



SECTION 08333 [08 33 14]

SECURITY GRILLES

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**** NOTE TO SPECIFIER ** Wayne Dalton; Rolling steel door products.**

This section is based on the products of Wayne Dalton, which is located at:
2501 S. State Highway 121 Business, Suite 200
Lewisville, TX 75067
Phone: (800) 827-3667
Web Site: www.wayne-dalton.com
Email: info@wayne-dalton.com.
[click Here] for additional information.

Since its inception in 1954, Wayne Dalton has become known as a company with innovative ideas, which far exceed industry standards. Often, Wayne Dalton is the only source for the latest garage door and garage door opener features. Because the company has always maintained a staunch commitment to developing innovative new products, Wayne Dalton is now a world leader in the garage door and garage door opener industry.

Wayne Dalton Rolling Doors have a long history of excellence in the design and construction of doors that have met and often exceeded the needs and expectations of even the most critical projects.

With numerous innovations created and experience acquired over the years, Wayne Dalton continues to lead all other manufacturers with both standard and custom-made doors from a variety of materials and colors to meet almost any need.

So whether it's enormous Titan rolling doors, protective FireStar rolling steel fire doors, ventilated Secur-Vent doors, or secure Accordion-Folding Grilles, you can feel confident that with Wayne Dalton's many years of knowledge and experience, you will get the best possible solution for your building application needs.

This Specifications includes Wayne Dalton Rolling Grilles that offer total security, visibility, and ventilation in a number of patterns and finishes for commercial, industrial, retail, and institutional applications. These grilles are available in steel, aluminum, or stainless steel to meet any need. Wayne Dalton Rolling Grilles are designed to maximize security, visibility, and ventilation. The durable construction technique used ensures that the grilles will offer many years of reliable and consistent performance.

PART 1 GENERAL

1.1 SECTION INCLUDES

**** NOTE TO SPECIFIER ** Delete items below not required for project.**

- A. Upcoiling Security Grilles, manually operated.
- B. Upcoiling Security Grilles, power operated.
- C. Springless Security Grilles, power operated.
- D. Advanced Upcoiling Security Grilles, power operated.

1.2 RELATED SECTIONS

**** NOTE TO SPECIFIER ** Delete any sections below not relevant to this project; add others as required.**

- A. Section 05500 - Metal Fabrications: Support framing and framed opening.
- B. Section 06200 - Finish Carpentry: Wood jamb and head trim.
- C. Section 08710 - Door Hardware: Product Requirements for cylinder core and keys.
- D. Section 09900 - Painting: Field applied finish.
- E. Section 16130 - Raceway and Boxes: Conduit from electric circuit to door operator and from door operator to control station.
- F. Section 16150 - Wiring Connections: Power to disconnect.

1.3 REFERENCES

**** NOTE TO SPECIFIER ** Delete references from the list below that are not actually required by the text of the edited section.**

- A. ASTM A 123 - Standard Specification for Zinc (Hot-Dip Galvanized) Coatings on Iron and Steel Products.
- B. ASTM A 229 - Standard Specification for Steel Wire, Quenched and Tempered for Mechanical Springs.
- C. ASTM A 653 - Standard Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process.
- D. ASTM A 666 - Standard Specification for Austenitic Stainless Steel Sheet, Strip, Plate, and Flat Bar.
- E. ASTM A 924 - Standard Specification for General Requirements for Steel Sheet, Metallic-Coated by the Hot-Dip Process.
- F. ASTM B 221 - Standard Specification for Aluminum and Aluminum-Alloy Extruded Bars, Rods, Wire, Profiles, and Tubes.
- G. ASTM B 221 - Standard Specification for Aluminum and Aluminum-Alloy Extruded Bars, Rods, Wire, Profiles, and Tubes (Metric).
- H. NEMA 250 - Enclosures for Electrical Equipment (1000 Volts Maximum).

- I. NEMA ICS 2 - Industrial Control and Systems: Controllers, Contactors, and Overload Relays, Rated Not More Than 2000 Volts AC or 750 Volts DC.
- J. NEMA MG 1 - Motors and Generators.

