
PART 1 GENERAL**1.1 RELATED DOCUMENTS**

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

1.2 SUMMARY

- A. This section includes the following types of automatic door operators:
1. In-ground, low-energy door operators for swinging doors.
 2. Remote speed adjustment for in-ground operators.
- B. Related Sections:
1. Division 7 Sections for caulking to the extent not specified in this section.
 2. Division 8 Section "All-Glass Entrances and Storefronts" for entrances furnished separately in Division 8 Section.
 3. Division 8 Section "Door Hardware" for hardware to the extent not specified in this Section.
 4. Division 26 and 28 Sections for electrical connections including conduit, liquid-tight connections, and wiring for automatic entrance door operators and access control devices.

1.3 DEFINITIONS

- A. Activation Device: Device that, when actuated, sends an electrical signal to the door to activate the operation of the door.
1. Knowing act: Consciously initiating the powered opening of a low energy door using acceptable methods including wall mounted switches such as push plates and controlled access devices such as keypads, card readers and key switches.
- B. 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.
- C. AAADM: American Association of Automatic Door Manufacturers.

1.4 QUALITY ASSURANCE

- A. The work of this section shall be performed by a company which specializes in the type of automatic door operators work required for this Project, with a minimum of 5 years of documented successful experience and shall be performed by skilled workmen thoroughly experienced in the necessary crafts.
1. Work shall be performed in compliance with Owner's insurance underwriters' requirements and UL approvals and testing for materials, assemblies and procedures.
- B. Manufacturers Qualifications: Engage qualified manufacturers with a minimum 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.
- C. Certified Inspector Qualifications: Certified by AAADM.
- D. Source Limitations for Automatic Operators: Obtain each type of door operator complete and sensor components specified in this Section from a single source, same manufacturer unless otherwise indicated.
1. Operator shall be furnished complete with the cement case, case cover and drive mechanism from a single manufacturer.
- E. Certifications: Operators shall be certified by the manufacturer to meet performance design criteria in accordance with the following standards.
1. ANSI/BHMA A156.19 American National Standard for Power Assist and Low Energy Operated Doors.
 2. NFPA 101 - Life Safety Code.
- F. Emergency Exit door requirements: Comply with requirements of authorities having jurisdiction for automatic entrance doors serving as a required means of egress.

- G. Manufacturer's identification tags or marks are not acceptable on surfaces which will remain exposed to view after installation.
 - 1. Evidence of "patching" after removal of tags or marks is not acceptable.

1.5 PERFORMANCE REQUIREMENTS

- A. General: Provide automatic door operators that have been designed and fabricated to comply with specified performance requirements, as demonstrated by testing manufacturer's corresponding standard systems.
- B. Automatic door equipment accommodates medium to heavy pedestrian traffic and have the following minimum performance characteristics:
 - 1. Up to 700 pound (317.5 kg) weight of doors, 48 inches (1219 mm) maximum door width per operator.
- C. Operator capable of operating within temperature ranges of -31 °F to 160 °F (-35 °C to 71 °C).
- D. Opening force requirements: Doors shall open with a manual force, not to exceed 30lbf (133N) to set the door in motion and 15 lbf to fully open the door applied at 1" (25 mm) from the latch edge of the door. The force required to prevent a stopped door from opening or closing shall not exceed 15 lbf (67 N) measured 1" (25 mm) from the latch edge of the door at any point during opening or closing.
- E. Closing Time:
 - 1. Doors shall be field adjustable to close from 90 degrees to 10 degrees in 3 seconds or longer as applicable per ANSI/BHMA A156.19 standards.
 - 2. Doors shall be field adjusted to close from 10 degrees to fully closed in not less than 1.5 seconds.

1.6 ACTION SUBMITTALS

- A. Submit the following according to Conditions of the Construction Contract and Division 1 Specification Sections.
- B. Comply with Division 1 - Submittal Procedures.
- C. Product Data: Manufacturer's product sheets including installation details, material descriptions, dimensions of individual components and profiles, fabrication, operational descriptions and finishes.
- D. Shop Drawings: Submit manufacturer's shop drawings, including elevations, sections and details, indicating dimensions, materials, operator, motion/presence sensor control device, anchors, hardware, finish, options and accessories.
 - 1. Indicate required clearances, and location and size of each field connection.
 - 2. Indicate locations and elevations of entrances showing activation and safety devices.
 - 3. Wiring Diagrams: For power, signal, and activation / safety device wiring.
 - 4. Indicate routing of conduit to operator.
 - 5. Elevations, sections and details shall reflect job specific conditions and shall include surrounding materials for context.
- E. Samples: Submit manufacturer's samples of aluminum finish.
- F. Manufacturers Field Reports: Submit manufacturer's field reports from AAADM certified technician of inspection and approval of doors for compliance with ANSI/BHMA A156.19 after completion of installation.
- G. 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.
- H. Warranties and Maintenance: Special warranties and maintenance agreements specified in this Section.
- I. Hazardous Materials Notification: In the event no product or material is available that does not contain asbestos, PCB or other hazardous materials as determined by the Owner, a "Material Safety Data Sheet" (MSDS) equivalent to OSHA Form 20 shall be submitted for that proposed product or material prior to installation.

