**SECTION 08 33 00**

**ROLLING GRILLES – OPEN DESIGN**

**EXTREME® PERFORMANCE MicroCoil Grille**

**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 SPECIFIER \*\*** are highlighted in red text and should be deleted from final copy.

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

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

1. GENERAL

\*\* NOTE TO SPECIFIER \*\* Include appropriate language below, including a reference to section 01 23 00 alternates, if rolling grilles are included in any alternates, add section 01 23 00 to 1.1 B. Delete if no alternates.

* 1. SUMMARY
		1. **Section Includes:** Electric operated overhead rolling grilles
		2. **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.
			5. Division 26. Electrical wiring and conduit, fuses, disconnect switches, connection of operator to power supply, and installation of control station and wiring.
		3. **Products That May Be Supplied, But Are Not Installed Under This Section:**
			1. **Control Panel and Means of Activation**
	2. SYSTEM DESCRIPTION
		1. **Design Requirements:**
			1. **Performance:**
				1. Construction for high cycle usage of up to 500,000 cycles for the life of the product
				2. Construction for high speed operation to achieve an operating speed of up to
				3. Up to 24 inches per second open and 12 inches per second close
				4. Electronic automatic locking upon closure with manual override
			2. **Headroom:**
				1. Fully coiled curtain/bracket not to exceed 13.75” in diameter
			3. **Security:**
				1. Product will feature guide mounted, automatically activated, electronic cylinder locks with key operated manual override function

\*\*NOTE TO SPECIFIER\*\* If your project does not involve a custom layout or custom product modifications, please delete 4 and 5. If you are unsure, please contact Architectural Design Support at 833-958-1273.

 3. **New Product:**

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

4. **Custom Layout:**

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

5. **Customized Product:**

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

* 1. SUBMITTALS
		1. Reference Section 01 33 00 Submittal Procedures; submit the following items:
			1. **Product Data**
			2. **Shop Drawings**
			3. **Quality Assurance/Control Submittals:**
				1. Provide proof of manufacturer ISO 9001:2015 registration
				2. Provide proof of manufacturer and installer qualifications - see 1.4 below
				3. Provide manufacturer's installation instructions

d. Provide manufacturer’s Health Product Declaration (HPD) for each product

* + - 1. **Closeout Submittals:**
				1. Operation and Maintenance Manual.
				2. Certificate stating that installed materials comply with this specification
	1. QUALITY ASSURANCE
		1. Qualifications:
			1. **Manufacturer Qualifications:** ISO 9001:2015 registered and a minimum of five years’ experience in producing doors of the type specified
			2. **Installer Qualifications:** Manufacturer's approval
	2. DELIVERY STORAGE AND HANDLING
		1. Reference Section 01 66 00 Product Storage and Handling Requirements
		2. Follow manufacturer's instructions
	3. WARRANTY
		1. **Standard Warranty:** Two years or 500,000 cycles, whichever comes first, from date of shipment, against defects in material and workmanship, on mechanical components, operator and control panel
		2. **Maintenance:** Submit for owner’s consideration and acceptance of a required preventative maintenance schedule and service agreement for installed products
1. PRODUCTS
	1. MANUFACTURER
		1. **Manufacturer:**
			1. **Cornell:** 24 Elmwood Avenue, Mountain Top, PA 18707

Telephone: (800) 233-8366.

**Model:** [EPG324C (Straight Pattern)] or [EPG324CB (Brick Pattern)]

* + - 1. **Cookson**
			2. **Clopay Building Products**

**Substitutions:** Not permitted

* 1. MATERIALS
		1. **Curtain:**
			1. **Configuration**
				1. **Straight Pattern (Model EPG324C)**

**Horizontal Rods:** Minimum solid 5/16 inch (8 mm) diameter, 5056 H32 aluminum alloy sleeved with horizontal aluminum or stainless steel tube spacers to separate vertical links on alternate rods with continuous end tube spacers.

**Vertical Spacing:** 2.5” to 3.7” inches (50.8 mm) on center

**Vertical Chains:** Solid 1/8” minimum curved stainless steel links, 1/4 inch (6 mm) wide, positioned by aluminum or stainless steel tube spacers on 9 inch (228.6 mm) centers. Provide nylon insert nuts threaded on to the end of each rod to secure the chains.

* + - * 1. **Brick Pattern (Model EPG324CB)**

**Horizontal Rods:** Minimum solid 5/16 inch (8 mm) diameter, 5056 H32 aluminum alloy sleeved with horizontal aluminum or stainless steel tube spacers to separate vertical links on every rod with continuous end tube spacers.

**Vertical Spacing:** 2.5” to 3.7” on center

**Vertical Chains:** Solid 1/8” minimum curved stainless steel links, 1/4 inch (6 mm) wide, positioned by aluminum tube spacers on 9 inch (228.6 mm) staggered centers. Provide nylon insert nuts threaded on to the end of each rod to secure the chains.