1.4 SYSTEM DESCRIPTION

**** NOTE TO SPECIFIER ** Edit the following paragraphs to select the doors, mounting and operation required and delete the options not required.**

- A. Security Grille: Wayne–Dalton 600 Series Upcoiling Security Grilles.
 - 1. Mounting: Door mounting can be self-supporting, using structural tubes, or directly to the building structure.
 - 2. Operation:

**** NOTE TO SPECIFIER ** Select operation required and delete those not required.**

- a. Manual push-up with lift handles.
- b. Chain and gear maximum pull of 35 lbs.
- c. Fully enclosed awning type crank gearing and removable crank arm,
- d. Motor operated with control station.

1.5 SUBMITTALS

- A. Submit under provisions of Section 01300.
- B. Product Data: Manufacturer's data sheets on each product to be used, including:
 - 1. Preparation instructions and recommendations.
 - 2. Storage and handling requirements and recommendations.
 - 3. Installation methods.
- C. Shop Drawings: Include detailed plans, elevations, details of framing members, required clearances, anchors, and accessories. Include relationship with adjacent materials.

**** NOTE TO SPECIFIER ** Delete selection samples if colors have already been selected.**

- D. Selection Samples: For each finish product specified, two complete sets of color chips representing manufacturer's full range of available colors and patterns.
- E. Verification Samples: For each finish product specified, two samples, minimum size 6 inches (150 mm) square, representing actual product, color, and patterns.
- F. Manufacturer's Certificates: Certify products meet or exceed specified requirements.
- G. Closeout Submittals: Provide manufacturer's maintenance instructions that include recommendations for periodic checking, adjustment and maintenance of all components.

1.6 QUALITY ASSURANCE

- A. Manufacturer Qualifications: Company specializing in performing Work of this section with a minimum of five years' experience in the fabrication and installation of security closures.
- B. Installer Qualifications: Installer Qualifications: Company specializing in performing Work of this section with minimum three years and approved by manufacturer.

**** NOTE TO SPECIFIER ** Include a mock-up if the project size and/or quality warrant taking such a precaution. The following is one example of how a mock-up on a large project might be specified. When deciding on the extent of the mock-up, consider all the major different types of work on the project.**

- C. Mock-Up: Provide a mock-up for evaluation of surface preparation techniques and application workmanship.
 - 1. Finish areas designated by Architect.
 - 2. Do not proceed with remaining work until workmanship, color, and sheen are approved by Architect.
 - 3. Refinish mock-up area as required to produce acceptable work.

1.7 DELIVERY, STORAGE, AND HANDLING

- A. Store products in manufacturer's unopened packaging until ready for installation.
- B. Protect materials from exposure to moisture. Do not deliver until after wet work is complete and dry
- C. Store materials in a dry, warm, ventilated weathertight location

1.8 SEQUENCING

- A. Ensure that locating templates and other information required for installation of products of this section are furnished to affected trades in time to prevent interruption of construction progress.
- B. Ensure that products of this section are supplied to affected trades in time to prevent interruption of construction progress.

1.9 PROJECT CONDITIONS

- A. Maintain environmental conditions (temperature, humidity, and ventilation) within limits recommended by manufacturer for optimum results. Do not install products under environmental conditions outside manufacturer's absolute limits.

1.10 COORDINATION

- A. Coordinate Work with other operations and installation of adjacent materials to avoid damage to installed material

1.11 WARRANTY

**** NOTE TO SPECIFIER ** Select the following paragraph for Model 600 ADV only if applicable and delete if not relevant to this project.**

- A. Provide Advanced Upcoiling Security Grilles Model 600 ADV with limited 2 Year or 300,000 cycle Warranty and an Electric Motor limited Warranty of 60 months.

**** NOTE TO SPECIFIER ** Select the following paragraph for Model 600 HC only if applicable and delete if not relevant to this project.**

- B. Provide High Cycle Springless Upcoiling Security Grille Model 600 HC with limited 2 year or 300,000 cycle Warranty on door system.

