# SECTION 08 33 00

# ROLLING SERVICE DOORS

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 DOOR MODEL, IT IS LISTED IN THE FIRST POSITION. MAKE APPROPRIATE SELECTION AND DELETE OTHERS.

ITEMS REQUIRING ADDITIONAL INFORMATION ARE UNDERLINED, E.G.: _____ .

OPTIONAL PARAGRAPHS ARE SEPARATED BY A REDLINED "OR," E.G.:

OR

## PART 1 GENERAL

### 1.1 SUMMARY

A. Section Includes: [Manual] [and] [electric operated] overhead rolling doors.

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. Padlocks. Masterkeyed cylinder.
   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. Control Station

INCLUDE APPROPRIATE LANGUAGE BELOW, INCLUDING A REFERENCE TO SECTION 01 23 00 ALTERNATES, IF ROLLING SERVICE DOORS ARE INCLUDED IN ANY ALTERNATES, ADD SECTION 01 23 00 TO 1.1 B. DELETE IF NO ALTERNATES.

D. Alternates:

1.2 SYSTEM DESCRIPTION

A. Design Requirements:
   1. Wind Loading: Supply doors to withstand up to [ __ psf ( ___ Pa) maximum wind load.

OR

   1. Wind Loading: Supply doors to withstand up to [ __ psf ( ___ Pa) design wind load.
   2. Cycle Life:
      a. Design doors of standard construction for normal use of up to 20 cycles per day maximum.

OR

      a. Design doors of special construction for high cycle use. Expected cycles of up to ____ per day.

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 1.4 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 9001:2008 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 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**

2.1 MANUFACTURER

A. Manufacturer: Cornell Iron Works, Inc., Crestwood Industrial Park, Mountaintop, PA 18707. Telephone: (800) 233-8366, Fax: (800) 526-0841. Underwriters Laboratories, Inc. (UL), ISO 9001:2008 Registered.

INSERT NAME, ADDRESS, AND PHONE NUMBERS OF LOCAL DISTRIBUTOR BELOW.

1. Distributor:

B. Model: ESD10

C. Substitutions: Reference Section 01 25 13 Product Substitution Procedures.

2.2 MATERIALS

24 GAUGE IS AVAILABLE FOR DOOR WIDTHS THROUGH 12'-0" (3.66 M); 22 GAUGE IS STANDARD FOR DOOR WIDTHS THROUGH 24'-4" (7.42 M); 20 GAUGE IS STANDARD FOR DOOR WIDTHS OVER 24'-4" (7.42 M); 18 GAUGE IS AN AVAILABLE OPTION FOR ANY DOOR WIDTH.

A. Curtain:
   1. Slats: No. 5F, [24] [22] [20] [18] gauge, Grade 40 steel, ASTM A 653 galvanized steel zinc coating.
   2. Bottom Bar: Two 2x2x1/8 inch (50x50x3.2 mm) structural steel angles.

OR 1&2

   1. Slats: No. 5P, 20 gauge, Grade 40 steel, ASTM A 653 galvanized steel zinc coating perforated with 0.062 inch (1.6 mm) diameter openings at 0.094 inch (2.4 mm) staggered centers, approximately 22 percent free area.
   2. Bottom Bar: Two 2x2x1/8 inch (50x50x3.2 mm) structural steel angles.

OR 1&2

   1. Slats: No. 5F, 20 gauge AISI type 304 series stainless steel.
   2. Bottom Bar: Two 2x2x1/8 inch (50x50x3.2 mm) AISI 300 series stainless steel angles.

OR 1&2

   1. Slats: No. 5F, 0.050 inch (1.270 mm) aluminum.
   2. Bottom Bar: Two 2x2x1/8 inch (50x50x3.2 mm) aluminum angles.

SELECT NYLON ENDLOCKS BELOW FOR DOORS UP TO 21'-5" (6.528 M) DISTANCE BETWEEN GUIDES AND CAST IRON FOR LARGER DOORS.