* + - 1. **Finish:**
				1. **Aluminum:** [Mill finish] [Clear anodized]
				2. **Stainless Steel:** Type 304 #4 finish
		1. **Bottom Bar:**
			1. **Fabrication:**
				1. **Extruded Aluminum Tubular Section:** Minimum 1.5x1.5x.18 inch (38.1x38.1x4.572 mm)
				2. **Stainless Steel Square Tube:** Minimum 1.5x1.5x.18 inch (38.1x38.1x4.572 mm)
			2. **Finish:**
				1. **Extruded Aluminum:** [Mill finish] [Clear anodized]
				2. Stainless Steel: Type 304 #4 finish

\*\* NOTE TO SPECIFIER \*\* Use powder coat finish for exposed steel guide components and unpainted when steel guide components are recessed in the wall.

* + 1. **Guides:** Wall Mounted: Heavy duty (minimum .109 inch thick) extruded aluminum sections with [snap-on cover to conceal fasteners and] Santoprene runners on both sides of curtain. Provide steel mounting angle as required for face of wall installation. Also is 12 gauge bent stainless steel with UHMW overlaid on EPDM wear strips.
			1. **Fabrication**:
				1. **Aluminum Guide:**

**Finish:** [Mill finish] [Clear anodized]

* + - * 1. **Stainless Steel Guide, Finish:** Type 304 #4 finish
				2. **Steel Mounting Angle, Finish:**

**Standard (Stock Colors):** Phosphate treatment followed by a [gray] [tan] [white] baked-on polyester powder coat; minimum 2.5 mils (0.065 mm) cured film thickness

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

**Corrosion Inhibitive:** Phosphate treatment followed by a corrosion inhibitive baked-on zinc enriched gray polyester powder coat; minimum 2.5 mils (0.065 mm) cured film thickness

**Hot-dip Galvanized:** ASTM A 123, Grade 85 zinc coating, hot-dip galvanized after fabrication

* + 1. **Shaft Assembly:**
			1. **Barrel:** Minimum 6” steel pipe capable of supporting curtain load with maximum deflection of 0.005 inches per foot (2.5 mm per meter) of width
			2. **Springless Design:** System shall be designed to operate safely without the use of a counterbalance system. A direct connect inertia brake shall be mounted directly to the drive barrel shaft on the non-drive side to help prevent curtain free-fall.
			3. **Inertia Brake Engagement:** Shall disable the electrical control circuit. Chain driven inertia brake is not acceptable. Construction designed for 500,000 cycles.
		2. **Brackets:** Fabricate from minimum 1/4 inch (6.35 mm) steel plate with cast iron flange mount self-aligning double sealed ball bearing, pre-lubricated with high temperature grease for use in reversing applications, with grease fitting for re-lube and setscrews for locking, at rotating support points to support springless shaft assembly and form end closures.
			1. **Finish:**
				1. **Powder Coat (Stock Colors):** Phosphate treatment followed by a [gray] [tan] [white] baked-on polyester powder coat; minimum 2.5 mils (0.065 mm) cured film thickness
				2. **Hot-dip Galvanized:** ASTM A 123, Grade 85 zinc coating, hot-dip galvanized after fabrication
	1. OPERATION
		1. **High Cycle Cornell Direct Drive operator and Apex™ Pro SmartController system**
			1. (115/1/60, 208-230/1/60, 208-230/3/60, 460/3/60, 575/3/60, 230/1/50, 380/3/50) Motor operator and control system shall be designed for Continuous duty cycle, with a direct drive motor. Sprocket and roller chain are not accepted.
			2. Operator to include:
				1. High performance motor brake - Power electronic dynamic braking with timing optimized solenoid mechanical brake
				2. Electrically interlocked chain hoist for emergency manual operation
				3. Overload protection
				4. Motor mounted adjustable variable frequency drive, soft stop at both ends of limit travel. Operation that which does not include a frequency drive will not be accepted.
				5. Control panel mounted VFD will not be accepted.
				6. HP as recommended by the manufacturer.
				7. Detachable Control Enclosure with one-step error proof connections (“Plug and Play”) to connect:

Entrapment safety devices

Motor

Control panel

* + - * 1. Over-current and short-circuit protected Class II Control Circuits.
				2. NEMA 4X Wall Mounted Control Panel with operational buttons and self-diagnostic scrolling display messages to allow for initial set up, control adjustments and error reporting without the need to open the control box. Control panels that require opening of the control box to make changes will not be accepted.
				3. Control panel shall include

Circuit for activation of warning annunciator when closing

Non-resettable Cycle Counter

Lower position sensor

Absolute encoder for door position monitoring. Mechanical Limit Switches are not accepted

\*\* NOTE TO SPECIFIER \*\* Per UL325-2010, doors without a connected and properly functioning primary entrapment protection device will only function by constant pressure close operation. Select the operator function below when constant pressure close operation is acceptable. The motor control station(s) must be mounted within visible sight of the entire door opening and pressure must be maintained on “close” for the duration of each close cycle.