PART 2 PRODUCTS

2.1 MANUFACTURERS

- A. Acceptable Manufacturer: Wayne Dalton; 2501 S. State Highway 121 Business, Suite 200, Lewisville, TX 75067. ASD. Phone: (800) 827-3667; Web Site: www.wayne-dalton.com. Email: info@wayne-dalton.com.

**** NOTE TO SPECIFIER ** Delete one of the following two paragraphs; coordinate with requirements of Division 1 section on product options and substitutions.**

- B. Substitutions: Not permitted.
- C. Requests for substitutions will be considered in accordance with provisions of Section 01600.

**** NOTE TO SPECIFIER ** Edit the following paragraphs as required and applicable to project requirements. Delete the paragraphs that are not applicable.**

2.2 UPKOILING SECURITY GRILLE

**** NOTE TO SPECIFIER ** Wayne-Dalton Model 600 Upcoiling Security Grilles are available for openings with a maximum clear opening of 42 feet wide and 20 feet high.**

- A. Wayne Dalton Model 600 Upcoiling Security Grille.
1. Curtains:
 - a. Material: Curtains fabricated of 5/16 inch diameter horizontal rods continuous from jamb to jamb.

**** NOTE TO SPECIFIER ** Select the curtain material required from the following paragraphs. Delete paragraphs that are not applicable.**

- 1) Hollow galvanized steel.
- 2) Solid galvanized steel.
- 3) Solid stainless steel.
- 4) Solid aluminum.

- b. Material: Vertical links and tubes shall be:

**** NOTE TO SPECIFIER ** Select the vertical link and tube material required from the following paragraphs. Mill aluminum is standard. Delete paragraphs that are not applicable.**

- 1) Stainless steel.
- 2) Mill aluminum.
- 3) Galvanized steel.

- c. Patterns:

**** NOTE TO SPECIFIER ** Select the pattern required from the following paragraphs. G-6 straight pattern with 9 inch spacing is standard. Delete paragraphs that are not applicable.**

- 1) G-6 straight pattern (standard); 9 inch spacing.
- 2) G-6 straight pattern (standard); 9 inch spacing with acrylic lites and aluminum curtain.
- 3) G-6 modified straight pattern; 6 inch spacing,
- 4) G-8 straight pattern; 4 inch spacing,
- 5) G-3 straight pattern; 3 inch spacing,
- 6) G-7 straight pattern; 2 inch spacing.
- 7) G-1 brick pattern; 4.5 inch spacing,
- 8) G-1 modified brick pattern; 3.125 inch spacing.
- 9) Centerlock security pattern

- d. End links ensure that grille cannot be pulled from guides.
- e. Bottom bar is fitted with nylon end caps and fabricated of:

**** NOTE TO SPECIFIER ** Select the bottom bar material required from the following paragraphs. Tubular extruded aluminum with mill finish is standard. Delete paragraphs that are not applicable.**

- 1) Tubular extruded aluminum.
- 2) Double angle extruded aluminum.
- 3) Double angle steel.
- 4) Double angle stainless steel.
- 5) Sloping bottom bar.
- 6) Curb cutout bottom bar.

**** NOTE TO SPECIFIER ** Select the optional vinyl astragal if required from the following paragraph. Delete if not applicable.**

- f. Vinyl Astragal: Provided bottom bar with vinyl astragal.
2. Guides fabricated of extruded aluminum with polypropylene wool pile inserts to contact both faces of grille.

**** NOTE TO SPECIFIER ** Select the finish required from the following paragraphs. Mill aluminum is standard. Delete paragraphs that are not applicable.**

- a. Mill aluminum finish.
- b. Clear anodized aluminum.
- c. Bronze anodized aluminum.
- d. Powder coating as selected from the manufacturer's standard colors.
3. Bracket Plates are 3/16 inch minimum steel plate. Provide with sealed ball bearings to support the counterbalance assembly. Brackets to form end closures and support hoods.

