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## ARCHITECTURAL SPECIFICATIONS

### POWER SWING DOOR OPERATORS

**HD-Swing® Series 4100LE**  
Heavy Duty Low Energy Swing Door Operator  
Surface Applied

**B5.1**

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#### **DIVISION 08 - OPENINGS** **SECTION 08 71 13 POWER DOOR OPERATORS**

Specifier Note: Coordinate and edit articles and paragraphs below to suit project requirements. Add section numbers and titles per CSI "MasterFormat" and specifier's practice. Consult with manufacturer regarding performance requirements for units applicable to project, as well as, related equipment and accessories required.

#### **PART I – GENERAL**

##### **1.01 SUMMARY**

A. **WORK INCLUDED:** Furnish exterior and interior power door operators with visible mounting, as specified, that has been manufactured, fabricated and installed to maintain performance criteria stated by manufacturer without defects, damage or failure. Automatic door operators shall be configured as follows:

1. Single doors: Outswing or Inswing.
2. Simultaneous pairs: Outswing or Inswing.
3. Double Egress: Outswing and Inswing.

B. **RELATED WORK:**

1. Division 8 Section "Aluminum-Framed Entrances and Storefronts" for entrances furnished separately.
2. Division 8 Section "Door Hardware" for hardware to the extent not specified in this Section.
3. Division 16 Sections for electrical connections including conduit and wiring for power door operators.

##### **1.02 REFERENCES**

- A. AMERICAN ARCHITECTURAL MANUFACTURERS ASSOCIATION (AAMA) 101: Appendix Dissimilar Materials.
- B. AMERICAN ASSOCIATION OF AUTOMATIC DOOR MANUFACTURERS (AAADM).
- C. AMERICAN NATIONAL STANDARDS INSTITUTE (ANSI):
1. ANSI A156.19: For Power Assist and Low Energy Power Operated Doors
  2. ANSI.117.1: Accessible and Usable Buildings and Facilities
- D. AMERICAN SOCIETY FOR TESTING AND MATERIALS (ASTM) B221: Aluminum-Alloy Extruded Bars, Rods, Shapes and Tubes.
- E. AMERICANS WITH DISABILITIES ACT (ADA) 1990
- F. BUILDING OFFICIALS AND CODE ADMINISTRATORS INTERNATIONAL (BOCA)
- G. INTERNATIONAL CONFERENCE OF BUILDING OFFICIALS / UNIFORM BUILDING CODE (ICBO/UBC)
- H. INTERNATIONAL CODE COUNCIL / INTERNATIONAL BUILDING CODE (ICC/IBC)
- I. NATIONAL FIRE PROTECTION ASSOCIATION (NFPA) 101:
1. NFPA 101: Code for Safety to Life from Fire in Buildings & Structures.
  2. NFPA 70: National Electrical Code (NEC).
- J. THE ALUMINUM ASSOCIATION (AA) Aluminum Finishes Manual.
- K. UNDERWRITERS LABORATORY, INC. (USA & CANADA) UL 325: Electrical Door, Drapery, Gate, Louver, and Window Operators and Systems.



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#### 1.03 SUBMITTALS

- A. **PRODUCT DATA:** Submit manufacturer's complete product and installation data.
- B. **SHOP DRAWINGS:** Submit drawings showing layout, profiles, product components including anchorage, accessories, finish and glazing details (where required).
- C. **CLOSEOUT SUBMITTALS:** Submit the following:
  - 1. Owner's Manual.
  - 2. Warranty document as specified herein.
  - 3. AAADM inspection compliance form completed and signed by certified AAADM inspector prior to doors being placed in operation as proof of compliance with ANSI A156.19.

