

SECTION 08 42 29.23 50  
SLIDING AUTOMATIC ENTRANCE DOORS

PART 1 GENERAL

1.1 REFERENCES

1.2

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.

AMERICAN ARCHITECTURAL MANUFACTURERS ASSOCIATION (AAMA)

AAMA 611 (1998) Voluntary Specification for

Anodized Architectural Aluminum; includes  
604.2, 606.1, 607.1 and 608.1 (which are  
no longer available as separate documents)

AMERICAN ASSOCIATION OF AUTOMATIC DOOR MANUFACTURERS (AAADM)

AAADM American Association of Automatic Door  
Manufacturers

AMERICAN WELDING SOCIETY (AWS)

AWS A5.10/A5.10M (1999) Bare Aluminum and Aluminum Alloy

Welding Electrodes and Rods

AWS D1.2 (2003) Structural Welding Code - Aluminum

AMERICAN SOCIETY OF CIVIL ENGINEERS (ASCE)

ASCE 7 (2005) Minimum Design Loads for Buildings  
and Other Structures

ASTM INTERNATIONAL (ASTM)

ASTM B 209 (2004) Aluminum and Aluminum-Alloy Sheet  
and Plate

ASTM B 221 (2005) Aluminum and Aluminum-Alloy  
Extruded Bars, Rods, Wire, Profiles, and  
Tubes

ASTM C 1107 (2002) Packaged Dry, Hydraulic-Cement  
Grout(Nonshrink)

ASTM E 283 (1991; R 1999) Determining the Rate of Air  
Leakage Through Exterior Windows, Curtain  
Walls, and Doors Under Specified Pressure  
Differences Across the Specimen

BUILDERS HARDWARE MANUFACTURERS ASSOCIATION (BHMA)

ANSI/BHMA A156.5 (2001) Auxiliary Locks & Associated Products

ANSI/BHMA A156.10 (1999) Power Operated Pedestrian Doors

NATIONAL FIRE PROTECTION ASSOCIATION (NFPA)

NFPA 70 (2002) National Electrical Code

UNDERWRITERS LABORATORIES (UL)

UL 325 (2002) Door, Drapery, Gate, Louver, and Window Operators and Systems

### 1.3 SUBMITTALS

Government approval is required for submittals with a "G" designation; submittals not having a "G" designation are for Contractor Quality Control approval. The following shall be submitted in accordance with Section 01 33 00 SUBMITTAL PROCEDURES:

SD-02 Shop Drawings  
Sliding automatic entrance door assemblies; G

SD-03 Product Data  
Sliding automatic entrance door assemblies; G  
Components; G  
Door Operators; G  
Activation and safety devices; G  
Hardware; G

SD-05 Design Data  
Automatic entrance door assemblies  
Submit calculations for design loading and anchorage of exterior aluminum door and frame assemblies prepared by a registered structural engineer, indicating compliance with specified performance requirements.

SD-07 Certificates  
Special assembly warranty  
Automatic entrance door assemblies  
Submit written certificate, signed and sealed by a registered structural engineer, certifying that design and anchorage of exterior aluminum door and frame assemblies comply with specified performance requirements.

### 1.4 PERFORMANCE REQUIREMENTS

Provide automatic entrance door assemblies capable of withstanding structural loads and thermal movements based on testing manufacturer's standard units in assemblies similar to those indicated for this Project.

#### 1.4.1 Structural Loads

Design and fabricate all automatic entrance door assemblies provided to resist wind load forces based on design wind speed, importance factor and

exposure category indicated on the Structural drawings in accordance with ASCE 7, and local amendment requirements for Components and Cladding.

#### 1.3.2 Thermal Movements

Provide automatic entrance doors that allow for thermal movements resulting from the following maximum change (range) in ambient and surface temperatures by preventing buckling, opening of joints, overstressing of components, failure of joint sealants, failure of connections, and other detrimental effects. Base engineering calculation on surface temperatures of materials due to both solar heat gain and nighttime-sky heat loss. Temperature Change (Range): 120 deg F, ambient; 180 deg F, material surfaces.

#### 1.3.3 Operating Range

Minus 20 deg F to 130 deg F.

#### 1.3.4 Air Infiltration

When tested in accordance with ASTM E 283, air infiltration shall not exceed 0.06 cubic feet per minute per square foot of fixed area at a test pressure of 6.24 pounds per square foot (50 mile per hour wind).

#### 1.3.5 Opening-Force Requirements

a. Egress Doors: Not more than 50 lbf required to manually set door in motion if power fails, and not more than 15 lbf required to open door to minimum required width.

b. Accessible Interior Doors: Not more than 5 lbf.