**** NOTE TO SPECIFIER ** Select the material required from the following paragraphs. Steel with black painted finish is standard. Delete paragraphs that are not applicable.**

- a. Steel with black painted finish.
- b. Galvanized steel.
- c. Stainless steel.
- d. Powder coating as selected from the manufacturer's standard colors.
4. Tension shaft and pipe of sufficient size to carry door load with deflection not to exceed .033 inch per foot of door span and to be correctly balanced by helical springs, oil tempered torsion type. Cast iron barrel plugs will be used to anchor springs to tension shaft and pipe.

**** NOTE TO SPECIFIER ** Select the optional hood if required from the following paragraph. Delete if not applicable.**

5. Hood: Hood will enclose curtain coil and counterbalance mechanism and is fabricated of sheet metal, flanged at top for attachment to header and flanged at bottom to provide longitudinal stiffness. Provide intermediate hood supports over 16 feet opening width.

**** NOTE TO SPECIFIER ** Select the material required from the following paragraphs. Galvanized steel painted is standard. Delete those not applicable.**

- a. Galvanized steel 24 gauge.
- b. Mill aluminum (.032 mm).
- c. Aluminum.
- d. Stainless steel.
6. Finish: Curtain, bottom bar, and hood to be finished as follows:

**** NOTE TO SPECIFIER ** Select the finish required from the following paragraph. Delete those not applicable. Powder coating is available in 180 colors.**

- a. Galvanized Steel, primed.
- b. Aluminum: Mill finish.
- c. Aluminum: Clear anodized.
- d. Aluminum: Bronze anodized.
- e. Aluminum: Powder coating as selected from the manufacturer's standard colors.
- f. Stainless steel #4 finish.

- g. Steel: Powder coating as selected from the manufacturer's standard colors.

**** NOTE TO SPECIFIER ** Select manual or electric motor operation from the following two paragraphs and delete the one not required.**

7. Manual Operation:

**** NOTE TO SPECIFIER ** Select operation required and delete those not required.**

- a. Push-up with lift handles.
 - b. Chain hoist.
 - c. Awning crank.
 - d. Wall crank.
8. Electric Motor Operation: Provide UL listed electric operator, size as recommended by manufacturer to move door in either direction at not less than 2/3 foot or more than 1 foot per second.

a. Sensing Edge Protection:

**** NOTE TO SPECIFIER ** Select the following optional edge paragraph if required. Delete if not required.**

- 1) Electric sensing edge.
- 2) Pneumatic sensing edge.

b. Operator Controls:

**** NOTE TO SPECIFIER ** Select one of the following operation paragraphs and delete the ones not required.**

- 1) Push-button operated control stations with open, close, and stop buttons.
- 2) Key operation with open, close, and stop controls.
- 3) Push-button and key operated control stations with open, close, and stop buttons.

**** NOTE TO SPECIFIER ** Select one of the following location paragraphs and delete the ones not required.**

- 4) Controls for interior location.
- 5) Controls for exterior location.
- 6) Controls for both interior and exterior location.

**** NOTE TO SPECIFIER ** Select one of the following two paragraphs and delete the one not required.**

- 7) Controls surface mounted.
- 8) Controls flush mounted.

**** NOTE TO SPECIFIER ** Select one of the following two paragraphs and delete the one not required.**

- c. Emergency Egress: Provide code compliant emergency egress system that automatically unlocks and manually releases grille part way to permit passage, even if power is not available.
- d. Emergency Egress: Provide code compliant emergency egress operator system with self-locking mechanism that automatically unlocks, automatically releases, and opens grille fully to permit passage if power is not available.

9. Locking:

**** NOTE TO SPECIFIER ** Select the one of the following three options for manual or power operated door as applicable. Delete those not applicable**

- a. Manual or crank operated grilles to be locked by means of slide bolt locking device operable from inside or outside.
- b. Chain and gear operated doors are provided with a chain lock keeper.
- c. Motor operated grilles include self-locking gearing plus chain locking device for emergency chain. Locks on electric-motor operated doors, shall be provided with electric interlocks to prevent operation when lock bolts are engaged in the guides.

