**SECTION 08 33 00**

**EXTREME® PERFORMANCE 300 SERIES INSULATED ROLLING DOOR**

ASHRAE® 90.1 and IECC® 2018 Compliant Insulated rolling service Door

**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.: \_\_\_\_\_\_\_\_\_\_\_\_.

**PART 1** – GENERAL

**1.1 SUMMARY**

 A. **Section Includes:** electric operated overhead rolling doors rated for high cycle and/or high speed use

 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. 09 91 00 Painting. Field painting.

6. 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. Means of Activation

**1.2 SYSTEM DESCRIPTION**

 A. **Design Requirements:**

1. **Air Infiltration to Comply With:**

a. **ASHRAE®** (American Society of Heating, Refrigeration, and Air-Conditioning Engineers) Standard 90.1-2007, 2010 & 2013 requirements of less than .3 CFM/FT2

b. **IECC®** (International Energy Conservation Code) 2018 requirements of less than 1.0 CFM/FT2

2. **Wind Loading:**

a. Supply doors to withstand up to 50 PSF maximum wind load

a. Supply doors to be operational up to 10 PSF maximum wind load

a. Supply doors to withstand up to 20 PSF design wind load. Consult factory for availability.

3. **Cycle Life:**

a. Design doors of construction for high cycle use of up to 300,000 cycles for the life of the product

b. Design doors of construction for high speed operation to achieve operational speed up to 24 inches per second open and up to 12 inches per second close

4. **Insulated Door Slat Material Requirements:**

a. Flame Spread Index of 0 and a Smoke Developed Index of 10 as tested per ASTM E84

b. Sound Transmission Class (STC) rating up to 30 for the curtain and up to 32 for the entire assembly, as tested per ASTM E90 and based on testing a complete, operable assembly

c. Minimum R-value of 8.0 (U-value of 0.125) as calculated using the ASHRAE Handbook of Fundamentals

d. Insulation to be CFC Free with an Ozone Depletion Potential (ODP) rating of zero

\*\*NOTE TO SPECIFIER\*\* If your project does not involve a custom layout or custom product modifications, please delete 6 and 7. If you are unsure, please contact Architectural Design Support at 833-958-1273.

5. **New Product:**

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

6. **Custom Layout:**

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

7. **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 9001:2015 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 slatted coiling doors

2. **Installer Qualifications:** Manufacturer's approval

**1.5 DELIVERY STORAGE AND HANDLING**

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

1. Follow manufacturer's instructions

**1.6 WARRANTY**

A. **Standard Warranty:** Two years 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. **500,000 Cycle Warranty:** Three 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

C. **Maintenance:** Submit for owner’s consideration and acceptance of a required preventative maintenance schedule and service agreement for installed products

**PART 2** – PRODUCTS

**2.1 MANUFACTURER**

\*\* **NOTE TO SPECIFIER** \*\* Select one of the following.

 A. **Manufacturer:**

1. **Cornell:** 24 Elmwood Avenue, Mountain Top, PA 18707

**Telephone:** (800) 233-8366

 a) **Model:** EPI 300

2. **Cookson**

3. **Clopay Building Products**

**Substitutions:** Not Permitted

**2.2 MATERIALS**

1. **Curtain**: Air infiltration rate of less than .3 CFM/FT2, validated by an independent testing agency.

**Test report required.**

1. **Fabrication:**

\*\* **NOTE TO SPECIFIER** \*\* Select one of the following.

a. **Slats:** (Gauge listed Exterior/Interior)

1) **Galvanized Steel/Galvanized Steel:** Manufacturer recommended gauge based on performance requirements. Minimum 24/24 gauge, Grade 40, ASTM A 653 galvanized steel zinc coating

1) **Stainless Steel/Galvanized Steel:** Minimum 22 gauge AISI type 304 series stainless steel/24gauge, Grade 40, ASTM A 653 galvanized steel zinc coating

1) **Stainless Steel/Stainless Steel:** Minimum 22/22 gauge AISI type 304 series stainless steel

b. **Insulation:** 7/8” of insulation enclosed within the slat assembly

c. **Total Slat Thickness:** 15/16 inch (24 mm)

d. **Flame Spread Index** of 0 and a **Smoke Developed Index** of 10 as tested per ASTM E84

e. **R-value**: 8.0

f. **STC Rating:** Up to 30 for the curtain and up to 32 for the entire assembly, as tested per ASTM E90 and based on testing a complete, operable assembly

2. **Exterior Slat 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 [color as selected by Architect from manufacturer's standard color range, over 180 colors] [custom color as selected by Architect] [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. **CycleShield™ Ultra (Stock Colors):**

Ultra Powder Coat to be applied as a protective top coat over CycleShield finish. Top coat is a polyester based structured wear resistant clear powder coat of 2.5-3.5 mils cured film thickness. ASTM D-3363 pencil hardness: 2H or better. Tested per ASTM B117. Base coating of CycleShield [gray] [tan] [white].

