



SECTION 08330

ROLLING STEEL DOORS

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PART 1 GENERAL

1.1 SECTION INCLUDES

- A. Rolling steel doors.
- B. Rolling steel advanced performance service doors.
- C. Rolling steel fire doors.
- D. Overhead Coiling Security Shutters.

1.2 RELATED SECTIONS

- 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

- A. ANSI/DASMA 108 - American National Standards Institute Standard Method For Testing Sectional Garage Doors And Rolling Doors: Determination Of Structural Performance Under Uniform Static Air Pressure Difference.

- B. ANSI/DASMA 203 - American National Standards Institute Specifications for non-rated fire rolling doors published by Door & Access Systems Manufacturers Association International.
- C. ASTM A 123 - Zinc hot-dipped galvanized] coatings on iron and steel products.
- D. ASTM A 229 - Steel wire, oil-tempered for mechanical springs.
- E. ASTM A 653 - Steel sheet, zinc-coated galvanized by the hot-dipped process, commercial quality.
- F. ASTM E 330 - Structural performance of exterior windows, curtain walls, and doors by uniform static air pressure difference.
- G. ASTM E 413 - Classification for Rating Sound Insulation

1.4 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, anchoring methods, required clearances, hardware, and accessories. Include relationship with adjacent construction.
- D. LEED Submittals: Provide documentation of how the requirements of Credit will be met:
 - 1. List of proposed materials with recycled content. Indicate post-consumer recycled content and pre-consumer recycled content for each product having recycled content.
 - 2. Product data and certification letter indicating percentages by weight of post-consumer and pre-consumer recycled content for products having recycled content.
- E. Selection Samples: For each finish product specified, two complete sets of color chips representing manufacturer's full range of available colors and patterns.
- F. Verification Samples: For each finish product specified, two samples, minimum size 6 inches (150 mm) long, representing actual product, color, and patterns.
- G. Manufacturer's Certificates: Certify products meet or exceed specified requirements.
- H. Closeout Submittals: Provide manufacturer's maintenance instructions that include recommendations for periodic checking, adjustment and lubrication of components.

1.5 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 an authorized Wayne Dalton installer.
- 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.

1.6 DELIVERY, STORAGE AND HANDLING

- A. Store products in manufacturer's unopened packaging with seals and labels intact until ready for installation.
- B. Store materials off the ground in a dry, warm, ventilated weathertight location.

1.7 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.

1.8 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.

1.9 WARRANTY

- A. Provide Rolling Steel Service doors and Rolling Steel Fire doors with limited 2 Year Warranty on defects in materials and workmanship on the door; excludes the counterbalance spring and finish.
- B. Provide rolling steel Advanced Performance service doors with limited 5 Year Warranty on all doors system materials and workmanship.
- C. Provide Aluminum Security Shutters, Model 523 with limited 2 Year Warranty on defects in materials and workmanship on the door and components. Provide Powder Coat Finish with a 2 years warranty against excessive fading, cracking, blistering, flaking or peeling.

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

2.2 ROLLING STEEL SERVICE DOORS

- A. Wayne Dalton Model 900 Rolling Service Doors:
 - 1. Description:
 - a. Maximum Width: 14 feet
 - b. Maximum Height: 14 feet
 - 2. Curtain: composed of interlocking roll-formed slats.
 - a. Slat Profiles/Material:
 - 1) No. 2 Curved-faced single crown slat.
 - (a) 24-gauge steel.
 - (b) 22-gauge steel.
 - (c) 20-gauge steel.
 - (d) 22-gauge stainless steel.
 - (e) 20-gauge stainless steel.
 - (f) 18-gauge aluminum (mill finish).
 - 2) No. 17 Flat-faced slat.
 - (a) 24-gauge steel.
 - (b) 22-gauge steel.
 - (c) 20-gauge steel.
 - (d) 22-gauge stainless steel.
 - (e) 20-gauge stainless steel.
 - 3) Secur-Vent Perforated slat provides optimal security and ventilation. Slat consists of 1/16 inch diameter holes offering 41 percent open area over length of each slat. Available in No. 17 flat slat up to 14 feet wide by 12 feet high.
 - (a) 22-gauge steel.
 - (b) 22-gauge stainless steel.
 - b. Ends of alternate slats fitted with metal endlocks/windlocks.
 - 3. Bottom Bar: Consists of two equal angles, 0.12 inch minimum thickness, to stiffen curtain, with astragal. Angle shall be:
 - a. Steel.
 - b. Stainless steel.
 - c. Aluminum.
 - 4. Guides:
 - a. Roll-formed steel channel bolted to wall.
 - b. Roll-formed steel channel bolted to three structural angle guide angle assembly forming a slot to retain curtains in guides. Structural grade, three angle assembly fabricated of:
 - 1) Steel.
 - 2) Stainless steel.
 - 3) Aluminum.
 - c. Provide with integral windlock bars and removable bottom bar stops.
 - 5. Brackets: Design to enclose ends of coil and provide support for counterbalance pipe at each end. Fabricate of steel plates, with permanently sealed ball bearings. Thickness shall be:

- a. 3/16 inch minimum.
 - b. 1/4 inch minimum.
- 6. Counterbalance: Curtain to be coiled on a pipe of sufficient size to carry door load with deflection not to exceed 0.033 inch per foot of door span. Curtain 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.
- 7. Hood: Hood to enclose curtain coil and counterbalance mechanism. Hood fabricated of sheet metal, flanged at top for attachment to header and flanged at bottom to provide longitudinal stiffness. Fabricate of:
 - a. Minimum 22-gauge B&S aluminum.
 - b. Minimum 24-gauge galvanized steel.
 - c. Minimum 24-gauge stainless steel.
- 8. Finish: Shop coat of rust inhibitive primer on non-galvanized surfaces and operating mechanisms. Guides and bracket plates will be coated with a flat black prime paint.
 - a. Galvanized Steel:
 - 1) Gray baked on primer.
 - 2) White baked on primer.
 - 3) Beige baked on primer.
 - 4) Brown baked on primer.
 - 5) Powdercoat finish as selected from manufacturer's RAL color selections.
 - 6) Powdercoat finish in custom color as selected.
 - b. Aluminum Finish:
 - 1) Mill finish.
 - 2) Clear anodized.
 - 3) Bronze anodized.
 - c. Stainless Steel finish.
 - 1) #4 finish.
- 9. Operation: Door will be operated by means of:
 - a. Manual, lift-up.
 - b. Chain hoist.
 - c. Awning crank.
 - d. Wall crank box.
 - e. Motor operation.
 - f. Motor operation with electrical sensing edge attached to bottom bar to stop and reverse door when it contacts an object during the closing cycle.
 - g. Motor operation with pneumatic sensing edge attached to bottom bar to stop and reverse door when it contacts an object during the closing cycle.
- 10. Weatherstripping: Bottom astragal, optional surface guide weatherstrip, and internal hood baffle.
- 11. Locking:
 - a. Interior slide-bolts suitable for padlocks by others.
 - b. Chain-hoist door provided with chain keepers suitable for padlocks by others.
 - c. Electric-motor operation doors provided with lock through the operator gearing.
 - d. Provide with cylinder locks.
 - e. Provide with thumb turn.
- 12. Windload: Windload minimum ____ psf per DASMA 108-2012 and as required by local codes.
- 13. Mounting:

- a. Steel jambs,
 - b. Wood jambs.
 - c. Masonry jambs.
- B. Wayne Dalton Model 926 Service Doors:
 - 1. Description:
 - a. Maximum Width: 12 feet.
 - b. Maximum Height: 12 feet.
 - 2. Curtain: composed of interlocking roll-formed slats.
 - a. Slat Profiles/Material:
 - 1) No. 17 Flat-faced slat, 26-gauge steel.
 - b. Ends of alternate slats fitted with metal endlocks/windlocks.
 - 3. Bottom Bar: Consists of two equal angles to stiffen curtain, with astragal.
 - 4. Guides: Roll-formed steel channel bolted to angle to form a slot to retain curtains in guides.
 - 5. Brackets: Design to enclose ends of coil and provide support for counterbalance pipe at each end. Fabricate of steel plates, with permanently sealed ball bearings. Thickness shall be:
 - a. 3/16 inch minimum.
 - 6. Counterbalance: Curtain to be coiled on a pipe of sufficient size to carry door load with deflection not to exceed 0.033 inch per foot of door span. Curtain 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.
 - 7. Hood: Hood to enclose curtain coil and counterbalance mechanism. Hood fabricated of galvanized steel, flanged at top for attachment to header and flanged at bottom to provide longitudinal stiffness.
 - 8. Finish: Shop coat of rust inhibitive primer on non-galvanized surfaces and operating mechanisms. Guides and bracket plates will be coated with a flat black prime paint.
 - a. Galvanized Steel:
 - 1) White baked on primer.
 - 9. Operation: Door will be operated by means of:
 - a. Manual, lift-up.
 - b. Chain hoist.
 - c. Motor operation.
 - d. Motor operation with electrical sensing edge attached to bottom bar to stop and reverse door when it contacts an object during the closing cycle.
 - e. Motor operation with pneumatic sensing edge attached to bottom bar to stop and reverse door when it contacts an object during the closing cycle.
 - 10. Weatherstripping:
 - a. Vinyl bulb bottom seal.
 - 11. Locking:
 - a. Interior slide-bolts suitable for padlocks by others.
 - b. Chain-hoist door provided with chain keepers suitable for padlocks by others.
 - c. Electric-motor operation doors provided with lock through the operator gearing.
 - 12. Windload: Windload minimum ____ psf per DASMA 102-2012 and as required by local codes.
 - 13. Mounting:
 - a. Steel jambs,
 - b. Wood jambs.