**** NOTE TO SPECIFIER ** Select one of the following options if required from the following paragraphs. Delete if not applicable.**

- d. Provide cylinder lock at jambs or in center of bottom bar.
- e. Provide thumb turn lock at jambs or in center of bottom bar.
- f. EZ-LOK with Emergency Egress option only.

**** NOTE TO SPECIFIER ** Edit the following paragraphs as required and applicable to project requirements. Delete the paragraphs that are not applicable.**

2.3 SPRINGLESS SECURITY GRILLE

A. Model 600 with High Cycle Springless Option (600 HC):

- 1. Performance:
 - a. Springless direct drive mechanism without chain and sprocket connecting the drive mechanism to the door.
 - b. System cycle of no less than 300,000 cycles.
- 2. Curtain: Horizontal 5/16 inch (7.8 mm) diameter rods with network of vertically interlocking links to form a pattern. Vertical rod 2 inch (51 mm) on center spacing. Continuous spacer tubes. Bottom bar extruded aluminum tubular shape.

a. Material:

**** NOTE TO SPECIFIER ** Select the material required from the following paragraphs and delete the paragraph not required.**

- 1) Stainless Steel Link, Rod, and Spacer: No. 4 finish.
- 2) Stainless Steel Link, Rod, and Spacer: No. 2B finish.
- 3) Galvanized w/ Rust Inhibitor Steel Link, Rod, and Mill Aluminum Spacer.
- 4) Mill Aluminum Link, Spacer and Galvanized Steel Rod.
- 5) Clear Anodized Aluminum Link, Spacer and Galvanized Steel Rod.

b. Pattern:

**** NOTE TO SPECIFIER ** Select the pattern required from the following paragraphs and delete the paragraphs not required.**

- 1) Straight lattice; horizontal spacing 9 inches (228 mm) on center.
- 2) Brick pattern; horizontal spacing 9 inches (228 mm) on center.

3. Finish:

**** NOTE TO SPECIFIER ** Select the finish required from the following two paragraphs and delete the paragraph not required.**

- a. Prime all non-galvanized, exposed ferrous surfaces with one coat of rust-inhibitive primer
- b. Powder coat: polyester powder coat, color as selected by the Architect.

4. Guides: Three angle structural steel high usage guide.

**** NOTE TO SPECIFIER ** Select the finish required from the following paragraphs and delete the paragraphs not required.**

- a. Finish: polyester powder coat in black color.
- b. Finish: polyester powder coat, color as selected by the Architect.
- c. Finish: polyester powder coat enriched with zinc, color as selected by Architect.

5. Bottom Bar: Reinforces curtain in the guides.

- a. Tubular extruded aluminum
 - 1) Finish: Mill finish aluminum
- b. Double structure steel angle
 - 1) Material:

**** NOTE TO SPECIFIER ** Select the material required from the following paragraphs and delete the one not required.**

- (a) Steel.
- (b) Stainless steel with a brushed finish.

2) Finish:

**** NOTE TO SPECIFIER ** Select the finish required from the following paragraphs and delete those not required. Delete entirely for stainless steel.**

- (a) Finish: polyester powder coat in black.
- (b) Finish: polyester powder coat, color as selected by the Architect.
- (c) Finish: polyester powder coat enriched with zinc, color as selected by the Architect.

6. Motor: Direct drive, integrated gear motor/brake assembly sized for openings. Provide with a manual hand chain for operation during power outages. Operator and drive assembly is factory pre-assembled and provided with all wiring harnesses needed direct from the factory.

**** NOTE TO SPECIFIER ** Select one of the following paragraphs; and delete the one not required.**

- a. Supply Voltage: 220/240V AC, 1-phase (operating range 220-240v).
- b. Supply Voltage: 230V AC, 3-phase per (operating range 207-245v).
- c. Supply Voltage: 460V AC, 3-phase (will require appropriate step down transformer).
- d. Supply Voltage: 575V AC, 3-phase (will require appropriate step down transformer).

**** NOTE TO SPECIFIER ** Select one of the following paragraphs; and delete the one not required.**

- e. Left hand mount.
- f. Right hand mount.

