

**SECTION 08 33 00  
COILING DOORS AND GRILLES**

SPEC WRITER NOTE: Delete text between  
// // not applicable to project. Edit  
remaining text to suit project.

**PART 1 - GENERAL**

**1.1 SUMMARY**

- A. Section Includes:
  - 1. Coiling doors.
  - 2. Coiling door and grille combination.

**1.2 RELATED WORK**

SPEC WRITER NOTE: Update and retain  
references only when specified elsewhere  
in this section.

- A. Section 01 81 13, SUSTAINABLE CONSTRUCTION REQUIREMENTS: Paints and Coatings VOC Limits.
- B. Section 08 71 00, DOOR HARDWARE: Lock Cylinders for Cylindrical Locks.
- C. Section 09 06 00, SCHEDULE FOR FINISHES: Coiling Door // and // Grille // Color.
- D. DIVISION 26, ELECTRICAL: Electric Devices and Wiring.
- E. DIVISION 28, ELECTRONIC SAFETY AND SECURITY: Electric Devices and Wiring.

**1.3 APPLICABLE PUBLICATIONS**

- A. Comply with references to extent specified in this section.
- B. ASTM International (ASTM):
  - A36/A36M-19.....Carbon Structural Steel.
  - A240/A240M-20.....Chromium and Chromium-Nickel Stainless Steel Plate, Sheet, and Strip for Pressure Vessels and for General Applications.
  - A653/A653M-20.....Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process.
  - B209-14.....Aluminum and Aluminum-Alloy Sheet and Plate.
  - B209M-14.....Aluminum and Aluminum-Alloy Sheet and Plate (Metric).
  - B221-14.....Aluminum and Aluminum-Alloy Extruded Bars, Rods, Wire, Profiles, and Tubes.

B221M-13.....Aluminum and Aluminum-Alloy Extruded Bars,  
Rods, Wire, Profiles, and Tubes (Metric).  
D1187/D1187M-97(2018)...Asphalt-Base Emulsions for Use as Protective  
Coatings for Metal.

C. Master Painters Institute (MPI):

No. 18.....Primer, Zinc Rich, Organic.  
No. 76.....Primer, Alkyd, Quick Dry, for Metal.

D. National Association of Architectural Metal Manufacturers (NAAMM):  
AMP 500-06.....Metal Finishes Manual.

E. National Electrical Manufacturers Association (NEMA):

ICS 1-2000 (R2015).....Industrial Control and Systems General  
Requirements.  
ICS 2-2000 (R2005).....Controllers, Contactors and Overload Relays  
Rated 600 V.  
ICS 6-93 (R2016).....Industrial Control and Systems Enclosures.  
ST 20-2014.....Dry Type Transformers for General Applications.

F. National Fire Protection Association (NFPA):

70-20 .....National Electrical Code.  
80-19.....Fire Doors and Other Opening Protectives.

G. Underwriters Laboratories (UL)

UL 325.....Standard for Door, Drapery, Gate, Louver, and  
Window Operators and Systems

**1.4 SUBMITTALS**

A. Submittal Procedures: Section 01 33 23, SHOP DRAWINGS, PRODUCT DATA,  
AND SAMPLES.

B. Submittal Drawings:

- 1. Show size, configuration, and fabrication and installation details.
- 2. Wiring diagrams for motors and controls, // including wiring diagram  
for door, // and grille, // showing electrical interlock of motor  
with manually operated dead lock, // electrical rough-in. //

C. Manufacturer's Literature and Data:

- 1. Description of each product.
- 2. Installation instructions.

D. Sustainable Construction Submittals:

SPEC WRITER NOTE: Retain sustainable  
construction submittals appropriate to  
product.

1. Recycled Content: Identify post-consumer and pre-consumer recycled content percentage by weight.
2. Low Pollutant-Emitting Materials:
  - a. Show volatile organic compound types and quantities.
- E. Certificates: Indicate each product complies with specifications.
  1. Indicate oversize fire doors and hardware that are identical in design, material, and construction to doors complying with specified performance.
- F. Operation and Maintenance Data:
  1. Care instructions for each exposed finish product.
  2. Start-up, maintenance, troubleshooting, emergency, and shut-down instructions for each operational product.
  3. Parts list.

