

SECTION 08 33 23 - OVERHEAD COILING DOORS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. Section Includes:
 - 1. Service doors.
 - 2. Counter doors.
- B. Related Sections:
 - 1. Section 05 50 00 "Metal Fabrications" for miscellaneous steel supports.
 - 2. Section 09 91 13 "Exterior Painting" and Section 09 91 23 "Interior Painting" for finish painting of factory-primed doors.

1.3 PERFORMANCE REQUIREMENTS

- A. Delegated Design: Design overhead coiling doors, including comprehensive engineering analysis by a qualified professional engineer, using performance requirements and design criteria indicated.
- B. Structural Performance, Exterior Doors: Exterior overhead coiling doors shall withstand the wind loads, the effects of gravity loads, and loads and stresses within limits and under conditions indicated according to [SEI/ASCE 7] <Insert requirement>.
 - 1. Wind Loads: [As indicated on Drawings] [Uniform pressure (velocity pressure) of 20 lbf/sq. ft., acting inward and outward] <Insert loads>.
 - a. Basic Wind Speed: [85 mph] [90 mph] [100 mph] [110 mph] <Insert value>.
 - b. Importance Factor: <Insert factor>.
 - c. Exposure Category: [A] [B] [C] [D].
 - 2. Deflection Limits: Design overhead coiling doors to withstand design wind load without evidencing permanent deformation or disengagement of door components.
- C. Operability under Wind Load: Design overhead coiling doors to remain operable under [design] [uniform pressure (velocity pressure) of 20 lbf/sq. ft.] <Insert load> wind load, acting inward and outward.

- D. Windborne-Debris-Impact-Resistance Performance: Provide [glazed] [and] [impact-protective] overhead coiling doors that pass missile-impact and cyclic-pressure tests when tested according to [ASTM E 1886 and ASTM E 1996] <Insert requirement>.
 - 1. Large Missile Test: For overhead coiling doors located within 30 feet of grade.
- E. Operation Cycles: Provide overhead coiling door components and operators capable of operating for not less than number of cycles indicated for each door. One operation cycle is complete when a door is opened from the closed position to the fully open position and returned to the closed position.

1.4 ACTION SUBMITTALS

- A. Product Data: For each type and size of overhead coiling door and accessory. Include the following:
 - 1. Construction details, material descriptions, dimensions of individual components, profiles for slats, and finishes.
 - 2. Rated capacities, operating characteristics, electrical characteristics, and furnished accessories.
 - 3. For fire-rated doors, description of fire-release system including testing and resetting instructions.
- B. Shop Drawings: For each installation and for special components not dimensioned or detailed in manufacturer's product data. Include plans, elevations, sections, details, and attachments to other work.
 - 1. Detail equipment assemblies and indicate dimensions, weights, loads, required clearances, method of field assembly, components, and location and size of each field connection.
 - 2. Wiring Diagrams: For power, signal, and control wiring.
- C. Samples for Initial Selection: Manufacturer's finish charts showing full range of colors and textures available for units with factory-applied finishes.
 - 1. Include similar Samples of accessories involving color selection.
- D. Samples for Verification: For each type of exposed finish required, prepared on Samples of size indicated below.
 - 1. Curtain Slats: 12 inches long.
 - 2. Bottom Bar: 6 inches long[**with sensor edge**].
 - 3. Guides: 6 inches long.
 - 4. Brackets: 6 inches square.
 - 5. Hood: 6 inches square.

- E. Delegated-Design Submittal: For overhead coiling doors indicated to comply with performance requirements and design criteria, including analysis data signed and sealed by the qualified professional engineer responsible for their preparation.
 - 1. Detail fabrication and assembly of seismic restraints.
 - 2. Summary of forces and loads on walls and jambs.

1.5 INFORMATIONAL SUBMITTALS

- A. Qualification Data: For qualified Installer.

1.6 CLOSEOUT SUBMITTALS

- A. Maintenance Data: For overhead coiling doors to include in maintenance manuals.

