

**SECTION 08 36 13
SECTIONAL DOORS**

 SPEC WRITER NOTES:

1. Use this section only for NCA projects.
2. 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 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 SUSTAINABILITY REQUIREMENTS

- A. Materials in this section may contribute towards contract compliance with sustainability requirements. See Section 01 81 11, SUSTAINABLE DESIGN REQUIRMENTS, for project // local/regional materials, // low-emitting materials, // recycled content, // ____// requirements.

1.5 SUBMITTALS

- A. Submit in accordance with Section 01 33 23, SHOP DRAWINGS, PRODUCT DATA, AND SAMPLES.
- B. Shop Drawings:
 1. Include details of construction, accessories and hardware, electrical and mechanical items, supporting brackets for motors, location, and ratings of motors, and safety devices.

2. Provide 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. Attest door, anchors and hardware will withstand the horizontal loads specified.
2. Attest door complies with thermal performance, air infiltration, and water infiltration requirements.

1.6 APPLICABLE PUBLICATIONS

- A. Publications listed below form a part of this specification to extent referenced. Publications are referenced in text by the basic designation only. Comply with applicable provisions and recommendations of the following, except as otherwise shown or specified.

SPEC WRITER NOTES:

1. Remove reference citations that do not remain in Part 2 or Part 3 of edited specification.
2. Verify and make dates indicated for remaining citations the most current at date of submittal; determine changes from date indicated on the TIL download of the section and modify requirements impacted by the changes.

- B. American National Standards Institute and Door and Access Systems Manufacturers Association (ANSI/DASMA):

102-04 Sectional Overhead Type Doors

- C. American Society for Testing and Materials (ASTM):

A36/A36M-12	Structural Steel
A227/A227M-06(2011)	Steel Wire, Cold-Drawn for Mechanical Springs
A229/229M-12	Steel Wire, Oil-Tempered for Mechanical Springs
A653-11	Steel Sheet, Zinc-Coated (Galvanized) or Zinc Iron Alloy Coated (Galvanized) by the Hot Dip Process
C1036-11e1	Flat Glass
C1363-11	Thermal Performance of Building Materials and Envelope Assemblies by Means of a Hot Box Apparatus

- E84-13a Surface Burning Characteristics of Building Materials
- E283-04(2012) Determining the Rate of Air Leakage through Exterior Windows, Curtain Walls, and Doors Under Specified Pressure Difference Across the Specimen
- E330-02(2010) Structural Performance of Exterior Windows, Curtain Walls, and Doors by the Uniform Static Air Pressure Difference
- E331-00(2009) Water Penetration of Exterior Windows, Curtain Walls, and Doors by the Uniform Static Air Pressure Difference
- D. National Electrical Manufacturer's Association (NEMA):
- ICS 2-00(R2005) Industrial Control and Systems: Controllers, Contactors, and Overload Relays
- ICS 6-93(R2006) Industrial Control and Systems Enclosures
- MG 1-11 Motors and Generators
- E. National Fire Protection Association (NFPA):
- 70-11 National Electrical Code
- F. National Association of Architectural Metal Manufacturers (NAAMM):
- AMP 501 Metal Finishes Manual

PART 2 - PRODUCTS

2.1 MATERIALS

- A. Steel: Comply with ASTM A653 for forming operations; ASTM A36 for structural sections.
- B. Hard Drawn Spring Wire: ASTM A227.
- 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 NOTES:

1. 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 C1363.
- 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. Form of hot-dipped galvanized steel not lighter than // 0.9 mm thick (20 gage) with longitudinal integral reinforcing ribs // or // 0.6 mm thick (24 gage) with longitudinal integral reinforcing ribs and flat bottom V-grooves //; install sections not less than 50 mm (2 inch) in thickness.
 - 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 to 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 E84.
 - 6. Reinforced for hardware anchorage with not less than 2.6 mm (10 gage) galvanized steel.
- B. Tracks:

1. Manufacturer's standard formed of hot-dipped galvanized steel.
 2. Minimum 2.0 mm (14 gage) for 50 mm (2 inch) tracks and 2.5 mm (12 gage) for 75 mm (3 inch) tracks.
 3. Fabricate vertical tracks with adjustable brackets for mounting at incline to continuous steel angle wall bracket.
 4. Horizontal Track:
 - a. Reinforce with continuous steel angle anchored to vertical steel angle wall bracket and to ceiling angle supports.
 - b. Use vertical and cross or diagonal braced to obtain rigid installation of horizontal track.
 5. Use minimum 2.3 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 2.3 mm (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.
 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 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. 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 must not have commutation or more than one starting contact.
5. Motor Enclosures: Drip proof type or NEMA TENV type.

D. Controls:

1. Control Equipment: NEMA 2.
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. CLOSE Button: Constant pressure type.
 - e. Use key activated switch on exterior requiring constant pressure to operate.
 - f. Limit Switches: Manufacturers standard, position of switches readily adjustable.
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 must 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: Use a control transformer in power circuits to reduce the voltage on control circuits to 120 volts or less.
- 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 must open upon failure of device, component of device or component of control system.
 - b. Door closing circuit 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 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:

- 1. Comply with NAAMM's Metal Finishes Manual.
- 2. Clean surfaces free of scale, rust, oil and grease.
- 3. Non-galvanized Steel: Pretreatment to assure maximum paint adherence.
- 4. Galvanized Steel: Apply phosphate treatment.
- 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 to be 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 all repairs.

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