PART 1 GENERAL

1.01 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 1 Specification Sections, apply to this Section.

1.02 SUMMARY

A. This section includes the following types of automatic entrance doors:
   1. Exterior and interior, single and bi-parting, sliding automatic entrance doors with sidelites.

1.03 REFERENCES

A. References: Refer to the version year adopted by the Authority Having Jurisdiction.
   1. ANSI A117.1 - Accessible and Usable Buildings and Facilities.
   2. ICC/IBC - International Building Code.
   3. NFPA 70 - National Electrical Code.
   4. NFPA 101 - Life Safety Code.

B. American National Standards Institute (ANSI) / Builders Hardware Manufacturers Association (BHMA).
   1. ANSI/BHMA A156.10 American National Standard for Power Operated Pedestrian Doors.
   2. ANSI Z97.1 Standards for Safety Glazing Material Used in Buildings.
   3. Underwriters Laboratories (UL).
      a. UL 325 Standard for Safety for Door, Drapery, Gate, Louver and window Operators and Systems.

C. American Association of Automatic Door Manufacturers (AAADM).

D. American Society for Testing and Materials (ASTM).
   1. ASTM B221 Standard Specification for Aluminum and Aluminum Alloy Extruded Bars, Rods, Wire, Profiles and Tubes.
   2. ASTM B209 Standard Specification for Aluminum and Aluminum Alloy Sheet and Plate.
   3. ASTM 283e Standard Test Method for Determining Rate of Air Leakage Through Exterior Windows, Curtain Walls, and Doors Under Specified Pressure Differences Across the Specimen.

E. American Architectural Manufacturers Association (AAMA).
   1. AAMA 611 Voluntary Specification for Anodized Architectural Aluminum.

F. National Association of Architectural Metal Manufacturers (NAAMM).
   1. Metal Finishes Manual for Architectural Metal Products.

G. International Code Council (ICC).
   1. IBC: International Building Code Building Code.

1.04 DEFINITIONS

A. Activation Device: Device that, when actuated, sends an electrical signal to the door operator to activate the operation of the door.

B. Knowing act: Consciously initiating the opening of a power operated door using acceptable methods including wall mounted switches such as push plates and controlled access devices such as keypads, card readers and key switches.

C. Safety Device: A device that detects the presence of an object or person within a zone where contact could occur and provides a signal to stop the movement of the door.

D. SHGC: Solar Heat Gain Coefficient.

E. VT: Visible Transmittance.

F. CR: Condensation Resistance.

1.05 PERFORMANCE REQUIREMENTS

A. General: Provide doors that have been designed and fabricated to comply with specified performance requirements, as demonstrated by testing manufacturer's corresponding standard systems.

B. Compliance:
1. ANSI/BHMA A156.10 American National Standard for Power Operated Pedestrian Doors.
2. UL 325 listed.
3. Automatic door equipment accommodates medium to heavy pedestrian traffic.
4. Automatic Door equipment accommodates up to the following weights for active leaf doors:
   a. Bi-part doors: 300 lbs per active breakout leaf.
   b. Single doors: 300 lbs per active breakout leaf.
5. Operating Temperature Range: -31° F to 122° F.
6. Entrapment Force Requirements:
   a. Power Operated Sliding Doors: Not more than 30 lbf (133 N) required to prevent stopped door from closing.
   b. Sliding doors provided with a breakaway device shall require no more than 50 lbf applied 1 inch from the leading edge of the lock stile for the breakout panel to open.
7. Energy Code Requirements: Sliding automatic entrances that are required to meet construction energy code requirements in those districts that have adopted ASHRAE Std 90.1 I-P shall have been evaluated based on methodology in accordance with the following National Fenestration Rating Council (NFRC) standards:
   a. NFRC 100 - latest edition: Procedure for Determining Fenestration Product U-factors.
   b. NFRC 200 - latest edition: Procedure for Determining Fenestration Product Solar Heat Gain Coefficient and Visible Transmittance at Normal Incidence.
   c. NFRC 500 - latest edition: Procedure for Determining Fenestration Product Condensation Resistance Values.
   d. ASTM E283-latest edition: Standard Test Method for Determining Rate of Air Leakage Through Exterior Windows, Curtain Walls, and Doors Under Specified Pressure Differences Across the Specimen.