1.7 QUALITY ASSURANCE

- A. Installer Qualifications: Manufacturer's authorized representative who is trained and approved for both installation and maintenance of units required for this Project.
- B. Source Limitations: Obtain overhead coiling doors from single source from single manufacturer.
 - 1. Obtain operators and controls from overhead coiling door manufacturer.
- C. Electrical Components, Devices, and Accessories: Listed and labeled as defined in NFPA 70, by a qualified testing agency, and marked for intended location and application.
- D. Regulatory Requirements: Comply with applicable provisions in [the U.S. Architectural & Transportation Barriers Compliance Board's ADA-ABA Accessibility Guidelines] [and] [ICC/ANSI A117.1].

PART 2 - PRODUCTS

2.1 DOOR CURTAIN MATERIALS AND CONSTRUCTION

- A. Door Curtains: Fabricate overhead coiling-door curtain of interlocking metal slats, designed to withstand wind loading indicated, in a continuous length for width of door without splices. Unless otherwise indicated, provide slats of thickness and mechanical properties recommended by door manufacturer for performance, size, and type of door indicated, and as follows:
 - 1. Steel Door Curtain Slats: Zinc-coated (galvanized), cold-rolled structural steel sheet; complying with ASTM A 653/A 653M, with G90 (Z275) zinc coating; nominal sheet thickness (coated) of 0.028 inch and as required to meet requirements.

2. Aluminum Door Curtain Slats: ASTM B 209 sheet or ASTM B 221 extrusions, alloy and temper standard with manufacturer for type of use and finish indicated; thickness of 0.050 inch and as required to meet requirements.
- B. Endlocks and Windlocks for Service Doors: Malleable-iron casings galvanized after fabrication, secured to curtain slats with galvanized rivets or high-strength nylon. Provide locks on not less than alternate curtain slats for curtain alignment and resistance against lateral movement.
- C. Endlocks for Counter Doors: Manufacturer's standard locks on not less than alternate curtain slats for curtain alignment and resistance against lateral movement.
- D. Bottom Bar for Service Doors: Consisting of two angles, each not less than 1-1/2 by 1-1/2 by 1/8 inch thick; fabricated from manufacturer's standard hot-dip galvanized steel, stainless steel, or aluminum extrusions to match curtain slats and finish.
- E. Bottom Bar for Counter Doors: Manufacturer's standard continuous channel or tubular shape, fabricated from manufacturer's standard hot-dip galvanized steel, stainless steel, or aluminum extrusions to match curtain slats and finish.
- F. Astragal for Interior Doors: Equip each door bottom bar with a replaceable, adjustable, continuous, compressible gasket of flexible vinyl, rubber, or neoprene as a cushion bumper.
- G. Curtain Jamb Guides: Manufacturer's standard angles or channels and angles of same material and finish as curtain slats unless otherwise indicated, with sufficient depth and strength to retain curtain, to allow curtain to operate smoothly, and to withstand loading. Slot bolt holes for guide adjustment. Provide removable stops on guides to prevent overtravel of curtain[, **and a continuous bar for holding windlocks**].

2.2 HOOD

- A. General: Form sheet metal hood to entirely enclose coiled curtain and operating mechanism at opening head. Contour to fit end brackets to which hood is attached. Roll and reinforce top and bottom edges for stiffness. Form closed ends for surface-mounted hoods and fascia for any portion of between-jamb mounting that projects beyond wall face. Equip hood with intermediate support brackets as required to prevent sagging.
 1. Galvanized Steel: Nominal 0.028-inch- thick, hot-dip galvanized steel sheet with G90 (Z275) zinc coating, complying with ASTM A 653/A 653M.
 2. Aluminum: 0.040-inch- thick aluminum sheet complying with ASTM B 209, of alloy and temper recommended by manufacturer and finisher for type of use and finish indicated.

2.3 COUNTER DOORS

- A. Integral Frame, Hood, and Fascia for Counter Door: Welded sheet metal assembly of the following sheet metal:

1. Galvanized Steel: Nominal [**0.064-inch-**] <Insert thickness> thick, hot-dip galvanized steel sheet with G90 zinc coating, complying with ASTM A 653/A 653M.
2. Stainless Steel: [**0.062-inch-**] <Insert thickness> thick stainless-steel sheet, Type 304, complying with ASTM A 666.

B. Integral Metal Sill for Counter Door: Fabricate sills as integral part of frame assembly of Type 304 stainless steel in manufacturer's standard thickness with [**No. 4**] <Insert finish> finish.

