SECTION 08 33 00

ROLLING GRILLES – OPEN DESIGN

EXTREME® 300 SERIES ROLLING 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.

1.1 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.

 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 Panel and Means of Activation**

1.2 SYSTEM DESCRIPTION

 A. **Design Requirements:**

 1. **Cycle Life:**

 a. Construction for high cycle usage of up to 300,000 cycles for the life of the product

b. Construction for high speed operation to achieve an operating speed of up to 24 inches per second open and 12 inches per second close

2. **Security:**

 a. 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 3 and 3. 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**

 3. **Quality Assurance/Control Submittals:**

 a. Provide proof of manufacturer ISO 9001:2015 registration

 b. Provide proof of manufacturer and installer qualifications - see 1.4 below

 c. Provide manufacturer's installation instructions

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

product

 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’ experience in producing doors 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 year or 300,000 cycles, whichever comes first, from date of shipment against defects in material and workmanship, on mechanical components, operator and control panel.

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

PART 2 PRODUCTS

2.1 MANUFACTURER

 A. **Manufacturer:**

 1. **Cornell**: 24 Elmwood Avenue, Mountain Top, PA 18707. Telephone: (800) 233-8366.

a. **Model**: [EPG324 (Straight Pattern)] or [EPG324B (Brick Pattern)]

 2. **Cookson**

 3. **Clopay Building Products**

 **Substitutions**: Not permitted

2.2 MATERIALS

 A. **Curtain:**

 1. **Configuration - Straight Pattern (Model EPG324)**

 a. **Horizontal Rods**: Minimum solid 5/16 inch (8 mm) diameter, 5056 H32 aluminum alloy sleeved with horizontal aluminum tube spacers to separate vertical links on alternate rods with continuous end tube spacers. Will have continuous end tube spacers if anodized over 25 feet wide.

 b. **Vertical Spacing**: 2 inches (50.8 mm) on center

 c. **Vertical Chains**: Solid 1/8” minimum aluminum links, 3/4 inch (19 mm) wide, positioned by aluminum 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. **Configuration - Brick Pattern (Model EPG324B)**

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

 b. **Vertical Spacing**: 2 inches (50.8 mm) on center

 c. **Vertical Chains**: Solid 1/8” minimum aluminum links, 3/4 inch (19 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.

 2. **Finish:**

 [Mill finish] [Clear anodized] [Medium bronze anodized] [Dark bronze anodized] [Black duranodic]

 B. **Bottom Bar:**

 1. **Fabrication:**

 a. **Extruded Aluminum Tubular Section:** Minimum 2x3.5x.093 inch (50.8x88.9 mm)

a. **Aluminum Angle**: Minimum 3x2x3/16 inch (76.2x50.8x4.8 mm) aluminum angle fascia side and 2x2x1/8 inch (50.8x50.8x3.2 mm) aluminum angle coil side

 2. **Finish:**

[Mill finish] [Clear anodized] [Medium bronze anodized] [Dark bronze anodized] [Black duranodic]

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

C. **Guides: Wall Mounted:** Heavy duty (minimum .109 inch thick) extruded aluminum sections with standard trim and Santoprene runners on both sides of curtain and self-lubricating UHMW bell mouth entry points to guide extrusions. Provide steel mounting angle as required for face of wall installation.

 1. **Fabrication:**

 a. **Aluminum Guide:**

**Finish:** [Mill finish] [Clear anodized] [Medium bronze anodized] [Dark bronze anodized] [Black duranodic]

a. **Steel Mounting Angle:**

**Finish:**

a. **CycleShield™ (Stock Colors):**

Powder coating system with low coefficient of friction wear-resistance to include a galvanized base coat consistent with ASTM A-653, Zirconium treated and bonderized for prime coat adhesion, with a [gray] [tan] [white] baked-on polyester powder coat rust inhibiting paint with a minimum 2 mils (0.0508 mm) cured film thickness

a. **CycleShield™ (RAL or Custom Color Selected by Architect):**

Powder coating system with low coefficient of friction wear-resistance to include a galvanized base coat consistent with ASTM A-653, Zirconium treated and bonderized for prime coat adhesion, with [RAL powder coat color] [custom color] as selected by Architect baked-on polyester powder coat rust inhibiting paint with a minimum 2 mils (0.0508 mm) cured film thickness