   3. Fabricate interlocking sections with high strength [nylon] [cast iron] endlocks on alternate slats each secured with two ¼" (6.35 mm) rivets. Provide windlocks as required to meet specified wind load.
   4. Slat Finish:
      a. GalvaNex™ Coating System to include an ASTM A 653 galvanized base coating treated with dual process rinsing agents in preparation of a chemical bonding,

[light gray] [tan] [white] baked-on polyester base coat and a [light gray] [tan] [white] baked-on polyester finish coat. The scientific organic material composition and chemical bonding process of GalvaNex™ produces a superior finish against corrosion and abrasion. GalvaNex™ components include a limited two year finish warranty.

OR

a. GalvaNex™ Coating System and phosphate treatment followed by baked-on polyester powder coat, [color as selected by Architect from manufacturer's standard color range, minimum 32 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.

OR

a. Galvanized Steel: Phosphate and bonding treatment only, (no paint finish).

OR

a. Stainless steel: No. 4 finish.

OR

a. Aluminum: [Mill finish] [Clear anodized] [Medium bronze anodized] [Dark bronze anodized] [Black anodized].

SPECIFIY RAPIDRESPONSE™ CONFIGURATION FOR FAST REPAIR AFTER IMPACT. SELECT 5 a. 3' OF EXTRA SLATS or 6' OF EXTRA SLATS, 7 a. RAPIDRESPONSE IMPACTABLE BOTTOM BAR and B 2 a. RAPIDRESPONSE GUIDE CONFIGURATION.

5. Curtain Configuration:
   a. Standard Curtain configuration.

OR

   a. RapidResponse configuration with 3' of extra slats.

OR

   a. RapidResponse configuration with 6' of extra slats.
6. Bottom Bar Finish:
   a. Steel: Phosphate treatment followed by a [light gray] [tan] [white] baked-on polyester powder coat; minimum 2.5 mils (0.065 mm) cured film thickness.

OR

   a. Steel: Phosphate treatment followed by a corrosion inhibitive baked-on zinc-rich gray polyester powder coat; minimum 2.5 mils (0.065 mm) cured film thickness.

OR

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

OR

   a. Steel: Phosphate treatment followed by baked-on polyester powder coat, [color as selected by Architect from manufacturer's standard color range, minimum 32 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.

OR

   a. Stainless steel: No. 4 finish.

OR

   a. Aluminum: [Mill finish] [Clear anodized] [Medium bronze anodized] [Dark bronze anodized] [Black anodized].
7. Bottom Bar Configuration:
   a. Standard Bottom Bar Configuration.

OR

a. RapidResponse™ Impactable Bottom Bar consisting of 2 steel angles with flexible connecting members.

B. Guides: Fabricate with [structural steel] [stainless steel] [aluminum] 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.

IF STANDARD 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.

1. Finish:
   a. Steel: Phosphate treatment followed by a [light gray] [tan] [white] baked-on polyester powder coat; minimum 2.5 mils (0.065 mm) cured film thickness.

OR

   a. Steel: Phosphate treatment followed by a corrosion inhibitive baked-on zinc-rich gray polyester powder coat; minimum 2.5 mils (0.065 mm) cured film thickness.

OR

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

OR

   a. Steel: Phosphate treatment followed by baked-on polyester powder coat, [color as selected by Architect from manufacturer's standard color range, minimum 32 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.

OR

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).

   a. Stainless steel: [No. 4 finish] [Mill finish].

OR

   a. Aluminum: [Mill finish] [Clear anodized] [Medium bronze anodized] [Dark bronze anodized] [Black anodized].

2. Guide Configuration:
   a. Standard Guide Configuration.

OR

   a. RapidResponse Guide Configuration with a 56" removable lower guide section.

C. 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 door to ensure that maximum effort to operate will not exceed 25 lbs (110 N). Provide wheel for applying and adjusting spring torque.

D. Brackets: Fabricate from minimum 3/16 inch (5 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:
      a. Steel: Phosphate treatment followed by a [light gray] [tan] [white] baked-on polyester powder coat; minimum 2.5 mils (0.065 mm) cured film thickness.