C. Fire-Rated, Laminate Counter: Fire-door manufacturer's high-pressure decorative laminate-covered countertop, UL or ITS tested and labeled for 1-1/2-hour fire rating for approved use with fire-door assembly.

2.4 LOCKING DEVICES

A. Slide Bolt: Fabricate with side-locking bolts to engage through slots in tracks for locking by padlock, located on both left and right jamb sides, operable from coil side.

B. Locking Device Assembly: Fabricate with cylinder lock, spring-loaded dead bolt, operating handle, cam plate, and adjustable locking bars to engage through slots in tracks.

1. Lock Cylinders: Provide cylinders [**specified in Section 08 71 00 "Door Hardware"**] [**standard with manufacturer**] [**and keyed to building keying system**].
2. Keys: Provide [**two**] [**three**] <Insert number> for each cylinder.

C. Chain Lock Keeper: Suitable for padlock.

D. Safety Interlock Switch: Equip power-operated doors with safety interlock switch to disengage power supply when door is locked.

2.5 CURTAIN ACCESSORIES

A. Smoke Seals: Equip each fire-rated door with smoke-seal perimeter gaskets for smoke and draft control as required for door listing and labeling by a qualified testing agency.

B. Weatherseals: Equip each exterior door with weather-stripping gaskets fitted to entire perimeter of door for a weathertight installation, unless otherwise indicated.

1. At door head, use 1/8-inch- thick, replaceable, continuous sheet secured to inside of hood.
2. At door jambs, use replaceable, adjustable, continuous, flexible, 1/8-inch- thick seals of flexible vinyl, rubber, or neoprene.

C. Push/Pull Handles: Equip each push-up-operated or emergency-operated door with lifting handles on each side of door, finished to match door.

1. Provide pull-down straps or pole hooks for doors more than 84 inches high.

2.6 COUNTERBALANCING MECHANISM

- A. General: Counterbalance doors by means of manufacturer's standard mechanism with an adjustable-tension, steel helical torsion spring mounted around a steel shaft and contained in a spring barrel connected to top of curtain with barrel rings. Use grease-sealed bearings or self-lubricating graphite bearings for rotating members.
- B. Counterbalance Barrel: Fabricate spring barrel of manufacturer's standard hot-formed, structural-quality, welded or seamless carbon-steel pipe, of sufficient diameter and wall thickness to support rolled-up curtain without distortion of slats and to limit barrel deflection to not more than 0.03 in./ft. of span under full load.
- C. Spring Balance: One or more oil-tempered, heat-treated steel helical torsion springs. Size springs to counterbalance weight of curtain, with uniform adjustment accessible from outside barrel. Secure ends of springs to barrel and shaft with cast-steel barrel plugs.
- D. Torsion Rod for Counterbalance Shaft: Fabricate of manufacturer's standard cold-rolled steel, sized to hold fixed spring ends and carry torsional load.
- E. Brackets: Manufacturer's standard mounting brackets of either cast iron or cold-rolled steel plate.

2.7 MANUAL DOOR OPERATORS

- A. Equip door with manufacturer's recommended manual door operator unless another type of door operator is indicated.
- B. Push-up Door Operation: Design counterbalance mechanism so required lift or pull for door operation does not exceed 25 lbf .
- C. Chain-Hoist Operator: Consisting of endless steel hand chain, chain-pocket wheel and guard, and gear-reduction unit with a maximum 25 lbf force for door operation. Provide alloy-steel hand chain with chain holder secured to operator guide.
- D. Crank Operator: Consisting of crank and crank gearbox, steel crank drive shaft, and gear-reduction unit, of type indicated. Size gears to require not more than 25 lbf force to turn crank. Fabricate gearbox to be oil tight and to completely enclose operating mechanism. Provide manufacturer's standard crank-locking device.

2.8 ELECTRIC DOOR OPERATORS

- A. General: Electric door operator assembly of size and capacity recommended and provided by door manufacturer for door[**and operation-cycles requirement**] specified, with electric motor and factory-rewired motor controls, starter, gear-reduction unit, solenoid-operated brake, clutch, remote-control stations, control devices, integral gearing for locking door, and accessories required for proper operation.

