

**CONSTRUCTION MASTER SPECIFICATION**

**SECTION 08331**

**COILING STEEL DOORS**

**\*\*\*\*\* This guide section can be used for specifying the following types of overhead coiling steel doors for construction projects at SNL:**

**Exterior insulated overhead coiling steel doors.**

**Interior overhead coiling steel doors.**

**Interior fire-rated overhead coiling steel doors.**

**The specifier will need to edit this section for a specific project to reflect the options and applications being used. The guide section has been written so that most editing can be accomplished by deleting unnecessary requirements and options. Depending on project requirements, some additional information will need to be added by the specifier. Options are indicated by [ ]. Notes to assist the specifier in selecting options and editing the specification guide are printed in bold and indicated with \*\*\*\*\*. For final editing, all brackets and notes will need to be deleted from the guide, and this specification will need to be made into a special specification.**

**Throughout this product guide specification, references are made to other specification sections that might be contained in the project manual. These references are presented as examples and coordination reminders and will need to be edited for a specific project.**

**\*\*\*\*\***

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## PART 1 - GENERAL

### 1.1 SUMMARY

**\*\*\*\*\* Edit the following to reflect required overhead coiling steel door assemblies. \*\*\*\*\***

- A. Section includes: [Manually operated,] [Electrically operated,] [non-rated,] [fire rated,] [exterior insulated,] [interior,] overhead coiling steel doors.
- B. See Door Schedule in Drawings for types, sizes, and fire ratings of coiling steel door assemblies.

**\*\*\*\*\* List other specification sections dealing with work directly related to this section such as the following. \*\*\*\*\***

- C. Related Sections:
  - 1. Section 05500, "Metal Fabrications": Steel angles, supports, and framing of coiling door openings.
  - 2. Section 09900, "Painting": Field painting of coiling steel doors.
  - 3. Section 16720, "Intrusion Alarm System". Interface of fire-rated coiling door with fire and smoke alarm and detection systems.
  - 4. Section 16100, "Wiring Methods": Electrical power supply and wiring devices for electrically operated coiling doors.
- D. See Door Schedule in Drawings for types, sizes, and fire ratings of coiling steel door assemblies.

### 1.2 REFERENCES

**\*\*\*\*\* List by number and full title reference standards referred to in remainder of specification section. Delete non-applicable references. \*\*\*\*\***

A. American Society of Testing and Materials (ASTM):

ASTM A653/A653M Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process.

ASTM A924/A924M General Requirements for Sheet Steel, Metallic-Coated by the Hot-Dip Process.

ASTM 1008/A1008M Steel Sheet, Cold-Rolled, Carbon, Structural, High-Strength Low-Alloy and High-Strength Low-Alloy with Improved Formability.

ASTM C578 Rigid, Cellular Polystyrene Thermal Insulation.

B. Door and Access Systems Manufacturers Association (DASMA):

DASMA 105 Test Method for Thermal Transmittance and Air Infiltration of Garage Doors.

C. Factory Mutual (FM)

D. Green Seal (GS):

GC-03 Environmental Criteria for Anti-Corrosive Paints.

E. Military Standardization Documents (MIL):

MIL-DTL 24441/20A Paint, Epoxy-Polyamide, Green Primer, Formula 150, Type III.

F. National Electrical Manufacturer's Association (NEMA)

G. Steel Structures Painting Council (SSPC):

SSPC Paint 20 Zinc-Rich Coating (Type I-Inorganic and Type II-Organic).

SSPC Paint 25 Zinc Oxide, Alkyd, Linseed Oil Primer for Use Over Hand Cleaned Steel, Type I and Type II.

H. Underwriters Laboratories (UL)

### 1.3 SUBMITTALS

- A. Submit in accordance with Section 01330, "Submittal Procedures":
1. Product data for coiling door assemblies and components.
  2. Function descriptions for [electric operators] [interface with fire alarm system] [delayed release device].
  3. Shop drawings indicating door assembly elevations, dimensions, [wiring diagrams,] and details for fabrication, anchorage, and installation. Reflect actual Project conditions, adjacent components, and required clearances for adjustment.
  4. Certificates documenting:
    - a. Domestic Steel: Coiling steel doors are manufactured from United States produced steel as required by Paragraph [2.2.A] [\_\_\_\_\_].
    - b. Wind Load Resistance: Exterior units have been successfully tested for performance specified in Paragraph [2.3.C.1] [\_\_\_\_\_].
    - c. Air Infiltration: Exterior units have been successfully tested for performance specified in Paragraph [2.3.C.2] [\_\_\_\_\_].
    - d. R-Value: Exterior thermal units have been successfully tested for performance specified in Paragraph [2.3.F.3] [\_\_\_\_\_].
    - e. Fire Testing: Fire-rated units have been successfully tested in accordance with Paragraph [2.5.C] [\_\_\_\_\_].
    - f. Ozone Depleting Substances (ODS): Door insulation does not contain ODS as required by Paragraph [2.2.B] [\_\_\_\_\_].
    - g. Primer Environmental Criteria: Primers comply with GS GC-03 as required by Paragraph [2.2.C] [\_\_\_\_\_].