#### 1.04 QUALITY ASSURANCE AND PERFORMANCE REQUIREMENTS

- A. **INSTALLERS QUALIFICATIONS:** Installer shall be factory trained, certified by AAADM, and experienced to perform work of this section.
- B. **MANUFACTURER'S QUALIFICATIONS:** Manufacturer to have minimum (5) five years successful experience in the fabrication of automatic doors of the type required for this project. Manufacturer capable of providing field service representation during installation, approving acceptable installer and approving application method.
- C. **CERTIFICATIONS:** Automatic sliding door systems and options shall be factory certified to meet performance design criteria in accordance with the following standards:
  - 1. ADA 1990: Americans With Disabilities Act
  - 2. ANSI A156.19: For Power Assist and Low Energy Power Operated Doors
  - 3. ANSI.117.1: Accessible and Usable Buildings and Facilities
  - 4. NFPA 101: Code for Safety to Life from Fire in Buildings & Structures.
  - 5. UL 325: Electrical Door, Drapery, Gate, Louver, and Window Operators and Systems.
  - 6. BOCA: Means of Egress, Power Operated Doors
  - 7. ICBO/UBC: Egress Through Lobbies
  - 8. ICC/IBC: Egress Section
- D. **SOURCE LIMITATIONS:** Obtain automatic door operators through one source from a single manufacturer.
- E. **PRODUCT OPTIONS:** Drawings indicate sizes, profiles, and dimensional requirements of automatic entrance door assemblies and are based on the specific system indicated. Refer to Division 1 Section "Product Requirements."
- F. **POWER OPERATED DOOR STANDARD:** ANSI/BHMA A156.19.
- G. **OPERATION:** Automatic and/or Manual:
  - 1. Automatic: Pushbutton/Push Plate switch actuates door open; door closes after time delay expires. Opening and closing force, measured 1" (25.4 mm) out from the lock stile of the door, not to exceed 15 pounds (67 N) of force to stop the door when operating in either direction. Operator to include the following variable adjustments so as to comply with ANSI Standard A156.19: Opening speed – 4 1/2 to 6 seconds; Closing speed – 4 1/2 to 6 seconds.
  - 2. Manual: Push-N-Go™: Manually pushing door activates automatic opening cycle; door closes after time delay expires (approximately 30% less than after pushbutton actuation).
- H. **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.



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- I. OPERATING RANGE: -30° F to 130° F (-34° C to 54° C)
- J. OPENING FORCE REQUIREMENTS FOR EGRESS DOORS: In the event power failure to the operator, swinging automatic entrance doors shall open with a manual force, not to exceed 30 lbf (133 N) applied at 1" (25 mm) from the latch edge of the door.
- K. DOOR ENERGY: The kinetic energy of a door in motion shall not exceed 1.25 lbd-ft (1.69 Nm).
- L. CLOSING TIME:
  - 1. Doors shall be field adjusted to close from 90 degrees to 10 degrees in 3 seconds or longer.
  - 2. Doors shall be field adjusted to close from 10 degrees to fully closed in not less than 1.5 seconds.

#### 1.05 WARRANTIES

- A. MANUFACTURER'S WARRANTY: Units to be warranted against defect in material and workmanship for a period of one year from the Date of Substantial Completion. Manufacturer's warranty is in addition to, and not a limitation of, other rights owner may have under Contract Documents.
- B. DISTRIBUTOR'S WARRANTY: One year warranty: Labor & transportation charges for defective parts replacement.

#### 1.06 PROJECT CONDITIONS

FIELD MEASUREMENTS: Verify actual dimensions/openings by field measurements before fabrication and record on shop drawings. Coordinate with fabrication and construction schedule to avoid construction delays.

#### 1.07 DELIVERY, STORAGE AND HANDLING

- A. ORDERING AND DELIVERY: Comply with factory's ordering instructions and lead time requirements. Delivery shall be in factory's original, unopened, undamaged containers with identification labels intact.
- B. STORAGE AND PROTECTION: Provide protection from exposure to harmful weather conditions and vandalism.

### PART II - PRODUCTS

#### 2.01 MANUFACTURER

HORTON AUTOMATICS, a division of Overhead Door Corporation, shall manufacture automatic swing door(s) of type(s) and size(s) specified on plans and door schedule.