1. Comply with NFPA 70.
 2. Provide control equipment complying with NEMA ICS 1, NEMA ICS 2, and NEMA ICS 6, with NFPA 70 Class 2 control circuit, maximum 24 V, ac or dc.
- B. Usage Classification: Electric operator and components capable of operating for not less than number of cycles per hour indicated for each door.
- C. Door Operator Location(s): Operator location indicated for each door.
1. Top-of-Hood Mounted: Operator is mounted to the right or left door head plate with the operator on top of the door-hood assembly and connected to the door drive shaft with drive chain and sprockets. Headroom is required for this type of mounting.
 2. Front-of-Hood Mounted: Operator is mounted to the right or left door head plate with the operator on coil side of the door-hood assembly and connected to the door drive shaft with drive chain and sprockets. Front clearance is required for this type of mounting.
 3. Wall Mounted: Operator is mounted to the inside front wall on the left or right side of door and connected to door drive shaft with drive chain and sprockets. Side room is required for this type of mounting. Wall mounted operator can also be mounted above or below shaft; if above shaft, headroom is required.
 4. Bench Mounted: Operator is mounted to the right or left door head plate and connected to the door drive shaft with drive chain and sprockets. Side room is required for this type of mounting.
- D. Electric Motors: Comply with NEMA designation, temperature rating, service factor, enclosure type, and efficiency requirements specified in Section 11 05 13 "Common Motor Requirements for Equipment" unless otherwise indicated.
1. Electrical Characteristics:
 - a. Phase: **[Single phase] [Polyphase]**.
 - b. Volts: **[115] [208] [230] [460] <Insert value> V.**
 - c. Hertz: 60.
 2. Motor Type and Controller: Reversible motor and controller (disconnect switch) for motor exposure indicated.
 3. Motor Size: Minimum size as indicated. If not indicated, large enough to start, accelerate, and operate door in either direction from any position, at a speed not less than 8 in./sec. and not more than 12 in./sec., without exceeding nameplate ratings or service factor.
 4. Operating Controls, Controllers (Disconnect Switches), Wiring Devices, and Wiring: Manufacturer's standard unless otherwise indicated.
 5. Coordinate wiring requirements and electrical characteristics of motors and other electrical devices with building electrical system and each location where installed.
- E. Limit Switches: Equip each motorized door with adjustable switches interlocked with motor controls and set to automatically stop door at fully opened and fully closed positions.

- F. Obstruction Detection Device: Equip motorized door with indicated external automatic safety sensor capable of protecting full width of door opening. [**For non-fire-rated doors, activation of device immediately stops and reverses downward door travel.**] [**For fire-rated doors, activation delays closing.**]
 - 1. Photoelectric Sensor: Manufacturer's standard system designed to detect an obstruction in door opening without contact between door and obstruction.
 - a. Self-Monitoring Type: Designed to interface with door operator control circuit to detect damage to or disconnection of sensing device. When self-monitoring feature is activated, door closes only with sustained pressure on close button.
 - 2. Sensor Edge: Automatic safety sensor edge, located within astragal or weather stripping mounted to bottom bar. Contact with sensor activates device. Connect to control circuit using manufacturer's standard take-up reel or self-coiling cable.
 - a. Self-Monitoring Type: Four-wire configured device designed to interface with door operator control circuit to detect damage to or disconnection of sensor edge.
- G. Remote-Control Station: Momentary-contact, three-button control station with push-button controls labeled "Open," "Close," and "Stop."
 - 1. Interior units, full-guarded, surface-mounted, heavy-duty type, with general-purpose NEMA ICS 6, Type 1 enclosure.
 - 2. Exterior units, full-guarded, standard-duty, surface-mounted, weatherproof type, NEMA ICS 6, Type 4 enclosure, key operated.
- H. Emergency Manual Operation: Equip each electrically powered door with capability for emergency manual operation. Design manual mechanism so required force for door operation does not exceed [25 lbf] [30 lbf] <Insert force>.
- I. Emergency Operation Disconnect Device: Equip operator with hand-operated disconnect mechanism for automatically engaging manual operator and releasing brake for emergency manual operation while disconnecting motor without affecting timing of limit switch. Mount mechanism so it is accessible from floor level. Include interlock device to automatically prevent motor from operating when emergency operator is engaged.
- J. Motor Removal: Design operator so motor may be removed without disturbing limit-switch adjustment and without affecting emergency manual operation.
- K. Audible and Visual Signals: Audible alarm and visual indicator lights in compliance with regulatory requirements for accessibility.
- L. Radio-Control System: Consisting of the following:
 - 1. Three-channel universal coaxial receiver to open, close, and stop door; [one] [two] <Insert number> per operator.
 - 2. Multifunction remote control.