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

Ultra Powder Coat to be applied as a protective top coat over CycleShield finish. Top coat is a polyester based structured wear resistant clear powder coat of 2.5-3.5 mils cured film thickness. ASTM D-3363 pencil hardness: 2H or better. Tested per ASTM B117. Base coating of CycleShield [color as selected by Architect from manufacturer's standard color range, over 180 colors] [custom color as selected by Architect] [custom color]

a. **Stainless Steel:** type 304 #4 finish

3. **Interior Slat 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 [color as selected by Architect from manufacturer's standard color range, over 180 colors] [custom color as selected by Architect] [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. **Stainless Steel:** type 304 #4 finish

 B. **Bottom Bar**

1. Configuration

a. **Structural Steel Angles**: Minimum two 2x2x1/8 inch structural steel angles

a. **Stainless Steel Angles:** Minimum two 2x2 12 GA inch formed stainless steel or two 3x3x3/16 structural steel angles

2. Finish: Match Curtain Slats

 C. **Endlocks**

Fabricate interlocking sections with malleable steel endlocks on continuous slats each secured two ¼” rivets. Windlock material as required based on system description and manufacturer’s recommendation. Provide windlocks as required to meet specified wind load.

 D. **Guides:**

1. **Fabrication:**

a. **Thermal break required.** Minimum 3/16 inch (4.76 mm) [structural steel] [stainless steel] angles. Provide windlock bars of same material when windlocks are required to meet specified wind load. Top of inner and outer guide angles to be flared outwards to form bellmouth for smooth entry of curtain into guides. Provide removable guide stoppers to prevent over travel of curtain and bottom bar.

\*\* **NOTE TO SPECIFIER** \*\* If structural steel guides are selected above, add the following sentence below regarding removable top section. Delete if selecting stainless steel or aluminum guide angles.

Top 16 ½” (419.10 mm) of coil side guide angles to be removable for ease of curtain installation and as needed for future curtain service

\*\* **NOTE TO SPECIFIER** \*\* Mill finish structural stainless steel guide angles are used for stainless steel guide components over 12’-0” (3.66 m) high and on units wider than 21’-4” (6.50 m).

2. **Finish:**

\*\* **NOTE TO SPECIFIER** \*\* Select one of the following.

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

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] [custom color as selected by Architect]; minimum 2.5 mils (0.065 mm) cured film thickness; ASTM D-3363 pencil hardness: H or better

a. **Corrosion Inhibitive:** Zirconium 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

a. **Stainless Steel:** [#4 type 304 finish] [Mill finish]

 E. **Shaft Assembly**

1. Barrel: Minimum 6” steel tubing 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. Door designed with springs is not acceptable.

 F. **Brackets**

1. Configuration:

a. Constructed of steel not less than ¼” thick and shall be bolted to the wall angle with minimum ½” fasteners. Both drive and idler brackets are to be furnished with precision ball bearings.

2. Finish:

\*\* **NOTE TO SPECIFIER** \*\* Select one of the following.

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

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] [custom color as selected by Architect]; minimum 2.5 mils (0.065 mm) cured film thickness; ASTM D-3363 pencil hardness: H or better

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

 G. **Hood:** [24 gauge stainless steel] [galvanized steel] with reinforced top and bottom edges

1. Finish:

a. **Steel:** To match curtain finish

 H. **Perimeter Sealing:**

1. Bottom Bar:

1. Provide neoprene astragal extending full width of door bottom bar

b. Guides: Nylon brush seal on guides sealing against [fascia side] [both sides] sides of curtain

c. Lintel Seal: Nylon brush seal fitted at door header to impede air flow

2.3 OPERATION

 A. **High Cycle 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:

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

d. Motor mounted adjustable variable frequency drive; soft start and soft stop at both ends of limit travel. Operation that which does not include a frequency drive will not be accepted.

e. Control panel mounted VFD will not be accepted

3. HP as recommended by the manufacturer.

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

a. Entrapment safety devices

b. Motor

c. Control panel

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

6. 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.

7. 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

 B. **Entrapment Protection:**

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.

 C. **Control & Drive System Options:**

**\*\* NOTE TO SPECIFIER \*\*** The following options are available individually or in conjunction; delete those not desired.

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 \*\*** Show number and placement of vision panels on drawings. Minimum spacing is 6 inches (150 mm) apart, 12” (305 mm) in from guides. Delete below if not required.

 A. **Vision Panels:** 10x1-5/8 inch (254 x 41.28 mm) oval acrylic panes set with double sided foam glazing tape to provide ambient light and allow visibility of oncoming traffic. Refer to drawings for number and placement. Smaller vision panels are not acceptable.

**\*\* 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 UL325. Specify an operator cover whenever this field condition exists.

 B. **Operator and Bracket Mechanism Cover:** [24 gauge galvanized steel] [22 gauge stainless steel] [20 gauge stainless steel] sheet metal covers at coil area of unit. Finish matches door hood.

C. **Sloped Bottom Bar (Pitch Plate):** Tapered to match slope of opening and accommodate for irregular floor conditions. Maximum pitch with standard bottom bars: 1/8” per foot on doors with astragal or sensing edge; 1/16” per foot on doors without astragal or sensing edge.

D. **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.

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 door 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 doors 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**