### 1.4 QUALITY ASSURANCE

- A. Manufacturer: Company currently manufacturing overhead coiling doors with 5 years minimum successful experience.
- B. Installer: Experienced in the installation of overhead coiling doors and approved by the door manufacturer.

**\*\*\*\*\* Includes the following paragraph if Fire-Rated Coiling Door Assemblies are required. \*\*\*\*\***

- C. Fire-Rated Coiling Door Assemblies:
  - 1. Provide units identical to assemblies tested and listed by Factory Mutual (FM), Underwriters Laboratories (UL), or other nationally recognized testing agency acceptable to SNL Site Fire Marshall. Units shall bear testing agency labels.
  - 2. Oversize Door Assemblies: Provide certificate that assemblies exceeding fire tested assemblies sizes conform to fabrication of tested and labeled assemblies except for size.

## 1.5 DELIVERY, STORAGE, AND HANDLING

- A. Inspection: Upon delivery, inspect units. Remove and replace damaged units.
- B. Storage: Store components under cover, off ground, and in manner to avoid damage or distortion. Protect from corrosion and deterioration.

## PART 2 - PRODUCTS

### 2.1 ACCEPTABLE MANUFACTURERS

**\*\*\*\*\* The following are acceptable manufacturers of coiling steel doors. However, not all manufacturers provide all types and options of door assembly. Edit list to reflect manufacturers that offer specified options. \*\*\*\*\***

- A. Cornell Iron Works, Inc.; Mountaintop, Pennsylvania; ([www.cornelliron.com](http://www.cornelliron.com)).
- B. Overhead Door Corporation; Dallas, Texas; ([www.overheaddoor.com](http://www.overheaddoor.com)).
- C. Raynor Garage Doors; Dixon, Illinois; ([www.raynor.com](http://www.raynor.com)).
- D. The Cookson Company; Phoenix, Arizona; ([www.cooksondoor.com](http://www.cooksondoor.com)).
- E. Wayne-Dalton Corporation; Mount Hope, Ohio; ([www.wayne-dalton.com](http://www.wayne-dalton.com)).
- F. Manufacturers of equivalent products submitted and approved in accordance with Section 01330, "Submittal Procedures".

## 2.2 MATERIALS

- A. Steel: Manufactured in United States.
  - 1. Cold-Rolled Steel Sheet: Commercial quality, stretcher level for flatness complying with ASTM A1008/A1008M.
  - 2. Galvanized Steel Sheet: Comply with ASTM A924 and coated by Hot-Dip process in accordance with ASTM A653 to G90 coating.

**\*\*\*\*\* Polyurethane foam insulation is not to be used as door slat insulation for SNL projects. \*\*\*\*\***

- B. Door Slat Insulation: Fire-retardant, closed cell, expanded polystyrene complying with ASTM C578 and not containing ozone depleting substances (ODS).
- C. Galvanizing Repair Paint: Comply with SSPC Paint 20, GS GC-03.
- D. Primer: Corrosion inhibiting, red oxide primer complying with SSPC Paint 25 and GS GC-03 and performance requirements of MIL-DTL 24441/20A.
  - 1. Lead and cadmium free.
  - 2. VOC Concentration: 250 grams maximum per liter minus water and chemical component restrictions.

**\*\*\*\*\* Edit the following articles to reflect types of overhead coiling steel door assemblies being specified and project conditions. Delete door types not required. Coordinate requirements with Door Schedule on Drawings to ensure types, sizes, fire ratings, and other specific requirements are indicated on Door Schedule and that terminology conforms to descriptions in this article. \*\*\*\*\***

## 2.3 EXTERIOR INSULATED OVERHEAD COILING DOORS

**\*\*\*\*\* Include this article for non-rated, insulated, steel, overhead coiling exterior door assemblies. \*\*\*\*\***

- A. Type: [Manually operated,] [Electrically operated,] spring counterbalanced, insulated, weatherproofed, exterior, overhead coiling steel door furnished complete with guides, hardware, fastenings, operating mechanism, and accessories; Model No. [ ] as manufactured by [ ].
- B. Opening Sizes: As indicated on Drawings.

