

SECTION 08 36 13
SECTIONAL DOORS

SPEC WRITER NOTE: Delete between // //, if not applicable to project. Also delete all other items or paragraph not applicable in the section and renumber the paragraphs.

PART 1 - GENERAL

1.1 DESCRIPTION:

- A. This section specifies // manually // // electrically // operated sectional overhead steel doors.

1.2 RELATED WORK:

- A. Overhead Roll-Up Doors: Section 08 33 00, COILING DOORS AND GRILLES.
 B. Lock Cylinders for Cylindrical Locks: Section 08 71 00, DOOR HARDWARE.
 C. Field Painting of Factory Primed Doors: Section 09 91 00, PAINTING.
 D. Electrical Installation:
 1. Section 26 05 11, REQUIREMENTS FOR ELECTRICAL INSTALLATIONS.
 //2. Section 27 05 11, REQUIREMENTS FOR COMMUNICATIONS INSTALLATIONS. //
 3. Section 28 05 00, COMMON WORK RESULTS FOR ELECTRONIC SAFETY AND SECURITY.

1.3 MANUFACTURER'S AND INSTALLER'S QUALIFICATIONS:

- A. Manufacturer's with three (3) years' experience in providing items of type specified. Submit manufacturer qualifications.
 B. Installers who are trained and approved by manufacturer for installation of units required. Submit installer qualifications.

1.4 SUBMITTALS:

- A. Submit in accordance with Section 01 33 23, SHOP DRAWINGS, PRODUCT DATA, AND SAMPLES.
 B. Shop Drawings:
 1. Details of construction, accessories and hardware, electrical and mechanical items, supporting brackets for motors, location, and ratings of motors, and safety devices.
 2. Wiring diagrams for motors and controls, including wiring diagram for door, showing electrical interlock for motor with manually operated dead lock.
 C. Manufacturer's Literature and Data:
 1. Brochures or catalog cuts.
 2. Manufacturer's installation procedures and instructions.

- 3. Maintenance instructions, parts list.
- D. Installer’s qualifications.
- E. Manufacturer’s qualifications.
- F. Certificates:
 - 1. Attesting door, anchors and hardware will withstand the horizontal loads specified.
 - 2. Attesting door complies with thermal performance, air infiltration, and water infiltration requirements.
- G. Manufacturer warranty.

1.5 QUALITY ASSURANCE:

- A. Source: Obtain sectional doors from single source from single manufacturer. Obtain operators and controls from sectional door manufacturer.

1.6 WARRANTY:

- A. Construction Warranty: Comply with FAR clause 52.246-21 “Warranty of Construction”.
- B. Manufacturer Warranty: Manufacturer shall warranty their sectional doors for a minimum of two (2) // // years from the date of installation and final acceptance by the Government. Submit manufacturer warranty.

1.7 APPLICABLE PUBLICATIONS:

- A. Publications listed below form a part of this specification to the extent referenced. Publications are referenced in the text by the basic designation only.
- B. American Architectural Manufacturers Association (AAMA):
 - 2603-13.....Performance Requirements and Test Procedures
for Pigmented Organic Coatings on Aluminum
Extrusions and Panels
- C. American Society of Civil Engineers (ASCE):
 - 7-10.....Wind Load Provisions
- D. ASTM International (ASTM):
 - A36/A36M-14.....Structural Steel
 - A227/A227M-06(R2011)....Steel Wire, Cold-Drawn for Mechanical Springs
 - A229/229M-12.....Steel Wire, Oil-Tempered for Mechanical Springs
 - A653/A653M-12(R2013)....Steel Sheet, Zinc-Coated (Galvanized) or Zinc
Iron Alloy Coated (Galvanized) by the Hot Dip
Process
 - C1036-11(R2012).....Flat Glass

