below is a safety device offered by some manufacturers; it is an optional feature used with other safety devices. Retain if required.

Sidelite Safety Device: Presence sensor, mounted above each sidelite on side of door opening through which doors travel, to detect obstructions and to prevent door from opening.

Retain "Opening-Width Control" Subparagraphsubparagraph below only for exterior locations or where reduced opening-width control is required to conserve energy and reduce amount of air exchange.

Opening-Width Control: Two-position switch that in the normal position allows sliding doors to travel to full opening width and in the alternate position reduces opening to a selected partial opening width.

Retain "Finish" or "Metal Cladding and Finish" Subparagraph below.

Revise "Finish" Subparagraphsubparagraph below if different finish is required for components of automatic entrances. If more than one finish is required, indicate location of each on Drawings, in schedules, or by inserts. Class I anodic finish is thicker and retained for exterior applications and Class II finish is for interior applications.

Finish: Finish framing, door(s), and header with [**Class I, clear anodic finish**] [**Class II, clear anodic finish**] [**Class I, color anodic finish**] [**Class II, color anodic finish**] [**baked-enamel or powder-coat finish**] [**high-performance organic finish (two-coat fluoropolymer)**] [**high-performance organic finish (three-coat fluoropolymer)**] [**finish matching adjacent curtain wall**] [**finish matching adjacent storefront**].

Delete "Color" Subparagraphsubparagraph below only for clear anodic finishes. Color anodic finishes may vary in color range and availability among manufacturers.

Color: [**Light bronze**] [**Medium bronze**] [**Dark bronze**] [**Blackinsert other color**] [**As indicated by manufacturer's designations**] [**Match Architect's sample**] [**As selected by Architect from full range of industry colors and color densities**] [**Match adjacent aluminum framing**] [**match existing doors**] <**Insert color**>.

Retain "Metal Cladding and Finish" Subparagraph below only for metal-clad automatic entrances. Verify availability of metal cladding with manufacturers before specifying. Revise subparagraph if different finish is required for components of automatic entrances. If more than one finish is required, indicate location of each on Drawings, in schedules, or by inserts.

Metal Cladding and Finish: Clad framing, door(s), and header with [**No. 4 directional-satin-finish stainless steel sheet**] [**No. 8 mirrorlike reflective, nondirectional-polish-finish stainless steel sheet**] [**satin-brass sheet**] [**polished-brass sheet**] [**satin-bronze sheet**] [**polished-bronze sheet**] [**metal sheet in finish matching Architect's sample**] [**metal sheet in finish as selected by Architect from manufacturer's full range**] [**metal sheet in finish matching adjacent storefront**] <**Insert finish**>.

* + - 1. ENTRANCE COMPONENTS
         1. Framing Members: Extruded aluminum, minimum 0.125 inch (3.2 mm) thick and reinforced as required to support imposed loads.

Nominal Size: [**As indicated on Drawings**] [**1-3/4 by 4-1/2 inches (45 by 115 mm)**] [**1-3/4 by 6 inches (45 by 150 mm)**] <**Insert dimensions**>.

Retain "Extruded Glazing Stops and Applied Trim" Subparagraphsubparagraph below for separately framed sidelites or transoms.

Extruded Glazing Stops and Applied Trim: Minimum 0.062-inch (1.6-mm) wall thickness.

Retain "Stile and Rail Doors" Paragraphparagraph below for stile and rail doors.

* + - * 1. Stile and Rail Doors: 1-3/4-inch- (45-mm-) thick, glazed doors with minimum 0.125-inch- (3.2-mm-) thick, extruded-aluminum tubular stile and rail members. Mechanically fasten corners with reinforcing brackets that are welded, or incorporate concealed tie-rods that span full length of top and bottom rails.

Glazing Stops and Gaskets: [**Beveled**] [**Square**], snap-on, extruded-aluminum stops and preformed gaskets.

Verify, with manufacturers, availability of stile and rail dimensions in "Stile Design" and "Rail Design" subparagraphs below.

Stile Design: [**As indicated on Drawings**] [**Thin stile, less than 1-3/4-inch (45-mm) nominal width**] [**Narrow stile, 2-1/8-inch (55-mm) nominal width**] [Medium stile, 3-1/2-inch (90-mm) nominal width] [**Wide stile, more than 4-inch (100-mm) nominal width**].

Last option in "Rail Design" Subparagraphsubparagraph below is required for manual doors along an accessible route but is not required for automatic doors.

Rail Design: [**As indicated on Drawings**] [**5-inch (125-mm) nominal height**] [**6-1/2-inch (165-mm) nominal height**] [**10-inch (254-mm) nominal height**].

Retain "Muntin Bars" Subparagraphsubparagraph below if required. Many manufacturers include muntins as standard.

Muntin Bars: Horizontal tubular rail member for each door; match stile design and finish.

Retain "All-Glass Sliding Doors" Paragraph below for all-glass sliding doors.