C. Performance Requirements:

1. Wind loading: Coiling exterior door assemblies shall withstand 25 PSF positive and negative wind loads without damage and permanent deformation.
2. Maximum Air Infiltration: 0.4 cubic feet per minute per square foot tested in accordance with DASMA 105.

**\*\*\*\*\* Edit the following paragraph to reflect type of operation. Verify type of operation is suitable for door size. Refer to manufacturer's product literature for recommended operation, size limitations, method of mounting, and available types. Not all combinations of mounting and operation are available. Due to the increased weight of insulated steel doors, push-up and crank operation are not recommended. In general use the following guidelines for maximum door opening areas: \*\*\*\*\***

**Manual Chain Operation: 205 square feet.**

**Motor Operation: 390 square feet.**

- D. Operation: [Manual chain operated with endless chain and requiring 25 pounds maximum effort to open and close.] [Electric, motorized operations.]

**\*\*\*\*\* Face of wall mounting is preferred for exterior insulated doors. \*\*\*\*\***

E. Mounting: Face of wall opening.

F. Curtain:

1. Material: Roll-formed galvanized steel.
2. Slats: Interlocking, flat-faced, double wall slat with polystyrene insulation.
  - a. Nominal size: 3 inches wide by 7/8 inch deep.
  - b. Exterior face: 18-gauge minimum.
  - c. Interior face: 24-gauge minimum.
3. R-Value: 4.1 minimum.
4. Endlocks: Molded high strength nylon riveted to ends of alternate slats to hold curtain in alignment and act as thermal break between curtain and guides.



5. Bottom bar: 2 galvanized steel angles, 1/8 inch minimum thickness mounted back to back with insulated slat between.
6. Weather seals:
  - a. Curtain Guides: Seals to wipe against inside and outside faces of door curtain.
  - b. Hood: Air baffle and head seal.
  - c. Bottom Bar: Vinyl seal.

## 2.4 INTERIOR OVERHEAD COILING DOORS

\*\*\*\*\* **Include this article for non-rated, steel, overhead coiling interior door assemblies.**  
\*\*\*\*\*

- A. Type: [Manually operated,] [Electrically operated,] spring counterbalanced, interior, overhead coiling steel door furnished complete with guides, hardware, fastenings, operating mechanism, and accessories; Model No. [\_\_\_\_\_] as manufactured by [\_\_\_\_\_].
- B. Opening sizes: As indicated on Drawings.

\*\*\*\*\* **Edit the following paragraph to reflect type of operation. Verify type of operation is suitable for door size. Refer to manufacturer's product literature for recommended operation, size limitations, method of mounting, and available types. Not all combinations of mounting and operation are available. In general use the following guidelines for maximum door opening areas: \*\*\*\*\***

**Manual push-up operation: 80 square feet.**

**Manual hand-crank operation: 250 square feet.**

**Manual chain operation: 340 square feet.**

**Motor operation: 520 square feet.**

- C. Operation: [Manual push-up operation requiring 25 pounds maximum effort to open and close. Provide with lift handles on bottom bar and pole with hook.] [Manual hand-crank operation requiring 25 pounds maximum effort to open and close. Provide with removable awning type crank.] [Manual chain operated with

endless chain requiring 25 pounds maximum effort to open and close.] [Electric, motorized operation.]

**\*\*\*\*\* Face of wall mounting is preferred for hand-crank, chain, and motorized operation. Push-up operation can be mounted either on face of wall or between jambs. \*\*\*\*\***

D. Mounting: [Face of wall opening.] [Between jambs.]

E. Curtain:

1. Material: Roll-formed galvanized steel.
2. Slats: Interlocking flat-faced.
  - a. Nominal size: 2-5/8 inches wide by 3/4 inch deep.
  - b. Thickness: 24-gauge minimum.
3. Endlocks: Metal endlocks riveted to ends of alternate slats to hold curtain in alignment.
4. Bottom Bar: 2 galvanized steel angles, 1/8 inch minimum thickness mounted back to back with vinyl astragal.

