

## **SECTION 087113 - POWER DOOR OPERATORS**

### **PART 1 - GENERAL**

#### **1.1 SUMMARY**

- A. Section Includes:
  - 1. Power door operators for swinging doors.
  - 2. Low-energy door operators for swinging doors.
  - 3. Power-assist door operators for swinging doors.

#### **1.2 DEFINITIONS**

- A. AAADM: American Association of Automatic Door Manufacturers.
- B. Activation Device: A control that, when actuated, sends an electrical signal to the door operator to open the door.
- C. Double-Egress (Doors): A pair of doors that simultaneously swing, with the two doors moving in opposite directions with no mullion between them.
- D. Double-Swing (Doors): A pair of doors that swing, with the two doors moving in opposite directions with a mullion between them; each door functioning as a single-swing door.
- E. Safety Device: A control that, to avoid injury, prevents a door from opening or closing.
- F. For automatic door terminology, see BHMA A156.10 and BHMA A156.19 for definitions of terms.

#### **1.3 COORDINATION**

- A. Coordinate sizes and locations of recesses in concrete floors for recessed control mats that control power door operators. Concrete, reinforcement, and formwork requirements are specified elsewhere.
- B. Templates: Distribute for doors, frames, and other work specified to be factory prepared and reinforced for installing power door operators.
- C. Coordinate hardware for doors with operators to ensure proper size, thickness, hand, function, and finish.

- D. Electrical System Roughing-in: Coordinate layout and installation of power door operators with connections to the following:
  - 1. Power supplies.
  - 2. Access-control system.
  - 3. Remote activation devices.
  - 4. Remote monitoring systems.
- E. Pneumatic System Roughing-in: Coordinate layout and installation of power door operators and power units with compressed-air piping.

#### **1.4 PREINSTALLATION MEETINGS**

- A. Preinstallation Conference: Conduct conference at Project site.

#### **1.5 ACTION SUBMITTALS**

- A. Product Data: For each type of product.
  - 1. Include construction details, material descriptions, dimensions of individual components and profiles, and finishes for power door operators.
  - 2. Include rated capacities, operating characteristics, electrical characteristics, and furnished specialties and accessories.
- B. Shop Drawings: For power door operators.
  - 1. Include plans, elevations, sections, hardware mounting heights, and attachment details.
  - 2. Indicate dimensions, weights, loads, required clearances, method of field assembly, components, and location and size of each field connection.
  - 3. Indicate locations of activation and safety devices.
  - 4. Include diagrams for power, signal, and control wiring.
  - 5. Include plans, elevations, sections, and attachment details for guide rails.
- C. Samples: For each exposed product and for each color and texture specified, manufacturer's standard size.

#### **1.6 INFORMATIONAL SUBMITTALS**

- A. Product Certificates: For each type of power door operator. For each operator for fire-rated door assemblies, certify that operator is listed and labeled by a qualified testing agency acceptable to authorities having jurisdiction for use on types and sizes of labeled fire doors required.

- B. Field quality-control reports.

## **1.7 CLOSEOUT SUBMITTALS**

- A. Maintenance Data: For power door operators, safety devices, and control systems, to include in maintenance manuals.

## **1.8 QUALITY ASSURANCE**

- A. Installer Qualifications: An authorized representative who is trained and approved by manufacturer for installation and maintenance of units required for this Project and who employs a Certified Inspector.
  - 1. Maintenance Proximity: Not more than two hours' normal travel time from Installer's place of business to Project site.
- B. Certified Inspector Qualifications: Certified by AAADM.

## **1.9 WARRANTY**

- A. Special Warranty: Manufacturer agrees to repair or replace components of power door operators that fail in materials or workmanship within specified warranty period.
  - 1. Failures include, but are not limited to, the following:
    - a. Faulty or sporadic operation of power door operator, including controls.
    - b. Deterioration of metals, metal finishes, and other materials beyond normal weathering or use.
  - 2. Warranty Period: Two years from date of Substantial Completion.