**1.5 DELIVERY**

- A. Deliver products in manufacturer's original sealed packaging.
- B. Mark packaging, legibly. Indicate manufacturer's name or brand, type, and manufacture date.
- C. Before installation, return or dispose of products within distorted, damaged, or opened packaging.

**1.6 STORAGE AND HANDLING**

- A. Store products indoors in dry, weathertight facility.
- B. Protect products from damage during handling and construction operations.

**1.7 FIELD CONDITIONS**

- A. Field Measurements: Verify field conditions affecting overhead coiling door // and grille // fabrication and installation. Show field measurements on Submittal Drawings.
  1. Coordinate field measurement and fabrication schedule to avoid delay.

**1.8 WARRANTY**

SPEC WRITER NOTE: Always retain construction warranty. FAR includes Contractor's one year labor and material warranty.

- A. Construction Warranty: FAR clause 52.246-21, "Warranty of Construction."

SPEC WRITER NOTE: Specify extended manufacturer's warranties for materials only.

- B. Manufacturer's Warranty: Warrant coiling doors // and grilles // against material and manufacturing defects.

SPEC WRITER NOTE: Specify customarily available warranty period for specified products.

- 1. Warranty Period: Two years.

**PART 2 - PRODUCTS**

**2.1 SYSTEM DESCRIPTION**

- A. Coiling doors // and grilles // spring counter balanced, overhead type, inside face mounted with guides at jambs set back at adequate distance to provide clear opening.
- B. Where doors // and grilles // exceeding 7.4 square meter (80 square feet) are indicated as manually operated, provide design, fabrication, and installation permitting future electric motor operation.
- C. Configure coiling door and grille combinations with grille located on interior or room side of opening.

**2.2 SYSTEM PERFORMANCE**

- A. Design coiling doors complying with specified performance:
  - 1. // Fire Resistance: ASTM E119; 1-1/2 hour rating. //
- B. Design coiling doors // and grilles // complying with specified performance:
  - 1. Operation Cycles: 20,000 minimum.

**2.3 MATERIALS**

- A. Sheet Steel: A653/A653M; G90 galvanized coating.
- B. Structural Steel: ASTM A36/A36M.
- C. Stainless Steel: ASTM A240/A240M, Type 302 or 304.
- D. Aluminum, Plate and Sheet: ASTM B209M (ASTM B209).
- E. Aluminum, Extrusions: ASTM B221M (ASTM B221), alloy 6063-T5.

**2.4 PRODUCTS - GENERAL**

- A. Basis of Design: Section 09 06 00, SCHEDULE FOR FINISHES.
- B. Provide coiling doors // and grilles // from one manufacturer.
- C. Sustainable Construction Requirements:

SPEC WRITER NOTES:

- 1. Specify products containing greatest recycled content practicable to maximize material recovery. See EPA Comprehensive Procurement Guidelines (CPG) for guidance about individual products and available recycled content. Section 01 81 13

sets overall project recycled content requirements.

2. Steel recycled content depends upon furnace type. AISC reports industry wide 32 percent for basic oxygen furnace and 93 percent for electric arc furnace.

1. Steel Recycled Content: 30 percent total recycled content, minimum.

SPEC WRITER NOTE: Specialty Steel Industry of North America (SSINA) reports average 75 - 85 percent recycled content for stainless steel.

2. Stainless Steel Recycled Content: 70 percent total recycled content, minimum.

SPEC WRITER NOTE: Aluminum Association (AA) reports 2008 industry average 85 percent recycled content for aluminum in building construction industry.

3. Aluminum Recycled Content: 80 total recycled content, minimum.

SPEC WRITER NOTE:

1. Section 01 81 13, SUSTAINABLE CONSTRUCTION REQUIREMENTS includes comprehensive product list setting VOC limits for low-emitting materials.
2. Retain subparagraphs applicable to products specified in this section.

4. Low Pollutant-Emitting Materials: Comply with VOC limits specified in Section 01 81 13, SUSTAINABLE CONSTRUCTION REQUIREMENTS for the following products:

- a. Paints and coatings.