1.06 SUBMITTALS

A. Comply with Division 01 - Submittal Procedures.

B. Product Data: Manufacturer's product data sheets including installation details, material descriptions, dimensions of individual components and profiles, fabrication, operational descriptions and finishes.

C. Shop Drawings: Submit manufacturer's shop drawings, including elevations, sections and details, indicating dimensions, materials, and fabrication of doors, frames, sidelites, operator, motion /presence sensor control device, anchors, hardware, finish, options and accessories.

D. Samples: Submit manufacturer's samples of aluminum finish.

E. Informational Submittals: Manufacturer's product information.
   1. Operating and Maintenance Manuals: Provide manufacturers operating and maintenance manuals for each item comprising the complete door opening installation in quantity as required in Division 01, Closeout Submittals. The manual to include the name, address, and contact information of the manufacturers providing the hardware and their nearest service representatives. The final copies delivered after completion of the installation test to include spare parts list.
   2. Warranties and Maintenance: Special warranties and maintenance agreements specified in this Section.

1.07 QUALITY ASSURANCE

A. Manufacturers Qualifications: Engage qualified manufacturers with a minimum ten (10) years of documented experience in manufacturing of doors and equipment of similar to that indicated for this Project and that have a proven record of successful in-service performance.
   1. A manufacturer with company certificate issued by AAADM.

B. Installer Qualifications: Installers, trained by the primary product manufacturers, with a minimum three (3) years documented experience installing and maintenance of units similar in material, design, and extent to that indicated for this Project and whose work has resulted in construction with a record of successful in-service performance.

C. Certified Inspector Qualifications: Certified by AAADM.
   1. Source Limitations for Automatic Entrances: Obtain each type of door, frame, operator and sensor components specified in this Section from a single source, same manufacturer unless otherwise indicated.
   2. Power-Operated Pedestrian Door Standard: ANSI/BHMA A156.10 (current version).
   3. Emergency Exit door requirements: Comply with requirements of authorities having jurisdiction for automatic entrance doors serving as a required means of egress.

1.08 PROJECT CONDITIONS

A. Field Measurements: Verify actual dimensions of openings to receive automatic entrances by field measurements before fabrication and indicate on shop drawings.

1.09 COORDINATION

A. Coordinate sizes and locations of recesses in concrete floors for recessed tracks and thresholds if applicable. Concrete, reinforcement and formwork are specified in Division 03.

B. Electrical System Roughing-in: Coordinate layout and installation of automatic entrances with connections to power supplies and access control system as applicable.

1.10 WARRANTY

A. General Warranty: Reference Division 01, General Requirements. Special warranties specified in this Article shall not deprive Owner of other rights Owner may have under other provisions of the Contract Documents and shall be in addition to, and run concurrent with, other warranties made by Contractor under requirements of the Contract Documents.

B. Automatic Entrance Doors shall be free of defects in material and workmanship for a period of One (1) year from the date of substantial completion.

C. During the warranty period a factory-trained technician shall perform service and affect repairs. A safety inspection shall be performed after each adjustment or repair and a completed inspection form shall be submitted to the Owner.

D. During the warranty period all warranty work, including but not limited to emergency service, shall be performed during normal business hours.

E. Manufacturer shall have in place a dispatch procedure that shall be available 24 hours a Day, 7 Days a week for emergency call back service.

PART 2 PRODUCTS

2.01 MANUFACTURER

A. Manufacturer: ASSA ABLOY Entrance Systems, 1900 Airport Road, Monroe, NC 28110. Toll Free (877) SPEC-123. Phone (704) 290-5520 Fax (704) 290- 5555 Website www.assaabloyentrance.com contact: specdesk.na.aaes@assaabloy.com

2.02 SLIDING AUTOMATIC ENTRANCES

A. Model: Besam SL500 EcoDoor U-factor sliding automatic entrance (Basis of Design):
   1. Aluminum doors and frames and active door leaves.
   2. Overhead concealed, electro-mechanical, microprocessor controlled, sliding door operator.
   3. Operator housing, guide system and door carriers.
   4. Sliding Automatic Entrance Doors Configuration:
      a. Single slide, full breakout, door system
         1) Configuration: Single slide, two equal panel door unit with one operable leaf and one sidelite unit.
         2) Traffic Pattern: Two-way
         3) Emergency Breakaway Capability: Interior sliding leaf and sidelite unit.
         4) Mounting: Overhead header installed between jambs.
      b. Dimensions: Confirm door package dimensions as indicated on Architectural drawings.