- c. Masonry jambs.
- C. Wayne Dalton Model 800 Rolling Service Doors:
1. Description:
 - a. Maximum Width: 40 feet
 - b. Maximum Height: 40 feet
 2. Curtain: composed of interlocking roll-formed slats.
 - a. Slat Profiles/Material:
 - 1) No. 4 Curved-faced single crown slat.
 - (a) 22-gauge steel.
 - (b) 20-gauge steel.
 - (c) 18-gauge steel.
 - (d) 16-gauge steel.
 - (e) 22-gauge stainless steel.
 - (f) 20-gauge stainless steel.
 - (g) 18-gauge stainless steel.
 - (h) 16-gauge aluminum.
 - (i) 14-gauge aluminum.
 - 2) No. 14 Flat-faced slat.
 - (a) 22-gauge steel.
 - (b) 20-gauge steel.
 - (c) 18-gauge steel.
 - (d) 16-gauge steel.
 - (e) 22-gauge stainless steel.
 - (f) 20-gauge stainless steel.
 - (g) 18-gauge stainless steel.
 - (h) 16-gauge aluminum).
 - (i) 14-gauge aluminum.
 - 3) Secur-Vent Perforated slat provides optimal security and ventilation. Slat consists of 1/16 inch diameter holes offering 41 percent open area over length of each slat. Available in No. 14 flat slat up to 22 feet wide by 20 feet high.
 - (a) 20-gauge steel.
 - (b) 20-gauge stainless steel.
 - b. Ends of alternate slats fitted with metal endlocks/windlocks.
 3. Bottom Bar: Consists of two equal angles, 0.12 inch minimum thickness, to stiffen curtain, with astragal. Angle shall be:
 - a. Steel.
 - b. Stainless steel.
 - c. Aluminum.
 4. Guides:
 - a. Roll-formed steel channel bolted to wall.
 - b. Roll-formed steel channel bolted to three structural angle guide angle assembly forming a slot to retain curtains in guides. Structural grade, three angle assembly fabricated of:
 - 1) Steel.
 - 2) Stainless steel.
 - 3) Aluminum.
 - c. Provide with integral windlock bars and removable bottom bar stops.
 5. Brackets: Design to enclose ends of coil and provide support for counterbalance pipe at each end. Fabricate of steel plates, with permanently sealed ball bearings. Thickness shall be:
 - a. 3/16 inch minimum.
 - b. 1/4 inch minimum.

6. Counterbalance: Curtain to be coiled on a pipe of sufficient size to carry door load with deflection not to exceed 0.033 inch per foot of door span. Curtain 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.
7. Hood: Hood to enclose curtain coil and counterbalance mechanism. Hood fabricated of sheet metal, flanged at top for attachment to header and flanged at bottom to provide longitudinal stiffness. Fabricate of:
 - a. Minimum 22-gauge B&S aluminum.
 - b. Minimum 24-gauge galvanized steel.
 - c. Minimum 24-gauge stainless steel.
8. Finish: Shop coat of rust inhibitive primer on non-galvanized surfaces and operating mechanisms. Guides and bracket plates will be coated with a flat black prime paint.
 - a. Galvanized Steel:
 - 1) Gray baked on primer.
 - 2) White baked on primer.
 - 3) Beige baked on primer.
 - 4) Brown baked on primer.
 - 5) Powdercoat finish as selected from manufacturer's RAL color selections.
 - 6) Powdercoat finish in custom color as selected.
 - b. Aluminum Finish:
 - 1) Mill finish.
 - 2) Clear anodized.
 - 3) Bronze anodized.
 - c. Stainless Steel finish.
 - 1) #4 finish.
9. Operation: Door will be operated by means of:
 - a. Manual, lift-up.
 - b. Chain hoist.
 - c. Awning crank.
 - d. Wall crank box.
 - e. Motor operation.
 - f. Motor operation with electrical sensing edge attached to bottom bar to stop and reverse door when it contacts an object during the closing cycle.
 - g. Motor operation with pneumatic sensing edge attached to bottom bar to stop and reverse door when it contacts an object during the closing cycle.
10. Weatherstripping: Bottom astragal, optional surface guide weatherstrip, and internal hood baffle.
11. Locking:
 - a. Interior slide-bolts suitable for padlocks by others.
 - b. Chain-hoist door provided with chain keepers suitable for padlocks by others.
 - c. Electric-motor operation doors provided with lock through the operator gearing.
 - d. Provide with cylinder locks.
 - e. Provide with thumb turn.
12. Windload: Windload minimum ____ psf per DASMA 102-2012 and as required by local codes.
13. Mounting:
 - a. Steel jambs,
 - b. Wood jambs.