## 2.5 COILING DOORS AND GRILLES

A. Doors: Interlocking slats of // galvanized steel // aluminum // in manufacturer's standard profile, except exterior door slat profile to be flat.

1. Slat Thickness: As required to resist specified loads.

- a. Galvanized Steel: Minimum thickness:

- 1) Doors less than 4500 mm (15 feet) wide: 0.75 mm (0.030 inch).
- 2) Doors from 4530 mm (15 feet 1 inch) to 6300 mm (21 feet) wide: 0.90 mm (0.036 inch).
- 3) Doors wider than 6330 mm (21 feet): 1.2 mm (0.048 inch).

- b. Aluminum: Minimum thickness:

- 1) Doors less than 4500 mm (15 feet) wide: 1 mm (0.040 inch).

- 2) Doors from 4530 mm (15 feet 1 inch) to 6300 mm (21 feet) wide:  
1.45 mm (0.057 inch).
  - 3) Doors wider than 6330 mm (21 feet): 1.65 mm (0.064 inch).
2. Bottom Rail: Two continuous angles of // galvanized steel, // aluminum, // minimum 3 mm (0.125 inch) thick, to receive safety device.
- B. Grilles: Rods and links of // galvanized steel // aluminum // stainless steel //.
1. Horizontal Rods: Minimum 8 mm (5/16 inch) diameter spaced maximum 50 mm (2 inches) on center.
  2. Links: Hinged vertical links connecting rods and spaced maximum 225 mm (9 inches) on center.
  3. Bottom Rail: Tubular.
- C. Hoods: Formed to fit contour of end brackets.
1. Material:
  2. Sheet Steel: Minimum 0.6 mm (0.0239 inch) thick.
    - a. Aluminum Sheet: Minimum 1 mm (0.040 inch) thick.
  3. Reinforce at top and bottom edges with rolled beads, rods or angles. Provide intermediate supporting brackets for hoods greater than 3600 mm (12 feet) long.
  4. Fasten hood to brackets with screws or bolts and provide for fastening to wall with bolts.
- D. Counterbalance Assembly:
1. Design door // and grille // to coil on barrel supported at end of opening on brackets, counterbalanced by helical springs. Counterbalance minimum 80 percent of door // and grille // weight at any position.
  2. Barrel: Steel pipe or commercial welded steel tubing of proper diameter and thickness for door // and grille // size, to limit deflection with door // and grille // rolled up, not to exceed 1 in 400 (0.03 inch per foot) of span. Close barrel ends with cast iron plugs, machined to fit the opening.
  3. Spring: Oil-tempered, helically wound spring rotating on grease-sealed ball bearing or roller bearing units, capable of producing sufficient torque to ensure easy operation of door // and grille // from any position, and adjustable from exterior of counterbalance assembly without removing hood // or motor operator //.

E. Brackets: Steel plate forming end closure and support for hood and end of barrel assembly.

1. Screw end of barrel or shaft into bracket hubs fabricated of cast iron or steel. Equip bracket hubs or barrel plugs with pre-lubricated ball bearings, shielded or sealed.

SPEC WRITER NOTE: Specify steel guides for steel doors and grilles and aluminum guides for aluminum doors and grilles. Guides for stainless steel grilles are typically aluminum.

F. Guides: Standard formed sections or angles of // steel // aluminum //.

1. Thickness: Minimum 5 mm (3/16 inch).
2. Profile: Channel of sufficient depth to retain door // and grille // in place under the horizontal pressure specified, and prevent ends of door // and grille // from slipping out of guides. Flare guides at top to facilitate door // and grille // installation.
3. Provide stops to limit door // and grille // travel above top of guides.
4. Provide aluminum guides with replaceable wear strips to prevent metal to metal contact.
5. Provide mounting brackets for closure between guides and jambs.

G. Locking:

SPEC WRITER NOTE: Locking devices are required if there is no other entry to room or space, if electrically operated door or grille is required to be secured against possible operation by unauthorized persons, and if door or grille is manually operated.