7. Control Panel: Electronic controller with microprocessor self-diagnostics. Digital readout indicates door action, alarm conditions and fault conditions. Time delay self-close timer and non-resettable cycle counter are included. Enclosure is IP54 rated (NEMA 3 equivalent).
8. Door Roll: Directly driven, springless roll shall be steel tube with integral shafts, keyed on the Drive End and supported by self-aligning greaseable sealed bearings. Door shall not require any counterbalance device.
9. Hood, operator end cover and bracket end cover: Protecting drive motor, barrel, chain, and sprocket from dirt and debris and extending between the support brackets.

a. Material:

**** NOTE TO SPECIFIER ** Select one of the following hood material paragraphs; and delete the ones not required. Standard hood assembly is 24 gauge black painted steel.**

- 1) Steel.
- 2) Aluminum.
- 3) Stainless steel with a brushed finish.

b. Finish:

**** NOTE TO SPECIFIER ** Select the steel or aluminum finish required from the following paragraphs and delete those not required. Delete entirely for stainless steel.**

- 1) Polyester paint in black (steel only).
- 2) Polyester powder coat, color as selected by the Architect.
- 3) Clear anodized (aluminum only).

**** NOTE TO SPECIFIER ** Select the following paragraph for exterior mounted doors; and delete if not required.**

c. Provide with sloped top for exterior mounting.

10. Brackets: Provide steel brackets to support motor, curtain, and hood:

**** NOTE TO SPECIFIER ** Select one of the following paragraphs; and delete the ones not required. Standard is PowderGuard Premium in black color. Contact manufacturer for PowderGuard powder coat colors available.**

- a. Finish: polyester powder coat in black color.
 - b. Finish: polyester powder coat, color as selected by Architect.
 - c. Finish: polyester powder coat enriched with zinc, color as selected by the Architect.
11. Safety Devices: Provide door with following safety devices:
- a. Photoelectric sensors that cast an invisible beam across the door opening and reverses the downward motion of the door when an object enters the path of the beam.
 - b. Built-in (to motor assembly) brake mechanism eliminates uncontrolled curtain travel independent of other safeties.
 - c. Sensing Edge Protection (option; not standard)

**** NOTE TO SPECIFIER ** Select the following paragraph or delete if not required.**

- 1) Electric sensing edge.
12. Actuators:
- a. One Open/Close/Stop push button station incorporated into Control Panel.

**** NOTE TO SPECIFIER ** Complete the following paragraph for optional equipment as required; and delete if not required. Specify optional push buttons, loop detectors, radio control, motion detectors, or any combination thereof as required. Considerable thought should be given to the choice of actuators based on the type of traffic and traffic flow through the opening. Contact the manufacturer for additional information.**

- b. Radio control.
- c. Interior Push buttons.
- d. Exterior Push buttons.
- e. Interior Key switch.
- f. Exterior Key switch.
- g. Loop detectors.
- h. Motion detectors.
- i. Warning light.
- j. Second set of photoelectric sensors.

**** NOTE TO SPECIFIER ** Edit the following paragraphs as required and applicable to project requirements. Delete the paragraphs that are not applicable.**

2.4 ADVANCED UPCOILING SECURITY GRILLE

- A. Model 600 with Advanced Grille System Option:
- 1. Curtain: Horizontal 5/16 inch (7.8 mm) diameter rods with network of vertically interlocking links to form a pattern. Vertical rod 2 inch (51 mm) on center spacing. Continuous spacer tubes. Bottom bar extruded aluminum tubular shape.

- a. Material:

**** NOTE TO SPECIFIER ** Select the material required from the following paragraphs and delete the paragraph not required.**

- 1) Stainless Steel Link, Galvanized Steel Rod, and Stainless Steel Spacer: No. 4 finish.
 - 2) Stainless Steel Link, Galvanized Steel Rod, and Stainless Steel Spacer: No. 2B finish.
 - 3) Galvanized w/ Rust Inhibitor Steel Link, Rod, and Mill Aluminum Spacer.
 - 4) Mill Aluminum Link, Galvanized Steel Rod, and Mill Aluminum Spacer
 - 5) Clear Anodized Aluminum Link, Galvanized Steel Rod, and Clear Anodized Aluminum Spacer
- b. Pattern:

**** NOTE TO SPECIFIER ** Select the pattern required from the following paragraphs and delete the paragraphs not required.**

- 1) Straight; horizontal spacing 9 inches (228 mm) on center.
- 2) Brick; horizontal spacing 9 inches (228 mm) on center.
2. Performance:
 - a. Opening speed up to 24 inches/second
 - b. Closing speed no higher than 12 inches/second
 - c. Springless direct drive mechanism without chain and sprocket connecting the drive mechanism to the door.
 - d. System cycle of no less than 300,000 cycles.
3. Finish:

**** NOTE TO SPECIFIER ** Select the finish required from the following two paragraphs and delete the paragraph not required.**

- a. Prime all non-galvanized, exposed ferrous surfaces with one coat of rust-inhibitive primer
- b. Powder coat: polyester powder coat, color as selected by the Architect.
4. Guides: Three angle structural steel high usage guide.

**** NOTE TO SPECIFIER ** Select the finish required from the following paragraphs and delete the paragraphs not required.**

- a. Finish: polyester powder coat in black color.
- b. Finish: polyester powder coat, color as selected by Architect.
- c. Finish: polyester powder coat enriched with zinc, color as selected by the Architect.
5. Bottom Bar: Reinforces curtain in guides and incorporates a wireless, monitored safety edge.
 - a. Tubular extruded aluminum.
 - 1) Finish: Mill finish aluminum
 - b. Double structure steel angle.
 - 1) Material:

**** NOTE TO SPECIFIER ** Select the material required from the following paragraphs and delete the one not required.**

- (a) Steel.
- (b) Stainless steel with a brushed finish.
- 2) Finish:

**** NOTE TO SPECIFIER ** Select the finish required from the following paragraphs and delete those not required. Delete entirely for stainless steel.**

- (a) Finish: polyester powder coat in black.
- (b) Finish: polyester powder coat, color as selected by the Architect.
- (c) Finish: polyester powder coat enriched with zinc, color as selected by the Architect.
6. Motor: Direct drive, integrated gear motor/brake assembly sized for openings. Provide with a manual hand chain for operation during power outages. Operator and drive assembly is factory pre-assembled and provided with all wiring harnesses required.

**** NOTE TO SPECIFIER ** Select one of the following paragraphs; and delete the one not required.**

- a. Supply Voltage: 220/240V AC, 1-phase (operating range 220-240v).
- b. Supply Voltage: 230V AC, 3-phase per (operating range 207-245v).
- c. Supply Voltage: 460V AC, 3-phase (will require appropriate step down transformer).
- d. Supply Voltage: 575V AC, 3-phase (will require appropriate step down transformer).Electrical Characteristics: 220/240V AC, single phase per motor/drive.

**** NOTE TO SPECIFIER ** Select one of the following paragraphs; and delete the one not required.**

- e. Left hand mount.
- f. Right hand mount.
- 7. Control Panel: Provide electronic Variable Frequency drive controller with microprocessor self-diagnostics. LCD readout indicates door action, alarm conditions, and fault conditions. Timer to close programming options and non-resettable cycle counter are included. Enclosure is NEMA 4X rated. Control system is UL508A certified. The junction box is IP67 rated.
- 8. Door Roll: Directly driven, springless roll shall be steel tube with integral shafts, keyed on the Drive End and supported by self-aligning greaseable sealed bearings. Door shall not require any counterbalance device.
- 9. Hood, operator end cover and bracket end cover: Protecting drive motor, barrel, chain, and sprocket from dirt and debris and extending between the support brackets.
 - a. Material:

**** NOTE TO SPECIFIER ** Select one of the following hood material paragraphs; and delete the ones not required. Standard hood assembly is 24 gauge black painted steel.**

- 1) Steel.
 - 2) Aluminum.
 - 3) Stainless steel with a brushed finish.
- b. Finish:

**** NOTE TO SPECIFIER ** Select the steel or aluminum finish required from the following paragraphs and delete those not required. Delete entirely for stainless steel.**

- 1) Polyester paint in black (steel only).
- 2) Polyester powder coat, color as selected by the Architect.
- 3) Clear anodized (aluminum only).

