

SECTION 08465

AUTOMATIC FOLDING DOORS

PART 1 GENERAL

1.1 SECTION INCLUDES

- A. Aluminum folding doors and frames.
- B. Automatic door operators, actuators, and safeties.
- C. Fail-safe magnetic locking package.

1.2 RELATED SECTIONS

- A. Section 03300 - Cast-in-Place Concrete: Recess in concrete slab for mat-type actuators.
- B. Section 07900 - Joint Sealers.
- C. Section 08800 - Glass and Glazing.
- D. Division 16 - Electrical: 115 VAC, single-phase wiring in conduit between operator enclosure and building power supply and low voltage wiring between enclosure and actuators and safeties.

1.3 REFERENCES

- A. ANSI/BHMA A156.10 - American National Standard for Power-Operated Pedestrian Doors.
- B. NFPA 101 - Safety to Life from Fire in Buildings and Structures.
- C. UL 325 - Standard for Door, Drapery, Gate, Louver, and Window Operators and Systems.

1.4 DEFINITIONS

- A. FS Panel: The panel (half of a pair of bifolding doors) which hinges to the door jamb.
- B. FX Panel: The panel (half of a pair of bifolding doors) which locks to the door jamb in a bi-folding single application, or meets another panel in a bi-folding pair application.

1.5 PERFORMANCE REQUIREMENTS

- A. Automatic opening and closing of folding doors by way of inside and outside motion detectors and electro-mechanical operators; adjustable opening speed, closing speed, and hold open duration.
- B. Maximum security lock cylinders, keyed alike; one interior thumbturn.
- C. Emergency one-point unlocking system; releasing interior thumbturn in one operation allows doors to swing in the direction of egress.
- D. Adjustable ball/detent system allows folding door to swing out 90 degrees for manual breakout from any position in cycle, complying with NFPA 101.
- E. Power to door operator disconnected when folding doors are in emergency swing out position.
- F. Fail-safe magnetic locks prevent doors from opening except that, upon power failure, doors unlock allowing exit by use of the breakaway system.

1.6 SUBMITTALS

- A. Submit under provisions of Section 01300.
- B. Product Data: Manufacturer's catalog data, detail sheets, and specifications.
- C. Shop Drawings: Prepared specifically for this project; show dimensions of doors, operators, and interface with other products.
- D. Operating and Maintenance Data: Operating and maintenance instructions, parts lists, and wiring diagrams.

1.7 QUALITY ASSURANCE

- A. Installer Qualifications: Factory-trained, with minimum 3 years experience.

PART 2 PRODUCTS

2.1 MANUFACTURERS

- A. Acceptable Manufacturer: Provide products made by Dor-O-Matic, 7350 West Wilson Avenue, Harwood Heights, IL 60656-4786. ASD. Tel: (708) 867-7400 or (800) 543-4635. Fax: (708) 867-0291.
- B. Requests for substitutions will be considered in accordance with provisions of Section 01600.
- C. Substitutions: Not permitted.
- D. Provide all automatic folding doors, panels, jambs, and electro-mechanical automatic door operating equipment from a single manufacturer.

2.2 DOORS AND FRAMES

- A. Doors, Panels, and Jambs: Extruded aluminum alloy, minimum 1/8 inch (3.17 mm) thick.
 - 1. Door and Panel Construction: Heavy-duty interlocked sections, through-rod bolted.
 - 2. Top Web of Doors: 1/4 inch (6.34 mm) thick, factory-prepared with custom steel press nuts to accept required hardware.
 - 3. Finish: Natural anodized aluminum.
 - 4. Finish: Dark bronze anodized aluminum.
 - 5. Finish: _____.
 - 6. Motor/Gear Box Operator: Full size, heavy-duty self-contained electro-mechanical, concealed overhead.
 - 7. Actuator: Motion detector.
 - 8. Actuator: Push plate.
 - 9. Actuator: Key switch.
 - 10. Actuator: Card reader.
 - 11. Actuator: Mat type.
 - 12. Actuator: _____.
 - 13. Safety System: One overhead-mounted infrared safety sensor, two horizontal safety beams, and two microwave motion detectors; mount one motion detector on each side of door opening.
 - 14. Finger Guards: 1 inch (25 mm) vinyl on doors, panels, and jambs.

