

SECTION 08 33 00
COILING DOORS

PART 1 - GENERAL**1.1 DESCRIPTION**

This section specifies coiling doors of sizes shown, complete as specified.

1.2 RELATED WORK

- A. Lock cylinders for cylindrical locks: Section 08 71 00, DOOR HARDWARE.
- B. Field painting: Section 09 91 00, PAINTING.
- C. Electric devices and wiring: DIVISION 26, ELECTRICAL.

1.3 MANUFACTURER'S AND INSTALLER'S QUALIFICATIONS

- A. Coiling doors shall be products of manufacturers regularly engaged in manufacturing items of type specified.
- B. Install items under direct supervision of manufacturer's representative or trained personnel.

1.4 FIRE DOOR REQUIREMENTS

Where fire doors exceed the size for which testing and labeling is available, submit certificates stating that the doors and hardware is identical in design, materials, and construction to a door that has been tested and meets the requirements for the class indicated.

1.5 SUBMITTALS

- A. Submit in accordance with Section 01 33 23, SHOP DRAWINGS, PRODUCT DATA, AND SAMPLES.
- B. Shop Drawings:
 - 1. Each type of door showing 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, electrical rough-in
- C. Manufacturer's Literature and Data:
 - 1. Brochures or catalog cuts, each type door.
 - 2. Manufacturer's installation procedures and instructions.
 - 3. Maintenance instructions and parts lists.
 - 4. Standard color charts for selection by VA. (two copies)
- D. Certificates:
 - 1. Attesting doors, anchors and hardware will withstand the horizontal loads specified.

2. Attesting oversize fire doors and hardware are identical in design, material, and construction to doors that meet the requirements for the class specified.

1.6 APPLICABLE PUBLICATIONS

- A. The publications listed below form a part of this specification to the extent referenced. The publications are referenced in the text by the basic designation only.
- B. American Society for Testing and Materials (ASTM):
- A36/A36M-08.....Structural Steel
- A167-99(R2009).....Stainless and Heat-Resisting Chromium-Nickel
Steel Plate, Sheet and Strip
- A653/A653M-10.....Steel Sheet, Zinc-Coated (Galvanized) Zinc-Iron
Alloy-Coated (Galvannealed) by the Hot-Dip
Process
- B209/209M-07.....Aluminum and Aluminum-Alloy Sheet and Plate
- B221/B221M-08.....Aluminum-Alloy Extruded Bars, Rods, Wire,
Shapes, and Tubes
- C. National Electrical Manufacturers Association (NEMA):
- ICS 1-00(R2008).....Industrial Control and Systems General
Requirements
- ICS 2-00(R2005).....Industrial Control, and Systems, Controllers,
Contactors, and Overload Relays
- ICS 6-93 (R2006).....Industrial Control and Systems Enclosures
- MG 1-10.....Motors and Generators
- ST 20-92 (R1997).....Dry-Type Transformers for General Applications
- D. Master Painters Institute (MPI):
- MPI #35.....Exterior Bituminous Coating
- MPI #76.....Quick Drying Alkyd Metal Primer
- E. National Fire Protection Association (NFPA):
- 70-11.....National Electrical Code 1999 Edition
- 80-10.....Fire Doors and Fire Windows
- F. National Association of Architectural Metal Manufacturers (NAAMM):
- AMP 500 Series.....Metal Finishes Manual
- G. Underwriters Laboratories, Inc. (UL):
- 2010.....Fire Resistance Directory

PART 2 - PRODUCTS**2.1 MATERIAL**

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

2.2 DESIGN REQUIREMENTS

A. Coiling doors shall be spring counter balanced, overhead coiling type, outside (exterior) face mounted with guides at jambs set back a sufficient distance to provide a clear opening when door is in open position.

B. Doors, hardware, and anchors shall be designed to withstand a horizontal or wind pressure of 958 Pa (20 psf) of door area without damage.