* + - * 1. All-Glass Sliding Doors: Fabricated from 1/2-inch- (13-mm-) thick tempered glass, with polished vertical edges and minimum 0.125-inch- (3.2-mm-) thick, extruded-aluminum top and bottom rails.

Rail Design: [**3-1/2-inch (90-mm)**] [**5-inch (125-mm)**] nominal height.

* + - * 1. [**Sidelite(s)**] [**and**] [**Transom**]: 1-3/4-inch- (45-mm-) deep [**sidelite(s)**] [**and**] [**transom**] with minimum 0.125-inch- (3.2-mm-) thick, extruded-aluminum tubular stile and rail members matching door design.

Retain one of three options in "Glazing Stops and Gaskets" Subparagraph below; second and third option are for all-glass sliding doors.

Glazing Stops and Gaskets: [Same materials and design as for stile and rail door] [**Beveled, snap-on, extruded-aluminum stops and preformed gaskets**] [**Square, snap-on, extruded-aluminum stops and preformed gaskets**].

Retain "Muntin Bars" Subparagraphsubparagraph below if required for sidelites.

Muntin Bars: Horizontal tubular rail members for each sidelite; match stile design.

* + - * 1. Headers: Fabricated from minimum 0.125-inch- (3.2-mm-) thick extruded aluminum and extending full width of automatic entrance units to conceal door operators and controls. Provide hinged or removable access panels for service and adjustment of door operators and controls. Secure panels to prevent unauthorized access.

Mounting:: [**Surface mounted**] [Concealed, with one side of header flush with framing].

Capacity: Capable of supporting doors of up to [**175 lb (79 kg) per leaf over spans of up to 14 feet (4.3 m)**] <**Insert load and span required**> without intermediate supports.

Provide sag rods for spans exceeding 14 feet (4.3 m).

* + - * 1. Brackets and Reinforcements: High-strength aluminum with nonstaining, nonferrous shims for aligning system components.
        2. Signage: As required by cited BHMA standard.

First option in "Application Process" Subparagraphsubparagraph below is most common.

Application Process: [**Decals**] [**Silk-screened**] [**Door manufacturer's standard process**] <**Insert requirement**>.

Retain subparagraph below for signs on field-installed glass surfaces.

Provide sign materials with instructions for field application after glazing is installed.

* + - 1. MATERIALS
         1. Aluminum: Alloy and temper recommended by manufacturer for type of use and finish indicated.

Extrusions: ASTM B221 (ASTM B221M).

Sheet: ASTM B209 (ASTM B209M).

* + - * 1. Steel Reinforcement: Reinforcement with corrosion-resistant primer complying with SSPC-PS Guide No. 12.00 applied immediately after surface preparation and pretreatment. Use surface preparation methods in accordance with recommendations in SSPC-SP COM and prepare surfaces in accordance with applicable SSPC standard.
        2. Stainless Steel Bars: ASTM A276/A276M or ASTM A666, [**type 304**] [**type 316**] <**Insert type**>.
        3. Stainless Steel Tubing: ASTM A554, [**Grade MT 304**] [**Grade MT 316**] <**Insert grade**>.

Retain one or more of "Stainless Steel Sheet," "Brass Sheet," and "Bronze Sheet" paragraphs below for metal-clad finishes.

* + - * 1. Stainless Steel Sheet: ASTM A240/A240M or ASTM A666, [**type 304**] [**type 316**] <**Insert type**>, stretcher-leveled standard of flatness, in entrance manufacturer's standard thickness.

Retain "Brass Sheet" Paragraph below for brassy yellow color; revise to suit Project.

* + - * 1. Brass Sheet: ASTM B36/B36M, Alloy UNS No. C26000 (cartridge brass, 70 percent copper), in entrance manufacturer's standard thickness.

Retain "Bronze Sheet" Paragraph below for bronze look. Neither alloy is a true tin bronze, but both closely match color of extruded architectural bronze (also not a true tin bronze). Revise if only one of these two alloys is acceptable or to specify another alloy.

* + - * 1. Bronze Sheet: ASTM B36/B36M, Alloy UNS No. C28000 (muntz metal, 60 percent copper) or Alloy UNS No. C23000 (red brass, 85 percent copper), in entrance manufacturer's standard thickness.

Retain "Expanded Aluminum Mesh" or "Polycarbonate Sheet" Paragraphparagraph below for guide-rail infill panel if required. Revise to suit Project, or insert another material if required.

Options in "Expanded Aluminum Mesh" Paragraphparagraph below are types included in ASTM F1267.

* + - * 1. Expanded Aluminum Mesh: [**Expanded**] [**Expanded and flattened**] aluminum sheet in accordance with the geometry of ASTM F1267.
        2. Polycarbonate Sheet: ASTM C1349, Appendix X1, type II, coated, mar-resistant, UV-stabilized polycarbonate with coating on both surfaces.
        3. Glazing: As specified in [**Section 088000 "Glazing."**] [**Section 088853 "Security Glazing."**]
        4. Sealants and Joint Fillers: As specified in Section 079200 "Joint Sealants."