2.3 DOOR OPERATORS

- A. Operation: Electric power opening, closing, and holding; comply with ANSI A156.10 and UL 325.
 - 1. Open unlocked doors upon activation of motion detector.

2. Close doors after each cycle, and hold against drafts and wind pressure.
 3. Provide safety reverse function to automatically reverse doors to full open position should a person or object be encountered during closing cycle.
 4. Spring-close closing force: 9 lb-force (40 N).
 5. Manual switch between spring-close-and-hold and power-boost-close-and-hold.
 6. Power-boost-close-and-hold: Electronically increase door closing force to 18 lb-force (80 N).
 7. Provide adjustment by microprocessor control for:
 - a. Opening speed.
 - b. Hold open speed, from 1 to 30 seconds.
 - c. Closing speed.
 8. Factory-set door hold-open voltage.
 9. Manual "On-Off-Hold Open" switch.
 10. Fail safe: In event of power failure, make door operate manually without damage to operator components.
- B. Construction: Heavy-duty self-contained electro-mechanical; comply with ANSI A156.10 and UL 325.
1. Motor/gear box operator: Cast aluminum housing, with precision-machined gears and bearing seats and all-weather lubricant, mounted on vibration isolators.
 2. Gears: Manufactured by door operator manufacturer specifically for operators.
 3. Motor: DC permanent magnet motor with shielded ball bearings. Stop motor when door stops or is fully open and when break-away is operated.
 4. Door operating arm: Forged steel, attached at natural pivot point of door; do not use slide block in top of door.
 5. Microprocessor control: 115 VAC. Do not use rotary arm mechanism or door position switches along header. Mount control in snap-in type control box.
 6. "On-Off-Hold Open" switch: Three-position toggle or rocker type.
 7. Control circuits for actuators and safeties: Low voltage, NEC Class II.
 8. Service conditions: Satisfactory operation between minus 30 degrees F (minus 34 degrees C) and 160 degrees F (71 degrees C).
 9. Power supply required: 115 VAC.
- C. Enclosure: Overhead header, 9 inches high by 6 inches wide (230 x 152 mm), containing all operating components.

1. Provide access door on bottom of enclosure for access to controls and removable components without removal of door or operator.
2. No exposed fasteners.
3. Finish of Exposed Surfaces: Match doors.
4. Finish of Exposed Surfaces: Anodized aluminum.
5. Finish of Exposed Surfaces: Factory coated, Kynar 500(tm).
6. Finish of Exposed Surfaces: Clad to match door frame.
7. Color: To match door.
8. Color: As selected from manufacturer's standard selection.
9. Color: Dark bronze.
10. Color: Natural aluminum.
11. Color: Black.
12. Color: _____.

2.4 ACTUATORS

- A. Motion Detectors: Dor-O-Matic "Astro-Scan".
1. Operation: Detect movement within adjustable zone near door and activate operator; deactivate operator upon no movement.
 2. Operation: Detect approaching movement within adjustable zone near door and activate operator; deactivate operator upon no movement or departing movement.
 3. Adjustable sensitivity and time delay.
 4. Housing: Black anodized aluminum.
 5. Lens: Black Lexan, screwed on; sealed to provide weather- and dust-proofing.
 6. Mounting: Flush against header/wall.
 7. Operating unit: Gimbal-mounted oscillator allowing pattern adjustment.
 8. Electronics: Removable printed circuit board with gold-plated contacts; unaffected by radio frequency interference, normal police, fire, and ambulance frequencies, and other two-way radio frequencies; designed to eliminate line noise and surge current.
 9. Service conditions: Satisfactory operation between minus 30 degrees F (minus 34 degrees C) and 160 degrees F (71 degrees C); unaffected by humidity or moisture.
- B. Push Plate Actuator: Formed metal plate with rounded corners, satin finish; approximately 5 inches (127 mm) square; with depressed marking.

