

SECTION 08 33 00

ROLLING SERVICE DOORS

ENTREMAT~~IC~~

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:** [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

1.2 SYSTEM DESCRIPTION

- A. **Design Requirements:**
 - 1. **Wind Loading:**
 - a. Doors to withstand up to [] psf ([] Pa) design wind load

**** NOTE TO SPECIFIER **** If cycles are 300,000 or above, select an alternate product. Contact Entrematic's Commercial Experts at 866-366-4814

- 2. **Cycle Life:**
 - a. Standard construction for normal use of up to 20 cycles per day maximum, and an overall maximum of 50,000 operating cycles for the life of the door

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- b. Special construction for high-cycle use. Expected cycles of up to [] per day and [] life of the door

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 9001:2008 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:**
 - 1. Entrematic; 165 Carriage Court, Winston-Salem, NC 27105. ASD. Tel: (800) 503-3667. Fax: (336) 251-1851. Email: MarketingDept@amarr.com Website: www.amarr.com.
 - a. **Model:** 4000

Substitutions: Not permitted

2.2 MATERIALS

- A. **Curtain:**

**** NOTE TO SPECIFIER **** Specify RapidResponse™ configuration for fast repair after impact. Select 3' of extra slats or 6' of extra slats, RapidResponse impactable bottom bar and RapidResponse guide configuration. **Any opening that will experience vehicular traffic should include this option.**

- 1. **Configuration:**
 - a. Standard curtain configuration
 - a. **RapidResponse** configuration with 3 feet of extra slats
 - a. **RapidResponse** configuration with 6 feet of extra slats

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**** NOTE TO SPECIFIER ** Gauge as selected by manufacturer to meet windload requirements.**

2. **Slats:**
 - a. **Galvanized Steel:** No. 5F, minimum 20 gauge, Grade 40 steel, ASTM A 653 galvanized steel zinc coating with Bottom Bar: [Extruded aluminum alloy 6063-T5, min height 3 3/8" min base thickness 3/16", min width 4"] [Two 2x2x1/8 inch (50x50x3.2 mm) AISI 300 series steel angles]
 - a. **Steel:** No. 5F, minimum 24 gauge (prefinished), Grade 40 steel, ASTM A 653 galvanized steel zinc coating with Bottom Bar: [Extruded aluminum alloy 6063-T5, min height 3 3/8" min base thickness 3/16", min width 4"] [Two 2x2x1/8 inch (50x50x3.2 mm) AISI 300 series steel angles]
 - a. **Perforated:** No. 5P, minimum 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 with Bottom Bar: [Extruded aluminum alloy 6063-T5, min height 3 3/8" min base thickness 3/16", min width 4"] [Two 2x2x1/8 inch (50x50x3.2 mm) AISI 300 series steel angles]
 - a. **Stainless Steel:** No. 5F, minimum 20 gauge AISI type 304 series stainless steel with Bottom Bar: Two 2x2x1/8 inch (50x50x3.2 mm) AISI 300 series stainless steel angles
 - a. **Aluminum:** No. 5F, minimum 0.050 inch (1.270 mm) aluminum with Bottom Bar: [Extruded aluminum alloy 6063-T5, min height 3 3/8" min base thickness 3/16", min width 4"] [Two 2x2x1/8 inch minimum (50x50x3.2 mm) aluminum angles]
3. **Finish:**
 - a. **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] [tan] [white] [brown] baked-on polyester enamel finish coat
 - a. **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) Zirconium pre-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
 - a. **Galvanized Steel (No Paint Finish):** Zirconium and bonding treatment only (no paint finish)
 - a. **Stainless Steel:** #4 type 304 finish
 - a. **Aluminum:** [Mill finish] [Clear anodized] [Medium bronze anodized] [Dark bronze anodized] [Black anodized]

**** NOTE TO SPECIFIER ** Nylon endlocks are recommended whenever possible to minimize operating noise.**

- B. **Endlocks:**

Alternate slats each secured with two 1/4" (6.35 mm) rivets. Fabricate interlocking sections with high strength [nylon] [galvanized cast iron]. Provide windlocks as required to meet specified wind load.