Retain "Nonmetallic, Shrinkage-Resistant Grout" Paragraphparagraph below for leveling floor tracks.

* + - * 1. Nonmetallic, Shrinkage-Resistant Grout: Premixed, nonmetallic, noncorrosive, nonstaining grout; complying with ASTM C1107/C1107M; of consistency suitable for application.
        2. Bituminous Coating: Cold-applied asphalt emulsion complying with ASTM D1187/D1187M.
        3. Fasteners and Accessories: Corrosion-resistant, nonstaining, nonbleeding fasteners and accessories compatible with adjacent materials.
      1. DOOR OPERATORS AND CONTROLS
         1. General: Provide operators and controls, which include activation and safety devices, in accordance with BHMA standards, for condition of exposure, and for long-term, maintenance-free operation under normal traffic load for type of occupancy indicated.
         2. Door Operators: Provide door operators of size recommended by manufacturer for door size, weight, and movement.

Door Operator Performance: Door operators shall open and close doors and maintain them in fully closed position when subjected to Project's design wind loads.

Electromechanical Operators: Concealed, self-contained, overhead units powered by fractional-horsepower, permanent-magnet dc motor; with closing speed controlled mechanically by gear train and dynamically by braking action of electric motor; with solid-state microprocessor controller; complying with UL 325; and with manual operation with power off.

Retain one or more activation and safety devices in this article; available devices vary among manufacturers. GenerallyGenerally, indicate location of each device for each door opening on Drawings, because some devices can be used for both activation and safety. Coordinate with devices retained, if any, in "Sliding Automatic Entrances" Article. Consult manufacturers and revise retained paragraphs as needed.

* + - * 1. Motion Sensors: Self-contained, K-band-frequency, microwave-scanner units; fully enclosed by their plastic housings; adjustable to provide detection-field sizes and functions required by BHMA A156.10.

Provide capability for switching between bi- and unidirectional detection.

For one-way traffic, sensor on egress side shall not be active when doors are fully closed.

* + - * 1. Presence Sensors: Self-contained, active-infrared scanner units; adjustable to provide detection-field sizes and functions required by BHMA A156.10. Sensors shall remain active at all times.
        2. Photoelectric Beams: Pulsed infrared, sender-receiver assembly for recessed mounting. Beams shall not be active when doors are fully closed.

Control mats and activation switches in "Control Mats," "Push-Plate Switch," "Touchless Switch," "Push-Button Switch," "Key Switch," and "Wireless or Remote Radio Control Switch" paragraphs below vary among manufacturers. Consult manufacturers and revise retained devices as needed.

* + - * 1. Control Mats: 1/2-inch- (13-mm-) thick, synthetic-rubber or flexible-plastic mat in safety-ribbed surface pattern, with extruded-aluminum frame; with pressure switches for low-voltage control wiring; and complying with performance requirements of BHMA A156.10.

Frame: [**Recessed to fit flush with floor, with concealed anchors**] [**Surface mounted, with tapered safety edge**].

Size: As indicated, but no smaller than required by BHMA A156.10, including Appendix A.

If needed, insert requirements for monograms and directional arrows.

Color: [**As indicated by manufacturer's designations**] [**Match Architect's sample**] [**As selected by Architect from full range of industry colors and color densities**].

* + - * 1. Push-Plate Switch: Momentary-contact door-control switch with flat push-plate actuator[**, with contrasting-colored, engraved message**].

Retain "Configuration, Round", "Configuration, Square", or "Configuration, Rectangular" Subparagraphsubparagraph below. Insert mounting height for wall switches if not indicated on Drawings.

Configuration, Round: Round push plate with 4-by-4-inch (100-by-100-mm) junction box.

Mounting: [**As indicated on Drawings**] [**Recess mounted, semiflush in wall**] [**Surface mounted on wall**].

Configuration, Square: Square push plate with 4-by-4-inch (100-by-100-mm) junction box.

Mounting: [**As indicated on Drawings**] [**Recess mounted, semiflush in wall**] [**Surface mounted on wall**].

Configuration, Rectangular: Rectangular push plate with 2-by-4-inch (50-by-100-mm) junction box.

Mounting: [**As indicated on Drawings**] [**Recess mounted, semiflush in wall**] [**Recess mounted in door jamb**] [**Surface mounted on wall**] [**Surface mounted on post**] [**Surface mounted on guide rail**].

Push-Plate Material: [**Stainless steel**] [**Plastic**], as selected by ArchitectDirector’s Representative from manufacturer's full range.

Message: [**Plain face with no message.**] [**"Push to Open."**] [**International symbol of accessibility.**] [**International symbol of accessibility and "Push to Open."**]

* + - * 1. Touchless Switch: Hands-free-activation door-control switch with flat motion sensor faceplate[**with contrasting-colored, engraved message**].

Insert mounting height for wall switches if not indicated on Drawings.

Configuration: [**6-inch (152.4-mm) round**] [**4.56-by-4.56-inch (115.8-by-115.8-mm) (double gang) square**] [**2.77-by-4.56-inch (70-by-115.8-mm) (single gang) rectangular**] [**1.68-by-4.56-inch (42.6-by-115.8-mm) jamb-style**] faceplate.