## 2.5 INTERIOR FIRE-RATED OVERHEAD COILING DOORS

**\*\*\*\*\* Include this article for fire-rated, steel, overhead coiling interior door assemblies.**

**\*\*\*\*\***

- A. Type: [Manually operated,] [Electrically operated,] fire-rated, spring counterbalanced, interior, overhead coiling steel door furnished complete with guides, hardware, fastenings, operating mechanism, and accessories; Model No. [\_\_\_\_\_] as manufactured by [\_\_\_\_\_].
- B. Opening Sizes: As indicated on Drawings.

**\*\*\*\*\* Most fire-rated coiling doors qualify for 3 hours fire-rating but can be used in openings requiring a lower rating. \*\*\*\*\***

- C. Fire Rating: [[45 minutes] [90 minutes] [3 hours] [4 hours] minimum.] [As indicated on Drawings.] Permanently attach fire-rating label to door edge.

**\*\*\*\*\* Face of wall mounting is preferred for hand-crank, chain, and motorized operation. Push-up operation can be mounted either on face of wall or between jambs. \*\*\*\*\***

- D. Mounting: [Face of wall opening.] [Between jambs.]
- E. Curtain:
  - 1. Material: Roll-formed galvanized steel.
  - 2. Slats: Interlocking flat-faced.
    - a. Nominal Size: 2-5/8 inches wide by 3/4 inch deep.
    - b. Thickness: 24-gauge minimum.
  - 3. Endlocks: Metal endlocks riveted to ends of alternate slats to hold curtain in alignment.
  - 4. Bottom Bar: 2 galvanized steel angles, 1/8 inch minimum thickness mounted back to back with vinyl astragal.

**\*\*\*\*\* Edit the following paragraph to reflect type of operation. Verify type of operation is suitable for door size. Refer to manufacturer's product literature for recommended operation, size limitations, method of mounting, and available types. Not all combinations of mounting and operation are available. In general use the following guidelines for maximum door opening areas: \*\*\*\*\***

**Manual push-up operation: 80 square feet.**

**Manual hand-crank operation: 250 square feet.**

**Manual chain operation: 340 square feet.**

**Motor operation: 520 square feet.**

- F. Operation:
  - 1. Normal Operation: [Manual push-up operation requiring 25 pounds maximum effort to open and close. Provide with lift handles on bottom bar and pole with hook.] [Manual hand-crank operation requiring 25 pounds maximum effort to open and close. Provide with removable awning type crank.] [Manual chain operated with endless chain requiring 25 pounds maximum effort to open and close.] [Electric, motorized operation.]

2. Emergency Automatic Operation:

- a. 160 degrees F (71 degrees C) fusible link causing door to close at speed of not less than 6 inches nor more than 24 inches per second.

**\*\*\*\*\* Include the following paragraph if delayed release device is required. \*\*\*\*\***

- b. Delayed Release Device: Provide release device wired to [heat detector] [smoke detector] [fire alarm system] as method of emergency closing.
  - (1) Mechanism shall hold door in set position. Energizing fire alarm shall release holding mechanism after 10 seconds delay. If fire alarm is canceled within 10 seconds of activation, release device shall reset without closing of door.
  - (2) Power outages of less than 10 seconds shall not release door.

**\*\*\*\*\* Edit the following paragraphs to reflect if coiling door is manually operated or electrically operated. \*\*\*\*\***

- c. Closing Method: During emergency, [manually operated doors close by gravity.] [motorized doors close electrically if power is present or by gravity during power failure.]
- d. Closing speed: Provide governor to control speed.
  - (1) Minimum: 6 inches per second.
  - (2) Maximum: 24 inches per second.

**\*\*\*\*\* Include the following paragraph to specify optional audible and visual warning device for motorized coiling doors. \*\*\*\*\***

- e. Annunciator: Equip door with visual and audible warning device to provide 40 seconds warning that door is closing. Device to be operable during power failure.

**\*\*\*\*\* Note that coiling overhead doors do not qualify as means of emergency egress. However, doors closed during an emergency shall be capable of being re-opened. Edit the following to reflect project conditions and type of coiling fire-door being specified. \*\*\*\*\***

3. Egress During Emergency: [Manually operated doors closed during emergency shall allow manual re-opening.] [Electrically operated doors closed during emergency shall be opened electrically using door operation controls. Door to immediately close if still in alarm.]
4. Flame and Smoke Baffle: Equip hood with 24-gauge galvanized steel baffle activated by fusible link or electromagnetic device.

