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:

This section specifies electrically operated thermal insulated 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: Section 09 91 00, PAINTING.
D. Electrical Installation: Section 26 05 11, REQUIREMENTS FOR ELECTRICAL INSTALLATIONS// Section 27 05 11, REQUIREMENTS FOR COMMUNICATIONS INSTALLATIONS// Section 28 05 11, REQUIREMENTS FOR ELECTRONIC SAFETY AND SECURITY INSTALLATIONS.

1.3 MANUFACTURER'S AND INSTALLER'S QUALIFICATIONS:

A. Manufacturer's regularly engaged in manufacturing items of type specified.
B. Installers under direct supervision of manufacturer's representative or trained personnel.

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. 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.

1.5 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 Society for Testing and Materials (ASTM):
      A36/A36M-08 ............ Structural Steel
      A227/A227M-06 ............ Steel Wire, Cold-Drawn for Mechanical Springs
      A229/229M-99 (R2005) .... Steel Wire, Oil-Tempered for Mechanical Springs
      A653-10 ............... Steel Sheet, Zinc-Coated (Galvanized) or Zinc Iron Alloy Coated (Galvanized) by the Hot Dip Process
      C1036-06 ............... Flat Glass
      E84-10 ............... Surface Burning Characteristics of Building Materials
      E283-04 ............... Determining the Rate of Air Leakage Through Exterior Windows, Curtain Walls, and Doors Under Specified Pressure Difference Across the Specimen
      E330-02 (R2010) ........ 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.

   C. American National Standards Institute and Door and Access Systems Manufacturers Association (ANSI/DASMA):
      102-04 ............... Sectional Overhead Type Doors.

   D. National Electrical Manufacturer's Association (NEMA):
      ICS 2-00 (R2005) ....... Industrial Control and Systems: Controllers, Contactors, and Overload Relays
      MG 1-10 ............... Motors and Generators

   E. National Fire Protection Association (NFPA):
      70-11 ............... National Electrical Code
F. National Association of Architectural Metal Manufacturers (NAAMM): AMP 500-06 ............ Metal Finishes Manual

PART 2 - PRODUCTS

2.1 MATERIALS:

A. Steel: ASTM A653 for forming operations. ASTM A36 for structural sections.


C. Oil Tempered Spring wire: ASTM A229.

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 (one 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 a horizontal or wind pressure of 960 Pa (20 pounds per square foot) of door area without damage when tested in accordance with ASTM E330.

B. Thermal Performance: Maximum U value of 0.14 for door when tested in accordance with ASTM C236.

C. Air Infiltration: 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: No infiltration when tested in accordance with ASTM E331.

E. Comply with ANSI/NAGDM 102, for an Industrial door and specified design criteria, inside face mounted with tracks at jambs set back a sufficient distance to provide a clear opening when door is in open position.

F. Operation-Cycle Requirements: Door components and operators 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 sections: Not to exceed 600 mm (24 inches) may be varied to suit door height.

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

5. Insulation shall have a flame spread rating of not more than 25 and a smoke development factor of not more than 50 when tested in accordance with ASTM E 84.

6. Reinforced for hardware anchorage with not less than 10 gage galvanized steel.

B. Tracks:

1. Manufacturer’s standard formed of galvanized steel.

2. Minimum of 14 gage for 50 mm (2 inch) tracks and 12 gage for 75 mm (3 inch) tracks.

3. Vertical tracks fabricated with adjustable brackets for mounting at incline to continuous steel angle wall bracket.

4. Horizontal track: Reinforce with continuous steel angle anchored to vertical steel angle wall bracket and to ceiling angle supports. Use vertical and cross or diagonal braced to obtain rigid installation of horizontal track.

5. Use not less than 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 13 gage galvanized steel.

3. Use rollers with ball bearings and case hardened races.

4. Positive locking device to receive cylinder lock, specified in Section 08 71 00, DOOR HARDWARE, with interlocking switch to motor operator.

2.4 ELECTRIC MOTOR OPERATORS:

A. Complete with electric motor, machine cut reduction gears, steel chain and sprockets, magnetic brake, overload protection, brackets, push button controls, limit switches, magnetic reversing contactor, and other accessories necessary for proper operation, including emergency manual operator.
B. Design:
1. Design the operator for motor removal without disturbing the limit-switch timing and without affecting the emergency manual operators.
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 and not affect the timing of the limit switches.
4. Provide interlock with motor to prevent motor from operating when manual locks are activated.

C. Motors:
1. Motor conform to NEMA MG 1, maximum operation 3600 rpm.
2. Suitable for operation on current specified in Division 26, ELECTRICAL.
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 shall not have commutation or more than one starting contact.
5. Motor Enclosures: Drip proof type or NEMA TENV type.

D. Controls:
2. Control enclosures: NEMA ICS 6, Type 12 or Type 4, except that contractor enclosures may be Type 1. Use weatherproof corrosion-resistant covers for exterior locations.
3. At door motors use an enclosed, across-the-line type, magnetic reversing contactor, thermal overload protection, solenoid operated brake, limit switches, and remote control switches at locations indicated.
4. 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. Use key activated switch on exterior requiring constant pressure to operate.


5. Operation:
   a. Open door upon activation of Open switch.
   b. Close door only when constant pressure applied.
   c. When the door is in motion, and the STOP button is pressed, door shall 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. Push buttons full-guarded to prevent accidental operation.

7. Transformer:
   a. Use a 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. Bottom door edge weather-strip safety device to immediately stop and reverse the door closing to full open position upon contact with an obstruction. Door is to open upon failure of device, component of device or component of control system.
   b. The door closing circuit shall be electrically locked out and door to remain capable of manual operation until the failure or damage has been corrected.
   c. Do not use as a limit switch.
   d. Safety device connecting cable to motor to be flexible type SO cable with spring loaded automatic take up reel or equivalent device, as required for proper operation of the doors.

2.5 FINISHES:

A. Steel:
   2. Clean surfaces free of scale, rust, oil and grease.
   3. Non-galvanized steel: Pretreatment to assure maximum paint adherence.
5. Apply shop prime coat of corrosion inhibitive paint on exposed surfaces after fabrication.
6. Apply finish paint on color scheduled when specified in Section 09 06 00, SCHEDULE FOR FINISHES.
7. 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. For electrical work, see Section 26 05 11, REQUIREMENTS FOR ELECTRICAL INSTALLATIONS// Section 27 05 11, REQUIREMENTS FOR COMMUNICATIONS INSTALLATIONS// Section 28 05 11, REQUIREMENTS FOR ELECTRONIC SAFETY AND SECURITY INSTALLATIONS.
B. Locate anchors and inserts for tracks, brackets, motors, switches, hardware, and other accessories accurately.
C. Securely attach tracks to adjoining construction with not less than 9 mm (3/8 inch) diameter bolts, spaced near each end and not over 600 mm (24 inches) apart.
D. Locate control switches where shown at least five feet above the floor line so that the operator will have complete visibility of the door.
E. Lubricate, properly adjust and demonstrate door to operate freely.
F. Upon completion, door openings shall be weathertight and doors shall be 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 all repairs.

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