- c. Masonry jambs.
- D. Wayne Dalton Model 800C Insulated Rolling Service Doors:
1. Description:
 - a. Maximum Width: 42 feet
 - b. Maximum Height: 30 feet
 - c. ASTM E 413 Sound transmission class acoustical performance value = STC 22.
 2. Curtain: composed of interlocking roll-formed slats.
 - a. Slat Profiles/Material:
 - 1) No. 34 Flat-faced slat. The area between the #34 exterior slat and the back slat filled with polyurethane insulation, R-value of 7.7 (U = 0.15).
 - (a) 22-gauge galvanized steel with 24-gauge back.
 - (b) 20-gauge galvanized steel with 24-gauge back.
 - (c) 18-gauge galvanized steel with 24-gauge back.
 - (d) 16-gauge aluminum with 24-gauge aluminum back.
 - (e) 22-gauge stainless steel with 24-gauge steel back.
 - (f) 20-gauge stainless steel with 24-gauge steel back.
 - (g) 18-gauge stainless steel with 24-gauge steel back
 - b. Ends of alternate slats fitted with metal endlocks/windlocks.
 3. Bottom Bar: Consists of two equal angles, 0.12 inch minimum thickness, to stiffen curtain, with astragal. Angle shall be:
 - a. Steel.
 - b. Stainless steel.
 - c. Aluminum.
 4. Guides:
 - a. Roll-formed steel channel bolted to wall.
 - b. Roll-formed steel channel bolted to three structural angle guide angle assembly forming a slot to retain curtains in guides. Structural grade, three angle assembly fabricated of:
 - 1) Steel.
 - 2) Stainless steel.
 - 3) Aluminum.
 - c. Provide with integral windlock bars and removable bottom bar stops.
 5. Brackets: Design to enclose ends of coil and provide support for counterbalance pipe at each end. Fabricate of steel plates, with permanently sealed ball bearings. Thickness shall be:
 - a. 3/16 inch minimum.
 - b. 1/4 inch minimum.
 6. Counterbalance: Curtain to be coiled on a pipe of sufficient size to carry door load with deflection not to exceed 0.033 inch per foot of door span. Curtain 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.
 7. Hood: Hood to enclose curtain coil and counterbalance mechanism. Hood fabricated of sheet metal, flanged at top for attachment to header and flanged at bottom to provide longitudinal stiffness. Fabricate of:
 - a. Minimum 22-gauge B&S aluminum.
 - b. Minimum 24-gauge galvanized steel.
 - c. Minimum 24-gauge stainless steel.
 8. Finish: Shop coat of rust inhibitive primer on non-galvanized surfaces and operating mechanisms. Guides and bracket plates will be coated with a flat black prime paint.
 - a. Galvanized Steel:

- 1) Gray baked on primer.
 - 2) White baked on primer.
 - 3) Beige baked on primer.
 - 4) Brown baked on primer.
 - 5) Powdercoat finish as selected from manufacturer's RAL color selections.
 - 6) Powdercoat finish in custom color as selected.
- b. Aluminum Finish:
 - 1) Mill finish.
 - 2) Clear anodized.
 - 3) Bronze anodized.
- c. Stainless Steel finish.
 - 1) #4 finish.
9. Operation: Door will be operated by means of:
 - a. Manual, lift-up.
 - b. Chain hoist.
 - c. Awning crank.
 - d. Wall crank box.
 - e. Motor operation.
 - f. Motor operation with electrical sensing edge attached to bottom bar to stop and reverse door when it contacts an object during the closing cycle.
 - g. Motor operation with pneumatic sensing edge attached to bottom bar to stop and reverse door when it contacts an object during the closing cycle.
10. Weatherstripping: Doors will include bottom astragal, optional surface guide weatherstrip, and internal hood baffle.
 - a. Provide with lintel brush weatherstrip.
11. Air Infiltration Package: IECC 2012/2015) listed product to meet C402.4.3 2012 Air leakage <1.00 cfm/ft2
 - a. Air infiltration perimeter seal package includes: guide cover, guide cap, dual brush exterior guide seal, 3 inch lintel rubber seal, internal hood baffle and bottom astragal.
12. Locking:
 - a. Interior slide-bolts suitable for padlocks by others.
 - b. Chain-hoist door provided with chain keepers suitable for padlocks by others.
 - c. Electric-motor operation doors provided with lock through the operator gearing.
 - d. Provide with cylinder locks.
 - e. Provide with thumb turn.
13. Windload: Windload minimum ____ psf per DASMA 102-2012 and as required by local codes.
14. Mounting:
 - a. Steel jambs,
 - b. Wood jambs.
 - c. Masonry jambs.

2.3 ROLLING STEEL ADVANCED PERFORMANCE DOORS

- A. Wayne Dalton Model 800 with Advanced Rolling Door System Option:
 1. Description:
 - a. Maximum Width: 20 feet

- b. Maximum Height: 20 feet
- 2. Curtain: composed of interlocking roll-formed slats.
 - a. Slat Profiles/Material:
 - 1) No. 14 Flat-faced slat.
 - (a) 22-gauge steel.
 - (b) 20-gauge steel.
 - (c) 18-gauge steel.
 - (d) 22-gauge stainless steel.
 - (e) 20-gauge stainless steel.
 - (f) 16-gauge (.050 inch) B&S aluminum.
 - 2) For fenestrated service doors, provide slats with 5 inch by 3/4 inch uniformly spaced openings.
 - 3) Vision Lite: Provide with 5 inch by 3/4 inch uniformly spaced openings, with 1/16 inch clear plastic.
 - 4) Ends of alternate slats fitted with malleable iron endlocks/windlocks.
 - b. Curtain Finish:
 - 1) Galvanized steel with polyester top coat in choice of:
 - (a) Gray.
 - (b) Beige.
 - (c) White.
 - (d) Powder coat with hardening additive, color as selected by the Architect.
 - 2) Aluminum: Clear or bronze anodized.
- 3. Bottom Bar: Consists of two equal angles, 0.12 inch minimum thickness, to stiffen curtain, incorporating a 2-wire, self-monitoring, fail safe, electric sensing edge. Angle shall be:
 - a. Steel factory painted black.
 - b. Steel with standard powder coat, color as selected by Architect.
 - c. Stainless steel.
- 4. Guides: Three piece structural angle guide assembly forming a slot to retain curtains in guides.
 - a. Structural grade, three angle assembly fabricated of:
 - 1) Steel factory painted black.
 - 2) Steel with standard powder coat, to match curtain.
 - 3) Stainless steel.
 - b. Provide with integral windlock bars when size or wind loading requires.
 - c. Removable bottom bar stops.
- 5. Brackets: Design to enclose ends of coil and provide support for counterbalance pipe at each end. Fabricate of steel plates, with permanently sealed ball bearings. Brackets shall be black painted steel. Thickness shall be:
 - a. 3/16 inch minimum.
 - b. 1/4 inch minimum.
- 6. Door Roll: Directly driven, springless roll shall be steel tube with integral shafts, keyed on the Drive End and supported by self-aligning sealed bearings. Door shall not require any counterbalance device.
- 7. Hood: Hood to enclose curtain coil and counterbalance mechanism. Hood fabricated of sheet metal, flanged at top for attachment to header and flanged at bottom to provide longitudinal stiffness.
 - a. Fabricate of:
 - 1) Minimum 22-gauge B&S aluminum.
 - 2) Minimum 24-gauge galvanized steel.
 - 3) Minimum 24-gauge stainless steel.

