

SECTION 083326 – OVERHEAD COILING GRILLES

PART 1 - GENERAL

1.1 SUMMARY

- A. Section includes open-curtain overhead coiling grilles.
- B. Related Sections:
 - 1. Section 055000 – Metal Fabrications.
- C. Reference and Industry Standards
 - 1. The following reference standards are applicable to this Section:
 - a. The current Enterprise Green Communities (EGC) Criteria, and the current New York City Overlay.
 - b. Industry Standards
 - ICS (Industrial Control and Systems)
 - NEMA (National Electrical Manufacturers Association)
 - NFPA (National Fire Protection Association)
 - UL (Underwriters Laboratories)
- D. The current NYC Overlay of the current Enterprise Green Communities Criteria:
 - 1. Mandatory Requirements: See the NYC Overlay of the EGC reference standard for full specifications.
 - a. All projects must achieve compliance with the mandatory criteria measures that are applicable:
 - Criterion 6.4: Healthier Material Selection
 - Criterion 6.10: Construction Waste Management
 - 2. Optional Project Requirements for Certification Points
 - a. Additionally, rehab projects are required to achieve **55** optional points. Criteria with optional points related to this Specification Section include, but may not be limited to:
 - Criterion 6.2: Recycled Content and Ingredient Transparency
 - Criterion 6.4: Healthier Material Selection
 - Criterion 6.5: Environmentally Responsible Material Selection
 - Criterion 6.10: Construction Waste Management

1.2 PREINSTALLATION MEETINGS

- A. Preinstallation Conference: Conduct conference at Project site.

1.3 ACTION SUBMITTALS

- A. Product Data: For each type and size of overhead coiling grille and accessory.
- B. Shop Drawings: For each installation and for special components not dimensioned or detailed in manufacturer's product data.
 - 1. Include points of attachment and their corresponding static and dynamic loads imposed on structure.
 - 2. Show locations of controls, locking devices, and other accessories.
 - 3. Include diagrams for power, signal, and control wiring.

1.4 INFORMATIONAL SUBMITTALS

- A. Sample warranty.
- B. Documentation for compliance with Enterprise Green Communities Criteria.

1.5 CLOSEOUT SUBMITTALS

- A. Maintenance data.

1.2 WARRANTY

- A. Special Warranty: Manufacturer agrees to repair or replace components of grilles that fail in materials or workmanship within specified warranty period.
 - 1. Warranty Period: Five (5) years from date of Substantial Completion.

PART 2 - PRODUCTS

2.1 PERFORMANCE REQUIREMENTS

- A. Seismic Performance: Overhead coiling grilles shall withstand the effects of earthquake motions determined according to ASCE/SEI 7.

2.2 OPEN-CURTAIN GRILLE ASSEMBLY

- A. Open-Curtain Grille: Overhead coiling grille with a curtain having a network of horizontal rods that interconnect with vertical links.
- B. Operation Cycles: Grille components and operators capable of operating for not less than [10,000] [20,000] [50,000] [100,000] [200,000] <Insert number>.
- C. Grille Curtain Material: Aluminum.