## **PART 2 - PRODUCTS**

### **2.1 MANUFACTURERS**

- A. Manufacturers: Subject to compliance with requirements, provide products by the following:
  - 1. Besam Entrance Solutions; an ASSA ABLOY Group Company.
  - 2. Door Motion Technologies, Inc.
  - 3. DORMA USA, Inc.
  - 4. Falcon; an Allegion Brand.

5. Hager Companies.
6. Horton Automatics; a division of Overhead Door Corporation.
7. Hunter Automatics, DITEC Entrematic Group.
8. KM Systems, Inc.
9. LCN; an Allegion brand.
10. NABCO Entrances, Inc.
11. record-usa.
12. SARGENT Manufacturing Company; ASSA ABLOY.
13. Stanley Access Technologies.

- B. Source Limitations: Obtain power door operators, including activation and safety devices, from single source from single manufacturer.

## **2.2 POWER DOOR OPERATORS, GENERAL**

- A. General: Provide 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 occupancy type indicated; and in accordance with UL 325. Coordinate operator mechanisms with door operation, hinges, and activation and safety devices.
1. Emergency Breakaway: Where indicated for center-pivoted doors, provide emergency breakaway feature for reverse swing of doors. Equip system to discontinue power to power door operator when door is in emergency breakaway position, to return door to closed position after breakaway, and to automatically reset.
- B. Electromechanical Operating System: Self-contained unit powered by permanent-magnet dc motor; with closing speed controlled mechanically by gear train and dynamically by braking action of electric motor, connections for power and activation- and safety-device wiring, and manual operation, including spring closing when power is off.
- C. Electrohydraulic Operating System: Self-contained, low-pressure unit; with separate cylinders for power and checking, connections for power and activation- and safety-device wiring, and manual operation, including spring closing when power is off.
- D. Pneumatic Operating System: Pneumatic operator, air opened and spring closed; with checking in both cycles and manual operation when power is off.
1. Power Unit:
    - a. Control box and compressor unit, complete with tank, compressor, air line to operator, motor, regulator, safety valve, pressure cutoff switch, and automatic air-line filter drain.
- E. Hinges: See Section 087100 "Door Hardware" Section 087111 "Door Hardware (Descriptive Specification)" for hinge type for each door that door operator shall accommodate.

- F. Housing for Overhead Concealed Operators: Fabricated from minimum 0.125-inch- thick, extruded or formed aluminum and extending full width of door opening, including door jambs, 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.
- G. Cover for Surface-Mounted Operators: Fabricated from 0.125-inch- thick, extruded or formed aluminum; manufacturer's standard width; continuous over full width of operator-controlled door opening; continuous over full width of door opening, including door jambs; with enclosed end caps, provision for maintenance access, and fasteners concealed when door is in closed position.
- H. Brackets and Reinforcements: Fabricated from aluminum with nonstaining, nonferrous shims for aligning system components.
- I. Fire-Door Package: Consisting of UL-listed latch mechanism, power-reset box, and caution signage for fire-rated doors. Latch mechanism shall allow door to swing free during automatic operation; when fire is detected, latch actuator shall cause exit hardware to latch when door closes. Provide latch actuators with fail-secure design.
- J. 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.

## **2.3 POWER DOOR OPERATORS FOR SWINGING DOORS**

- A. Standard: BHMA A156.10.
- B. Performance Requirements:
  - 1. Opening Force:
    - a. Power-Operated Doors: Not more than 50 lbf required to manually set door in motion if power fails; not more than 15 lbf required to open door to minimum required width.
    - b. Power-Operated Swinging Doors: Not more than 30 lbf required to manually open door if power fails.
    - c. Breakaway Device for Power-Operated Doors: Not more than 50 lbf required for breakaway door or panel to open.
  - 2. Entrapment-Prevention Force: Not more than 40 lbf required to prevent stopped door in the last 10 degrees of opening from moving in the direction of opening; not more than 30 lbf required to prevent stopped door from moving in direction of closing.
- C. Configuration: Operator to control single swinging doorpair of swinging doors.

