SECTION 08 33 00

**Steel Weave® Metal Mesh Grille**

**ROLLING GRILLES**

**GENERAL NOTES TO SPECIFIER:**

This specification section has been prepared to assist design professionals in the preparation of project or office master specifications. It follows guidelines established by the construction specifications institute, and therefore may be used with most master specification systems with minor editing.

Edit carefully to suit project requirements. Modify as necessary and delete items that are not applicable. Verify that referenced section numbers and titles are correct. (Numbers and titles referenced are based on MasterFormat™, 2004 edition).

This section assumes the project manual will contain complete division 01 documents including sections 01 33 00 submittal procedures, 01 62 00 product options, 01 25 13 product substitution procedures, 01 66 00 product storage and handling requirements, 01 77 00 closeout procedures, and 01 78 00 closeout submittals. If the project manual does not contain these sections, additional information should be included under the appropriate articles.

This is an open proprietary specification allowing users the option of approving other manufacturers which comply with the criteria specified herein.

**\*\* NOTES TO THE SPECIFIER\*\*** are contained in boxes and should be deleted from final copy.

Optional items requiring selection by the specifier are enclosed within brackets, e.g.: [35] [40] [45]. In cases where one of the optional items is a standard feature of the grille model, it is listed in the first position. Make appropriate selection and delete others.

Items requiring additional information are underlined, e.g.: \_\_\_\_\_\_\_\_\_\_\_.

**PART 1 GENERAL**

1.1 SUMMARY

 A. Section Includes: Electric operated overhead rolling grilles.

 B. Related Sections:

 1. 05 50 00 Metal Fabrications. Door opening jamb and head members.

 2. 06 10 00 Rough Carpentry. Door opening jamb and head members.

 3. 08 31 00 Access Doors and Panels. Access doors.

 4. 08 70 00 Hardware. Masterkeyed cylinders.

 5. Division 26. Electrical wiring and conduit, fuses, disconnect switches, connection of operator to power supply, and installation of control station and wiring.

 C. Products That May Be Supplied, But Are Not Installed Under This Section:

 1. Control station.

1.2 SYSTEM DESCRIPTION

 A. Design Requirements:

 1. Cycle Life:

a. Design grilles of standard construction for normal use of up to 10 cycles per day maximum, and an overall maximum of 50,000 operating cycles for the life of the grille.

\*\*NOTE TO SPECIFIER\*\* If your project does not involve a custom layout or custom product modifications, please delete 3 and 4. If you are unsure, please contact Architectural Design Support at 833-958-1273.

2. New Product:

a. This is a new product that has been developed by CornellCookson. Alternate manufacturers may be unable to meet the specification.

3. Custom Layout:

a. Product has been reconfigured for a custom layout, refer to drawings by CornellCookson.

4. Customized Product:

a. This product has custom modifications designed by CornellCookson. Contact Manufacturer for details.

1.3 SUBMITTALS

 A. Reference Section 01 33 00 Submittal Procedures; submit the following items:

 1. Product Data.

 2. Shop Drawings: Include special conditions not detailed in Product Data. Show interface with adjacent work.

 3. Quality Assurance/Control Submittals:

a. Provide proof of manufacturer ISO 9001:2008 registration.

b. Provide proof of manufacturer and installer qualifications - see 1.3 below.

 c. Provide manufacturer's installation instructions.

 4. Closeout Submittals:

 a. Operation and Maintenance Manual.

 b. Certificate stating that installed materials comply with this specification.

1.4 QUALITY ASSURANCE

 A. Qualifications:

1. Manufacturer Qualifications: ISO 9001:2015 registered and a minimum of five years of experience in producing grilles of the type specified.

 2. Installer Qualifications: Manufacturer's approval.

1.5 DELIVERY STORAGE AND HANDLING

 A. Reference Section 01 66 00 Product Storage and Handling Requirements.

 B. Follow manufacturer's instructions.

1.6 WARRANTY

A. Standard Warranty: Two years from date of shipment against defects in material and workmanship.

B. Maintenance: Submit for owner’s consideration and acceptance of a maintenance service agreement for installed products.