#### 1.3.6 Closing-Force Requirements

ANSI/BHMA A156.10. Not more than 30 lbf required to prevent door from closing.

### 1.5 QUALITY ASSURANCE

#### 1.4.1 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.

#### 1.4.2 Manufacturer Qualifications

A qualified manufacturer with company certificate issued by AAADM.

#### 1.4.3 Certified Inspector

Certified by AAADM.

#### 1.4.4 Welding

Qualify procedures and personnel according to AWS D1.2.

#### 1.4.5 Power-Operated Door Standard

ANSI/BHMA A156.10.

#### 1.4.6 Electrical Components, Devices, and Accessories

Listed and labeled as defined in NFPA 70, Article 100, by a testing agency acceptable to authorities having jurisdiction, and marked for intended use.

#### 1.4.7 Emergency-Exit Door Requirements

Comply with requirements of authorities having jurisdiction for automatic

entrance doors serving as a required means of egress.

#### 1.5 COORDINATION

Coordinate size and location of recesses in concrete floors for recessed sliding tracks. Concrete, reinforcement, and formwork requirements are specified in Section 03 30 00.00 20 CAST-IN-PLACE CONCRETE.

##### 1.5.1 Templates

Obtain and distribute, to the parties involved, templates for doors, frames, and other work specified to be factory prepared for installing automatic entrance doors.

#### 1.6 WARRANTY

##### 1.6.1 Special Assembly Warranty

Manufacturer's standard form in which manufacturer agrees to repair or replace components of automatic entrance door assemblies that fail in materials or workmanship within 3 years from date of Substantial Completion. Failures include, but are not limited to, the following:

- a. Structural failures including, but not limited to, excessive deflection.
- b. Faulty operation of operators, controls, and hardware.
- c. Deterioration of metals, metal finishes, and other materials beyond normal weathering.

##### 1.6.2 Special Finish Warranty

Manufacturer's standard form in which manufacturer agrees to repair or replace components on which finishes fail within 20 years from date of Substantial Completion. Warranty does not include normal weathering.

### PART 2 PRODUCTS

#### 2.1 MATERIALS

##### 2.1.1 Aluminum

Alloy and temper recommended by manufacturer for type of use and finish indicated.

##### 2.1.1.1 Extruded Bars, Rods, Profiles, and Tubes

ASTM B 221, Alloy 6063-T5 for extrusions.

##### 2.1.1.2 Sheet and Plate

ASTM B 209, alloy and temper best suited for aluminum sheets and strips.

##### 2.1.1.3 Welding Rods and Bare Electrodes

AWS A5.10/A5.10M.

##### 2.1.2 Sealants and Joint Fillers

Refer to Section 07 92 00 JOINT SEALANTS.

##### 2.1.3 Nonmetallic, Shrinkage-Resistant Grout

Premixed, nonmetallic, noncorrosive, nonstaining grout; complying with ASTM C 1107; of consistency suitable for application.

##### 2.1.4 Bituminous Paint

Cold-applied, asphalt-mastic paint complying with SSPC-Paint 12 requirements, except containing no asbestos; formulated for 30 mil thickness per coat.

## 2.2 SLIDING AUTOMATIC ENTRANCE DOOR ASSEMBLIES

Provide manufacturer's standard automatic entrance door assemblies including doors, sidelites, framing, headers, carrier assemblies, roller tracks, door operators, activation and safety devices, and accessories required for a complete installation.

### 2.2.1 Sliding Automatic Entrance Door

#### 2.2.1.1 Configuration (Single-Sliding)

Single-sliding door, with one sliding leaf and sidelite where indicated on drawings.

- a. Traffic Pattern: One way.
- b. Emergency Breakaway Capability: Sliding leaf only.
- c. Mounting: Between jambs.

#### 2.2.2 Sidelites

Manufacturer's standard 1-3/4 inch deep sidelites with minimum 0.125 inch thick, extruded-aluminum tubular stile and rail members matching door design.

- a. Glazing Stops and Gaskets: Same materials and design as for stile and rail door.
- b. Muntin Bars: Horizontal tubular rail members for each sidelite; match stile design.

### 2.2.3 Glazing

As specified in Section 08 81 00, GLASS AND GLAZING.

### 2.2.4 Headers

Fabricated from minimum 0.125 inch thick extruded aluminum and extending full width of automatic entrance door units to conceal door operators, carrier assemblies, and roller tracks. Provide hinged or removable access panels for service and adjustment of door operators and controls. Secure panels to prevent unauthorized access.

- a. Mounting: Surface mounted.
- b. Capacity: Capable of supporting doors up to 175 lb per leaf over spans up to 14 feet without intermediate supports.