Mounting: [**As indicated on Drawings**] [**Recess mounted in wall**] [**Recess mounted in door jamb**] [**Surface mounted on wall**].

Faceplate Material: [**Stainless steel**] [**Plastic**] [**Stainless steel with backlight acrylic window**], as selected by ArchitectDirector’s Representative from manufacturer's full range.

Message: [**"Wave to Open"**] [**"Wave to Open" and wave symbol**] [**International symbol of accessibility**] [**International symbol of accessibility, "Wave to Open," and wave symbol**].

* + - * 1. Push-Button Switch: Momentary-contact door-control switch with one red-button actuator; enclosed in nominal [**2-by-4-inch (50-by-100-mm)**] [**4-by-4-inch (100-by-100-mm)**] junction box.

Provide faceplate engraved with "Press to Open" letters[**and international symbol of accessibility**] in contrasting color.

Provide blue plastic cover engraved with "Press Button to Open" in white letters and international symbol of accessibility.

Mounting: [**As indicated on Drawings**] [**Surface mounted on wall**] [**Surface mounted on post**] [**Surface mounted on guide rail**] [**Recess mounted in wall**].

Faceplate Material: [**Stainless steel**] [**Painted metal**], as selected by Architect from manufacturer's full range.

* + - * 1. Key Switch: Recess-mounted, door-control switch with key-controlled actuator; enclosed in 2-by-4-inch (50-by-100-mm) junction box. Provide faceplate engraved with letters indicating switch functions.

Faceplate Material: [**Stainless steel**] [**Painted metal**], as selected by ArchitectDirector’s Representative from manufacturer's full range.

Functions: [**On-off, momentary contact**] [**On-off, maintained contact**] [**Two-way automatic, hold open, one-way exit, and off**] [**Two-way automatic, hold open, one-way exit, off, full open, and partial open**].

Mounting: [**As indicated on Drawings**] [**Recess mounted, semiflush in wall**] [**Recess mounted in door jamb**] [**Surface mounted on wall**] [**Surface mounted on post**].

* + - * 1. Wireless or Remote Radio Control Switch: Auxiliary radio control system consisting of header-mounted receiver and [**wall-mounted**] [**hand-held, battery-operated**] transmitter switch[**for each entrance**] <**Insert requirement**>.

Wall-Mounted Transmitter Switch: One red-button, momentary-contact actuator enclosed in 4-by-4-inch (100-by-100-mm) junction box. Provide blue plastic cover engraved with "Press Button to Open" in white letters and international symbol of accessibility.

If required, insert another type of sensing device, switch, or access-control device. Verify availability with manufacturers.

* + - * 1. Electrical Interlocks: Unless units are equipped with self-protecting devices or circuits, provide electrical interlocks to prevent activation of operator when door is locked, latched, or bolted.
      1. HARDWARE

Before revising this article, verify requirements for accessible entrances, emergency-exit doors, and other requirements of authorities having jurisdiction.

If various door and hardware combinations are needed, insert requirements in "Sliding Automatic Entrances" Article.

* + - * 1. General: Provide units in sizes and types recommended by automatic entrance and hardware manufacturers for entrances and uses indicated. Finish exposed parts to match door finish[**unless otherwise indicated**].
        2. Breakaway Device for Power-Operated Doors: Device that allows door to swing out in direction of egress to full 90 degrees from any operating position. Maximum force to open door shall be as stipulated in "Performance Requirements" Article. Interrupt powered operation of door operator while in breakaway mode.

Include [**one adjustable detent device mounted at the top of each breakaway panel**] [**two adjustable detent devices mounted in each breakaway panel; one top mounted and one bottom mounted**] to control breakaway force.

Retain "Panel Closer" or "Limit Arms" Subparagraphsubparagraph below for detent device.

Panel Closer: Factory-installed concealed hydraulic door closer.

Limit Arms: Limit swing to 90 degrees, spring loaded with adjustable friction damping.

* + - * 1. Deadlocks: Deadbolt operated by exterior cylinder and interior thumb turn, with minimum 1-inch- (25-mm-) long throw bolt; BHMA A156.5, Grade 1.

Cylinders: [**BHMA A156.5, Grade 1, six-pin mortise type.**] [**As specified in Section 087100 "Door Hardware."**] [**As specified in Section 087111 "Door Hardware (Descriptive Specification)."**]

Retain "Keying" and "Keys" subparagraphs below if cylinders are provided by door manufacturer.

Keying: [**No master**] [**Integrate into building master**] key system.

Keys: [**Two**] [**Three**] <**Insert number**> for each cylinder.

Retain first option in "Deadbolts" Subparagraphsubparagraph below for stile and rail doors; retain second option for all-glass sliding doors.

Deadbolts: [**Laminated-steel hook**] [**Steel**], mortise type, BHMA A156.5, Grade 1.