1. Traffic Pattern: One way.
  2. Operator Mounting: Overhead concealed.
- D. Operation: Power opening and power-assisted spring closing. Provide time delay for door to remain open before initiating closing cycle as required by BHMA A156.10.
- E. Operating System: ElectromechanicalElectrohydraulicPneumatic.
- F. Microprocessor Control Unit: Solid-state controller.
- G. Features:
1. Adjustable openingandclosing speed.
  2. Adjustable openingandclosing force.
  3. Adjustable backcheck.
  4. Adjustable hold-open time from zero to 30 seconds.
  5. Adjustable time delay.
  6. Adjustable acceleration.
  7. Adjustable limit switch.
  8. Obstruction recycle.
  9. Power door re-open if stopped while closing.
  10. On-off/hold-open switch to control electric power to operator; key operated.
- H. Controls: Activation and safety devices as indicated on Drawings and in accordance with BHMA standards.
1. Safety Device, Presence Sensor: Mounted on door headerhorizontal door muntinguide rail to detect pedestrians in presence zone and to prevent door from closing.
- I. Exposed Finish: Finish matching door hardware.
1. Color: As selected by Architect from full range of industry colors and color densities.

## **2.4 LOW-ENERGY DOOR OPERATORS FOR SWINGING DOORS**

- A. Standard: BHMA A156.19.
- B. Performance Requirements:
1. Opening Force if Power Fails: Not more than 15 lbf required to release latch if provided, not more than 30 lbf required to manually set door in motion, and not more than 15 lbf required to fully open door.
  2. Entrapment-Prevention Force: Not more than 15 lbf required to prevent stopped door from closing or opening.

- C. Configuration, Single: Operator to control single swinging door.
  - 1. Traffic Pattern: One way.
  - 2. Operator Mounting: Overhead concealed.
- D. Operation: Power opening and[ power-assisted] spring closing. Provide time delay for door to remain open before initiating closing cycle as required by BHMA A156.19. When not in automatic mode, door operator shall function as manual door closer, with or without electrical power.
- E. Operating System: ElectromechanicalElectrohydraulicPneumatic.
- F. Microprocessor Control Unit: Solid-state controller.
- G. Features:
  - 1. Adjustable openingandclosing speed.
  - 2. Adjustable openingandclosing force.
  - 3. Adjustable backcheck.
  - 4. Adjustable hold-open time from zero to 30 seconds.
  - 5. Adjustable time delay.
  - 6. Adjustable acceleration.
  - 7. Obstruction recycle.
  - 8. On-off/hold-open switch to control electric power to operator; key operated.
- H. Activation Device: Push-plate switchTouchless switchon each side of door to activate door operator.
- I. Exposed Finish: Finish matching door hardware.
  - 1. Color: As selected by Architect from full range of industry colors and color densities.

## **2.5 POWER-ASSIST DOOR OPERATORS FOR SWINGING DOORS**

- A. Standard: BHMA A156.19.
- B. Performance Requirements:
  - 1. Opening Force:
    - a. Opening Force if Power Fails: Not more than 15 lbf required to release latch if provided, not more than 30 lbf required to manually set door in motion, and not more than 15 lbf required to fully open door.

- b. Accessible Interior Doors: Not more than 5 lbf to push or pull door to fully open position.
- 2. Entrapment-Prevention Force: Not more than 15 lbf required to prevent stopped door from closing or opening.
- C. Configuration, Single: Operator to control single swinging door.
  - 1. Traffic Pattern: One way.
  - 2. Operator Mounting: Surface.
- D. Configuration, Pair: Operator to control pair of swinging doors.
  - 1. Traffic Pattern: One way.
  - 2. Operator Mounting: Surface.
- E. Operation: Power-assisted opening that reduces the force to open door and power-assisted spring closing. Pushing or pulling on door activates operator. Provide time delay for door to remain open before initiating closing cycle as required by BHMA A156.19. When not in automatic mode, door operator shall function as manual door closer, with or without electrical power.
- F. Operating System: ElectromechanicalElectrohydraulicPneumatic.
- G. Microprocessor Control Unit: Solid-state controller.
- H. Features:
  - 1. Adjustable openingandclosing speed.
  - 2. Adjustable openingandclosing force.
  - 3. Adjustable backcheck.
  - 4. Adjustable hold-open time from zero to 30 seconds.
  - 5. Adjustable time delay.
  - 6. Adjustable acceleration.
  - 7. Obstruction recycle.
  - 8. On-off/hold-open switch to control electric power to operator; key operated.
- I. Exposed Finish: Class I, clear anodic finishClass II, clear anodic finishClass I, color anodic finishClass II, color anodic finishBaked-enamel or powder-coat finishMetal claddingFinish matching door and frameFinish matching door hardwareInsert finish.
  - 1. Color: Light bronzeMedium bronzeDark bronzeBlackAs indicated by manufacturer's designationsMatch Architect's sampleAs selected by Architect from full range of industry colors and color densitiesInsert color.