1. **SpectraShield® Coating System (Color Selected by Architect):**

Zirconium pre-treatment followed by baked-on polyester powder coat, with color as selected by architect from manufacturer’s [standard color selection – gray, tan, white or brown] [specialty color range – over 180 RAL colors] [custom color indicated by architect]; minimum 2.5 mils (0.065 mm) cured film thickness; ASTM D-3363 pencil hardness: H or better.

a. **GalvaNex™ Coating System (Stock Colors):**

ASTM A 653 galvanized base coating treated with dual process rinsing agents in preparation for chemical bonding baked-on base coat and [gray] [white] [tan] baked-on polyester finish coat

a. **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

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

 C. **Guides: Tube Mounted**: Heavy duty (minimum .109 inch thick) extruded aluminum sections with standard trim and Santoprene runners on both sides of curtain and self-lubricating UHMW bell mouth entry points to guide extrusions. Provide steel tubes, floor saddles and hardware as recommended by manufacturer to support grille.

 1. **Fabrication:**

 a. **Aluminum Guide:**

**Finish:** [Mill finish] [Clear anodized] [Medium bronze anodized] [Dark bronze anodized] [Black duranodic]

 a. **Steel Tubes:**

 **Finish:**

 1. **Unpainted**

1. **CycleShield™ (Stock Colors):**

Powder coating system with low coefficient of friction wear-resistance to include a galvanized base coat consistent with ASTM A-653, Zirconium treated and bonderized for prime coat adhesion, with a [gray] [tan] [white] baked-on polyester powder coat rust inhibiting paint with a minimum 2 mils (0.0508 mm) cured film thickness

1. **CycleShield™ (RAL or Custom Color Selected by Architect):**

Powder coating system with low coefficient of friction wear-resistance to include a galvanized base coat consistent with ASTM A-653, Zirconium treated and bonderized for prime coat adhesion, with [RAL powder coat color] [custom color] as selected by Architect baked-on polyester powder coat rust inhibiting paint with a minimum 2 mils (0.0508 mm) cured film thickness

1. **SpectraShield® Coating System (Color Selected by Architect):**

Zirconium pre-treatment followed by baked-on polyester powder coat, with color as selected by architect from manufacturer’s [standard color selection – gray, tan, white or brown] [specialty color range – over 180 RAL colors] [custom color indicated by architect]; minimum 2.5 mils (0.065 mm) cured film thickness; ASTM D-3363 pencil hardness: H or better.

1. **GalvaNex™ Coating System (Stock Colors):**

ASTM A 653 galvanized base coating treated with dual process rinsing agents in preparation for chemical bonding baked-on base coat and [gray] [white] [tan] baked-on polyester finish coat

1. **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

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

 D. **Shaft Assembly:**

 1. **Barrel:** Minimum 6” steel pipe capable of supporting curtain load with maximum deflection of 0.03 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.

 3. **Inertia Brake Engagement**: Shall disable the electrical control circuit. Chain driven inertia brake is not acceptable. Construction designed for 300,000 cycles.

E. **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:**

a. **CycleShield™ (Stock Colors):**

Powder coating system with low coefficient of friction wear-resistance to include a galvanized base coat consistent with ASTM A-653, Zirconium treated and bonderized for prime coat adhesion, with a [gray] [tan] [white] baked-on polyester powder coat rust inhibiting paint with a minimum 2 mils (0.0508 mm) cured film thickness

a. **CycleShield™ (RAL or Custom Color Selected by Architect):**

Powder coating system with low coefficient of friction wear-resistance to include a galvanized base coat consistent with ASTM A-653, Zirconium treated and bonderized for prime coat adhesion, with [RAL powder coat color] [custom color] as selected by Architect baked-on polyester powder coat rust inhibiting paint with a minimum 2 mils (0.0508 mm) cured film thickness

a. **SpectraShield® Coating System (Color Selected by Architect):**

Zirconium pre-treatment followed by baked-on polyester powder coat, with color as selected by architect from manufacturer’s [standard color selection – gray, tan, white or brown] [specialty color range – over 180 RAL colors] [custom color indicated by architect]; minimum 2.5 mils (0.065 mm) cured film thickness; ASTM D-3363 pencil hardness: H or better.