Retain "Two-Point Locking for Stile and Rail Sliding Doors" or "Three-Point Locking for Stile and Rail Sliding Doors" ubparagraphsubparagraph below if required. Delete if exit devices are required. Verify requirements of authorities having jurisdiction.

Two-Point Locking for Stile and Rail Sliding Doors: Mechanism in stile of active door leaf that automatically extends second lockbolt into [**overhead carrier assembly**] [**threshold**].

Three-Point Locking for Stile and Rail Sliding Doors: Mechanism in stile of active door leaf that automatically extends lockbolts into overhead carrier assembly and threshold.

Retain "Lock/Unlock Indicator" and "Armored Strike" subparagraphs below to suit project. Coordinate with access control requirements.

Lock/Unlock Indicator: Lock position indicators integrated with locking system. Stile is mounted on secure side of door. Visual display of lock position as follows: "OPEN" in black letters when unlocked, and "LOCKED" in red letters when locked.

Armored Strike: Reinforced security strike plate.

If retaining "Automatic Locking" Paragraphparagraph below, delete "Deadlocks" Paragraphparagraph above and "Access-Control Locking" below. Retain first paragraph below if required for security purposes. An automatic locking system locks the sliding motion only; it does not lock the breakout function. Verify requirements with authorities having jurisdiction. "Fail-secure" means that when power is off, door is locked. "Fail-safe" means that when power is off, door is unlocked. Fail-secure is typical for automatic entrances.

* + - * 1. Automatic Locking: Electrically controlled device mounted in header that automatically locks sliding door in closed position, preventing door panels from sliding manually. Provide fail- [**secure**] [**safe**] operation if power fails.

Retain first option in "Power Interruption" Subparagraphsubparagraph below if retaining fail-secure option in "Automatic Locking" Paragraphparagraph above. Retain second option below if retaining fail-safe option above.

Power Interruption: [**Lock shall be engaged, preventing doors from sliding manually**] [**Lock shall be disengaged, allowing doors to slide manually**].

Means of Egress: Standard breakaway feature.

If retaining "Access-Control Locking" Paragraphparagraph below, delete "Deadlocks" and "Automatic Locking" paragraphs above. Retain paragraph below if required for security purposes. An access control system locks sliding door in closed position and secures breakout function to only allow breakout from inside; it cannot be broken out from the exterior. Access-control locking requires panic hardware. Verify requirements with authorities having jurisdiction. "Fail-secure" means that when power is off, door is locked. "Fail-safe" means that when power is off, door is unlocked. Fail-secure is typical for automatic entrances.

* + - * 1. Access-Control Locking: Electrically controlled device mounted in header that automatically locks sliding door in closed position, preventing door panels from sliding manually. Provide fail- [**secure**] [**safe**] operation if power fails.

Include concealed, vertical-rod, tamper-proof exit devices, complying with UL 305, with latching into threshold and overhead carrier assembly and released by [**full-width panic bar**] [**push paddle**], [**surface mounted**] [**recessed**] [**flush mounted and concealed within horizontal muntin bar**], prohibiting manual breakout of door(s) from exterior.

Retain first option in "Power Interruption" Subparagraphsubparagraph below if retaining fail-secure option in "Access-Control Locking" Paragraphparagraph above. Retain second option below if retaining fail-safe option in "Access-Control Locking" Paragraphparagraph above.

Power Interruption: [**Lock shall be engaged, preventing doors from sliding manually**] [**Lock shall be disengaged, allowing doors to slide manually**].

Means of Egress: Vertical rod exit device.

Retain subparagraph below only if sidelites with emergency breakaway capability are required.

Include locking devices for sidelites to prevent manual breakout.

Retain "Uninterrupted Power Supply" Paragraphparagraph below if required for project. Verify requirements with authorities having jurisdiction. Verify availability with manufacturers. Some manufacturers may also have other forms of battery backup.

* + - * 1. Uninterrupted Power Supply: UL 1778, fully integrated unit mounted [**within header**] [**above ceiling**].

Power Interruption: Supply power to operator, controls, activation device, and safety systems of sliding automatic door for up to [**1.5**] <**Insert number**> hours of normal operation.

Include low-battery shutdown feature to safely open or close door prior to complete battery discharge.

Include audible battery replacement alarm to indicate that battery will no longer accept a charge and replacement is required.

* + - * 1. Dustproof Strikes for All-Glass Sliding Doors: [**Recessed, floor type, BHMA A156.16, Grade 1, to receive deadbolt.**] [**As specified in Section 087100 "Door Hardware."**] [**As specified in Section 087111 "Door Hardware (Descriptive Specification)."**]
        2. Weather Stripping: Replaceable components.

Sliding Type: AAMA 701/702, made of wool, polypropylene, or nylon woven pile with nylon-fabric or aluminum-strip backing.

* + - 1. ACCESSORIES
         1. Guide Rails:

Retain one of two subparagraphs below if guide rails are required. BHMA and IBC BCNYS do not require guide rails for sliding doors. However, guide rails might still be useful in some door layout conditions and where control mats are used.