## **2.6 MATERIALS**

- A. Aluminum: Alloy and temper recommended by manufacturer for type of use and finish indicated.
  - 1. Extrusions: ASTM B221.
  - 2. Sheet: ASTM B209.
- B. Stainless Steel Sheet: ASTM A240/A240M or ASTM A666, Type 304, stretcher-leveled standard of flatness, in manufacturer's standard thickness.
- C. Brass Sheet: ASTM B36/B36M, Alloy UNS No. C26000 (cartridge brass, 70 percent copper), in manufacturer's standard thickness.
- D. 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 manufacturer's standard thickness.
- E. Expanded Aluminum Mesh: Expanded aluminum sheet in accordance with the geometry of ASTM F1267.
- F. Fasteners and Accessories: Corrosion-resistant, nonstaining, nonbleeding fasteners and accessories compatible with adjacent materials.

## **2.7 CONTROLS**

- A. General: Provide controls, including 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 occupancy type indicated. Coordinate activation and safety devices with door operation and door operator mechanisms.
- B. Motion Sensors: Self-contained, K-band-frequency, microwave-scanner units; fully enclosed in plastic housing; adjustable to provide detection field sizes and functions required by BHMA A156.10.
  - 1. Provide capability for switching between bidirectional and unidirectional detection.
  - 2. For one-way traffic, sensor on egress side shall not be active when doors are fully closed.
- C. 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.
- D. Photoelectric Beams: Pulsed infrared, sender-receiver assembly for recessed mounting. Beams shall not be active when doors are fully closed.

- E. Control Mats: 1/2-inch- 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 in accordance with performance requirements in BHMA A156.10.
1. Frame: Recessed to fit flush with floor, with concealed anchorsSurface mounted, with tapered safety edge.
  2. Size: As indicated, but not smaller than required by BHMA A156.10, including Appendix A.
  3. Color: As indicated by manufacturer's designationsMatch Architect's sampleAs selected by Architect from full range of industry colors and color densitiesInsert color.
- F. Push-Plate Switch: Momentary-contact door control switch with flat push-plate actuator with contrasting-colored, engraved message.
1. Configuration:
    - a. RoundSquare push plate with 4-by-4-inch junction box.
      - 1) Mounting: As indicated on DrawingsRecess mounted, semiflush in wallSurface mounted on wall.
  2. Push-Plate Material: Stainless steelPlastic as selected by Architect from manufacturer's full range.
  3. Message: Plain face with no message."Push to Open."International symbol of accessibility.International symbol of accessibility and "Push to Open."
- G. Touchless Switch: Hands-free activation door-control switch with flat motion sensor face-plate with contrasting-colored, engraved message.
1. Configuration: 6-inch round4.56-by-4.56-inch (double gang) square2.77-by-4.56-inch (single gang) rectangular1.68-by-4.56-inch jamb-style face plate.
    - a. Mounting: As indicated on DrawingsRecess mounted in wallRecess mounted in door jambSurface mounted on wall.
  2. Face-Plate Material: Stainless steelPlasticStainless steel with backlight acrylic windowAs selected by Architect from manufacturer's full range of options.
  3. Message: "Wave to Open.""Wave to Open" and wave symbol.International symbol of accessibility.International symbol of accessibility and "Wave to Open" and wave symbol.
- H. Push-Button Switch: Momentary-contact door control switch with one red-button actuator; enclosed in nominal 2-by-4-inch4-by-4-inch junction box.
1. Provide faceplate engraved with "Press to Open" text and international symbol of accessibility in contrasting color.