C. All motor operators shall have manual emergency mechanical operators.

D. Fire rated doors shall conform to the requirements specified herein and to NFPA 80 for the class indicated. Doors shall bear Underwriters Laboratories, Inc. label indicating the applicable fire rating.

E. Refer to Drawings for additional requirements.

2.3 FABRICATION**A. Curtains:**

1. Form of interlocking slats of galvanized steel of shapes standard with the manufacturer, except that slats for exterior doors shall be flat type and insulated.

2. Thickness of slats shall be as required to resist loads specified except not less than the following:

a. For doors less than 4500 mm (15 feet) wide: 0.75 mm (0.0299 inch).

b. For doors from 4530 mm (15 feet 1 inch) to 6300 mm (21 feet wide): 0.90 mm (0.0359 inch).

c. For doors wider than 6330 mm (21 feet 1 inch): 1.20 mm (0.0478 inch).

B. Endlocks and Windlocks:

1. Manufacturer's stock design of galvanized malleable iron or galvanized steel or stamped cadmium steel for doors.

2. The ends of each slat for exterior doors and each alternate slat for interior doors shall have endlocks.

3. Doors shall have windlocks at ends of at least every sixth slat. Windlocks shall prevent curtain from leaving guide because of deflection from wind pressure or other forces.

C. Bottom Bar:

1. Two angles of equal weight, one on each side.
2. Bottom bar designed to receive weather-stripping and safety device, and be securely fastened to bottom of curtain.

D. Barrel and Spring Counterbalance:

1. Curtain shall coil on a barrel supported at end of opening on brackets and be balanced by helical springs.
2. Barrel fabricated of steel pipe or commercial welded steel tubing of proper diameter and thickness for the size of curtain, to limit deflection with curtain rolled up, not to exceed 1 in 400 (0.03 inch per foot) of span.
3. Close ends of barrel with cast iron plugs, machined to fit the opening.
4. Within the barrel, install an oil-tempered, helical, counter balancing steel spring, capable of producing sufficient torque to assure easy operation of the door curtain from any position.
5. At least 80 percent of the door weight shall be counter balanced at any position.
6. Spring-tension shall be adjustable from outside of bracket without removing the hood.

E. Brackets:

1. Steel plate designed to form end closure and support for hood and the end of the barrel assembly.
2. End of barrel or shaft shall screw into bracket hubs fabricated of cast iron or steel.
3. Equip bracket hubs or barrel plugs with prelubricated ball bearings, shielded or sealed.

F. Hoods:

1. Steel galvanized, 0.6 mm (0.0239 inch) thick.
2. Form hood to fit contour of end brackets.
3. Reinforce at top and bottom edges with rolled beads, rods or angles. Hoods more than 3600 mm (12 feet) in length shall have intermediate supporting brackets.
4. Fasten to brackets with screws or bolts and provide for attachment to wall with bolts.

5. Provide a weather baffle at the lintel or inside the hood of each exterior door to minimize seepage of air through the hood enclosure.
6. Hood shall be adequate for exterior installation.

G. Guides:

1. Manufacturer's standard formed sections or angles of steel.
 - a. Steel sections not less than 5 mm (3/16 inch) thick.
2. Form a channel pocket of sufficient depth to retain the curtain in place under the horizontal pressure specified, and prevent ends of curtain from slipping out of guide slots.
3. Top sections flared for smooth entry of curtain to vertical sections that will facilitate entry of curtain.
4. Provide stops to limit curtain travel above top of guides.
5. Provide guide of aluminum with replaceable wear strips to prevent metal to metal contact.
6. Mounting brackets shall provide closure between guides and jambs.

H. Weather-stripping:

1. Manually Operated Doors: Exterior doors shall have a compressible and replaceable rubber, neoprene, or vinyl weather seal attached to bottom bar.
2. Motor Operated Doors: Bottom bar safety device shall be a combination compressible seal and safety device as specified in paragraph, ELECTRIC MOTOR OPERATORS.
3. At exterior doors provide replaceable sweep type continuous vinyl or neoprene weather seals on guides and across head on exterior to seal against wind infiltration.