1. Rod Spacing: Approximately [1-1/2 inches] [2 inches] [3 inches] <Insert dimension> o.c.
 2. Link Spacing: Approximately [3 inches] [6 inches] [9 inches] <Insert dimension> apart in a [straight in-line] [brick (staggered)] <Insert pattern> pattern.
 3. Spacers: [Metal tubes matching curtain material] [PVC] <Insert description>.
- D. Bottom Bar: Continuous [tubular shape] [channel] [or] [doubled angles], fabricated from aluminum extrusion and finished to match grille.
- E. Curtain Jamb Guides: Aluminum with exposed finish [matching curtain slats] <Insert requirement>. Provide continuous integral wear strips to prevent metal-to-metal contact and to minimize operational noise. [Provide removable post(s) and jamb guides where indicated on Drawings.]
- F. Hood: Aluminum.
1. Mounting: [Face of wall] [On mounting frame] [As indicated on Drawings].
- G. Locking Devices: Equip grille with [slide bolt for padlock] [locking device assembly] [and] [chain lock keeper].
1. Locking Device Assembly: [Single-jamb side] [Cremone-type, both jamb sides] locking bars, operable from [inside with thumbturn] [outside with cylinder] [outside only, with cylinder] [inside and outside with cylinders] <Insert requirement>.
- H. Manual Grille Operator: [Push-up operation] [Chain-hoist operator] [Manufacturer's standard crank operator] [Awning-crank operator] [Wall-crank operator].
- I. Electric Grille Operator:
1. Usage Classification: [Heavy duty, 25 or more cycles per hour and more than 90 cycles per day] [Standard duty, up to 25 cycles per hour and up to 90 cycles per day] [Medium duty, up to 12 cycles per hour and up to 50 cycles per day] [Light duty, up to 10 cycles per hour] <Insert classification>.
 2. Safety: Listed according to UL 325 by a qualified testing agency for commercial or industrial use.
 3. Motor Exposure: [Interior] [Exterior, wet, and humid].
 4. Motor Electrical Characteristics:
 - a. Horsepower: [1/2] [1] [2] [3] <Insert value> hp.
 - b. Voltage: [115-V ac] [208-V ac] [230-V ac], single phase, 60 Hz.
 - c. Voltage: [208-V ac] [230-V ac] [460-V ac], three phase, 60 Hz.
 5. Emergency Manual Operation: [Push-up] [Chain] [Crank] type.
 6. Obstruction-Detection Device: Automatic [photoelectric sensor] [electric sensor edge on bottom bar] [pneumatic sensor edge on bottom bar] [; self-monitoring type] <Insert type>.
 7. Control Station: [Interior mounted] [Exterior mounted] [Where indicated on Drawings] <Insert location>.

8. Other Equipment: **[Audible and visual signals] [Emergency-egress release] [Self-opening mechanism] <Insert device>.**
- J. Curtain Accessories: Equip grille with **[astragal] [push/pull handles] [and] [pole hook] <Insert item>.**
- K. Grille Finish:
 1. Aluminum Finish: **[Mill] [Clear anodized] [Light bronze anodized] [Medium bronze anodized] [Dark bronze anodized] [Black anodized] [Anodized color as selected by Design-Professional-of-Record from full range of industry colors and color densities] [Anodized color as selected by Owner from full range of industry colors and color densities].**
 2. Baked-Enamel or Powder-Coat Finish: **[Color as indicated by manufacturer's designations] [Color as selected by Design-Professional-of-Record from manufacturer's full range] [Color as selected by Owner from manufacturer's full range].**
 3. Factory Prime Finish: Manufacturer's standard color.
 4. PVC Spacers: Color as indicated by manufacturer's designations.

2.3 MATERIALS, GENERAL

- A. 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.

2.4 GRILLE CURTAIN MATERIALS AND CONSTRUCTION

- A. Open-Curtain Grilles: Fabricate metal grille curtain as an open network of horizontal rods, spaced at regular intervals, that are interconnected with vertical links, which are formed and spaced as indicated and are free to rotate on the rods.
- B. Bottom Bar: Manufacturer's standard continuous shape unless otherwise indicated, finished to match grille.
 1. Astragal: Equip grille bottom bar with a replaceable, adjustable, continuous, compressible gasket of flexible vinyl, rubber, or neoprene as a cushion bumper.
 2. Provide motor-operated grilles with combination bottom astragal and sensor edge.
- C. Grille Curtain Jamb Guides: Manufacturer's standard shape having curtain groove with return lips or bars to retain curtain. Provide continuous integral wear strips to prevent metal-to-metal contact and to minimize operational noise; with removable stops on guides to prevent overtravel of curtain.
 1. Removable Posts and Jamb Guides: Manufacturer's standard.

2.5 HOODS AND ACCESSORIES

- 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.

- B. Removable Metal Soffit: Formed or extruded from same metal and with same finish as curtain if hood is mounted above ceiling unless otherwise indicated.
- C. Push/Pull Handles: Equip push-up-operated or emergency-operated grille with lifting handles on each side of grille, finished to match grille.
- D. Pull-Down Strap: Provide pull-down straps for grilles more than 84 inches high.
- E. Pole Hooks: Provide pole hooks and poles for grilles more than 84 inches high.

2.6 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: As standard with manufacturer.
 - 2. Keys: [Two] [Three] <Insert number> for each cylinder.
- C. Chain Lock Keeper: Suitable for padlock.
- D. Safety Interlock Switch: Equip power-operated grilles with safety interlock switch to disengage power supply when grille is locked.