[**Anodized aluminum**] [**Baked-enamel or powder-coated aluminum**] [**Stainless steel**], fabricated from [**bars**] [**or**] [**tubing**], minimum 30 inches (762 mm) high, and finished to match doors unless otherwise indicated; positioned and projecting from face of door jamb for distance as indicated[**, but not less than that required by BHMA A156.10 for type of door and direction of travel**] <**Insert requirement**>; with filler panel.

Filler Panel: [**Expanded aluminum mesh**] [**Clear polycarbonate sheet**] [**Colored polycarbonate sheet**] <**Insert material**>.

Retain first subparagraph below if required; delete if shown on Drawings.

Orient expanded aluminum mesh with long dimension of diamonds [**parallel to top rail**] [**perpendicular to top rail**].

Color: [**Match ArchitectDirector’s Representative's sample**] [**As selected by ArchitectDirector’s Representative from manufacturer's full range**] <**Insert color**>.

Mounting: [**As indicated on Drawings**] [**Jamb and floor**] [**Floor, freestanding**].

Retain "Aluminum Finish" or "Stainless Steel Finish" Subparagraphsubparagraph below; revise to suit Project.

Aluminum Finish: [**Class I, clear anodic finish**] [**Class II, clear anodic finish**] [**Class I, color anodic finish**] [**Class II, color anodic finish**] [**Baked-enamel or powder-coat finish**] [**Finish matching door and frame**] <Insert finish>.

Delete "Color" Subparagraphsubparagraph below only for clear anodic finishes. Color anodic finishes may vary in color range and availability among manufacturers.

Color: [**Light bronze**] [**Medium bronze**] [**Dark bronze**] [**Black**] [**Match ArchitectDirector’s Representative's sample**] [**As selected by ArchitectDirector’s Representative from full range of industry colors and color densities**] <**Insert color**>.

Stainless Steel Finish: [**No. 4 directional-satin-finish stainless steel**] [**Finish matching door and frame**] <**Insert finish**>.

If retaining subparagraph below, verify that guide-rail design and layout complies with BHMA A156.10.

See [**Section 055213 "Pipe and Tube Railings."**] [**Section 057300 "Decorative Metal Railings."**]

* + - 1. FABRICATION
         1. General: Factory fabricate automatic entrance components to designs, sizes, and thicknesses indicated and to comply with indicated standards.

Form aluminum shapes before finishing.

Weld in concealed locations to greatest extent possible to minimize distortion or discoloration of finish. Remove weld spatter and welding oxides from exposed surfaces by descaling or grinding.

Use concealed fasteners to greatest extent possible. Where exposed fasteners are required, use countersunk Phillips flat-head machine screws[**, finished to match framing**] [**, fabricated from stainless steel**].

Where fasteners are subject to loosening or turning out from thermal and structural movements, wind loads, or vibration, use self-locking devices.

Reinforce members as required to receive fastener threads.

Where aluminum will contact dissimilar metals, protect against galvanic action by painting contact surfaces with primer or by applying sealant or tape recommended by manufacturer for this purpose.

* + - * 1. Framing: Provide automatic entrances as prefabricated assemblies. Complete fabrication, assembly, finishing, hardware application, and other work before shipment to Project site.

Fabricate tubular and channel frame assemblies with welded or mechanical joints. Provide subframes and reinforcement as required for a complete system to support required loads.

Perform fabrication operations in manner that prevents damage to exposed finish surfaces.

Form profiles that are sharp, straight, and free of defects or deformations.

Provide components with concealed fasteners and anchor and connection devices.

Fabricate components with accurately fitted joints, with ends coped or mitered to produce hairline joints free of burrs and distortion.

Fabricate exterior components to drain water passing joints, condensation occurring within framing members, and moisture migrating within system to exterior. Provide anchorage and alignment brackets for concealed support of assembly from building structure.

Allow for thermal expansion of exterior units.

* + - * 1. Doors: Factory fabricated and assembled in profiles indicated. Reinforce as required to support imposed loads and for installing hardware.

Retain "Metal Cladding" Paragraphparagraph below only for metal-clad finishes.

* + - * 1. Metal Cladding: Factory-fabricated and -installed metal cladding, completely covering all visible surfaces as part of prefabricated entrance assembly before shipment to Project site.

Perform fabrication operations in manner that prevents damage to exposed finish surfaces.

Form profiles that are sharp, straight, and free of defects or deformations.

Provide components with concealed fasteners and anchor and connection devices.

Fabricate components with accurately fitted joints, with ends coped or mitered to produce hairline joints free of burrs and distortion.

Fabricate exterior components to drain water passing joints, condensation occurring within framing members, and moisture migrating within system to exterior. Allow for thermal expansion at exterior entrances.

* + - * 1. Door Operators: Factory fabricated and installed in headers, including adjusting and testing.
        2. Glazing: Fabricate framing with minimum glazing edge clearances for thickness and type of glazing indicated, in accordance with GANA's "Glazing Manual."

Insert requirements for factory glazing if available from manufacturers. Automatic entrances are generally field glazed.