2.03 ALUMINUM DOORS AND FRAMES

A. Doors and Frames: Extruded Aluminum, Alloy 6063-T5.
   1. Door panels shall have a minimum .125 inch structural wall thickness including adjoining horizontal members and perimeter frames where applicable.
   2. Door Construction shall be by means of an integrated corner block with 3/8 inch all-thread through bolt from each stile.
   3. Glass stops shall be .062 inch (15.8 mm) wall thickness and shall provide security function as a standard by means of a fixed non-removable exterior section with glazing to be performed from the interior only. Glazing stops that allow for glass removal from the exterior shall not be deemed as equivalent.
   4. The sliding door system shall include two interlocks securing the leading stile of the sidelite and the butt stile of the sliding door panel together.
   5. Vertical Stiles shall be wide stile 5" (127mm).
   6. Bottom Rails shall be standard 10 inch (254 mm)
   7. Weather-stripping shall be slide-in type, replaceable pile mohair seals retained by the aluminum extrusions. The following types of weather-stripping are required: complementing weather-stripping on the joining vertical stiles of the sidelite and sliding door panels, complementing weather-stripping on the lead edge of the lock stiles of bi-parting doors, single pile weather-stripping between the carrier and the header, single

pile weather-stripping on the lead edge stile of single slide door panels, dual pile weather-stripping on the pivot stile of breakout sidelite panels, and dual pile weather-stripping on the butt stile of fixed sidelite panels. Bottom rails shall be provided with an adjustable nylon sweep.

a. EcoDoor Seals: (Required at all doors requiring a U-factor) High pile mohair weather stripping on the lock stile of the sliding doors, integrated mohair weather stripping with vinyl fin on the joining vertical stiles of the sidelite and sliding door panels, and expandable foam inserts in leading stile of sidelite panels at pockets for interlocks. Bottom rails shall be provided with a concealed adjustable nylon sweep.

b. U-factor Door Package:

1) U-factor door package shall have been evaluated in full compliance with the listed National Fenestration Rating Council (NFRC) and American Society for Testing and Materials (ASTM) standards: NFRC 100, NFRC 200, NFRC 500, and ASTM E283.

2) U-factor door package shall meet the following requirements:

(a)	U-factor Rating	0.64 BTU/hr./ degrees F/ sq. ft.
(b)	Solar Heat Gain Coefficient	0.28
(c)	Visible Light Transmittance	0.45
(d)	Condensation Resistance	22
(e)	Air infiltration rating	0.93 cu. ft./min/sq. ft.

8. Glass: Glazing shall comply with ANSI Z97.1, thickness as indicated.

a. Glazing Active Door Panels and Sidelite Panels, thickness and type as indicated.

1) U-factor Door and Sidelite Glazing: 1” (25 mm) overall thickness insulating glass unit consisting of an 3/8" thick impact resistant interior glass lite with PVB interlayer and 1/4" thick exterior clear tempered glass lite; Airspace to be 90% argon filled.

2) Glazing shall be PPG Solarban 60 Clear, coated on surface 2, and the airspace 90% argon filled and meet the following listed requirements specified for U-factor and Solar Heat Gain Coefficient:

(a)	U-factor Summer (BTU/ hr./ degrees F/sq. ft.)	0.22
(b)	U-factor Summer (W/(m2K)	1.27
(c)	U-factor Winter (BTU/ hr./ degrees F/sq. ft.)	0.25
(d)	U-factor Winter (W/(m2K)	1.4
(e)	Solar Heat Gain Coefficient	0.37

b. Glazing Installation: See Division 8 Section Glazing for requirements and as required by the manufacturer to meet the specified energy performance of the sliding entrance.

9. Door Carriers: Manufacturer’s standard carrier assembly that allows vertical adjustment.

a. Carriage Assembly: Carriage bar with two wheel assemblies. Each assembly shall have tandem roller wheels.

b. Roller Wheels: Two heavy duty Delrin roller wheels per wheel assembly, for a total of four (4) roller wheels, 1-7/16 inch diameter, per active door leaf for operation over a replaceable aluminum track. Single journal with sealed oil impregnated bearings.

c. Two (2) heavy duty self-aligning anti-risers per leaf.