2.7 COUNTERBALANCE MECHANISM

- A. General: Counterbalance grilles 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. Brackets: Manufacturer's standard mounting brackets of either cast iron or cold-rolled steel plate.

2.8 MANUAL GRILLE OPERATORS

- A. General: Equip grille with manual grille operator by grille manufacturer.
- B. Push-up Grille Operation: Lift handles and pull rope for raising and lowering grille, with counterbalance mechanism designed so that required lift or pull for grille operation does not exceed 5 lbf.
- C. Chain-Hoist Operator: Consisting of endless steel hand chain, chain-pocket wheel and guard, and gear-reduction unit with a maximum 5-lbf force for grille 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 5-lbf force to turn crank. Fabricate gearbox to be oil-tight and to completely enclose operating mechanism. Provide manufacturer's standard crank-locking device.

2.9 ELECTRIC GRILLE OPERATORS

- A. General: Electric grille operator assembly of size and capacity recommended and provided by grille manufacturer for grille and operation cycles requirement specified, with electric motor and factory-prewired motor controls, starter, gear-reduction unit, solenoid-operated brake, clutch, control stations, control devices, integral gearing for locking grille, and accessories required for proper operation.
 - 1. Comply with NFPA 70.
 - 2. 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 grille.
- C. Motors: Reversible-type motor [**with controller (disconnect switch)**] for motor exposure indicated for each grille assembly.
 - 1. Electrical Characteristics: Minimum as indicated for each grille assembly. If not indicated, large enough to start, accelerate, and operate grille 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.
 - 2. Operating Controls, Controllers (Disconnect Switches), Wiring Devices, and Wiring: Manufacturer's standard unless otherwise indicated.
- D. Obstruction-Detection Devices: External entrapment protection consisting of indicated automatic safety sensor capable of protecting full width of grille opening. Activation of sensor immediately stops and reverses downward grille travel.
 - 1. Photoelectric Sensor: Manufacturer's standard system designed to detect an obstruction in grille opening without contact between grille and obstruction.
 - a. Self-Monitoring Type: Designed to interface with grille operator control circuit to detect damage to or disconnection of sensing device. When self-monitoring feature is activated, grille closes only with sustained or constant pressure on close button.
 - 2. Electric 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 grille operator control circuit to detect damage to or disconnection of sensor edge.
 - 3. Pneumatic Sensor Edge: Automatic safety sensor edge, located within astragal mounted to bottom bar. Contact with sensor activates device.

- E. Control Station: Three-button control station in fixed location with momentary-contact push-button controls labeled "Open" and "Stop" and sustained- or constant-pressure push-button control labeled "Close."
 - 1. Interior-Mounted Units: Full-guarded, surface-mounted, heavy-duty type, with general-purpose NEMA ICS 6, Type 1 enclosure.
 - 2. Exterior-Mounted Units: Full-guarded, standard-duty, surface-mounted, weatherproof type; NEMA ICS 6, Type 4 enclosure, key operated.
- F. Emergency Manual Operation: Equip electrically powered grille with capability for emergency manual operation. Design manual mechanism so required force for grille operation does not exceed [25 lbf] [30 lbf] <Insert value>.
- G. 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.
- H. Motor Removal: Design operator so motor may be removed without disturbing limit-switch adjustment and without affecting emergency manual operation.
- I. Audible and Visual Signals: Audible alarm and visual indicator lights in compliance with the accessibility standard.
- J. Emergency-Egress Release: Flush, wall-mounted handle mechanism, for accessibility-code-compliant egress feature, not dependent on electric power. The release allows an unlocked grille to partially open without affecting limit switches to permit passage, and it automatically resets motor drive on return of handle to original position.
- K. Self-Opening Mechanism: Automatic release mechanism triggered by [**smoke detector,**] [**emergency push-button station,**] fire alarm or power failure. When activated, the grille self-opens by means of a fail-safe operator to the fully open position without the need for power operation or battery backup systems. When the[**emergency push-button is reset, and the**] alarm is cleared and power is restored, the grille will operate normally.

PART 3 - EXECUTION

3.1 INSTALLATION

- A. Install overhead coiling grilles and operating equipment complete with necessary hardware, anchors, inserts, hangers, and equipment supports, according to manufacturer's written instructions and as specified.
- B. Power-Operated Grilles: Install according to UL 325.

END OF SECTION 083326