**** NOTE TO SPECIFIER ** Select the following paragraph for exterior mounted doors; and delete if not required.**

- c. Provide with sloped top for exterior mounting.
- 10. Brackets: Provide steel brackets to support motor, curtain, and hood with material and finish as follows:

**** NOTE TO SPECIFIER ** Select one of the following bracket material paragraphs; and delete the ones not required. Standard is black powder coated steel.**

- a. Finish: Polyester powder coated, black color.
- b. Finish: Polyester powder coated, color as selected by Architect.
- c. Finish: Polyester powder coated enriched with zinc, color as selected by Architect.
- 11. Safety Devices: Provide door with following safety devices:
 - a. Photoelectric sensors that cast an invisible beam across the door opening and reverses the downward motion of the door when an object enters the path of the beam.
 - b. Wireless, monitored safety edge reverses downward motion upon impact.
 - c. Built-in (to motor assembly) brake mechanism eliminates uncontrolled curtain travel independent of other safeties.
- 12. Actuators:
 - a. One Open/Close/Stop push button station incorporated into Control Panel.

**** NOTE TO SPECIFIER ** Complete the following paragraph for optional equipment as required; and delete if not required. Specify optional push buttons, loop detectors, radio control, motion detectors, or any combination thereof as required. Considerable thought should be given to the choice of actuators based on the type of traffic and traffic flow through the opening. Contact the manufacturer for additional information.**

- b. Loop detectors.

- c. Radio control.
- d. Interior Push buttons.
- e. Exterior Push buttons.
- f. Interior Key switch.
- g. Exterior Key switch.
- h. Motion detectors.
- i. Warning light.
- j. Horns and/or strobes.
- k. Second set of photoelectric sensors.

PART 3 EXECUTION

3.1 EXAMINATION

- A. Verify opening sizes, tolerances and conditions are acceptable.
- B. Examine conditions of substrates, supports, and other conditions under which this work is to be performed.
- C. If substrate preparation is the responsibility of another installer, notify Architect of unsatisfactory preparation before proceeding.

3.2 PREPARATION

- A. Clean surfaces thoroughly prior to installation.
- B. Prepare surfaces using the methods recommended by the manufacturer for achieving the best result for the substrate under the project conditions.

3.3 INSTALLATION

- A. Install in accordance with manufacturer's instructions.
- B. Use anchorage devices to securely fasten assembly to wall construction and building framing without distortion or stress.
- C. Securely and rigidly brace components suspended from structure. Secure guides to structural members only.
- D. Fit and align assembly including hardware; level and plumb, to provide smooth operation.
- E. Coordinate installation of electrical service with Section 16150. Complete wiring from disconnect to unit components.

**** NOTE TO SPECIFIER ** Select the following paragraph for electric operation of coiling doors and delete if not required.**

- F. Coordinate installation of sealants and backing materials at frame perimeter as specified in Section 07900.
- G. Install perimeter trim and closures.
- H. Instruct Owner's personnel in proper operating procedures and maintenance schedule.

3.4 ADJUSTING

- A. Test for proper operation and adjust as necessary to provide proper operation without binding or distortion
- B. Adjust hardware and operating assemblies for smooth and noiseless operation.

3.5 CLEANING

- A. Clean curtain and components using non-abrasive materials and methods recommended by manufacturer.
- B. Remove labels and visible markings.
- C. Touch-up, repair or replace damaged products before Substantial Completion.

3.6 PROTECTION

- A. Protect installed products until completion of project.

3.7 SCHEDULES

**** NOTE TO SPECIFIER ** Retain Paragraph below if required to suit project requirements. Identify products by name on the Drawings or use this paragraph to define the location of each type of material to be used. The following are some examples of schedule references. Edit as required to suit project or delete and identify products on the Drawings.**

- A. :
 - 1.
 - 2.
 - 3.
- B. :
 - 1.
 - 2.
 - 3.

END OF SECTION