1. Material: Stainless steel.
 2. Material: Brass.
 3. Marking: "Push to operate door", filled red.
 4. Marking: Handicapped symbol, filled blue.
- C. Card Reader Actuator: _____.
- D. Key Switch Actuator: _____.
- E. Mat-Type Actuator/Safety: Manufacturer's standard rubber mat type.
1. Frame for recessed mounting in floor slab.
 2. Frame for surface mounting, with transition strips.
 3. Color: As selected from manufacturer's standard selection.
 4. Color: _____.

2.5 HARDWARE AND ACCESSORIES

- A. Door Hardware:
1. Manual Locks: Emergency one-point unlocking system, Adams-Rite maximum security lock cylinders, keyed alike.
 - a. Quantity: Two per opening.
 - b. Quantity: Three per opening.
 2. Main Cylinders: One per opening, keyed on outside, thumbturn on inside, locking the FX panel into adjacent jamb and dropping vertical bolt into threshold/floor. Releasing interior thumbturn shall allow doors to swing in the direction of egress.
 3. Secondary Cylinders: Keyed both sides, operating vertical bolt to lock the FS panel into breakaway carrier.
 4. Pivot Systems: Extra-heavy duty, providing concealed radial thrust bearings at tops of panels.
 5. Threshold: Manufacturer's standard.
 6. Fail-Safe Magnetic Locking Package (with Four-Position Switch):
 - a. Magnetic lock control board; 12-volt DC, 2,700 pound (12,000 N) holding force shear magnetic locks.
 - b. Doors unlock with power failure, allowing exit by use of the breakaway system.
 - c. Switch Position "Off": Magnetic locks and all sensing devices deactivated; doors still manually lockable.

- d. Switch Position "One-Way": Doors locked for night (security) operation; outside sensing devices deactivated, magnetic locks prevent forcible opening from outside; inside sensing devices unlock and open doors, activating outside sensing devices until doors are fully closed.
 - e. Switch Position "Two-Way": Doors unlocked for day (normal) operation; inside and outside sensors active.
 - f. Switch Position "Hold Open": Doors unlocked and held in full open position.
7. Fail-Safe Magnetic Locking Package (Wired into Security System):
- a. Magnetic lock control board; 12-volt DC, 2,700 pound (12,000 N) holding force shear magnetic locks.
 - b. Doors unlock with power failure, allowing exit by use of the breakaway system.
 - c. Contacts Open (One-Way): Doors locked for night (security) operation; outside sensing devices deactivated, magnetic locks prevent forcible opening from outside; inside sensing devices unlock and open doors, activating outside sensing devices until doors are fully closed.
 - d. Contacts Closed (Two-Way): Doors unlocked for day (normal) operation; inside and outside sensors active.
8. Two-Position Magnetic Lock Override Switch:
- a. Position "Off": Prevents magnetic lock from engaging (locking) no matter which of the four positions is selected; door functions as if there were no magnetic lock, but doors still manually lockable.
 - b. Position "On": Magnetic lock functions as specified.
- B. Signs: Provide signs complying with ANSI A156.10 and applicable codes.
- 1. Approach side: Black arrow on white background inside green circle.
 - 2. Reverse side: "DO NOT ENTER" in white letters on a red circle.
 - 3. Traffic in both directions through same door: Yellow circle with "AUTOMATIC DOOR" in black letters and "CAUTION" across the middle in yellow letters on black.

PART 3 EXECUTION

3.1 EXAMINATION

- A. Verify that door openings are plumb, square, and ready for installation of automatic folding door equipment.
- B. Verify that electrical service is available, properly located, and of proper type.

3.2 INSTALLATION

- A. Install folding doors, frames, operating equipment, hardware, and accessories in accordance with manufacturer's instructions; comply with ANSI A156.10.
- B. Install mat-type actuators in recesses in floor; level and grout securely.
- C. Verify that electrical connections are made correctly.

3.3 ADJUST AND CLEAN

- A. Adjust doors and operators for proper operation, without binding or scraping and without excessive noise.

END OF SECTION