### 2.2.5 Carrier Assemblies and Overhead Roller Tracks

Manufacturer's standard 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 two ball-bearing roller wheels and two antirise rollers for each

active leaf.

#### 2.3.7 Threshold

Manufacturer's standard threshold members and bottom-guide track system, with stainless steel ball-bearing center roller wheels. Configuration: Saddle type threshold across door opening.

#### 2.3.8 Brackets and Reinforcements

Manufacturer's standard high-strength aluminum with nonstaining, nonferrous shims for aligning system components.

#### 2.3.9 Fasteners and Accessories

Manufacturer's standard corrosion-resistant, nonstaining, nonbleeding fasteners and accessories compatible with adjacent materials.

#### 2.3.10 Caution Sign

ANSI/BHMA A156.10; 6 inches in diameter, with minimum 1/2-inch high, black lettering on a yellow background with the words "CAUTION AUTOMATIC DOOR."

#### 2.3.11 Emergency Breakaway Sign

ANSI/BHMA A156.10; red background with 1 inch high contrasting letters with the words "IN EMERGENCY PUSH TO OPEN."

### 2.4 DOOR OPERATORS

Provide door operators of size recommended by manufacturer for door size, weight, and movement; for condition of exposure; and for long-term, maintenance-free operation under normal traffic load for type of occupancy indicated. Provide door operators that will open and close doors and maintain them in fully closed position when subjected to Project's design wind pressures.

#### 2.4.1 Electromechanical Operators

Self-contained overhead unit 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; UL 325; and with manual operation including spring closing with power off.

##### 2.4.1.1 Operation

Power opening and spring closing.

##### 2.4.1.2 Features

- a. Adjustable opening and closing speeds.
- b. Adjustable backcheck and latching.
- c. Adjustable hold-open time between 0 and 30 seconds.
- d. Obstruction recycle.
- e. On-off/hold-open switch to control electric power to operator.

##### 2.4.1.3 Mounting

Surface.

### 2.5 ACTIVATION AND SAFETY DEVICES

#### 2.5.1 Motion Detectors

Self-contained, K-band frequency, microwave scanner units with metal or plastic housing; adjustable to provide detection field sizes and functions required by ANSI/BHMA A156.10; with relay hold time of not less than 2 to

10 seconds.

- a. Provide capability for switching between bi-directional and uni-directional detection.
- b. For one-way traffic entrance doors, detector on egress side shall not be active when doors are fully closed.

#### 2.5.2 Presence Detectors

Self-contained, infrared scanner units with metal or plastic housing; adjustable to provide detection field sizes and functions required by ANSI/BHMA A156.10; with relay hold time of not less than 2 to 10 seconds. Detectors shall remain active at all times.

#### 2.5.3 Combination Motion/Presence Detectors

Self-contained units; consisting of both motion and presence detectors in a single metal or plastic housing; adjustable to provide detection field sizes and functions required by ANSI/BHMA A156.10.

##### 2.5.3.1 Motion Detector

K-band frequency, microwave scanner units; with relay hold time of not less than 2 to 10 seconds.

- a. Provide capability for switching between bi-directional and uni-directional detection.

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

##### 2.5.3.2 Presence Detector

Infrared-scanner units; with relay hold time of not less than 2 to 10 seconds. Detectors shall remain active at all times.

#### 2.5.4 Photoelectric Beams

Pulsed infrared, sender-receiver assembly for recessed mounting. Beams shall not be active when doors are fully closed.

#### 2.5.5 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.

### 2.6 HARDWARE

Provide units in sizes and types recommended by automatic entrance door and hardware manufacturers for entrances and uses indicated. Finish exposed parts to match door finish.

#### 2.6.1 Emergency Breakaway Hardware

Provide release hardware that allows panel to swing out in direction of egress to full 90 degrees from any position in sliding mode. Maximum force to open panel shall be 50 lbf according to ANSI/BHMA A156.10. Interrupt powered operation of panel operator while in breakaway mode.

#### 2.6.2 Deadlocks

Manufacturer's standard deadbolt operated by exterior cylinder and interior thumb turn; with minimum 1 inch long throw bolt; ANSI/BHMA A156.5, Grade 1.

##### 2.6.2.1 Cylinders and Keying

As specified in Division 8 Section "Door Hardware."

#### 2.6.2.2 Deadbolts

Laminated-steel hook, mortise type, ANSI/BHMA A156.5, Grade 1.

#### 2.6.2.3 Two-Point Locking

Mechanism in stile of active door leaf that automatically extends lockbolt into overhead carrier assembly.

#### 2.6.3 Sliding Weather Stripping

Manufacturer's standard replaceable components made of wool, polypropylene, or nylon woven pile with nylon fabric or aluminum strip backing.