 1. **Nylon:** Required up to 21'-5" width (DBG - Distance Between Guides)
 1. **Galvanized cast iron:** Required if above 21'-5" width (DBG - Distance Between Guides)
- C. **Bottom Bar**
 1. **Configuration:**
 - a. **Standard Bottom Bar 21.5' DBG and smaller:** Extruded aluminum alloy 6063-T5, min height 3 3/8" min base thickness 3/16", min width 4"
 - a. **Standard Bottom Bar larger than 21.5' DBG:** 2 structural steel angles minimum 2"x2"x1/8"

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- a. **RapidResponse™ Impactable Bottom Bar:** 2 structural steel angles minimum 2x2x1/8" with flexible connecting members
 - a. **Heavy Duty Bottom Bar:** 6" x 2" x 3/8" aluminum tubular extrusion configured to withstand 350% more impact than standard bottom bar. (Doors up to 12' wide.)
2. **Finish:**
- a. **Aluminum:** [Mill finish] [Clear anodized] [Medium bronze anodized] [Dark bronze anodized] [Black anodized]
 - a. **Powder Coat (Stock Colors):** Zirconium pre-treatment followed by a [gray] [tan] [white] [brown] baked-on polyester powder coat; minimum 2.5 mils (0.065 mm) cured film thickness
 - a. **Powder Coat (Color Selected by Architect):** Zirconium pre-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:** type 304 #4 finish

D. **Guides:**

1. **Fabrication:**
- a. Minimum 3/16 inch (4.76 mm) [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.
2. **Configuration:**
- a. **Standard** guide configuration
 - a. **RapidResponse** guide configuration with a 56" removable lower guide section for quick access to curtain for repairs

**** 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).

3. **Finish:**
- a. **Powder Coat (Stock Colors):** Zirconium pre-treatment followed by a [gray] [tan] [white] [brown] baked-on polyester powder coat; minimum 2.5 mils (0.065 mm) cured film thickness
 - a. **Powder Coat (Color Selected by Architect):** Zirconium pre-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]
 - a. **Aluminum:** [Mill finish] [Clear anodized] [Medium bronze anodized] [Dark bronze anodized] [Black anodized]

E. **Counterbalance Shaft Assembly:**

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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

F. **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. **Powder Coat (Stock Colors):** Zirconium pre-treatment followed by a [gray] [tan] [white] [brown] baked-on polyester powder coat; minimum 2.5 mils (0.065 mm) cured film thickness
 - b. **Powder Coat (Color Selected by Architect):** Zirconium pre-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
 - c. **Corrosion Inhibitive:** Zirconium treatment followed by a corrosion inhibitive baked-on zinc enriched gray polyester powder coat; minimum 2.5 mils (0.065mm) cured film thickness
 - d. **Hot-dip Galvanized:** ASTM A 123, Grade 85 zinc coating, hot-dip galvanized after fabrication

G. **Hood:**

Minimum 24 gauge [galvanized steel] [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:**
 - a. **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] [tan] [white] [brown] baked-on polyester finish coat
 - a. **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) Zirconium pre-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
 - a. **Stainless steel:** #4 type 304 finish
 - a. **Aluminum:** [Mill finish] [Clear anodized] [Medium bronze anodized] [Dark bronze anodized] [Black anodized]

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

H. **Weatherstripping:**

1. **Bottom Bar:**
 - a. **Manually Operated Doors:** Replaceable, bulb-style, compressible EDPM gasket extending into guides
 - a. **Motor Operated Doors:** Sensing/weather edge within neoprene 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

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2.3 OPERATION

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

**** NOTE TO SPECIFIER **** Select model MG operators for units that will routinely cycle less than 20 times per day and require no more than 3/4 HP.

- 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, [redacted] Volts, [redacted] 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, [redacted] Volts, [redacted] 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.

**** NOTE TO SPECIFIER **** Most common control stations are listed below. **Delete sections B through C for manual push-up or crank /hoist operation.**

- 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

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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. **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.
 - b. **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.
 - c. **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.
 - d. **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.

2.4 ACCESSORIES

**** NOTE TO SPECIFIER **** Standard locking is based on door operation. Locking is not recommended for motor operated units.

- A. Locking:
1. **None**

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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.
1. **Padlockable chain keeper** on guide. (Manual Chain operated.)
1. **Masterkeyable cylinder operable** from [coil] [fascia] [both] side[s] of bottom bar, options for all types of operation. Provide interlock switches on Motor operated units.
 - a. Standard Mortise Cylinder
 - b. BEST 7-Pin
 - c. U-Change
 - d. Schlage

**** NOTE TO SPECIFIER **** 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.

- 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. Smaller vision panels are not acceptable.

**** NOTE TO SPECIFIER **** Pass doors with hinged frames are available.

- C. **Pass Doors:** Hollow metal pass door and hinged frame available within a curtain. Also known as wicket door or man door.
- D. **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 grilles with astragal or sensing edge; 1/16" per foot on grilles without astragal or sensing edge.

**** NOTE TO SPECIFIER **** Exposed moving operator components lower than 8' 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.

E. **Interior Aesthetic Covers:**

1. **Operator [and Bracket Mechanism] Cover:** Minimum [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 matching hood.

**** NOTE TO SPECIFIER **** A Trim Package is custom-made to hide visible bolts, fasteners and other exposed hardware.

2. **Trim Package:** Minimum 16 gauge [powder coated steel to match guides] [#4 type 304 finish stainless steel].

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. 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

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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

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