* + - * 1. Hardware: Factory install hardware to greatest extent possible; remove only as required for final finishing operation and for delivery to and installation at Project site. Cut, drill, and tap for factory-installed hardware before applying finishes.

Provide sliding-type weather stripping, mortised into door, at perimeter of doors[**and breakaway sidelites**].

* + - * 1. Controls:

General: Factory install activation and safety devices in doors and headers as required by BHMA A156.10 for type of door and direction of travel.

Install photoelectric beams in vertical jambs of sidelites, with dimension above finished floor as follows:

Top Beam: [**48 inches (1219 mm)**] <**Insert dimension**>.

Bottom Beam: [**24 inches (610 mm)**] <**Insert dimension**>.

* + - 1. GENERAL FINISH REQUIREMENTS
         1. Protect mechanical finishes on exposed surfaces from damage by applying a strippable, temporary protective covering before shipping.

Retain first paragraph below for coatings and anodic finishes.

* + - * 1. Apply organic and anodic finishes to formed metal after fabrication unless otherwise indicated.
        2. Appearance of Finished Work: Noticeable variations in same piece are unacceptable. Variations in appearance of adjoining components are acceptable if they are within the range of approved Samples and are assembled or installed to minimize contrast.
      1. ALUMINUM FINISHES

Some manufacturers of sliding automatic entrances use different systems of finish designation than the Aluminum Association finishes below; verify with manufacturers. See evaluations.

If retaining more than one finish in paragraphs below, indicate location of each on Drawings or by inserts.

Retain one of two options in "Clear Anodic Finish" Paragraphparagraph below. Verify availability with manufacturers.

* + - * 1. Clear Anodic Finish: AAMA 611, [**AA-M12C22A41, Class I, 0.018 mm**] [**AA-M12C22A31, Class II, 0.010 mm**] or thicker.

Retain one of two options in "Color Anodic Finish" Paragraphparagraph below. Verify availability with manufacturers.

* + - * 1. Color Anodic Finish: AAMA 611, [**AA-M12C22A42/A44, Class I, 0.018 mm**] [**AA-M12C22A32/A34, Class II, 0.010 mm**] or thicker.

"Baked-Enamel or Powder-Coat Finish" Paragraph below references AAMA standard for pigmented organic coating on extrusions and panels.

* + - * 1. Baked-Enamel or Powder-Coat Finish: AAMA 2603 except with a minimum dry film thickness of 1.5 mils (0.04 mm). Comply with coating manufacturer's written instructions for cleaning, conversion coating, and applying and baking finish.

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

Retain "High-Performance Organic Finish, Two-Coat" or "High-Performance Organic Finish, Three-Coat" Paragraph below; if both are required, indicate location of each system on Drawings, in schedules, or by inserts. Retain AAMA 2604 or AAMA 2605 for high- or superior-performance organic coatings, respectively, on extrusions and panels. If specific products are required, name coating manufacturers and products.

* + - * 1. High-Performance Organic Finish, Two-Coat: Fluoropolymer finish complying with [**AAMA 2604**] [**AAMA 2605**] and containing not less than [**50**] [**70**] percent PVDF resin by weight in color coat. Prepare, pretreat, and apply coating to exposed metal surfaces to comply with coating and resin manufacturers' written instructions.

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

* + - * 1. High-Performance Organic Finish, Three-Coat: Fluoropolymer finish complying with AAMA 2605 and containing not less than [**50**] [**70**] percent PVDF resin by weight in both color coat and clear topcoat. Prepare, pretreat, and apply coating to exposed metal surfaces to comply with coating and resin manufacturers' written instructions.

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

1. EXECUTION
   * + 1. EXAMINATION
          1. Examine conditions, with Installer present, for compliance with requirements for installation tolerances, header support, and other conditions affecting performance of automatic entrances.
          2. Examine roughing-in for electrical systems to verify actual locations of power connections before automatic entrance installation.
          3. Proceed with installation only after unsatisfactory conditions have been corrected.
       2. INSTALLATION
          1. General: Install automatic entrances according to manufacturer's written instructions and cited BHMA A156.10 for direction of pedestrian travel, including signage, controls, wiring, and connection to the building's power supply.

Do not install damaged components. Fit frame joints to produce hairline joints free of burrs and distortion. Rigidly secure nonmovement joints. Seal joints watertight.

Where aluminum will contact dissimilar metals, protect against galvanic action by painting contact surfaces with primer or by applying sealant or tape recommended by manufacturer for this purpose.

Where aluminum will contact concrete or masonry, protect against corrosion by painting contact surfaces with bituminous coating.

* + - * 1. Entrances: Install automatic entrances plumb and true in alignment with established lines and grades without warp or rack of framing members and doors. Anchor securely in place.

Retain first subparagraph below for field-installed hardware items.

Install surface-mounted hardware using concealed fasteners to greatest extent possible.

Set headers, carrier assemblies, tracks, operating brackets, and guides level and true to location with anchorage for permanent support.