2. Provide blue plastic cover engraved with "Press Button to Open" in white text and with international symbol of accessibility.
  3. Mounting: As indicated on DrawingsSurface mounted on wallSurface mounted on postSurface mounted on guide railRecess mounted in wall.
  4. Faceplate Material: Stainless steelPainted metal as selected by Architect from manufacturer's full range.
- I. Key Switch: Recess-mounted, door control switch with key-controlled actuator; enclosed in 2-by-4-inch junction box. Provide faceplate engraved with text indicating switch functions.
1. Faceplate Material: Stainless steelPainted metal as selected by Architect from manufacturer's full range.
  2. Functions: On-off, momentary contactOn-off, maintained contactTwo-way automatic, hold open, one-way exit, and offTwo-way automatic, hold open, one-way exit, off, full open, and partial open.
  3. Mounting: As indicated on DrawingsRecess mounted, semiflush in wallRecess mounted in door jambSurface mounted on wallSurface mounted on post.
- J. Wireless or Remote Radio-Control Switch: Radio-control system consisting of header-mounted receiver and wall-mountedhandheld, battery-operated transmitter switch.
1. Wall-Mounted Transmitter Switch: One red-button, momentary-contact actuator enclosed in 4-by-4-inch junction box. Provide blue plastic cover engraved with "Press Button to Open" in white text and with international symbol of accessibility.
- K. 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.

## **2.8 ACCESSORIES**

- A. Signage: As required by cited BHMA standard for type of door and its operation.
1. Application Process: DecalsSilk-screenedOperator manufacturer's standard processInsert requirement.
  2. Provide sign materials with instructions for field application when operators are installed.
- B. Guide Rails:
1. Anodized aluminumBaked-enamel or powder-coated aluminumStainless steel, fabricated from barstube, minimum 30 inches 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 travelInsert requirement; with filler panel.

- a. Filler Panel: Expanded aluminum meshClear polycarbonate sheetColored polycarbonate sheetInsert material.
  - 1) Orient expanded aluminum mesh with long dimension of diamonds parallelperpendicular to top rail.
  - 2) Color: Match Architect's sampleAs selected by Architect from manufacturer's full rangeInsert color.
- b. Provide intermediate guide rail suitable for supporting photoelectric beams.
- c. Mounting: As indicated on DrawingsJamb and floorFloor, freestanding.
- d. Aluminum Finish: Class I, clear anodic finishClass II, clear anodic finishClass I, color anodic finishClass II, color anodic finishBaked-enamel or powder-coat finishFinish matching door and frameInsert finish.
  - 1) Color: Light bronzeMedium bronzeDark bronzeBlackMatch Architect's sampleAs selected by Architect from full range of industry colors and color densitiesInsert color.
- e. Stainless Steel Finish: No. 4, directional-satin-finish stainless steelFinish matching door and frameInsert finish.

## **2.9 FABRICATION**

- A. Factory fabricate power door operators to comply with indicated standards.
- B. Form aluminum shapes before finishing.
- C. Fabricate exterior components to drain condensation and water-passing joints within operator enclosure to the exterior.
- D. Use concealed fasteners to greatest extent possible. Where exposed fasteners are required, use countersunk Phillips flat-head machine screws, finished to match operator.
- E. Provide metal cladding, completely covering visible surfaces before shipment to Project site. Fabricate cladding with concealed fasteners and connection devices, with accurately fitted joints with ends coped or mitered to produce hairline joints free of burrs and distortion, and with allowance for thermal expansion at exterior doors.

## **2.10 GENERAL FINISH REQUIREMENTS**

- A. Protect mechanical finishes on exposed surfaces from damage by applying strippable, temporary, protective covering before shipping.

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

## **2.11 ALUMINUM FINISHES**

- A. Clear Anodic Finish: AAMA 611, AA-M12C22A41, Class I, 0.018 mm AA-M12C22A31, Class II, 0.010 mm or thicker.
- B. Color Anodic Finish: AAMA 611, AA-M12C22A42/A44, Class I, 0.018 mm AA-M12C22A32/A34, Class II, 0.010 mm or thicker.
- C. Baked-Enamel or Powder-Coat Finish: AAMA 2603 except with a minimum dry film thickness of 1.5 mils. Comply with coating manufacturer's written instructions for cleaning, conversion coating, and applying and baking finish.