1. Cylinder Locks: Accept standard screw in cylinders furnished under Section, 08 71 00 DOOR HARDWARE.
2. Manually Operated Doors // and Grilles //: Provide manufacturer's standard cylinder dead locking device on the inside at each door jamb, key operated from exterior and interior // by turn knob //.

SPEC WRITER NOTE: Use key from interior to prevent unauthorized operation unless door or grille is the only means of egress.

3. Electrically Operated Doors // and Grilles //: Provide manufacturer's standard cylinder dead locking device on inside, key

operated from both sides, interlocked with motor to prevent motor from operating when locks are activated.

## 2.6 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 operator so motor can be removed without disturbing limit-switch timing and without affecting emergency manual operators.
  - 2. Make provision for emergency manual operation by chain-gear mechanism.
  - 3. Arrange emergency manual operating mechanism so it can be immediately put into and out of operation from floor with electrical or mechanical device to disconnect motor from operating mechanism when emergency manual operating mechanism is engaged without affecting limit switch timing, in case of electrical power failure.
  - 4. Provide interlock with motor to prevent motor from operating when manual locks are activated.
- C. Motors: NEMA MG1; TENV open drip-proof, maximum 3600 rpm.
  - 1. Power Characteristics: as indicated on drawings.
  - 2. // Single-phase motors: Maximum one starting contact without commutation. //
  - 3. High starting torque, reversible type, of sufficient horsepower and torque output to operate door // and grille // in both directions from any position, and produce door // and grille // travel speed of 200 mm/second (8 inches/second), minimum, and 300 mm/s (12 inches/sec.), maximum, without exceeding rated capacity.
- D. Controls: NEMA ICS 1 and NEMA ICS 2.
  - 1. Enclosures: NEMA ICS 6, Type 12 or Type 4, except contractor enclosures may be Type 1.
  - 2. Provide each motor with an enclosed, across-the-line type, magnetic reversing contactor, thermal overload protection, solenoid operated brake, limit switches, and remote control switches at locations shown.

3. Provide key activated switches on exterior requiring constant pressure to operate.
4. Provide three-button type, push button switch on interior, unless noted to be key activated, with buttons marked, OPEN, CLOSE, and STOP.
  - a. Type: Fully guarded to prevent accidental operation.
  - b. OPEN and STOP Buttons: Momentary contact type.
  - c. CLOSE Button: Constant contact type.
  - d. When the door // or grille // is in motion, pressing STOP button causes door // or grille // to stop instantly and remain in stop position. From stop position, pressing OPEN or CLOSE buttons will operate door // or grille //.
5. Provide field adjustable, limit switches to automatically stop doors // and grilles // at fully open and closed positions. Locate limit switches to be readily accessible for adjustment.
6. Safety device:
  - a. Provide UL 325, noncontact sensors for garage door operators with photoelectric sensors in opening of electrically operated doors // and grilles // to disrupt the door's operation when an object lies in the field of view and safety switches that reverse the door to an open position when extra current is used by the motor when encountering an obstruction.
  - b. Upon safety device and control system failure, immediately stop, reverse, and fully open doors // and grilles // and lock out electrical controls. Permit continued manual operation until electrical controls are repaired.
  - c. Do not use safety device as limit switch.
7. Transformer: NEMA ST20.
  - a. Control transformer in power circuits as required to reduce Voltage on control circuits to 120 Volts or less.
8. Electrical Components: Comply with NFPA 70.
  - a. Hazardous Locations: UL Listed for specific hazard indicated on drawings.

## 2.7 MANUAL OPERATORS

SPEC WRITER NOTE: Specify manual operation type according to project requirements.

### A. Push-Up Operation:

1. Provide one lifting handle on both sides of door // and grille // and counterbalance for easy operation while raising or lowering doors // and grilles // by hand.
2. Opening and Closing Force: Maximum 111 N (25 pound force).
3. Provide pull-down straps or pole hooks on bottom rail of doors // and grilles // over 2100 mm (7 feet) high.

B. Hand Chain Operation:

1. Galvanized, endless chain operating over sprocket and extending to within 900 mm (3 feet) of floor.
2. Obtain reduction through permanently lubricated gearing connected by roller chain and sprocket drive.
3. Opening and Closing Force: Maximum 111 N (25 pound force).