10. Framing Members: Provide automatic entrances as complete assemblies. Manufacturer’s standard extruded aluminum framing reinforced as required to support loads.

a. Vertical jambs shall be 1-3/4 inches by 4-1/2 inches (114.3 mm)

11. Header: Manufacturer’s standard one-piece extruded aluminum header with a replaceable aluminum track extending full width of entrance unit. Header to conceal door operators, carrier assemblies, and roller track; complete with hinged access panel for service of door operator, and controls.

a. Span: Maximum 16’-0” without intermediate supports when using 1/4-inch glass.

1) Capacity: Capable of supporting active breakout leafs up to maximum of 300 lbs. per leaf when header is supported per manufacturer’s recommendations.

b. Size: 7 inches (177.8 mm) wide by 7 inches high.

1) Header height including the sensor plate cap which spans the clear door opening width is 8-1/2 inches high.

c. Hinge Point: Continuous hinge at top of header allows for complete access to operator and internal electronic and mechanical assemblies.

d. Design: Manufacturer's standard closed header.

12. Hardware: Provide manufacturer's standard hardware as required for operation indicated.

a. Breakaway arms and bottom pivot assemblies shall be supplied by the manufacturer and shall be adjustable to comply with applicable codes.

1) Wind resistant hydraulic damper to control movement of breakout panels.

2) Bottom ball detent on breakout sidelite panels to provide additional wind resistance.

b. Locking hardware shall be provided as indicated.

1) Electrified slide lock shall automatically lock the sliding function of all sliding door panels within the entrance when the door panels are in the closed position.

(a) Fail secure operation: Slide lock shall lock the sliding function of the door panels upon loss of power.

(b) Exit devices shall lock the breakout function while allowing emergency egress at all times. Exit devices in combination with the automatic slide locking hardware to be provided on secured doors. Automatic locking for the sliding door when the door control switch is in the closed position.

(1) Flush mounted Adams-Rite F86 Series, concealed vertical rod exit devices mounted to active doors.

(2) Exterior jamb mounted key switch to unlock sliding door operation.

c. Keyed cylinders shall be provided as indicated.

1) Keyed cylinder specified in Division 8 Section "Door Hardware".

13. Guide Track/Threshold: Manufacturer's threshold as indicated.

a. Aluminum guide track adjacent to the sidelite portion of the sliding automatic door assembly.

1) Recessed mounted track

b. 1/2 inch high by 4-1/2 inch width continuous aluminum threshold with integral track shall span the entire width of the sliding door header and fit between the vertical framing members. Threshold design shall allow for optional extruded ramps to securely interlock to flat section to meet ADA requirements.

1) Surface mounted threshold with interlocking ADA accessible ramps

2.04 SLIDING DOOR OPERATOR

A. Door Operator and Controller:

1. Electro-mechanical controlled unit utilizing a high-efficiency, energy efficient, DC motor requiring a maximum of 3 amp current draw, allowing 5 operators on one 20 amp circuit. The supplied system shall have the capability to operate at full performance well beyond a brown out and high line voltage conditions (85V – 265V) sensing changes and adjusting automatically. The operator shall allow an adjustable hold open time delay of 0 to 60 seconds and have internal software to incorporate a self-diagnostic system.

2. Microprocessor Control Box:

a. Modular control unit to allow for changing technology. Factory-adjusted configuration with opening and closing speeds set to comply with ANSI/BHMA A156.10 requirements and electronic dampening to reduce wear on drive train. Should the drive train operations deviate from design criteria ranges, Watchdog Control Circuit Monitoring will assume command of the system and shut down the automatic function allowing a secondary supervisory circuit to perform as a backup. Control unit shall allow the following functions:

1) Diagnostics with the ability to produce application data.

b. Mode Selector Control:

1) Multi position keyed cylinder mode selector switch to be interior jamb mounted and shall allow selection of the indicated functions to be engaged when switch is turned to the appropriate setting.
2) Mode selector control to allow the following functions:
   (a) “Off”
   (b) “Exit Only” one way traffic with automatic operation from the interior.
   (c) “Two Way Traffic” allowing automatic operation from exterior and interior.
   (d) “Partial Opening” energy saving door position allows door to automatically adjust opening width based on amount of usage, that is, full open during high use and partial open during low use. The control for this setting is programmable allowing adjustment to both the usage setting and the opening width.
   (e) “Hold Open” doors activated and held in the full open position.