## **PART 3 - EXECUTION**

### **3.1 EXAMINATION**

- A. Examine conditions, with Installer present, for compliance with requirements for installation tolerances, door and frame preparation and reinforcements, and other conditions affecting performance of power door operators.
- B. Examine roughing-in for electrical systems to verify actual locations of power connections before power door operator installation.
- C. Examine roughing-in for compressed-air piping systems to verify actual locations of piping connections before power door operator installation.
- D. Verify that full-height finger guards are installed at each door with pivot hinges, where door has a clearance at hinge side greater than 1/4 inch and less than 3/4 inch with door in any position.
- E. Proceed with installation only after unsatisfactory conditions have been corrected.

### **3.2 INSTALLATION, GENERAL**

- A. Install power door operators in accordance with manufacturer's written instructions and cited BHMA standard for type of door operation and direction of pedestrian travel, including signage, controls, wiring, remote power units if any, and connection to building's power supply.
  - 1. Do not install damaged components. Fit joints to produce hairline joints free of burrs and distortion.
  - 2. Install operators true in alignment with established lines and door geometry without warp or rack. Anchor securely in place.
- B. Controls: Install activation and safety devices in accordance with manufacturer's written instructions and cited BHMA standard for operator type and direction of pedestrian travel. Connect control wiring in accordance with Section 260519 "Low-Voltage Electrical Power Conductors and Cables."
- C. Access-Control System: Connect operators to access-control system as specified in Section 281500 "Access Control Hardware Devices."
- D. Signage: Apply on both sides of each door as required by cited BHMA standard for type of door operator and direction of pedestrian travel.
- E. Guide Rails: Install in accordance with BHMA A156.10, including Appendix A and manufacturer's written instructions unless otherwise indicated.

### **3.3 FIELD QUALITY CONTROL**

- A. Certified Inspector: Owner will engage a Certified Inspector to test and inspect components, assemblies, and installations, including connections.
- B. Perform the following tests and inspections with the assistance of a factory-authorized service representative:
  - 1. Test and inspect each power door operator installation, using AAADM inspection forms, to determine compliance of installed systems with applicable BHMA standards.
- C. Power door operators will be considered defective if they do not pass tests and inspections.
- D. Prepare test and inspection reports.

### **3.4 ADJUSTING**

- A. Adjust power door operators to function smoothly, and lubricate as recommended by manufacturer; comply with requirements of applicable BHMA standards.
  - 1. Adjust operators on exterior doors for tight closure.
- B. After completing installation of power door operators, inspect exposed finishes on doors and operators. Repair damaged finish to match original finish.
- C. Readjust power door operators and controls after repeated operation of completed installation equivalent to three days' use by normal traffic (100 to 300 cycles).
- D. Occupancy Adjustment: When requested within 12 months of date of Substantial Completion, provide on-site assistance in adjusting system to suit actual occupied conditions. Provide up to two visits to Project during other-than-normal occupancy hours for this purpose.

### **3.5 MAINTENANCE SERVICE**

- A. Initial Maintenance Service: Beginning at Substantial Completion, maintenance service shall include 12 months' full maintenance by skilled employees of power door operator Installer. Include monthly preventive maintenance, repair or replacement of worn or defective components, lubrication, cleaning, and adjusting as required for proper door operation. Parts and supplies shall be manufacturer's authorized replacement parts and supplies.
  - 1. Engage a Certified Inspector to perform safety inspection after each adjustment or repair and at end of maintenance period. Furnish completed inspection reports to Owner.
  - 2. Perform maintenance, including emergency callback service, during normal working hours.
  - 3. Include 24-hour-per-day, seven-day-per-week, emergency callback service.

### **3.6 DEMONSTRATION**

- A. Engage a factory-authorized service representative to train Owner's maintenance personnel to adjust, operate, and maintain power door operators.

### **END OF SECTION**