- J. Asbestos and PCB Certification: After completion of installation, but prior to Substantial Completion, Contractor shall certify in writing that products and materials installed, and processes used, do not contain asbestos or polychlorinated biphenyls (PCB), using format in Article 3 of General Conditions.

1.7 DELIVERY, STORAGE, AND HANDLING

- A. Comply with General Conditions and Division 1 Section "Product Requirements".

1.8 COORDINATION

- A. Coordinate sizes and locations of recesses in concrete if applicable. Concrete, reinforcement and formwork are specified in Division 3.
- B. Coordinate door operators 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 the project.
- C. Electrical System Roughing-in: Coordinate layout and installation of power door operators with connections to power supplies and access control system as applicable.

1.9 WARRANTY

- A. Comply with General Conditions and Division 1 Section "Product Requirements".
- B. 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.
- C. Automatic Door Operators shall be free of defects in material and workmanship for a period of two (2) year from the date of substantial completion.
- D. During the warranty period a factory-trained technician shall perform service and affect repairs. An inspection shall be performed after each adjustment or repair.
- E. During the warranty period all warranty work, including but not limited to emergency service, shall be performed during normal business hours.
- F. 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.

1.10 ATTIC STOCK

- A. Provide attic stock from the manufacturer consisting of five (5) neoprene gaskets and ten (10) lid screws for each door operator.

PART 2 PRODUCTS

2.1 UNAUTHORIZED MATERIALS

- A. Materials and products required for work of this section shall not contain asbestos, polychlorinated biphenyls (PCB) or other hazardous materials identified by the Owner.

2.2 ACCEPTABLE MANUFACTURERS

- A. Products of the manufacturers specified in this section establish the minimum functional, aesthetic and quality standards required for work of this section.
- B. 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.besam-usa.com contact: specdesk.na.besam@assaabloy.com.
- C. Substitutions: Comply with General Conditions and Division 1 Section "Product Requirements" using form in Division 1 Section "Substitution Request Form".

2.3 AUTOMATIC SWING DOOR OPERATOR

- A. Model: Besam SW200i-IG in-ground, low energy automatic door operator (Basis of Design):
1. Configuration: Operator to control single swinging doors and pairs of swinging doors as indicated on the drawings and specified below
 - a. Traffic Pattern: One way.
 - b. Pairs of Doors: Simultaneous swing.
 2. Automatic Operator: Electro-mechanical, non-handed operator, powered by 24 volt, 1/4 hp motor. Operator shall be adjustable to compensate for different manual push forces as required.
 - a. In-Ground Operator Enclosure and Drive Unit:
 - 1) Cement case shall be 12 gauge minimum thickness steel, fully welded enclosure.
 - a) Corrosion Protection: 6 to 10 mill powder coat finish suitable for continuous protection when in contact with concrete and masonry.
 - 2) Removable top case cover shall be 12 gauge minimum thickness steel with powder coat finish. Cover shall be sealed to cement case by a neoprene gasket. All penetrations including the operator drive shaft shall have seals to prevent water and moisture infiltration.
 - 3) Drive Mechanism Assembly: Manufacturer's drive mechanism assembly designed to provide swing door operation from an in-ground automatic door operator.
 - a) Operator shaft shall be directly coupled to the pivot assembly.
 - b) Weight of door shall be fully supported independently through a pivot bearing support. Door weight shall not be supported by the operator or the gear box assembly.
 - 4) Connecting hardware to door shall be a door arm attached to the bottom rail of the swing door.
 - a) Output shaft adapter and door arm shall allow for offset pivoted installation as indicated on drawings.
 - b) Door arm and top pivot shall be supplied by door manufacturer.
 - c) Digital Cycle Counter: Battery powered, 7 digit LCD cycle counter with a reset feature to track door usage cycles.
 - b. Provide remote speed adjustment of in-ground operators, to be located in adjacent jamb, 2'-0" AFF.
 - 1) Coordinate location with Architect.
 3. Door Operation:
 - a. Opening Cycle: The adjustable speed operator mechanically powers the drive shaft and the torque control maintains constant speed throughout the opening cycle regardless of stack pressures or wind speed. Operator shall allow manual door operation with operational forces as indicated to fully open the door applied at 1" (25 mm) from the latch edge of the door.
 - 1) Manual push force shall be adjustable from 5 lbf to 15 lbf maximum.
 - b. Hold Open: The operator shall stop and hold the door open at the selected door opening angle for an adjustable period of time (1.5 seconds to 30 seconds).
 - c. Closing Cycle: Spring close with speed controlled power assist.
 - 1) Upon loss of power, dynamic braking will control the door insuring controlled closing.
 - 2) Selectable Torque Control: Automatically adjusts torque without changing the closing speed of the operator.
 - a) When the torque control is activated, the closing speed shall remain constant regardless of stack pressures or wind speed.
 - b) Torque Cancellation: The torque control is deactivated whenever there is a signal received from door mounted sensors.
 - c) The torque control is disabled during manual use of the door.
 - d. Wind Force Dampening: The operator electromechanically counteracts wind forces, slowing down the door movement to safely open or close the door.
 - e. Stack Pressure Compensation: Operator shall counteract positive stack pressures, negative stack pressures, and sudden changes of stack pressures. The operator never allows the door to open or close faster than the speed control settings, regardless of pressures.
 - f. Obstruction Control: The operator will stop and reverse the door movement.
 - g. Electric Lock Management:
 - 1) Internal module for electrified locking integration.
 - 2) Electric Lock Output: Selectable 12 VDC, maximum 1200 mA / 24 VDC, maximum 600 mA.
 - 3) Lock monitoring prevents operator(s) from opening door(s) until release of electrified lock.
 - 4) Operator pulls door closed before opening, automatically unjamming electric latch hardware.
 - 5) Sequenced operation between operators for pairs of doors allowing lock release and astragal coordination.
 - h. Lock Retry Circuit: If attempt to fully close the door is unsuccessful, the operator will automatically reverse open 10 degrees and reclose in an attempt to successfully close the door.