#### 2.6.4 Weather Sweeps

Manufacturer's standard nylon brush sweep mounted to underside of door bottom.

### 2.7 FABRICATION

Factory fabricate automatic entrance door assembly components to designs, sizes, and thicknesses indicated and to comply with indicated standards.

a. Form aluminum shapes before finishing.

b. 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.

c. Use concealed fasteners to greatest extent possible. Where exposed fasteners are required, use countersunk Phillips flathead machine screws, finished to match framing. 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.

d. 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.

#### 2.7.1 Framing

Provide automatic entrance doors as prefabricated assemblies. Complete fabrication, assembly, finishing, hardware application, and other work before shipment to Project site.

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

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

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



d. Prepare components to receive concealed fasteners and anchor and connection devices.

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

f. Fabricate exterior components to drain water passing joints and condensation and moisture occurring or migrating within the system to the exterior.

g. Provide anchorage and alignment brackets for concealed support of assembly from the building structure.

h. Allow for thermal expansion of exterior units.

#### 2.7.2 Doors

Factory fabricated and assembled in profiles indicated. Reinforce as required to support imposed loads and for installing hardware.

#### 2.7.3 Door Operators

Factory fabricated and installed in headers, including adjusting and testing.

#### 2.7.4 Glazing

Fabricate framing with minimum glazing edge clearances for thickness and type of glazing indicated, according to GANA's "Glazing Manual."

#### 2.7.5 Hardware

Factory install hardware to the 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 weather stripping, mortised into door, at perimeter of sliding doors and breakaway sidelites.

#### 2.7.6 Activation and Safety Devices

Factory install devices in doors and headers. Install photoelectric beams in vertical jambs of sidelites, with dimension above finished floor as follows:

a. Top Beam: 48 inches.

b. Bottom Beam: 24 inches.

### 2.8 ALUMINUM FINISHES

#### 2.8.1 Anodic Finish

Clean exposed aluminum surfaces and provide an anodized finish conforming to AA DAF-45 and AAMA 611. Finish shall be integral color-anodized, designation AA-M10-C22-A32, Architectural Class II, 0.4 mil to 0.7 mil, designation AA-M10-C22-A42, Architectural Class I, 0.7 mil or thicker. Color shall be as indicated on finish identification drawings.

## PART 3 EXECUTION

### 3.1 INSTALLATION

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

a. 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.

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

#### 3.1.1 Entrances

Install automatic entrance doors plumb and true in alignment with established lines and grades without warp or rack of framing members and doors. Anchor securely in place.

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

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

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

d. Level recesses for recessed thresholds using nonshrink grout.

#### 3.1.2 Door Operators

Connect door operators to electrical power distribution system as specified in Division 16 Sections.

#### 3.1.3 Activation and Safety Devices

Adjust devices to provide detection field and functions indicated.

#### 3.1.4 Glazing

Install glazing as specified in Section 08 81 00 GLAZING.

#### 3.1.5 Sealants

Comply with requirements specified in Section 07 92 00 JOINT SEALANTS to provide weathertight installation.

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

b. Seal perimeter of framing members with sealant.

#### 3.1.6 Signage

Provide caution signs on each automatic entrance door, visible from both sides of door. Mount caution signs with centerline 58 inches above finished floor.

##### 3.1.6.1 Emergency Breakaway Panels

Provide emergency breakaway sign visible to egress side of each automatic entrance door that has emergency breakaway capability. Mount signs adjacent to lock stile with centerline between 36 and 60 inches above finished floor.

### 3.2 FIELD QUALITY CONTROL

Repair or remove work where test results and inspections indicate that it does not comply with specified requirements. Additional testing and inspecting, at Contractor's expense, will be performed to determine compliance of replaced or additional work with specified requirements.

#### 3.2.1 Inspector

Engage Installer's certified inspector to test and inspect automatic entrance doors and prepare test and inspection reports.

#### 3.2.2 Testing Services

Certified inspector shall test and inspect each automatic entrance door to determine compliance of installed systems with applicable BHMA standards. Certified inspector shall submit report in writing to Contracting Officer within 24 hours after inspection.

### 3.3 ADJUSTING

Adjust door operators, controls, and hardware for smooth and safe operation, for weathertight closure, and complying with requirements in ANSI/BHMA A156.10. Lubricate operating hardware and other moving parts. Readjust door operators and controls after repeated operation of completed installation equivalent to 3 days' use by normal traffic (100 to 300 cycles). Lubricate hardware, operating equipment, and other moving parts.

### 3.4 DEMONSTRATION

Engage a certified inspector to train Owner's maintenance personnel to adjust, operate, and maintain automatic entrance doors and door operators.

-- End of Section --