OR

      a. Phosphate treatment followed by a corrosion inhibitive baked-on zinc-rich gray polyester powder coat; minimum 2.5 mils (0.065 mm) cured film thickness.

OR

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

OR

      a. Phosphate treatment followed by baked-on polyester powder coat, [color as selected by Architect from manufacturer's standard color range, minimum 32 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.

E. Hood: [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 as required to prevent excessive sag.
   1. Finish:
      a. GalvaNex™ Coating System to include an ASTM A 653 galvanized base coating treated with dual process rinsing agents in preparation of a chemical bonding, [light gray] [tan] [white] baked-on polyester base coat and a [light gray] [tan] [white] baked-on polyester finish coat. The scientific organic material composition and chemical bonding process of GalvaNex™ produces a superior finish against corrosion and abrasion. GalvaNex™ components include a limited two year finish warranty.

OR

      a. GalvaNex™ Coating System and phosphate treatment followed by baked-on polyester powder coat, [color as selected by Architect from manufacturer's standard color range, minimum 32 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.

OR

      a. Stainless steel: No. 4 finish.

OR

      a. Aluminum: [Mill finish] [Clear anodized] [Medium bronze anodized] [Dark bronze anodized] [Black anodized].

F. Weatherstripping:
   1. Bottom Bar: Replaceable, bulb-style, compressible EDPM gasket extending into guides.

FOLLOWING FOUR WEATHERSTRIP OPTIONS ARE AVAILABLE; DELETE THOSE NOT DESIRED.

OR

   1. Bottom Bar, Motor Operated Doors: Sensing/weather edge within neoprene ~~or rubber~~ astragal extending full width of door bottom bar.

2. Guides: Vinyl strip sealing against fascia side of curtain.
3. Hood: Neoprene/rayon baffle to impede air flow above coil.
4. Lintel Seal: Nylon brush seal fitted at door header to impede air flow.

2.3 ACCESSORIES

| STANDARD LOCKING METHODS ARE LISTED BELOW. |
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A. Locking:
   1. [Manual Push-Up] [Manual Crank Hoist]: Padlockable slide bolt on [coil] [fascia] side of bottom bar at each jamb extending into slots in guides.

OR

   1. Manual Chain Hoist: Padlockable chain keeper on guide.

OR

| AVAILABLE LOCKING OPTIONS ON ALL DOORS; CONSULT CORNELL ENGINEERING SERVICES (800) 233-8366 EXT. 551 FOR OTHER OPTIONS. |
|---|

   1. Padlockable slide bolt on [coil] [fascia] side of bottom bar at each jamb extending into slots in guides. [Provide interlock switches on motor operated units.]

OR

   1. Masterkeyable cylinder operable from [coil] [fascia] [both] side[s] of bottom bar. [Provide interlock switches on motor operated units.]

| VISION PANELS ARE AVAILABLE IN SLAT 5F ONLY. SHOW NUMBER AND PLACEMENT ON DRAWINGS. MINIMUM SPACING IS 1-1/2 INCHES (40 mm) APART, 12” (305 MM) IN FROM GUIDES. DELETE BELOW IF NOT REQUIRED. |
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B. Vision Panels: 10 x 1-5/8 inch (254 x 41.28 mm) oval acrylic panes set with double sided foam glazing tape and secured with retaining clips and rivets. Refer to drawings for number and placement.

| PASS DOORS WITH HINGED FRAMES ARE AVAILABLE. CONSULT CORNELL ENGINEERING SERVICES (800) 233-8366 EXT. 551 FOR OPTIONS. DELETE BELOW IF NOT REQUIRED. |
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C. Pass Doors.

| GRAPHIC DOOR IMAGE AND MATADOOR BREAKAWAY CURTAIN SECTION ARE AVAILABLE SERVICE DOOR ACCESSORIES. GRAPHIC HEIGHT LIMIT IS 10’. INCLUDE “D” AND/OR “E” BELOW WHEN DESIRED. |
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D. Graphics Door Image: [Flat face surface of door curtain slats] [hood] [fascia] to include a factory applied [4] [2] -color process, 2 mil thick vinyl graphic image, 3M® or equal. Graphic image to be selected and electronically supplied by customer. Door opening size to be _____ feet wide x _____ feet high. Graphic image size to be _____ feet wide x _____ feet high.