- C1363-11.....Test Method for Thermal Performance of Building Materials and Envelope Assemblies by Means of a Hot Box Apparatus
- E84-14.....Surface Burning Characteristics of Building Materials
- E283-04(R2012).....Determining the Rate of Air Leakage Through Exterior Windows, Curtain Walls, and Doors Under Specified Pressure Difference Across the Specimen
- E330/E330M-14.....Structural Performance of Exterior Windows, Curtain Walls, and Doors by the Uniform Static Air Pressure Difference.
- E331-00(R2009).....Water Penetration of Exterior Windows, Curtain Walls, and Doors by the Uniform Static Air Pressure Difference.
- E. American National Standards Institute and Door and Access Systems Manufacturers Association (ANSI/DASMA):
- 102-11.....Sectional Overhead Type Doors.
- F. National Electrical Manufacturer's Association (NEMA):
- ICS 6-93(R2011).....Industrial Controls and Systems: Enclosures
- MG 1-11(R2014).....Motors and Generators
- ST 20-14.....Dry Type Transformers for General Applications
- G. National Fire Protection Association (NFPA):
- 70-14.....National Electrical Code
- H. National Association of Architectural Metal Manufacturers (NAAMM):
- AMP 500-06.....Metal Finishes Manual
- I. Underwriters Laboratories, Inc. (UL):
- 325-06(R2013).....Door, Drapery, Gate, Louver, and Window Operators and Systems

PART 2 - PRODUCTS

2.1 MATERIALS:

- A. Steel: ASTM A653/A653M for forming operations. ASTM A36/A36M for structural sections.
- B. Hard Drawn Spring wire: ASTM A227/A227M.
- C. Oil Tempered Spring wire: ASTM A229/A229M.
- D. Glass: ASTM C1036
1. Clear Glass: Type 1, Class 1, Quality q5, 6 mm (1/4 inch) thick.
 2. Fabricated into sealed insulating glass 25 mm (1 inch) thick.

E. Weather-strips, Gaskets, and Thermal Breaks:

1. Neoprene, EPDM, PVC, silicone rubber, or other low conductance material.
2. Standard with door manufacturer.

2.2 DESIGN REQUIREMENTS:

SPEC WRITER NOTE: Use not less than 960 Pa (20 pounds per square foot) for wind load. Insert higher loads for locations when required by Code.

- A. Wind Load: Design to withstand uniform pressure (velocity pressure) of 960 Pa (20 lbs. per sq. ft.) acting inward and outward when tested in accordance with ASTM E330/E330M. Doors are to remain operable under design wind load.
- B. Thermal Performance for Insulated Doors: Maximum U value of 0.14 for door when tested in accordance with ASTM C1363.
- C. Air Infiltration for Exterior Doors: Maximum of 0.10 cfm at 24 Km (15 miles per hour) wind speed per foot of crack between door sections and door perimeter opening when tested in accordance with ASTM E283.
- D. Water Infiltration for Exterior Doors: No infiltration when tested in accordance with ASTM E331.

SPEC WRITER NOTE: Retain paragraph below where required.

//E. Seismic Performance: Sectional doors are to withstand the effects of earthquake motions determined according to ASCE 7. //

- F. Comply with ANSI/DASMA 102. Provide metal doors with horizontal sections hinged together to operate in a system of tracks to completely close the door opening in the closed position and make the full width and height of the door opening available for use in the open position.
- g. Operation-Cycle Requirements: Door components and actuators to operate for not less than 10,000 // // cycles.

2.3 FABRICATION:

A. Steel Door Sections:

1. Formed of hot-dipped galvanized steel.
2. Meeting rails: Interlocking joints with thermal breaks separating face sheets formed to provide weathertight closure and alignment for full width of door.
3. Height of Each Section: Not to exceed 610 mm (24 inches).

//4. Install glazing panels where indicated using rubber thermal break gaskets standard with door manufacturer.//

5. Provide // board // // foamed in place // insulation with flame spread rating of not more than 25 and a smoke development factor of not more than 50 when tested in accordance with ASTM E84.
6. Reinforced for hardware anchorage with not less than 10 gage galvanized steel.