I. Locking:

1. Cylinder locks shall receive electrically operated cylinders with interlock switch furnished under Section, 08 71 00 DOOR HARDWARE.
2. Provide manufacturer's electrically operated cylinder dead lock type locking device on the inside at each door jamb, key operated from the exterior and interior.

2.4 ELECTRIC MOTOR OPERATORS

- A. Provide operators 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 so that the motor may be removed 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.
3. Arrange the emergency manual operating mechanism so that it may be immediately put into and out of operation from the floor with an electrical or mechanical device, which will disconnect the motor from the operating mechanism when the emergency manual operating mechanism is engaged, and its use shall not affect the timing of the limit switches, in case of electrical failure.
4. Provide interlock with motor to prevent motor from operating when manual locks are activated.
5. Refer to drawing for additional requirements.

C. Motors:

1. Motors shall conform to NEMA MG1, suitable for operation on current of the characteristics indicated, and shall operate at not more than 3600 rpm. Single-phase motors shall not have commutation or more than one starting contact. Motor enclosures shall be the drip proof type of NEMA TENV type.
2. Motors shall be high starting torque, reversible type, of sufficient horsepower and torque output to move the door in either direction from any position, and produce a door travel speed of not less than 0.66 foot or more than one foot per second, without exceeding the rated capacity.

D. Controls:

1. The control equipment shall conform to NEMA ICS 1 and 2.
2. Control enclosures shall be NEMA ICS 6, Type 12 or Type 4, except that contractor enclosures may be Type 1.
3. Remote control switches shall be at least 1500 mm (5 feet) above the floor line, and located so that the operator will have complete visibility of the door at all times.
4. Each door motor shall have an enclosed, across-the-line type, magnetic reversing contactor, thermal overload protection, solenoid operated brake, limit switches, and remote control switches at locations shown.
5. Use key activated switches on exterior requiring constant pressure to operate.

6. Use three-button type, push button switch on interior, unless noted to be key activated, with the buttons marked, OPEN, CLOSE, and STOP.
 - a. The OPEN and STOP buttons shall be of the type requiring only momentary pressure to operate. The CLOSE button shall be of the type requiring constant pressure to maintain the closing motion of the door. When the door is in motion, and the STOP button is pressed, the door shall stop instantly and remain in the stop position; from the stop position, the door may then be operated in either direction by the OPEN or Close buttons.
 - b. Push buttons shall be full-guarded to prevent accidental operation.
7. Provide limit switches to automatically stop the doors at their fully open and closed positions. Positions of the limit switches shall be readily adjustable.
8. Safety device:
 - a. The bottom bar of power-operated doors shall have a fail safe safety device that will immediately stop and reverse the door in its closing travel upon contact with an obstruction in the door opening, or upon failure of the device, or any component of the device, or any component of the control system, and cause the door to return to its full open position. The door closing circuit shall be electrically locked out, and the door shall be operable manually until the failure or damage has been corrected.
 - b. Safety device shall not be used as a limit switch.
 - c. Safety device connecting cable to motor shall be flexible "Type SO" cable and spring loaded automatic take up reel or equivalent device, as required for proper operation of the doors.
9. Transformer:
 - a. Provide a control transformer in power circuits as necessary to reduce the voltage on the control circuits to 120 volts or less.
 - b. The transformer shall conform to NEMA ST20.
10. Electrical components shall conform to NFPA 70.

2.5 MANUAL OPERATORS

A. Push-up Operation:

1. Provide one lifting handle on each side of door and counterbalance in a manner to provide easy operation while raising or lowering the curtain by hand.