#### 2.02 EQUIPMENT

- A. MANUFACTURED DOOR UNITS: HD-SWING® Series 4100LE: Surface Applied Operator with connecting arms and linkage shall provide positive control of door through entire swing; units shall permit use of butt hung and center pivot doors.
  - 1. Mounting: The operator header shall be mounted to the surface of the existing door frame or wall.
  - 2. Door Arms: Connecting hardware shall be a double arm arrangement that can either push the door or pull the door open to suit the job condition. When the operator mounting is on the pull side and adjacent wall is within 4" (102 mm) of the door frame, specify a parallel arm.
  - 3. Fasteners and Accessories: Manufacturer's standard corrosion-resistant, non-staining, non-bleeding fasteners and accessories compatible with adjacent materials.



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- B. HD-SWING® HEADER CASE: Shall be available in the following configurations:
1. Side Access: Shall be extruded aluminum case 6" x 6" (152 mm x 152 mm)
  2. Bottom Access: Shall be extruded aluminum case 4 1/2" x 6" (114 mm x 152 mm). This configuration will allow for bottom of header to be flush with ceiling.
- B. OPERATOR: The Electric Operating Mechanism shall be Series 4000LE: Operator shall be isolation mounted and concealed in an extruded aluminum case for smooth and quiet operation. Maximum current draw shall not exceed 3.15 amps.
1. Opening Action: Shall be accomplished by a 1/8 HP D.C. permanent magnet motor working through reduction gears to the output shaft. Gear train bearings shall be sealed ball bearing types.
  2. Field Adjustable Spring Closing Action: shall be accomplished by a maximum-duty Quadracoil™ spring (four independent coil springs separated by teflon discs and enclosed in an external spring box) with a lifetime warranty. The spring shall be adjustable, without removing the operator from the header, to accommodate a wide range of field conditions.
  3. Independent Adjustable Closing and Latching Speed Control: The operator shall employ a rheostat module to allow for independent field adjustment of closing and latching speeds using the motor as a dynamic brake.
  4. Field Adjustable Open Stop: The operator shall provide a field adjustable open stop to accommodate opening angles from 80 to 135 degrees without the need for additional components.
  5. Consistent Cycle: The operator shall deliver an even, consistent open force across the entire transition from door fully closed to door open check. Additionally, the range of the force shall be field adjustable to accommodate a wide range of on-site conditions.
  6. Manual Use: The operator shall function as a manual door closer in the direction of swing with or without electrical power. The operator shall deliver an even, consistent open force across the entire transition from door fully closed to door fully open.
  7. Controller Protection: The controller shall incorporate the following features to ensure trouble free operation:
    - a. Automatic Reset upon power up.
    - b. Main fuse protection.
    - c. Electronic surge protection.
    - d. Internal power supply protection.
    - e. Resettable sensor supply fuse protection.
  8. Push Button Interface: The controller shall have push button switches with to allow for selection or change of the following parameters: carpet or timer logic, single or dual door, activation options, normal back check or large back check, push-to-open assist on/off.
  9. Soft Start/Stop: A "soft-start" "soft-stop" motor driving circuit shall be provided for smooth normal opening and recycling.
  10. Control Switch: Automatic door operators shall be equipped with a three position function switch to control the operation of the door. Control switch shall provide three modes of operation, Automatic, Off, and Hold-Open.
  11. Master Control: Shall incorporate the following features:
    - a. Adjustable time delay of 2 to 30 seconds (ANSI A156.19 requirement is 5 second minimum time delay).
    - b. Infinite adjustment to opening and open check speeds including adjusting the opening force without affecting the opening speed.
    - c. Immediate reversal of door motion without undue strain on the drive train. This will be accomplished by supplying stepped voltage to the motor. The door shall reverse when closing if an object stops the door.
    - d. Motor Protection Circuit: A locked door motor protection circuit will be supplied that will shut off current to the motor when the door is inadvertently locked or otherwise prevented from opening.