3. Remote-antenna mounting kit.

2.9 DOOR ASSEMBLY <Insert drawing designation>

- A. Service Door: Overhead coiling door formed with curtain of interlocking metal slats.
 1. **Basis-of-Design Product:** Subject to compliance with requirements, provide Series 620 rolling door by Overhead Door Corporation, or comparable product by one of the following:
 - a. **ACME Rolling Doors**, model FWMO.
 - b. **Cornell Iron Works, Inc.**, model ESD10.
 - c. **Substitutions:** See Section 01 25 00 - Substitution Procedures.
- B. Operation Cycles: Not less than [10,000] [20,000] [50,000] [100,000] <Insert number>.
 1. Include tamperproof cycle counter.
- C. Door Curtain Material: Galvanized steel .
- D. Door Curtain Slats: [Curved] [Flat] profile slats of [1-1/4-inch] [1-1/2-inch] [1-7/8-inch] [2-5/8-inch] [3-1/4-inch] <Insert dimension> center-to-center height.
- E. Curtain Jamb Guides: Galvanized steel with exposed finish matching curtain slats. Provide continuous integral wear strips to prevent metal-to-metal contact and to minimize operational noise.
- F. Hood: [Match curtain material and finish] [Galvanized steel] [Stainless steel] [Aluminum].
 1. Shape: Round .
 2. Mounting: As shown on Drawings.
- G. Locking Devices: Equip door with [slide bolt for padlock] [locking device assembly] [and] [chain lock keeper].
 1. Locking Device Assembly: [Single-jamb side] [Cremona type, both jamb sides] locking bars, operable from [inside with thumb turn] [outside with cylinder] [outside only, with cylinder] [inside and outside with cylinders] <Insert requirement>.
- H. Manual Door Operator: [Push-up operation] [Chain-hoist operator] [Manufacturer's standard crank operator] [Awning-crank operator] [Wall-crank operator].
 1. Provide operator with manufacturer's standard removable operating arm.
- I. Electric Door Operator:
 1. Usage Classification: [Heavy duty, 60 to 90 cycles per hour] [Standard duty, up to 60 cycles per hour] [Medium duty, up to 15 cycles per hour] [Light duty, up to 10 cycles per hour] <Insert classification>.

2. Operator Location: [**Top of hood**] [**Front of hood**] [**Wall**] [**Bench**] [**Through wall**] [**As shown on Drawings**].
3. Motor Exposure: [**Interior**] [**Exterior, wet, and humid**].
4. Emergency Manual Operation: [**Push-up**] [**Chain**] [**Crank**] type.
5. Obstruction-Detection Device: Automatic [**photoelectric sensor**] [**electric sensor edge on bottom bar**] [**pneumatic sensor edge on bottom bar**] [; self-monitoring type].
 - a. Sensor Edge Bulb Color: [**Black**] [**As selected by Architect from manufacturer's full range**] <Insert color>.
6. Remote-Control Station: [**Interior**] [**Exterior**] [**Where shown on Drawings**] <Insert location>.
7. Other Equipment: [**Audible and visual signals**] [**Radio-control system**] <Insert device>.

J. Door Finish:

1. Aluminum Finish: [**Mill**] [**Clear anodized**] [**Light bronze anodized**] [**Medium bronze anodized**] [**Dark bronze anodized**] [**Black anodized**] [**Anodized color matching Architect's sample**] [**Anodized color as selected by Architect from full range of industry colors and color densities**] <Insert color>.
2. Baked-Enamel or Powder-Coated Finish: [**Color as indicated by manufacturer's designations**] [**Color matching Architect's sample**] [**Color as selected by Architect from manufacturer's full range**] <Insert color and gloss>.
3. Factory Prime Finish: Manufacturer's standard color.
4. Stainless-Steel Finish: [**No. 2B (bright, cold rolled)**] [**No. 4 (polished directional satin)**] <Insert finish>.
5. Interior Curtain-Slat Facing: [**Match finish of exterior curtain-slat face**] [**PVC plastic**] <Insert finish>.