2.05 ACTIVATION AND SAFETY CONTROL DEVICES

A. General: Provide the types of activation and safety devices specified in accordance with ANSI/BHMA standards, for the condition of exposure and for long-term, maintenance-free operation under normal traffic load for type of occupancy indicated. Coordinate activation and safety devices with door operation and door operator mechanisms.

B. Combination Activation Motion Sensor/Safety Presence Sensor:
   1. Shall be a sliding door sensor utilizing K-band microwave technology to detect motion and focused active infrared technology to detect presence, combined in a single housing surface mounted on each side of the header.
      a. Presence sensor shall remain active at all times.
      b. The sensor shall communicate with the automatic door operator through a self-monitoring connection that allows the door to go into a fail safe mode preventing the door from closing in the event of a sensor failure.
   2. Motion/presence detecting sensors to be field installed and adjusted.

2.06 ELECTRICAL

A. High-Efficiency DC Motor: Maximum of 3 amp current draw, allowing 5 operators to run on one 20 Amp circuit.

B. Power: Self-detecting line voltage capable control. 120 VAC through 240 VAC, 50/60 Hz, 3 amp minimum incoming power with solid earth ground connection for each door system.

C. Key Impulse Input: Input for card readers or remote activation with independent adjustable hold open delay.

D. Wiring: Separate internal channel raceway free from moving parts.

E. Brown out / high voltage capability: System has capability to operate at full performance well beyond brown out and high voltage line conditions (85 V – 265 V) sensing changes and adjusting automatically.

F. Convenience Battery: Shall be concealed in header and capable of full operation with blackout conditions, including sensor capabilities for minimum of 100 cycles.

2.07 ALUMINUM FINISHES

A. Comply with NAAMM's "Metal Finishes Manual for Architectural and Metal Products" for recommendations for applying and designating finishes.

B. Painted Finish:
   1. Kynar finish, 3 coat as selected by the architect from manufacturer's full line of colors.

PART 3 EXECUTION

3.01 EXAMINATION

A. Examine doors and frames, with Installer present, for compliance with requirements for installation tolerances, wall and floor construction, and other conditions affecting performance.

B. Examine roughing-in for electrical source power to verify actual locations of wiring connections.

C. Proceed only after such discrepancies or conflicts have been resolved.

3.02 INSTALLATION

A. Do not install damaged components. Fit frame joints to produce hairline joints free of burrs and distortion. Rigidly secure non-movement joints.

B. 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.
   1. Install surface mounted hardware using concealed fasteners to greatest extent possible.
   2. Set headers, carrier assemblies, tracks, operating brackets and guides level and true to location with anchorage for permanent support.
   3. Door Operators: Connect door operators to electrical power distribution system as specified in Division 26 Sections.
   4. Glazing: Glaze sliding automatic entrance door panels in accordance with the Glass Association of North America (GANA) Glazing Manual, published recommendations of glass product manufacturer, and published instructions of automatic entrance system manufacturer.
   5. Sealants: Comply with requirements specified in Section 079200 - JOINT SEALANTS to provide weather tight installation.
      a. Set thresholds, bottom guide and track systems and framing members in full bed of sealants.
      b. Seal perimeter of framing members with sealant.
   6. Signage: Apply signage on both sides of each door and sidelite as required by ANSI/BHMA A156.10 and manufacturers installation instructions.

3.03 FIELD QUALITY CONTROL

A. Manufacturers Field Services:
   1. Manufacturer’s representative shall provide technical assistance and guidance for installation of doors.
   2. Before placing doors into operation, AAADM certified technician shall inspect and approve doors for compliance with ANSI/BHMA A156.10. Certified technician shall be approved by manufacturer.
   3. Verify installation and alignment of all entrance weather-stripping as required for compliance with specified air infiltration requirements.

3.04 ADJUSTING

A. Adjust door operators, controls and hardware for smooth and safe operation and for weather tight closure. Adjust doors in compliance with ANSI/BHMA A156.10.

3.05 CLEANING AND PROTECTION

A. Clean adjacent surfaces soiled by door installation.

B. Clean glass and metal surfaces promptly after installation. Remove excess sealants, compounds, dirt and other substances. Repair damages finish to match original finish.
   1. Comply with requirements in Division 08 Section Glazing for cleaning and maintaining glass.

3.06 DEMONSTRATION

A. Engage a factory-authorized representative to train Owner's maintenance personnel to adjust, operate, and maintain safe operation of the door.

END OF SECTION