**PART 2 PRODUCTS**

* 1. MANUFACTURER
1. Manufacturer:
2. Cornell - 24 Elmwood Ave. Mountain Top, PA 18707. Telephone: (800) 233-8366
3. Cookson

**Substitutions**: Not Permitted

2.2 PRODUCT INFORMATION

 A. Model: EAG 10 C, EAG 10 V, EAG 10 S

2.3 MATERIALS

A. Curtain:

1. Configuration - Tigris Curtain
2. Woven Stainless Steel Mesh shall be manufactured using drawn stainless steel wire and

 stainless steel rods.

1. The warp wire is 3x.075” T316L stainless steel; and the weft element is .115” T316L

 stainless steel.

C. Product Data: The fabric shall be 100% aisi type 316L Electro polishing quality stainless steel for exterior application.

D. Open area to be 64%.

E. Weight to be 1.33 lbs. per sf.

F. Thickness to be 0.244”

1. Configuration – Lago Curtain

1. Woven Stainless Steel Mesh shall be manufactured using drawn stainless steel wire and stainless steel rods.
2. The warp element is 4x.032” T316L stainless steel; and the weft rod is .075” T316L stainless steel.

C. The fabric shall be 100% aisi type 316L Electro polishing quality stainless steel for exterior application.

D. Open area to be 44%.

E. Weight to be 1.5 lbs. per sf.

1. Thickness to be 0.14”
2. Cables to be .032”
3. Rods to be .075”

\*\***NOTE TO SPECIFIER**\*\* You can also select Mandarin patterns. Please refer to product data sheet for details. These patterns may not have wind load available and have longer lead-time upon order. Please consult factory for additional details.

B. Bottom Bar:

 1. Configuration:

a. Stainless Steel angles forming tubular shape

a. Extruded Aluminum tubular section

2. Finish:

a. 316 Stainless Steel Curtain with 304 Stainless Steel Bottom Bar: Factory polished.

a. 316 Stainless Steel Curtain with Aluminum Bottom Bar

C. Guides, Wall Mounted:

a. Aluminum: Heavy duty extruded aluminum one piece guide with santoprene wear strips, mounts directly to wall. Product requiring additional wall angles is not acceptable.

 Finish, Aluminum Guide Components:

a. Clear anodized

a. SpectraShield® Coating System (Color Selected by Architect): Zirconium treatment followed by baked-on polyester powder coat, color as selected by Architect from manufacturer's standard color range, over 180 colors; minimum 2.5 mils (0.065 mm) cured film thickness; ASTM D-3363 pencil hardness: H or better

a. Stainless Steel: Brushed #4 finish 2 piece guides system that slips together with no visible fasteners.

D. Counterbalance Shaft Assembly:

1. Barrel: Steel pipe capable of supporting curtain load with maximum deflection of 0.03 inches per foot (2.5 mm per meter) of width.

2. Spring Balance: Oil-tempered, heat-treated steel helical torsion spring assembly designed for proper balance of grille to ensure that maximum effort to operate will not exceed 25 lbs (110 N). Provide wheel for applying and adjusting spring torque.

E. Brackets: Fabricate from minimum 3/16 inch (4.76 mm) steel plate with permanently lubricated ball or roller bearings at rotating support points to support counterbalance shaft assembly and form end closures.

1. Finish: Zirconium treatment followed by a black baked-on polyester powder coat; minimum 2.5 mils (0.065 mm) cured film thickness.

F. Hood: 20 GA stainless steel 3 sided hood with return on bottom flange to allow bottom bar to align flush with bottom of hood when door in opened position. Provide minimum 1/4 inch (6.35 mm) steel intermediate support brackets as required to prevent excessive sag.

 1. Finish: Stainless Steel hood.

2.4 OPERATION

\*\* **NOTE TO SPECIFIER** \*\* A tube motor is ideal for tighter clearances, providing the convenience of a motor, all within limited headroom conditions. Recommended for applications not exceeding 5 cycles per hour.