Install components to drain water passing joints, condensation occurring within framing members, and moisture migrating within system to exterior.

Level recesses for recessed thresholds using nonshrink grout.

* + - * 1. Door Operators: Connect door operators to electrical power distribution system.

Retain "Access-Control Devices" Paragraphparagraph below only if inserting access-control devices in Part 2.

* + - * 1. Access-Control Devices: Connect access-control devices to access-control system, as specified in Section 281300 "Access Control Software and Database Management."
        2. Controls: Install and adjust activation and safety devices according to manufacturer's written instructions and cited BHMA standard for direction of pedestrian travel. Connect control wiring in accordance with Section 260519 "Low-Voltage Electrical Power Conductors and Cables."

Retain "Guide Rails" Paragraphparagraph below if specifying guide rails in Part 2. Delete if specifying guide rails in another Section.

* + - * 1. Guide Rails: Install rails in accordance with BHMA A156.10, including Appendix A, and manufacturer's written instructions unless otherwise indicated.

Retain "Glazing" Paragraphparagraph below unless requiring factory glazing in Part 2.

* + - * 1. Glazing: Install glazing as specified in [**Section 088000 "Glazing."**] [**Section 088853 "Security Glazing."**]
        2. Sealants: Comply with requirements specified in Section 079200 "Joint Sealants" to provide weathertight installation.

Set [**thresholds,**] [**bottom-guide-track system,**]framing members and flashings in full sealant bed.

Seal perimeter of framing members with sealant.

* + - * 1. Signage: Apply signage on both sides of each door[**and breakaway sidelite**], as required by cited BHMA standard for direction of pedestrian travel.
        2. Wiring within Automatic Entrance Enclosures: Bundle, lace, and train conductors to terminal points with no excess and without exceeding manufacturer's written limitations on bending radii. Provide and use lacing bars and distribution spools.
      1. FIELD QUALITY CONTROL

Retain "Certified Inspector" and "Perform the following tests and inspections" paragraphs below to identify who shall perform tests and inspections. If retaining second option in "Certified Inspector" Paragraph or if retaining "Perform the following tests and inspections" Paragraph, retain "Field quality-control reports" Paragraph in "Informational Submittals" Article.

* + - * 1. Certified Inspector: [**Owner will engage**] [Engage ] a Certified Inspector to test and inspect components, assemblies, and installations, including connections.

Retain "Perform the following tests and inspections" Paragraph below to require Contractor to perform tests and inspections.

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

Test and inspect each automatic entrance, using AAADM inspection forms, to determine compliance of installed systems with applicable BHMA standards.

See Section 014000 "Quality Requirements" for retesting and reinspecting requirements and Section 017300 "Execution" for requirements for correcting the Work.

* + - * 1. Automatic entrances will be considered defective if they do not pass tests and inspections.
        2. Prepare test and inspection reports.
      1. ADJUSTING
         1. Adjust hardware, moving parts, door operators, and controls to function smoothly, and lubricate as recommended by manufacturer; comply with requirements of applicable BHMA standards.

Retain subparagraph below for exterior doors.

Adjust exterior doors for tight closure.

* + - * 1. Readjust door operators and controls after repeated operation of completed installation equivalent to three days' use by normal traffic (100 to 300 cycles).
        2. Occupancy Adjustments: When requested within [**12**] <**Insert number**> months of date of Substantial Completion, provide on-site assistance in adjusting system to suit actual occupied conditions. Provide up to [**two**] <**Insert number**> visits to Project during other-than-normal occupancy hours for this purpose.
      1. CLEANING
         1. Clean glass and metal surfaces promptly after installation. Remove excess glazing and sealant compounds, dirt, and other substances. Repair damaged finish to match original finish.

Comply with requirements in [**Section 088000 "Glazing"**] [**Section 088853 "Security Glazing"**] for cleaning and maintaining glass.

* + - 1. MAINTENANCE SERVICE

Verify with Owner Director’s Representative that maintenance service is required for Project.

* + - * 1. Initial Maintenance Service: Beginning at Substantial Completion, maintenance service shall include [**three**] [**six**] [**nine**] [**12**] months' full maintenance by skilled employees of automatic entrance Installer. Include [**monthly**] [**quarterly**] preventive maintenance, repair or replacement of worn or defective components, lubrication, cleaning, and adjusting as required for proper automatic entrance operation. Parts and supplies shall be manufacturer's authorized replacement parts and supplies.

Engage a Certified Inspector to perform safety inspection after each adjustment or repair and at end of maintenance period. Furnish completed inspection reports to OwnerDirector’s Representative.

Retain one of two subparagraphs below. Generally, retain second subparagraph, which adds appreciable cost, only for critical locations.

Perform maintenance, including emergency callback service, during normal working hours.

Include 24-hour-per-day, 7-day-per-week emergency callback service.

* + - 1. DEMONSTRATION
         1. Engage a Company Service Advisor factory-authorized service representative to train OwnerDirector’s Representative's maintenance personnel to adjust, operate, and maintain automatic entrances.

END OF SECTION 084229.23