## 2.6 ELECTRIC OPERATOR

**\*\*\*\*\* Include this article if electric operated coiling doors are required. \*\*\*\*\***

- A. Electric motor operator with pre-wired motor controls, built-in safety system, reversing magnetic controller, overload protection, electric brake, remote control station, and limit switches.
- B. Motor: Constant duty, instant reversing, high-starting torque with automatic reset and thermal overload protection, Class A insulated electric motor. Unit shall be self-locking and capable of holding door in any position in case of counterbalance spring failure. Sized motor to move door in either direction from any position at 8 inches minimum per second and 12 inches maximum per second.
- C. Limit Switches: Adjustable rotary type synchronized with door.
- D. Clutch: Adjustable disc type.
- E. Brake: Solenoid actuated drum type.
- F. Control Station: Momentary contact, 3-button station with open, close, and stop functions.
  1. Interior Installations: NEMA Type 1 surface mounted enclosure.
  2. Exterior Installation: NEMA Type 4, weatherproof, surface mounted enclosure.
- G. Manual Override: In case of power failure, provide auxiliary hand chain operator interlocked to disconnect motor, prevent motor operating, and release break.
- H. Safety Device: Provide electric sensing edge on bottom bar to sense object in path of door and activate switch which reverses door's downward travel.

## 2.7 AUXILIARY COMPONENTS

- A. Coiling door assemblies shall be self-supporting. Provide brackets, plates, fasteners, bracing, and other components to securely anchor to adjacent construction. Provide required bracing.
- B. Fasteners and Anchors: Heavy-duty, galvanized or stainless steel of type, size, and spacing recommended by door manufacturer for secure, rigid, functional installation.
- C. Curtain Guides:
  - 1. Constructed from 3/16 inch minimum rolled formed steel shapes.
  - 2. Anchor to jambs with 3/8 inch minimum diameter bolts at 30 inches minimum.
- D. Counterbalance Assembly:
  - 1. Steel pipe barrel capable of carrying curtain load with maximum deflection of 0.03 inch per foot of opening.
  - 2. Heat treated steel helical torsion springs encased in pipe barrel and designed for counterbalancing curtain. Provide tension wheel for adjustment.
  - 3. Provide ball bearings at rotating support points.
- E. Brackets: 3/16 inch minimum steel plate to support counterbalance assembly and form end closures. Attach with two minimum 1/2 inch diameter bolts.
- F. Hood:
  - 1. Rectangular enclosure of 24-gauge minimum galvanized steel sheet.
  - 2. Internally reinforced to maintain rigidity and form and prevent sag.
- G. Locking Devices:
  - 1. Push-up and Crank Operated Doors: Interior slide bolts suitable for padlocks.
  - 2. Chain Operated Doors: Chain keepers suitable for padlocks.

**\*\*\*\*\* In order to prevent potential damage to electric motor operators, electrically operated coiling doors should not be equipped with padlocks or other type of mechanical lock. \*\*\*\*\***

- 3. Electrically Operated Doors: Solenoid operated brake.

## 2.8 FACTORY APPLIED FINISHES

- A. Factory prime galvanized and ferrous metal surfaces:
  - 1. Preparation: Clean with non-petroleum solvent to remove oil, dirt, grease, and other contaminants. Clean welds, mechanical connections, and abraded areas. Apply galvanizing repair paint to galvanized components.
  - 2. Pretreat with conversion coating compatible with primer.
  - 3. Primer: Apply primer to prepare units for site applied paint finish.

## PART 3 - EXECUTION

### 3.1 PREPARATION

- A. Examination: Prior to fabrication or submittal of shop drawings, field verify size of openings and clearances. Determine installation conditions and requirements.
- B. Furnish built-in anchors and inserts in timely manner to avoid delays.

### 3.2 INSTALLATION

- A. Install overhead door assemblies in prepared openings in accordance with approved shop drawings and manufacturer's instructions.
- B. Use anchorage devices to securely fasten assembly to wall construction and building framing without distortion or stress.
- C. Fit and align door assembly including hardware, level and plumb, to provide smooth operation.
- D. Doors shall be lubricated and properly adjusted to manufacturer's specifications to operate freely. Completed doors shall be free from warp, twist, and distortion.
- E. Remove labels, visible markings, and clean assemblies.

### 3.3 FIELD QUALITY CONTROL

- A. Testing: After installation, operate doors completely open, closed, and locked a minimum of three times. [Ensure perimeter of exterior doors is weathertight.] Correct deficiencies, adjust, and re-test.

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- B. Fire Door Testing: Perform drop test to simulate emergency situation. Test to be witnessed by Architect, Contracting Officer, and Fire Marshall.
- C. Remove labels, visible markings, and clean assemblies.

END OF SECTION