1. **Motor - Electric Tube Motor Operator:** Rated for a maximum of 5 cycles per hour, UL325 listed, rated (50 ft-bl/sec) (100 ft-bl/sec) or (150 ft-bl/sec) as recommended by door manufacturer for size and type of door, 120 Volts, 1 Phase. Provide complete with electric tube motor, maintenance free electric brake, emergency manual crank hoist and control station(s). Motor shall be protected against overload with an auto-reset thermal sensing device. Operator shall be equipped with an emergency manual crank hoist assembly that safely cuts operator power when engaged. A disconnect chain shall not be required to engage or release the manual crank hoist. Electronic limit switch required. The electrical contractor shall mount the control station(s) and supply all conduit and wiring per the overhead door wiring instructions.
2. **Motor - Evergard Tube Motor Operator**: Complete electric tube motor operator with 120V Single Phase, Nema1 Wall Mounted Control Unit, 24V rechargeable battery back-up, 12 ft long, pre-wired, wiring harness, solenoid actuated brake and speed governor and 3 button push button station. Motor is rated for a maximum of 10 cycles per hour, 24 VDC TENV motor, overload protection, cULus recognized, with a rating as recommended by door manufacturer for size and type of door. Operator shall be capable of driving the door at a speed of 3 to 8 inches per second (8.69 to 20.22 cm/sec). Operator shall also be capable of 12-28 RPM. Fully adjustable mechanical internal worm limit switch mechanism shall synchronize the operator with the door. The electrical contractor shall mount the control stations and supply the appropriate disconnect switch all conduit and wiring per the overhead door wiring instructions. Provide a guide mounted interlock system to prevent damage to the door and operator when mechanical door locking devices are provided.
	1. Supply model **EverGard Motor Control Box** with programmable logic board and back-up power supply.  120v AC input power with auto switch to 24v DC back-up power.  Back-up power to provide power for 10 cycles (25 minutes)
		1. (2) 12v rechargeable lead sealed batteries.
		2. Programmable battery self-testing
		3. Monitoring points for open/close position, AC power loss and battery low voltage
		4. 12’ wiring whip to connect control box and motor standard (**Optional 25’, 50’, 75’ & 120’ available**)
		5. Emergency Push Button (EPB):  Flush mounted, single red push button station wired for emergency open function only.
		6. Door power indicator: Flush mounted voltage monitor for battery back-up system.  Flashing red light indicates low battery power and maintenance check-up.  Can be located up to 150 ft. away from motor control box.
		7. Non-resettable cycle counter
		8. UL325 compliant system.

A. **Motor – Standard Use – Model MG (Industrial Duty Gear Head) Operator:** The operator must not extend above or below the door coil when mounted front-of-coil. Rated for a maximum of 20 cycles per hour (not to be used for consecutive hours) cULus listed (to comply with UL requirements in The United States and Canada), Totally Enclosed Non Ventilated gear head operator(s) rated (1/3) (1/2) or (3/4) hp as recommended by door manufacture for size and type of door, \_\_\_\_Volts, \_\_\_\_Phase. Provide complete with electric motor and factory pre-wired motor control terminals, maintenance free solenoid actuated brake, [emergency manual chain hoist] [provisions for auxiliary push-up operation] and control station(s). Motor shall be high starting torque, industrial type, protected against overload with an auto-reset thermal sensing device. Primary speed reduction shall be heavy-duty, lubricated gears with mechanical braking to hold the door in any position. Operator shall be equipped with [an emergency manual chain hoist assembly that safely cuts operator power when engaged. A disconnect chain shall not be required to engage or release the manual chain hoist.] [a disconnect cable for auxiliary push-up operation.] Operator drive and door driven sprockets shall be provided with #50 roller chain. [Provide an integral Motor Mounted Interlock system to prevent damage to door and operator when mechanical door locking devices are provided.] Operator shall be capable of driving the door at a speed of 8 to 9 inches per second (20 to 23 cm/sec). Fully adjustable, driven linear screw type cam limit switch mechanism shall synchronize the operator with the door. The electrical contractor shall mount the control station(s) and supply the appropriate disconnect switch, all conduit and wiring per the overhead door wiring instructions.

\*\***NOTE TO SPECIFIER**\*\* Select SG operators for units that will cycle more than 20 times per day and for large size units that will require greater than 3/4 HP.