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### 2.03 RELATED EQUIPMENT

ACTIVATING DEVICE: Shall be located on each side of the opening as per ANSI Safety Standard A117 and shall be hardwired to door operator controls. Optional wireless radio control. Activating device shall be momentary contact microswitch assembly in one of the following configurations:

- A. PUSHBUTTON: 1" diameter (25 mm) round, red pushbutton switch. Face plates shall be engraved with the international symbol for accessibility and "Press To Open". Jamb or wall mounted.
- B. PUSH PLATE: 6" diameter (152 mm) round or 4 ½" (114 mm) square, stainless steel switch. Wall mounted. Optional engravings shall be:
  - 1. International symbol for accessibility and "Press To Open".
  - 2. International symbol for accessibility only.
  - 3. "Press To Open" only.
  - 4. Plain - No engraving

### 2.04 RELATED WORK REQUIREMENTS

ELECTRICAL: To be provided under Division 16: 120 or 220 VAC, 60 cycle, 1 phase, 10 amps for doors with operators in pairs, 5 amps for single doors. Non-North American voltages can be 240 VAC (operator must have 240 volt power supply)

### 2.05 MATERIALS, FINISHES AND FABRICATION

- A. EXTRUDED ALUMINUM: ASTM B221, 6063-T5 alloy and temper, anodized: Structural Header Sections: Minimum 1/8" (3 mm) thickness.
- B. FINISHES (for all exposed aluminum surfaces): Shall be one of the following:
  - 1. 204-R1 Clear: Arch. Class 2 Clear Anodized Coating, AA-MI2C22A31.
  - 2. 313-R1 Dark Bronze: Arch. Class 1 Anodized Coating, AA-MI2C22A44.
  - 3. 312-R1 Light Bronze: Arch. Class 1 Anodized Coating, AA-MI2C22A44.
  - 4. 315-R1 Black: Arch. Class 1 Anodized Coating, AA-MI2C22A44.
  - 5. Special Paint Coating: Color as selected.
  - 6. Clad with stainless steel or muntz metal (brass alloy): #7 mirror finish or #4 brushed finish.
- C. OPERATOR CONSTRUCTION: Electromechanical.

## PART III - EXECUTION

### 3.01 EXAMINATION

SITE VERIFICATION OF CONDITIONS: Installer must verify that base conditions previously installed under other sections are acceptable for product installation according to with manufacturer's instructions. Notify the Contractor in writing of conditions detrimental to the proper and timely completion of work. Do not start work until all negative conditions are corrected in a manner acceptable to the installer and manufacturer.



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### 3.02 INSTALLATION

- A. **GENERAL:** Installer shall be factory trained, certified by AAADM, and experienced to perform work of this section. Install door units plumb, level and true to line, without warp or rack of frames or sash with manufacturer's prescribed tolerances. Provide support and anchor in place.
- B. **DISSIMILAR MATERIALS:** Comply with AAMA 101, Appendix Dissimilar Materials by separating aluminum materials and other corrodible surfaces from sources of corrosion or electrolytic action contact points.
- C. **WEATHER-TIGHT CONSTRUCTION:** Install header and framing members in a bed of sealant or with joint filler or gaskets. Coordinate installation with wall flashings and other components of construction.
- D. **ELECTRICAL:** General or electrical contractor to install all wiring to operator on a separate circuit breaker routed into header.

### 3.03 CLEANING, ADJUSTMENT AND PROTECTION

- A. **CLEANING:** After installation, installer to take following steps:
  - 1. Remove temporary coverings and protection of adjacent work areas.
  - 2. Remove construction debris from construction site and legally dispose of debris.
  - 3. Repair or replace damaged installed products.
  - 4. Clean product surfaces and lubricate operating equipment for optimum condition and safety.
- B. **ADJUSTMENT:** AAADM certified technician shall inspect and adjust installation to assure compliance with ANSI A156.19.
- C. **ADVISE CONTRACTOR:** Of precautions required through the remainder of the construction period, to ensure that doors will be without damage or deterioration (other than normal weathering) at the time of acceptance.
- D. **FIELD QUALITY CONTROL:** Testing Services: Factory Trained Installer shall test and inspect each swinging automatic entrance door to determine compliance of installed systems with applicable ANSI standards.

*Note: Horton Automatics reserves the right to make product improvements and change specifications without notice.*

**END OF SECTION**