C. Crank Operation:

1. Locate crank approximately 854 mm (34 inches) above floor.
2. Connect vertical shaft, gear box, and gears to doors // and grilles //.
3. Opening and Closing Force: Maximum 111 N (25 pound force).

## **2.8 FIRE-RATED DOORS**

- A. Provide doors complete with hardware, accessories, and automatic closing device required by NFPA 80. Provide UL label indicating fire rating.
- B. Equip fire-rated doors with an automatic closing mechanism actuated by fusible links to release at 54 degrees C (130 degrees F).
- C. Design doors to be closed by auxiliary spring in barrel which does not operate during normal operation and when activated will not affect adjustment of counterbalance spring.
  1. Control door descent by an oscillating governor to prevent impact when contacting floor.
  2. Maintain closing pressure on door until release device is reset.
- D. Provide handles for push up operation.

## **2.9 FINISHES**

A. Steel:

1. Clean steel surfaces of scale, rust, oil, and grease.
2. Apply light colored shop prime paint after fabrication.
  - a. Non-Galvanized Steel: Treat to ensure maximum paint adhesion, and apply corrosion inhibitive primer.
  - b. Galvanized Steel: Apply phosphate treatment and corrosion inhibitive primer.

SPEC WRITER NOTE: Use No. 4 finish only in public areas where aesthetic reasons justify.

B. Stainless Steel: NAAMM AMP 500.

1. Mill finish on concealed surfaces.
2. No. 4 polished finish on exposed surfaces.
3. Blend welds to match adjacent finish.

SPEC WRITER NOTE: On most projects, specify finish of aluminum by using description. Do not use Aluminum Association's designation.

C. Aluminum: NAAMM AMP 500.

1. Mill finish, as fabricated.
2. Clear Anodized Finish: AA-C22A41; Class I Architectural, 0.018 mm (0.7 mil) thick.

**2.10 ACCESSORIES**

- A. Galvanizing Repair Paint: MPI No. 18.
- B. Alkyd Metal Primer: MPI No. 76.
- C. Barrier Coating: ASTM D1187/1187M.
- D. Touch-Up Paint: Match shop finish.

**PART 3 - EXECUTION**

**3.1 PREPARATION**

- A. Examine and verify substrate suitability for product installation.
- B. Protect existing construction and completed work from damage.

**3.2 INSTALLATION - GENERAL**

- A. Install products according to manufacturer's instructions and approved submittal drawings under direct supervision of manufacturer's representative or trained personnel.
  1. Install fire-rated doors to comply with NFPA 80.

**3.3 COILING DOOR // AND GRILLE // INSTALLATION**

- A. Locate anchors and inserts for guides, brackets, // motors, switches, // hardware, and other accessories accurately.
- B. Securely attach guides to adjoining construction with minimum 9 mm (3/8 inch) diameter bolts, spaced maximum 600 mm (24 inches) on center.
- C. Locate control switches where shown.
  1. Locate control switches minimum 1500 mm (5 feet) above floor line, so operating personnel have complete view of door // and grille //.
- D. Install electric devices and wiring as specified in DIVISION 26, ELECTRICAL and DIVISION 28, ELECTRONIC SAFETY AND SECURITY.

- E. Isolate aluminum in contact with dissimilar metal, concrete and masonry by painting with coat of bituminous paint.
- F. Paint aluminum in contact with wood or other absorptive materials with barrier coating.
- G. Touch up damaged factory finishes.
- H. Lubricate and adjust units to operate freely.
- I. Touch up damaged factory finishes.
  - 1. Galvanized Surfaces: Apply galvanizing repair paint.
  - 2. Primed Surfaces: Apply touch up paint.

**3.4 FIELD QUALITY CONTROL**

- A. Field Tests: Test fire-rated door closing and reset device after test is successfully completed.

**3.5 CLEANING**

- A. Clean exposed doors // and grilles // surfaces. Remove contaminants and stains.
- B. Polish exposed stainless steel surfaces.

**3.6 PROTECTION**

- A. Protect coiling doors // and grilles // from construction operations.
- B. Remove protective materials immediately before acceptance.
- C. Repair damage.

- - E N D - -