* + 1. **Entrapment Protection:**
			1. Provide the following protection safety devices installed by the manufacturer to angled mounting plates to be mounted to the guides with 3 bolts.
				1. UL325-2010 compliant 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.
				2. SafetyGard™ Light Curtain Technology consisting of an integral 6’ (1828.8mm) high light curtain, if where an object breaks the plane of the light curtain, the door reverses to the open position. Doors provided without a light curtain will not accepted.
		2. **Control & Drive System Options:**
			1. Activation devices [motion detector] [induction loop] [additional photo eyes]
			2. Sensing devices [wireless sensing edge] [presence sensor] [additional photo eyes]
			3. Annunciators [strobe] [beacon]
			4. Two-door interlocks
			5. Long distance wiring
			6. Additional monitoring controls
	1. ACCESSORIES
		1. **Electric Auto-lock:** (2) Guide mounted, automatically activated, electronic cylinder locks with key operated manual override function with [Standard cylinder], [Best cylinder tapered].  Operable from coil side of guides. Stainless steel housing and cover. Solenoid plates within housing. Standard cylinders not to project more than 0” past aluminum guides or 1 1/32 “ past stainless steel guides. Best cylinders not to project more than 5/16” past aluminum guides or 3/4’’ past stainless steel guides. Autolock must fail secure, grille to stay locked in the closed position during a power outage with ability to be unlocked manually with key override.
		2. **Hood [and Fascia]:** [24 gauge galvanized steel] [24 gauge stainless steel] [0.040 inch (1.016 mm) aluminum] with reinforced top and bottom edges. Provide minimum 1/4 inch (6.35 mm) steel intermediate support brackets.
			1. **Finish:**
			2. **GalvaNex™ Coating System (Stock Colors):**
				1. ASTM A 653 galvanized base coating treated with dual process rinsing agents in preparation for chemical bonding baked-on base coat and [gray] baked-on polyester finish coat
			3. **SpectraShield® Coating System (Color Selected by Architect):**
				1. ASTM A 653 galvanized base coating treated with dual process rinsing agents in preparation for chemical bonding, gray baked-on base coat and gray baked-on polyester finish coat
				2. Phosphate treatment followed by baked-on polyester powder coat, with [color as selected by Architect from manufacturer's standard color range, over 180 colors] [custom color as selected by Architect]; minimum 2.5 mils (0.065 mm) cured film thickness; ASTM D-3363 pencil hardness: H or better
			4. **Stainless steel: Type 304 #4 finish**
			5. **Aluminum:** [Mill finish] [Clear anodized]
		3. **Operator [and Bracket Mechanism] Cover:** [24 gauge galvanized steel] [24 gauge galvanized steel] [0.040 inch (1.016 mm) aluminum] sheet metal cover [to provide weather resistance] [to enclose exposed moving operating components] at coil area of unit. Finish to match door hood.
		4. **Tubular Style Sloped Bottom Bar:** 2.75” x 2.8**’’** [aluminum] [stainless] **tube style sloped bottom bar** Tapered to match slope of opening and accommodate for irregular floor conditions. **Maximum pitch with standard bottom bars**: 1” per 1 foot of opening. **Minimum pitch with standard bottom bars:** 1” slope. Minimum upset is 4”. Upset increases with greater slope. Astragal on bottom bar is standard. Slopes with a pitch plate not accepted.
		5. **Trim Package:** Minimum 16 gauge [powder coated steel to match guides] [Type 304 #4 finish stainless steel]. Custom-made to hide visible bolts, fasteners and other exposed hardware.

**\*\* NOTE TO SPECIFIER \*\*** Vibration isolators not available for units requiring wind load or seismic validation. Delete below if not required.

* + 1. **Vibration Isolators:**
			1. Include continuous vibration isolators pre-installed on both guides to reduce vibration transferred from the door to the structure. Vibration isolators should be expected to reduce vibration by up to 14%. Dampening pads are to be manufactured from nitrile oil-resistant rubber, durometer 50A.

**\*\* 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.

**G. 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.
1. EXECUTION
	1. EXAMINATION
		1. Examine substrates upon which work will be installed and verify conditions are in accordance with approved shop drawings
		2. Coordinate with responsible entity to perform corrective work on unsatisfactory substrates.
		3. Commencement of work by installer is acceptance of substrate
	2. INSTALLATION
		1. General: Install grille and operating equipment with necessary hardware, anchors, inserts, hangers and supports
		2. Follow manufacturer's installation instructions
	3. ADJUSTING
		1. Following completion of installation, including related work by others, lubricate, test, and adjust grilles for ease of operation, free from warp, twist, or distortion
	4. CLEANING
		1. Clean surfaces soiled by work as recommended by manufacturer
		2. Remove surplus materials and debris from the site
	5. DEMONSTRATION
		1. Demonstrate proper operation to Owner's Representative
		2. Instruct Owner's Representative in maintenance procedures

END OF SECTION