A. **Motor** **- Continuous Use - Model SG (Super Duty Gear Head) Operator:** The operator must not extend above or below the door coil when mounted front-of-coil. cULus listed (to comply with UL requirements in The United States and Canada). Totally Enclosed Fan Cooled gear head operator(s) rated (1/2) to (7 1/2) hp as recommended by door manufacture for size and type of door, \_\_\_\_Volts, \_\_\_\_Phase. Provide complete with electric motor and factory pre-wired motor control terminals, maintenance free solenoid actuated brake, emergency manual chain hoist and control station(s). Motor shall be high starting torque, industrial type, with overload protection. Primary speed reduction shall be heavy-duty gears running in grease or oil bath with mechanical braking to hold the door in any position. The emergency manual chain hoist assembly is automatically disengaged when motor is energized. A disconnect chain shall not be required to engage or release the manual chain hoist. Operator drive and door driven sprockets shall be provided with minimum #50 roller chain. Operator shall be capable of driving the door at a speed of 8 to 9 inches per second (20 to 23 cm/sec). Fully adjustable, driven linear screw type cam limit switch mechanism shall synchronize the operator with the door. The motor shall be removable without affecting the limit switch settings. The electrical contractor shall mount the control station(s) and supply the appropriate disconnect switch, all conduit and wiring per the overhead door wiring instructions.

A. **Motor – Model EverGard Operator:** The Electric Motor Operator with back-up power control box, Limited Duty (up to 10 cycles per hour), cULus listed, TENV gear head operator, 24DVC. Horsepower as recommended by manufacturer. Provide complete with electric motor and factory pre-wired motor control terminals, maintenance free solenoid actuated brake, emergency manual chain hoist and control station(s). Motor shall be high starting torque, industrial type, with overload protection. Primary speed reduction shall be heavy-duty gears running in maintenance free, sealed gear box with mechanical braking to hold the door in any position. The emergency manual chain hoist assembly is automatically disengaged when motor is energized. A disconnect chain shall not be required to engage or release the manual chain hoist. Operator shall be capable of driving the door at a speed of 6 to 9 inches per second (15 to 23 cm/sec). Fully adjustable, driven linear screw type cam limit switch mechanism shall synchronize the operator with the door. The motor shall be removable without affecting the limit switch settings. The electrical contractor shall mount the control stations and supply the appropriate disconnect switch, all conduit and wiring per the overhead door wiring instructions.

1. Supply model EverGard Motor Control Box with programmable logic board and back-up power supply. 120v AC input power with auto switch to 24v DC back-up power. Back-up power to provide minimum 10 open/close cycles and 48 hr stand-by.

a. (2) 12v rechargeable lead sealed batteries.

b. Programmable battery load testing

c. Monitoring points for open/close position, AC power loss and battery low voltage

d. 12’-0” (standard) wiring whip to connect control box and motor

(up to 120’-0” available)

e. Emergency Push Button (EPB): Flush mounted, single red push button station wired for emergency OPEN function only. If grille is at full open (normal business hours), depressing EPB will not affect the grille’s position.

f. Door power indicator: Flush mounted voltage monitor for battery back-up system. Flashing red light indicates low battery power and maintenance check-up. Can be located up to 150 ft. away from motor control box.

g. Non-resettable cycle counter

h. UL325 & UL864 compliant system.

**Control Stations:**

1. **Surface mounted:** "Open/Close/Stop" push buttons; NEMA 1

1. **Surface mounted:** "Open/Close" key switch with "Stop" push button; NEMA 3R

1. **Surface mounted:** "Open/Close/Stop," push buttons with keyed lock-out, not masterkeyable; NEMA 4

1. **Flush mounted:** "Open/Close/Stop" push buttons; NEMA 1B

1. **Flush mounted:** "Open/Close" key switch with "Stop" push button; NEMA 1B

C. **Control Operation:**

1. **Constant Pressure to Close:**

a. **No sensing device required**

a. **2-wire, electric sensing edge** seal extending full width of door bottom bar. Contact before door fully closes shall cause door to immediately stop downward travel and reverse direction to the fully opened position. Provide a [retracting safety cord and reel] [self-coiling cable] connection to control circuit.