B. Tracks:

1. Manufacturer's standard, formed of galvanized steel.
2. Track Configuration: // Standard-lift // // Low-headroom // // High-lift // // Vertical-lift // // Contour // track.
3. Minimum of 1.98 mm (14 gage) for 50 mm (2 inch) tracks and 2.78 mm (12 gauge) for 75 mm (3 inch) tracks.
4. Vertical tracks fabricated with adjustable brackets for mounting at incline to continuous steel angle wall bracket.
5. Horizontal Track: Reinforce with continuous steel angle anchored to vertical steel angle wall bracket and to ceiling angle supports. Provide vertical and cross or diagonal braces to obtain rigid installation of horizontal track.
6. Provide not less than 2.38 mm (13 gage) galvanized steel angles.

C. Hardware:

1. Manufacturers standard hinges, brackets, rollers, locking devices and other hardware required for a complete installation.
2. Hinges and Roller Brackets: Minimum of 2.38 mm (13 gage) galvanized steel.
3. Provide rollers with ball bearings and case hardened races.
4. Provide positive locking device to receive cylinder lock, specified in Section 08 71 00, DOOR HARDWARE, with interlocking switch to motor actuator.
5. Weatherseals: Manufacturer's standard fitted // to bottom and top // // around entire perimeter // of door. Provide combination bottom weatherseal and sensor edge.

D. Manual Operation:

- //1. Pushup Operation: Provide lifting handles on both sides of door with counterbalance mechanism designed to that required lift or pull for door operation does not exceed 111 newton (N) (25 pound force). Provide pulldown straps or ropes at the bottom of doors over 2134 mm (7 feet) high.//
- //2. Chain Hoist Operation: Provide galvanized, endless chain operating over a sprocket.

- a. Extend chain to within 1219 mm (4 feet) of the floor and mount on inside of building.
- b. Obtain reduction by use of roller chain and sprocket drive or gearing.
- c. Provide chain cleat and pin for securing actuator chain.
- //d. Allow for installation of power actuators to chain hoist operator when indicated in construction documents.//
- e. Do not exceed the maximum lifting force of 111 newton (N) (25 pound force) required to operate the door.//

//2.4 ELECTRIC MOTOR OPERATORS:

- A. Complete with electric motor, machine cut reduction gears, steel chain and sprockets, magnetic brake, overload protection, brackets, wall mount push button controls, limit switches, magnetic reversing contactor, and other accessories necessary for proper operation, including emergency manual actuator.
- B. Design:
 1. Design the actuator for motor removal without disturbing the limit-switch adjustment and without affecting the emergency manual actuators.
 2. Make provision for emergency manual operation of door by chain-gear mechanism in case of electrical failure.
 3. Arrange the emergency manual operating mechanism to immediately be put into and out of operation from the floor with a mechanical device to disconnect the motor from the operating mechanism when the emergency manual operating mechanism is engaged. This operation is not to affect the adjustment of the limit switches.
 4. Provide interlock with motor to prevent motor from operating when manual locks are activated.
- C. Motors:
 1. NEMA MG 1, maximum operation 3600 rpm.
 2. Suitable for operation on power current of the characteristics indicated on the electrical construction documents.
 3. Use high starting torque, reversible type, of sufficient horsepower and torque output to move the door in either direction from door position, and produce door travel speed range of 0.20 to 0.30 m per second (8 to 12 inches per second), without exceeding the rated capacity.