- b. Hood Finish:
 - 1) Galvanized steel with polyester top coat in choice of:
 - (a) Gray.
 - (b) Beige.
 - (c) White.
 - (d) Color as selected by the Architect.
 - 2) Aluminum: Clear or bronze anodized.
- 8. 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.
- 9. Motor: Direct drive, hypoid gear motor/brake assembly sized for openings. Provide with a manual hand crank for operation during power outages. Operator and drive assembly is factory pre-assembled and provided with low voltage factory wiring with quick connect wiring harnesses where applicable.
 - a. Opening Speed: 20 inches per second.
 - b. Closing Speed: 12 inches per second.
 - c. Electrical Characteristics: 208/230V AC, three phase per motor/drive.
 - d. Electrical Characteristics: 460V AC, three phase per motor/drive.
 - e. Left hand mount.
 - f. Right hand mount.
- 10. 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. Self-monitoring 2-wire, electric fail-safe sensing edge reverses downward motion upon impact.
 - c. Drop stop device eliminates uncontrolled curtain travel independent of other safeties.
- 11. Actuators:
 - a. One Open/Close/Stop push button station incorporated into Control Panel.
 - 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.
- 12. Weatherstripping: Bottom astragal, optional high usage guide wear strip.
- 13. Windload Design:
 - a. Standard windload shall be 20 PSF.
 - b. Miami-Dade County NOA ____.
 - c. FBC certification FL# ____.
- 14. Mounting:
 - a. Steel jambs,
 - b. Wood jambs.
 - c. Masonry jambs.

B. Wayne Dalton Model 800C Insulated with Advanced Rolling Door System Options:

1. Description:
 - a. Maximum Width: 20 feet
 - b. Maximum Height: 20 feet
 - c. ASTM E 413 Sound transmission class acoustical performance value = STC 22.
2. Curtain: composed of interlocking roll-formed slats.
 - a. Slat Profiles/Material:
 - 1) No. 34 Flat-faced slat. The area between the #34 exterior slat and the back slat filled with polyurethane insulation, R-value of 7.7 ($U = 0.15$).
 - (a) 22-gauge galvanized steel with 24-gauge back.
 - (b) 20-gauge galvanized steel with 24-gauge back.
 - (c) 18-gauge galvanized steel with 24-gauge back.
 - (d) 22-gauge stainless steel with 24-gauge steel back.
 - (e) 20-gauge stainless steel with 24-gauge steel back.
 - (f) 16-gauge (.050 inch) B&S aluminum with 22-gauge (.025 inch) aluminum back.
 - 2) Insulated Vision Lites: Provide with 5 inch by 3/4 inch uniformly spaced openings, with 1/16 inch clear plastic.
 - 3) Ends of alternate slats fitted with malleable iron endlocks/windlocks.
 - b. Curtain Finish:
 - 1) Galvanized steel with polyester top coat in choice of:
 - (a) Gray.
 - (b) Beige.
 - (c) White.
 - (d) Color as selected by the Architect.
 - 2) Aluminum: Clear or bronze anodized.
3. Bottom Bar: Consists of two equal angles, 0.12 inch minimum thickness, to stiffen curtain, incorporating a 2-wire, self-monitoring, fail safe, electric sensing edge. Angle shall be:
 - a. Steel factory painted black.
 - b. Steel with standard powder coat, color as selected by Architect.
 - c. Stainless steel.
4. Guides: Three piece structural angle guide assembly forming a slot to retain curtains in guides.
 - a. Structural grade, three angle assembly fabricated of:
 - 1) Steel factory painted black.
 - 2) Steel with standard powder coat, to match curtain.
 - 3) Stainless steel.
 - b. Provide with integral windlock bars when size or wind loading requires.
 - c. Removable bottom bar stops.
5. Brackets: Design to enclose ends of coil and provide support for counterbalance pipe at each end. Fabricate of steel plates, with permanently sealed ball bearings. Brackets shall be black painted steel. Thickness shall be:
 - a. 3/16 inch minimum.
 - b. 1/4 inch minimum.
6. Door Roll: Directly driven, springless roll shall be steel tube with integral shafts, keyed on the Drive End and supported by self-aligning sealed bearings. Door shall not require any counterbalance device.
7. Hood: Hood to enclose curtain coil and counterbalance mechanism. Hood fabricated of sheet metal, flanged at top for attachment to header and flanged at bottom to provide longitudinal stiffness.