- i. Selectable Alarm Reset: The operator can be field set so that after receiving an alarm signal, the operator will not accept any activation impulses and will operate only as a manual door closer until manually reset.
 - j. Electronic Controls: Solid state integrated circuit controls the operation and switching of the swing power operator. The electronic control provides low voltage power supply for all means of actuation. The controls include time delay (1 to 30 seconds) for normal cycle.
 - k. Control Switch: Automatic door operators shall be equipped with the following type of multi-position function switch:
 - 1) 3 position toggle switch remotely mounted (On-Auto-Hold).
4. Operator Interface:
- a. Safety Sensor Integration for overhead presence safety device and door mounted reactivation safety sensor.

2.4 ACTIVATION AND SAFETY DEVICES

- A. General: Provide activation and safety devices in accordance with ANSI/BHMA standards, for 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. Manual Operation:
1. Operator shall provide power assist function to the doors to provide ease of manual operational forces.
 - a. Manual push force shall be adjustable from 5 lbf to 15 lbf maximum.
 2. Operator shall be programmable to provide a "push and go" feature allowing door to open automatically if pulled or pushed open manually.
- C. Safety Devices:
1. Door Mounted Presence Sensor (DMPS): Shall be the Besam door mounted infrared presence safety device (mounted at top of each door); adjustable to provide detection field sizes and functions required by ANSI/BHMA A156.10.
 - a. Unit to provide detection during the travel of the door.
 - b. Upon detection the sensor shall provide a signal to stop or reverse the door action.
 2. Door Mounted Safety Sensor Devices: Safety sensor devices shall be door mounted as specified.
 - a. The door mounted safety sensor devices shall be mounted on the approach (push) side of the door (1 safety sensor per leaf), providing detection on one side of the door only.

PART 3 EXECUTION

3.1 EXAMINATION

- A. Examine concrete floors, doors and frames, with Installer present, for compliance with requirements for installation tolerances, and other conditions affecting performance of swinging power operated doors.
- B. Examine roughing-in for electrical source power to verify actual locations of wiring connections.
1. Verify that all electrical penetrations into the cement case enclosure have liquid tight fittings.
 2. Water-test electrical conduit penetrations (high volt and low volt connections) in cement case to assure leak-free system.
- C. Proceed only after such discrepancies or conflicts have been resolved.

3.2 INSTALLATION

- A. Do not install damaged components. Fit joints to produce hairline joints free of burrs and distortion. Rigidly secure non-movement joints.
- B. Operators: Install automatic operators 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 in-ground operator housing in accordance with manufacturer's instructions and reviewed shop drawings.
 2. Install operator drive mechanism assembly in accordance with manufacturer's instructions.
 3. Adjust operator and drive mechanism to achieve smooth operation including back-check, latch, and proper limit stops.
 4. Install exposed to view fittings using concealed fasteners where possible.
 5. Install threshold and operator fittings per manufacturer's instructions.

- C. Door Operators: Connect door operators to electrical power distribution system [including smoke evacuation system and/or fire detection system] as specified in Division 26 Sections.
- D. Sealants: Comply with requirements specified in division 7 Section "Joint Sealants" to seal between the operator housing and the adjacent wall surfaces to provide a weather tight closure.
- E. Signage: Apply signage on both sides of each door and sidelite as required by ANSI/BHMA A156.19 and manufacturers installation instructions.

3.3 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 A156.19. Certified technician shall be approved by manufacturer.
- B. Closure of operator box at each instance requires the use of neoprene gasket and screws provided by the manufacturer.

3.4 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 A156.19.

3.5 CLEANING AND PROTECTION

- A. Clean adjacent surfaces soiled by automatic operator installation.
- B. Clean metal surfaces promptly after installation. Remove excess sealants, compounds, dirt and other substances. Repair damages finish to match original finish.

3.6 DEMONSTRATION

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

END OF SECTION