4. Single-phase motors are not to have commutation or more than one starting contact.
 5. Motor Enclosures: Drip proof type or NEMA TENV type.
- D. Controls:
1. Control enclosures:
 - a. Interior-Mounted Units: Full-guarded, surface-mounted, heavy-duty type, with general-purpose NEMA ICS 6, Type 1 enclosure.
 - b. Exterior-Mounted Units: Full-guarded, standard-duty, surface-mounted, weatherproof type, NEMA ICS 6, Type 4 enclosure, key operated.
 2. At door actuators, provide an enclosed, across-the-line type, magnetic reversing contactor, thermal overload protection, solenoid operated brake, limit switches, and remote control switches at locations on construction documents.
 3. Control switches:
 - a. Three push button type on interior, unless noted to be key activated.
 - b. Buttons marked, OPEN, CLOSE and STOP.
 - c. The OPEN and STOP buttons: Momentary pressure or contact type.
 - d. The CLOSE button: Constant pressure type.
 - e. Provide key activated switch on exterior requiring constant pressure to operate.
 - f. Limit switches: Manufacturers standard, position of switches readily adjustable.
 4. Operation:
 - a. Open door upon activation of OPEN button.
 - b. Close door only when constant key pressure applied to CLOSE button.
 - c. When the door is in motion, and the STOP button is pressed, door is to stop instantly and remain in the stop position; from stop position, door may be operated in either direction by OPEN or CLOSE button.
 - d. Limit switches automatically stop doors at their fully open and closed positions.
 6. Provide push buttons with guards to prevent accidental operation.
 7. Transformer:
 - a. Provide control transformer in power circuits to reduce the voltage on control circuits to 120 volts or less.

- b. Conform to NEMA ST 20.
- 8. Electrical Components: Conform to NFPA 70.
- 9. Safety Device:
 - a. Provide bottom door edge weather-strip safety device to immediately stop and reverse the door closing to full open position upon contact with an obstruction in compliance with UL 325. Door is to open upon failure of device, component of device or component of control system.
 - b. The door closing circuit is to be electrically locked out and door to remain capable of manual operation until the failure or damage has been corrected.
 - c. Do not use safety device as a limit switch.
 - d. Safety Device Connecting Cable to Motor: Flexible type SO cable, with spring loaded automatic take up reel or equivalent device, as required for proper operation of the doors. //

SPEC WRITER NOTE: Edit galvanization and finish type required for Project.

2.5 FINISHES:

A. Steel:

- 1. Comply with NAAMM's AMP 500-06 Metal Finishes Manual for recommendations for applying and designating finishes.
- 2. Clean surfaces free of scale, rust, oil and grease.
- 3. Baked-Enamel or Powder-Coat Finish: AAMA 2603.
- //4. Non-galvanized steel: Pretreat steel to assure maximum paint adherence. //
- 5. Galvanized steel: Apply phosphate treatment.
- 6. Apply shop prime coat of corrosion inhibitive paint on exposed surfaces after fabrication that is compatible with field applied finishes.
- 7. Apply finish paint of color scheduled when specified in Section 09 06 00, SCHEDULE FOR FINISHES.
- 8. Do not paint track, rollers, hinges, or locks.

PART 3 - EXECUTION

3.1 INSTALLATION:

- A. Install in accordance with approved shop drawings and manufacturer's instructions.
- B. For electrical work, see:
 - 1. Section 26 05 11, REQUIREMENTS FOR ELECTRICAL INSTALLATIONS.

//2. Section 27 05 11, REQUIREMENTS FOR COMMUNICATIONS INSTALLATIONS.//

//3. Section 28 05 00, COMMON WORK RESULTS FOR ELECTRONIC SAFETY AND SECURITY.//

- C. Locate anchors and inserts for tracks, brackets, motors, switches, hardware, and other accessories in accordance with approved shop drawings.
- D. Attach tracks to adjoining construction with not less than 9 mm (3/8 inch) diameter bolts, spaced near each end and not over 610 mm (24 inches) apart.
- E. Locate control switches where indicated in construction documents, not less than 1219 mm (4 feet) or more than 1372 mm (4 feet 6 inches) above finished floor.
- F. Lubricate, adjust and demonstrate door to operate freely.
- G. Upon completion, leave door openings weathertight and doors free from warp, twists, or distortion.

3.2 REPAIR:

- A. Repair zinc-coated surfaces both bare and painted, by the application of galvanizing repair compound.
- B. Spot prime and apply finish paint to repairs.

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