a. **GalvaNex™ Coating System (Stock Colors):**

ASTM A 653 galvanized base coating treated with dual process rinsing agents in preparation for chemical bonding baked-on base coat and [gray] [white] [tan] baked-on polyester finish coat

a. **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

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

2.3 OPERATION

 A. **High Cycle Direct Drive operator and Apex™ SmartController system**

1. (208-230/1/60, 208-230/3/60, 460/3/60, 575/3/60) **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:**

 a. High performance motor brake - Power electronic dynamic braking with timing optimized solenoid mechanical brake

 b. Electrically interlocked chain hoist for emergency manual operation

 c. Overload protection

 3. **HP as recommended by the manufacturer.**

 4. **PCB controller** with adjustable variable frequency drive; soft-start and soft-stop at both ends of limit travel. Operation which does not include a frequency drive will not be accepted.

5. **Detachable Control Enclosure** with one-step error proof connections (“Plug and Play”) to connect:

 a. Entrapment safety devices

 b. Motor

 c. Control panel

 6. **Over-current and short-circuit protected Class II Control Circuits.**

 7. **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.

 8. **Control panel shall include**

 a. Circuit for activation of warning annunciator when closing

 b. Non-resettable Cycle Counter

 c. Lower position sensor

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

\*\* NOTE TO SPECIFIER \*\* Most common control stations are listed below; consult Architectural Design Support at (800) 233-8366 ext. 4551 for other options.

 B. **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

1. **Flush mounted:** "Open/Close" key switch with ["Stop" push button and] [small format Best type 7-pin cylinder] [Schlage 6-pin cylinder] [#5 U-Change cylinder]; NEMA 1B

\*\* 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.

 C. **Entrapment Protection:**

 1. 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 when the door is closing above 6” from the floor shall cause the 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 be accepted. SafetyGard™ Light Curtain Technology consisting of an integral 3’ (914.4mm) high light curtain for doors shorter than 8’ (2438.4mm) high.

 D. **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

2.4 ACCESSORIES

\*\* NOTE TO SPECIFIER \*\* Exposed moving operator components lower than 8 feet above floor level that create possible pinch points are required to be covered per UL 325. Specify an operator cover whenever this field condition exists. Hoods are not provided as standard and normally not provided for coil above ceiling application. Delete hood below if not desired.

A. **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.

B. **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. **CycleShield™ (Stock Colors):**

Powder coating system with low coefficient of friction wear-resistance to include a galvanized base coat consistent with ASTM A-653, Zirconium treated and bonderized for prime coat adhesion, with a [gray] [tan] [white] baked-on polyester powder coat rust inhibiting paint with a minimum 2 mils (0.0508 mm) cured film thickness

1. **CycleShield™ (RAL or Custom Color Selected by Architect):**

Powder coating system with low coefficient of friction wear-resistance to include a galvanized base coat consistent with ASTM A-653, Zirconium treated and bonderized for prime coat adhesion, with [RAL powder coat color] [custom color] as selected by Architect baked-on polyester powder coat rust inhibiting paint with a minimum 2 mils (0.0508 mm) cured film thickness

1. **SpectraShield® Coating System (Color Selected by Architect):**

Zirconium pre-treatment followed by baked-on polyester powder coat, with color as selected by architect from manufacturer’s [standard color selection – gray, tan, white or brown] [specialty color range – over 180 RAL colors] [custom color indicated by architect]; minimum 2.5 mils (0.065 mm) cured film thickness; ASTM D-3363 pencil hardness: H or better.

1. **GalvaNex™ Coating System (Stock Colors):**

ASTM A 653 galvanized base coating treated with dual process rinsing agents in preparation for chemical bonding baked-on base coat and [gray] [white] [tan] baked-on polyester finish coat

1. **Stainless steel**: type 304 #4 finish

1. **Aluminum**: [Mill finish] [Clear anodized] [Medium bronze anodized] [Dark bronze anodized] [Black duranodic]

C. **Operator and Bracket Mechanism Cover**: [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.

D. **Sloped Bottom Bar:** 2.75” x 2.8**’’ aluminum 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.

E. **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.

F. **Fixed Panel**: Static grille curtain with frame assembly to fill adjacent space(s) around coiling grille.  Finish and pattern to match coiling grille.

**\*\* 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.

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**