E. Matadoor Breakaway Curtain Bottom Section: Bottom 25" (635 mm) of door curtain to be constructed of a reinforced vinyl laminated woven polyester fabric panel with a breakaway bottom bar constructed of back to back structural steel angles. Color of assembly to be safety orange. Design section to release upon impact avoiding most damage from accidents involving forklift trucks or other vehicles.

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.

F. Operator [and Bracket Mechanism] Cover: Provide [24 gauge galvanized steel] [24 gauge stainless 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.

2.4 OPERATION

A. Manual Push-Up: Provide lift handles on bottom bar and pole with hook.

OR

A. Manual Chain Hoist: Provide chain hoist operator with endless steel chain, chain pocket wheel and guard, geared reduction unit, and chain keeper secured to guide.

OR

A. Manual Crank Hoist: Provide crank hoist operator including crank gear box, steel crank drive shaft and geared reduction unit. Fabricate gear box to completely enclose operating mechanism and be oil-tight.

OR

SELECT MODEL MG OPERATORS FOR UNITS THAT WILL ROUTINELY CYLCE LESS THAN 20 TIMES PER DAY AND REQUIRE NO MORE THAN 3/4 HP. 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. Supply Cornell Model MG Electric Motor Operator, industrial duty - rated for a maximum of 20 cycles per hour, cULus listed, 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.

OR

A. Supply Cornell Model SG Electric Motor Operator, continuous duty, cULus listed, 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 provided up to 2 hp 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. When equipped, 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.

MOST COMMON CONTROL STATIONS ARE LISTED BELOW; CONSULT CORNELL ENGINEERING SERVICES (800) 233-8366 EXT. 551 FOR OTHER OPTIONS.

1. Control Station: Surface mounted, "Open/Close/Stop" push buttons; NEMA 1.

OR

1. Control Station: Flush mounted, "Open/Close/Stop" push buttons; NEMA 1B.

OR

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

OR

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

OR

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

PER UL325-2010, DOORS WITHOUT A CONNECTED AND PROPERLY FUNCTIONING PRIMARY ENTRAPMENT PROTECTION DEVICE WILL ONLY FUNCTION BY CONSTANT PRESSURE CLOSE OPERATION.
■ SELECT A PRIMARY ENTRAPMENT PROTECTION DEVICE FROM 2.4-B-1 BELOW TO ENABLE MOMENTARY CONTACT CLOSE OPERATION, INCLUDING THE CONNECTION OF RADIO CONTROLS, INDUCTION LOOPS, TIMER TO CLOSE, ETC.
■ COORDINATE A SENSING/WEATHER EDGE WITH 2.2 F; DELETE IF NOT DESIRED.

B. Entrapment Protection: Provide the following primary entrapment protection device to enable momentary contact close operation.

A STAND ALONE 2-WIRE E.L.R. ELECTRIC SENSING EDGE IS RECOMMENDED TO MEET THE UL325-2010 REQUIREMENT FOR ENTRAPMENT PROTECTION WHILE ALSO PROVIDING PROPERTY PROTECTION. A SENSING EDGE WILL DETECT OBJECTS PROJECTING THROUGH THE OPENING ABOVE 6" FROM THE FLOOR THAT PHOTO EYES MAY NOT DETECT.

1. Provide 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.

OR

1. Provide 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.

OR

1. Provide 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.

OR

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.

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

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 2.2 F; DELETE IF NOT DESIRED.

C. Sensing/Weather Edge: Provide automatic reversing control by an automatic sensing switch within neoprene or rubber astragal extending full width of door bottom bar.
   1. Provide an electric 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 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.

OR

1. Provide a 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.

**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