2.10 DOOR ASSEMBLY <Insert drawing designation>

- A. Counter Door: Overhead coiling door formed with curtain of interlocking metal slats.
 1. **Basis-of-Design Product:** Subject to compliance with requirements, provide Series 652 Counter shutter by Overhead Door Corporation, or comparable product by one of the following:
 - a. [ACME Rolling Doors](#), Counter Shutter.
 - b. [Cornell Iron Works, Inc.](#), model ESC10
 - c. **Substitutions:** See Section 01 25 00 - Substitution Procedures.
- B. Operation Cycles: Not less than [**10,000**] [**20,000**] [**50,000**] [**100,000**] <Insert number>.
 1. Include tamperproof cycle counter.
- C. STC Rating: [**26**] <Insert STC rating>.

- D. Curtain R-Value: [**4.5 deg F x h x sq. ft./Btu**] [**5.0 deg F x h x sq. ft./Btu**] [**6.0 deg F x h x sq. ft./Btu**] <Insert value>.
- E. Door Curtain Material: [Galvanized steel] [Stainless steel] [Aluminum].
- F. Door Curtain Slats: [Curved] [Flat] profile slats of [**1-1/4-inch**] [**1-1/2-inch**] [**1-7/8-inch**] [**2-5/8-inch**] [**3-1/4-inch**] <Insert dimension> center-to-center height.
1. Perforated Slats: Approximately [**1/16-inch pinholes**] [**3/32-inch pinholes**] [**7/8-inch-wide by 3/8-inch- high slots**] <Insert dimensions>.
- G. Curtain Jamb Guides: [Galvanized steel] [Stainless steel] [Aluminum] with exposed finish matching curtain slats.[Provide continuous integral wear strips to prevent metal-to-metal contact and to minimize operational noise.] [Provide removable post(s) and jamb guides where shown on Drawings.]
- H. Hood: [Match curtain material and finish] [Galvanized steel] [Stainless steel] [Aluminum].
1. Shape: [**Round**] [**Square**] [**As shown on Drawings**] <Insert shape>.
 2. Mounting: [**Face of wall**] [**Between jambs**] [**As shown on Drawings**].
- I. Integral Frame, Hood, and Fascia for Counter Door: [**Galvanized steel**] [**Stainless steel**].
1. Mounting: [**Face of wall**] [**Between jambs**] [**As shown on Drawings**].
- J. Sill Configuration for Counter Door: [**No sill**] [**Integral metal sill**].
- K. Locking Devices: Equip door with [slide bolt for padlock] [locking device assembly] [and] [chain lock keeper].
1. Locking Device Assembly: [**Single-jamb side**] [**Cremona type, both jamb sides**] locking bars, operable from [**inside with thumb turn**] [**outside with cylinder**] [**outside only, with cylinder**] [**inside and outside with cylinders**] <Insert requirement>.
- L. Manual Door Operator: [Push-up operation] [Chain-hoist operator] [Manufacturer's standard crank operator] [Awning-crank operator] [Wall-crank operator].
1. Provide operator with manufacturer's standard removable operating arm.
- M. Electric Door Operator:
1. Usage Classification: [**Heavy duty, 60 to 90 cycles per hour**] [**Standard duty, up to 60 cycles per hour**] [**Medium duty, up to 15 cycles per hour**] [**Light duty, up to 10 cycles per hour**] <Insert classification>.
 2. Operator Location: [**Top of hood**] [**Front of hood**] [**Wall**] [**Bench**] [**Through wall**] [**As shown on Drawings**].
 3. Motor Exposure: [**Interior**] [**Exterior, wet, and humid**].
 4. Emergency Manual Operation: [**Push-up**] [**Chain**] [**Crank**] type.