- a. Fabricate of:
 - 1) Minimum 22-gauge B&S aluminum.
 - 2) Minimum 24-gauge galvanized steel.
 - 3) Minimum 24-gauge stainless steel.
- b. Hood Finish:
 - 1) Galvanized steel with polyester top coat in choice of:
 - (a) Gray.
 - (b) Beige.
 - (c) White.
 - (d) Color as selected by the Architect.
 - 2) Aluminum: Clear or bronze anodized.
8. 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.
9. Motor: Direct drive, hypoid gear motor/brake assembly sized for openings. Provide with a manual hand crank for operation during power outages. Operator and drive assembly is factory pre-assembled and provided with low voltage factory wiring with quick connect wiring harnesses where applicable.
 - a. Opening Speed: 20 inches per second.
 - b. Closing Speed: 12 inches per second.
 - c. Electrical Characteristics: 208/230V AC, three phase per motor/drive.
 - d. Electrical Characteristics: 460V AC, three phase per motor/drive.
 - e. Left hand mount.
 - f. Right hand mount.
10. 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. Self-monitoring 2-wire, electric fail-safe sensing edge reverses downward motion upon impact.
 - c. Drop stop device eliminates uncontrolled curtain travel independent of other safeties.
11. Actuators:
 - a. One Open/Close/Stop push button station incorporated into Control Panel.
 - 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.
12. Weatherstripping: Bottom astragal, optional high usage guide wear strip, and internal neoprene hood baffle.
13. Windload Design:
 - a. Standard windload shall be 20 PSF.
 - b. Miami-Dade County NOA ____.
 - c. FBC certification FL# ____.
14. Mounting:

- a. Steel jambs,
- b. Wood jambs.
- c. Masonry jambs.

2.4 ROLLING STEEL FIRE DOORS

- A. Wayne Dalton FireStar 700 Rolling Steel Fire Door
 - 1. Description:
 - a. Maximum Width: 36 feet 0 inches
 - b. Maximum Height: 28 feet 0 inches
 - c. Fire Labeled: Yes
 - d. Windload: Windload minimum ____ psf per DASMA 108-2012 and as required by local codes.
 - 2. Curtain: composed of interlocking roll-formed slats.
 - a. Slat Profiles/Material:
 - 1) No. 4 Curved-faced single crown slat.
 - (a) 18-gauge steel.
 - (b) 20-gauge steel.
 - (c) 22-gauge steel.
 - (d) 18-gauge stainless steel.
 - (e) 20-gauge stainless steel.
 - (f) 22-gauge stainless steel.
 - 2) No. 14 Flat-faced slat.
 - (a) 18-gauge steel.
 - (b) 20-gauge steel.
 - (c) 22-gauge steel.
 - (d) 18-gauge stainless steel.
 - (e) 20-gauge stainless steel.
 - (f) 22-gauge stainless steel.
 - 3) No. 2 Curved-faced single crown slat.
 - (a) 20-gauge steel.
 - (b) 22-gauge steel.
 - (c) 20-gauge stainless steel.
 - (d) 22-gauge stainless steel.
 - 4) No. 17 Flat-faced slat.
 - (a) 20-gauge steel.
 - (b) 22-gauge steel.
 - (c) 20-gauge stainless steel.
 - (d) 22-gauge stainless steel.
 - b. Ends of alternate slats fitted with metal endlocks/windlocks.
 - 3. Bottom Bar: Consists of two equal angles, 0.12 inch minimum thickness, to stiffen curtain. Angle shall be:
 - a. Steel.
 - b. Stainless steel.
 - 4. Guides:
 - a. Three structural angle guide assembly fabricated of:
 - 1) Steel.
 - 2) Stainless steel.
 - b. Provide with integral windlock bars and removable bottom bar stops.
 - 5. Brackets: Design to enclose ends of coil and provide support for counterbalance pipe at each end. Fabricate of steel plates, with permanently sealed ball bearings. Thickness shall be:
 - a. 3/16 inch minimum.
 - b. 1/4 inch minimum.