2. The maximum exertion or pull required for lift handle operation shall not exceed 1197 Pa (25 psf).
 3. Provide pull-down straps or pole hooks on bottom rail of doors over 2100 mm (7 feet) high.
- B. Hand Chain Operation:
1. Galvanized, endless chain operating over a sprocket and extending to within 900 mm (3 feet) of floor.
 2. Obtain reduction by use of suitable permanently lubricated gearing connected by roller chain and sprocket drive.
 3. Calculate gear reduction to reduce pull required on hand chain, not to exceed 1676 Pa (35 psf).
- C. Crank Operation:
1. Locate crank approximately 854 mm (34 inches) above the floor.
 2. Connect vertical shaft, gear box, and gears to curtain.
 3. Calculate gear reduction to reduce pressure exerted on crank to not over 958 Pa (20 pounds).

2.6 FIRE DOORS

- A. B-labeled fire doors shall be complete with hardware, accessories, and automatic closing device as required by NFPA 80.
- B. Equip fire doors with an automatic closing mechanism actuated by fusible links to release at 54 °C (130 °F).
- C. Doors shall be forced into a closed position by an auxiliary spring in the barrel which is inoperative during normal operation and when activated will not affect the adjustment of the counterbalance spring. The auxiliary spring shall exert pressure on the curtain until the release device is reset. Door shall come to rest on the floor without impact.
- D. Control descent of curtain by an oscillating governor.
- E. Provide handles for push up operation.
- F. Fire rating shall be as indicated on the drawings.

2.7 FINISHES

- A. Steel:
1. Clean surfaces of steel free from scale, rust, oil and grease, and then apply a light colored shop prime paint after fabrication.
 2. Non-galvanized steel: Treat to assure maximum paint adherence, and apply corrosion inhibitive primer.
 3. Galvanized steel: Apply a phosphate treatment and a corrosion inhibitive primer. Slats and hood shall be galvanized in accordance

with ASTM A653 and receive rust inhibitive, roll coating process, including 0.2 mils thick baked-on prime paint, and 0.6 mils thick baked on polyester top coat.

B. Color: Color shall be selected by VA from manufacturer's standard.

2.8 MANUFACTURER

A. Coil door shall be Model F265i by Overhead Door or approved equal.

PART 3 - EXECUTION

3.1 INSTALLATION

- A. Install doors in accordance with approved shop drawings and manufacturer's instructions.
- B. Locate anchors and inserts for guides, brackets, hardware, and other accessories accurately.
- C. Securely attach guides to adjoining construction with not less than 9 mm (3/8 inch) diameter bolts, near each end and spaced not over 600 mm (24 inches) apart.
- D. Locate control switches where shown or required.
- E. Install all electric devices and wiring as specified in DIVISION 26 ELECTRICAL and DIVISION 28 - ELECTRONIC SAFETY AND SECURITY

3.2 REPAIR

- A. Repair prime painted zinc-coated surfaces and bare zinc-coated surfaces that are damaged by the application of galvanizing repair compound. Spot prime all damaged shop prime painted surfaces including repaired prime painted zinc-coated surfaces.
- B. Coiling Doors shall be lubricated, properly adjusted, and demonstrated to operate freely.
- C. Repair any damage done to door finish and components.

3.3 PROTECTION

- A. Isolate aluminum in contact with or fastened to dissimilar metals other than stainless steel, white bronze or other metals not compatible with aluminum by one of the following:
 - 1. Paint the dissimilar metal with a prime coat of zinc-Molybdate or other suitable primer, followed by two coats of aluminum paint.
 - 2. Place an approved caulking compound, or a non-absorptive tape, or gasket between the aluminum and the dissimilar metal.
- B. Paint aluminum in contact with or built into mortar, concrete, plaster or other masonry materials with a coat of bituminous paint.

- C. Paint aluminum in contact with wood or other absorptive materials, that may repeatedly become wet, with a coat of bituminous paint or two coats of aluminum paint.

3.4 INSPECTION

- A. Upon completion, doors shall be weathertight and doors shall be free from warp, twist, or distortion.
- B. Inspect doors for proper operation. Correct any deficiencies noted at no cost to the VA.

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