5. Obstruction-Detection Device: Automatic [**photoelectric sensor**] [**electric sensor edge on bottom bar**] [**pneumatic sensor edge on bottom bar**] [**; self-monitoring type**].
 - a. Sensor Edge Bulb Color: [**Black**] [**As selected by Architect from manufacturer's full range**] <Insert color>.
6. Remote-Control Station: [**Interior**] [**Exterior**] [**Where shown on Drawings**] <Insert location>.
7. Other Equipment: [**Audible and visual signals**] [**Radio-control system**] <Insert device>.

N. Door Finish:

1. Aluminum Finish: Clear anodized.

2.11 GENERAL FINISH REQUIREMENTS

- A. Comply with NAAMM's "Metal Finishes Manual for Architectural and Metal Products" for recommendations for applying and designating finishes.
- B. Appearance of Finished Work: Noticeable variations in same piece are not acceptable. Variations in appearance of adjoining components are acceptable if they are within the range of approved Samples and are assembled or installed to minimize contrast.

2.12 ALUMINUM FINISHES

- A. Mill Finish: Manufacturer's standard.
- B. Clear Anodic Finish: AAMA 611, [AA-M12C22A41, Class I, 0.018 mm] [AA-M12C22A31, Class II, 0.010 mm] or thicker.
- C. Color Anodic Finish: AAMA 611, [AA-M12C22A42/A44, Class I, 0.018 mm] [AA-M12C22A32/A34, Class II, 0.010 mm] or thicker.
- D. Baked-Enamel or Powder-Coat Finish: AAMA 2603. Comply with coating manufacturer's written instructions for cleaning, conversion coating, application, and baking.

2.13 STEEL AND GALVANIZED-STEEL FINISHES

- A. Factory Prime Finish: Manufacturer's standard primer, compatible with field-applied finish. Comply with coating manufacturer's written instructions for cleaning, pretreatment, application, and minimum dry film thickness.
- B. Baked-Enamel or Powder-Coat Finish: Manufacturer's standard baked-on finish consisting of prime coat and thermosetting topcoat. Comply with coating manufacturer's written instructions for cleaning, pretreatment, application, and minimum dry film thickness.

2.14 STAINLESS-STEEL FINISHES

- A. Surface Preparation: Remove tool and die marks and stretch lines, or blend into finish.
- B. Polished Finishes: Grind and polish surfaces to produce uniform finish, free of cross scratches.
 - 1. Run grain of directional finishes with long dimension of each piece.
 - 2. When polishing is completed, passivate and rinse surfaces. Remove embedded foreign matter and leave surfaces chemically clean.
 - 3. Directional Satin Finish: No. 4.
- C. Bright, Cold-Rolled, Unpolished Finish: No. 2B.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine substrates areas and conditions, with Installer present, for compliance with requirements for substrate construction and other conditions affecting performance of the Work.
- B. Examine locations of electrical connections.
- C. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 INSTALLATION

- A. Install overhead coiling doors and operating equipment complete with necessary hardware, anchors, inserts, hangers, and equipment supports; according to manufacturer's written instructions and as specified.
- B. Install overhead coiling doors, hoods, and operators at the mounting locations indicated for each door.
- C. Accessibility: Install overhead coiling doors, switches, and controls along accessible routes in compliance with regulatory requirements for accessibility.
- D. Fire-Rated Doors: Install according to NFPA 80.
- E. Smoke-Control Doors: Install according to NFPA 80 and NFPA 105.

3.3 STARTUP SERVICE

- A. Engage a factory-authorized service representative to perform startup service.

1. Perform installation and startup checks according to manufacturer's written instructions.
2. Test and adjust controls and safeties. Replace damaged and malfunctioning controls and equipment.
3. Test door closing when activated by detector or alarm-connected fire-release system. Reset door-closing mechanism after successful test.

3.4 ADJUSTING

- A. Adjust hardware and moving parts to function smoothly so that doors operate easily, free of warp, twist, or distortion.
- B. Lubricate bearings and sliding parts as recommended by manufacturer.
- C. Adjust seals to provide weathertight fit around entire perimeter.

3.5 DEMONSTRATION

- A. Engage a factory-authorized service representative to train Owner's maintenance personnel to adjust, operate, and maintain overhead coiling doors.

END OF SECTION 08 33 23