1. **Momentary Contact to Close:**

Fail-safe, UL325-2010 Compliant Entrapment Protection for Motor Operation.

a. **Smartsync Wireless Edge Kit –** continuously monitored, wireless sensing/weather edge seal extending full width of door bottom bar. Contact before door fully closes shall cause door to immediately stop downward travel and reverse direction to the fully opened position. Wireless edge kit will use Zigbee wireless technology. Radio band wireless sensing edges will not be permitted.

a. **2-wire, E.L.R. electric sensing/weather edge** seal extending full width of door bottom bar. Contact before door fully closes shall cause door to immediately stop downward travel and reverse direction to the fully opened position. Provide a [retracting safety cord and reel] [self-coiling cable] connection to control circuit.

a. **NEMA 4X photo eye sensors** consisting of a transmitter and receiver that are to be mounted within 6” (152.4 mm) of the floor, projecting an IR beam across the entire width of the door. Interruption of beam before door fully closes shall cause door to immediately stop downward travel and reverse direction to the fully opened position. Electrical contractor to provide low voltage wiring from the transmitter and receiver to the door operator.

a. **NEMA 1 photo eye sensors** consisting of a transmitter and receiver that are to be mounted within 6” (152.4 mm) of the floor, projecting an IR beam across the entire width of the door. Interruption of beam before door fully closes shall cause door to immediately stop downward travel and reverse direction to the fully opened position. Electrical contractor to provide low voltage wiring from the transmitter and receiver to the door operator.

\*\* **NOTE TO SPECIFIER** \*\* The items listed below are optional secondary entrapment protection devices, and may be used in conjunction with a set of primary entrapment protection photo eyes or with constant pressure close operation. Coordinate with primary entrapment protection; delete if not desired.

D. **Sensing/Weather Edge:**

1. **Electric sensing edge device:** Automatic sensing switch within neoprene or rubber astragal extending full width of door bottom bar. Contact before door fully closes shall cause door to immediately stop downward travel and automatically reverse direction to the fully opened position. Provide a wireless sensing edge connection to motor operator eliminating the need for a physical traveling electric cord connection between bottom bar sensing edge device and motor operator.

2. **Pneumatic sensing edge device:** Contact before door fully closes shall cause door to immediately stop downward travel and reverse direction to the fully opened position. Provide [self-coiling cable] [retracting safety cord and reel] connection to control circuit.

 B. Control Station:

 1. Control Station: Flush mounted, "Open/Close" key switch with "Best" core; NEMA 1B.

2. Provide operator to function with constant pressure close operation to meet UL325-2010 listing standard requirements.

2.5 ACCESSORIES

A. Locking:

1. Master keyable turn handle with cylinder operable from coil side of aluminum bottom bar, options for all types of operation. Master keyable cylinder locks operable from either or both sides of door for stainless steel bottom bar. Provide guide mounted motor interlocks with Tube motors.

**\*\* NOTE TO SPECIFIER \*\*** LED-illuminated light kit is a guide mounted LED light strip to provide an additional visible color coded notification on the door opening status. Delete below if not required.

1. **LED Light Kit :**
	1. Include LED Light Kit in [5ft] [10ft] [15ft] length. IP68 rated LED light kit to include guide mounting channel, power supply, controller and signal wire. LED lights to be solid red when door is closed, flash red when door is in motion and solid green when door is fully open.

**PART 3 EXECUTION**

3.1 EXAMINATION

A. Examine substrates upon which work will be installed and verify conditions are in accordance with approved shop drawings.

B. Coordinate with responsible entity to perform corrective work on unsatisfactory substrates.

 C. Commencement of work by installer is acceptance of substrate.

3.2 INSTALLATION

A. General: Install grille and operating equipment with necessary hardware, anchors, inserts, hangers and supports.

 B. Follow manufacturer's installation instructions.

3.3 ADJUSTING

A. Following completion of installation, including related work by others, lubricate, test, and adjust grilles for ease of operation, free from warp, twist, or distortion.

3.4 CLEANING

 A. Clean surfaces soiled by work as recommended by manufacturer.

 B. Remove surplus materials and debris from the site.

3.5 DEMONSTRATION

 A. Demonstrate proper operation to Owner's Representative.

 B. Instruct Owner's Representative in maintenance procedures.

END OF SECTION