6. Counterbalance: Curtain to be coiled on a pipe of sufficient size to carry door load with deflection not to exceed 0.033 inch per foot of door span. Curtain 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.
7. Hood: Hood to enclose curtain coil and counterbalance mechanism. Hood fabricated of sheet metal, flanged at top for attachment to header and flanged at bottom to provide longitudinal stiffness. Provide all FM hoods with a steel hood baffle. Fabricate of:
 - a. Minimum 24-gauge galvanized steel.
 - b. Minimum 24-gauge stainless steel.
8. Finish: Shop coat of rust inhibitive primer on non-galvanized surfaces and operating mechanisms. Guides and bracket plates will be coated with a flat black prime paint.
 - a. Galvanized Steel:
 - 1) Gray baked on primer.
 - 2) White baked on primer.
 - 3) Beige baked on primer.
 - 4) Brown baked on primer.
 - 5) Powdercoat finish as selected from manufacturer's RAL color selections.
 - 6) Powdercoat finish in custom color as selected.
 - b. Stainless Steel finish.
 - 1) #4 finish.
9. Operation: Door will be operated by means of:
 - a. Chain hoist.
 - b. Awning crank.
 - c. Motor operation.
 - d. Motor operation with electrical sensing edge attached to bottom bar to stop and reverse door when it contacts an object during the closing cycle.
 - e. Motor operation with pneumatic sensing edge attached to bottom bar to stop and reverse door when it contacts an object during the closing cycle.
10. Governor: If required by the size for chain hoist or motor driven doors, provide a viscous governor to regulate the rate of descent of door in a quiet manner. Use an engagement type that is not engaged during normal door operation, but after cable release, will retard the speed during automatic door closure to under 24 inches per second and not less than 6 inches per second per NFPA 80.
11. Label: Provide rolling fire doors certified with the following listing.
 - a. UL 3-Hour Class A Label for installation on masonry or steel jamb walls (face mounted). Door may be welded to the face of steel jambs.
 - b. ULC 3-Hour Class A Label for installation on masonry or steel jamb walls (face mounted). Door may be welded to the face of steel jambs.
 - c. FM 3-Hour Class A Label for masonry or concrete walls, steel wall jambs or with steel tubes set against fire walls (masonry or non-masonry construction).
 - d. UL 1-1/2-Hour Class B Label for installation in non-masonry walls, face mounted or between jambs.
 - e. ULC 1-1/2-Hour Class B Label for installation in non-masonry walls, face mounted or between jambs.
 - f. FM 3/4-Hour Class B Label when installed on fire-rated gypsum dry walls.
12. Mounting:

- a. Steel jambs,
 - b. Fire Rated wood jambs.
 - c. Fire Rated drywall over minimum 16-gauge steel stud jambs.
 - d. Masonry jambs.
- B. Wayne Dalton FireStar 700C Insulated Rolling Steel Fire Door:
1. Description:
 - a. Maximum Width: 24 feet
 - b. Maximum Height: 24 feet
 - c. Fire Labeled: Yes
 - d. Windload: Windload minimum ____ psf per DASMA 108-2012 and as required by local codes.
 2. Curtain: composed of interlocking roll-formed slats.
 - a. Slat Profiles/Material:
 - 1) No. 34 Flat-faced slat. Area between the #34 exterior slat and the back slat filled with non-combustible mineral wool insulation with 0 flame spread, 0 smoke development, providing an R-value of 5 ($U = 0.2$).
 - (a) 22-gauge galvanized steel front and 24-gauge backer.
 - (b) 20-gauge galvanized steel front and 24-gauge backer.
 - (c) 18-gauge galvanized steel front and 24-gauge backer.
 - (d) 22-gauge stainless steel slats with 24-gauge backer.
 - (e) 20-gauge stainless steel slats with 24-gauge backer.
 - (f) 18-gauge stainless steel slats with 24-gauge backer.
 - b. Ends of alternate slats fitted with metal endlocks/windlocks.
 3. Bottom Bar: Consists of two equal angles, 0.12 inch minimum thickness, to stiffen curtain. Angle shall be:
 - a. Steel.
 - b. Stainless steel.
 4. Guides:
 - a. Three structural angle guide assembly fabricated of:
 - 1) Steel.
 - 2) Stainless steel.
 - b. Provide with perimeter brush seals to reduce smoke/air infiltration around door opening
 5. Brackets: Design to enclose ends of coil and provide support for counterbalance pipe at each end. Fabricate of steel plates, with permanently sealed ball bearings. Thickness shall be:
 - a. 3/16 inch minimum.
 - b. 1/4 inch minimum.
 6. Counterbalance: Curtain to be coiled on a pipe of sufficient size to carry door load with deflection not to exceed 0.033 inch per foot of door span. Curtain 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.
 7. Hood: Hood to enclose curtain coil and counterbalance mechanism. Hood fabricated of sheet metal, flanged at top for attachment to header and flanged at bottom to provide longitudinal stiffness. Provide all FM hoods with a steel hood baffle. Fabricate of:
 - a. Minimum 24-gauge galvanized steel.
 - b. Minimum 24-gauge stainless steel.
 8. Finish: Shop coat of rust inhibitive primer on non-galvanized surfaces and operating mechanisms. Guides and bracket plates will be coated with a flat black prime paint.
 - a. Galvanized Steel:

- 1) Gray baked on primer.
 - 2) White baked on primer.
 - 3) Beige baked on primer.
 - 4) Brown baked on primer.
 - 5) Powdercoat finish as selected from manufacturer's RAL color selections.
 - 6) Powdercoat finish in custom color as selected.
- b. Stainless Steel finish.
 - 1) #4 finish.
9. Operation: Door will be operated by means of:
 - a. Chain hoist.
 - b. Awning crank.
 - c. Motor operation.
 - d. Motor operation with electrical sensing edge attached to bottom bar to stop and reverse door when it contacts an object during the closing cycle.
 - e. Motor operation with pneumatic sensing edge attached to bottom bar to stop and reverse door when it contacts an object during the closing cycle.
10. Governor: If required by the size for chain hoist or motor driven doors, provide a viscous governor to regulate the rate of descent of door in a quiet manner. Use an engagement type that is not engaged during normal door operation, but after cable release, will retard the speed during automatic door closure to under 24 inches per second and not less than 6 inches per second per NFPA 80.
11. Label: Provide rolling fire doors certified with the following listing.
 - a. UL 3-Hour Class A Label for installation on masonry or steel jamb walls (face mounted). Door may be welded to the face of steel jambs.
 - b. ULC 3-Hour Class A Label for installation on masonry or steel jamb walls (face mounted). Door may be welded to the face of steel jambs.
 - c. FM 3-Hour Class A Label for masonry or concrete walls, steel wall jambs or with steel tubes set against fire walls (masonry or non-masonry construction).
 - d. UL 1-1/2-Hour Class B Label for installation in non-masonry walls, face mounted or between jambs.
 - e. ULC 1-1/2-Hour Class B Label for installation in non-masonry walls, face mounted or between jambs.
 - f. FM 3/4-Hour Class B Label when installed on fire-rated gypsum dry walls.
12. Mounting:
 - a. Steel jambs,
 - b. Fire Rated wood jambs.
 - c. Fire Rated drywall over minimum 16-gauge steel stud jambs.
 - d. Masonry jambs.

2.5 OVERHEAD COILING SECURITY SHUTTERS

- A. Aluminum Security Shutter: Wayne Dalton, Model 523.
 1. Wall Mounting Condition:
 - a. Face-of-wall mounting.
 - b. Between jambs mounting.
 2. Curtain: Interlocking extruded aluminum slats constructed of .05 inch aluminum. Nickel plated, steel screws and end locks to retain curtain within

- guides and prevent lateral movement. Over 16 feet wide will come standard with plastic roller retainers to strengthen curtain.
3. Fenestration/Perforation:
 - a. Open fenestration 1 inch by 1 inch; 0.5 inch uniformly spaced openings; full curtain.
 - b. Perforation full curtain.
 - c. Partial open fenestration, 1 inch by 1 inch; 0.5 inch uniformly spaced openings; Height of curtain segment to be fenestrated as indicated on the Drawings.
 - d. Partial perforation, height of curtain segment to be perforated as indicated on the Drawings.
 4. Finish:
 - a. Powder Coat:
 - 1) Silver powder coat to match look of clear anodized aluminum.
 - 2) Bronze powder coat to match look of bronze anodized.
 - 3) White.
 - 4) Almond.
 - 5) Powdercoat color as selected by the Architect.
 - b. Powder Coat: Wood Grain
 - 1) Natural Pine.
 - 2) Rustic Alder.
 - 3) Barrel Oak.
 - 4) Dark Barrel Oak.
 - 5) Golden Maple.
 - 6) Winchester Cherry.
 - c. Powder Coat: Custom Image:
 - 1) Powder coat base on both sides of curtain, bottom bar, guides, brackets, hood; custom supplied image on one side of curtain.
 5. Bottom Bar and Locking:
 - a. Aluminum compact bottom bar with vinyl bulb seal with coil side left and right slide locks. Powder coat to match curtain color selection. (standard).
 - b. Aluminum compact bottom bar with vinyl bulb seal with padlock-able non-coil side left and right slide locks. Powder coat to match curtain color selection.
 - c. Tubular aluminum cylinder locking bottom bar with weatherstrip. Requires 1.5 inch by 3 inch wall tubes for face of wall mount.
 - d. Locking doors with tube motor shall be provided with interlock micro switch.
 - e. Aluminum compact bottom bar with vinyl bulb seal; non-locking.
 - f. Step angle attachment option.
 6. Guides: Extruded aluminum channels with continuous PVC wear strips. Powder coat: color to match curtain.
 7. Brackets: Steel plate to support counterbalance, curtain and hood. Powder coat to match curtain color selection.
 8. Hood: aluminum two-piece square hood silver powder coated to match curtain color selection. Provided with intermediate support brackets as required.
 9. Hood with brackets; box size to match manufacturer's recommendation on housing size based on door height.
 10. Counterbalance: Extruded aluminum barrel housing counterbalance spring assembly.
 11. Operation:
 - a. Manual push up.
 - b. Crank operation.

- c. Electric tube motor with crank for emergency egress manual override.
- 12. Electric Motor Operation: Provide UL listed electric operator, size as recommended by manufacturer:
 - a. Operator Controls:
 - b. Double throw hard wired wall switch.

PART 3 EXECUTION

3.1 EXAMINATION

- A. Do not begin installation until substrates have been properly prepared.
- 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. Install rolling fire doors in accordance with the manufacturer's instructions and in accordance with the requirements of the National Fire Protection Association Standard 80 (NFPA 80).
- C. Install door complete with necessary hardware, jamb and head mold strips, anchors, inserts, hangers, and equipment supports in accordance with final shop drawings, manufacturers instructions, and as specified herein.
- D. Fit, align and adjust rolling door assemblies level and plumb for smooth operation.
- E. Upon completion of final installation, lubricate, test and adjust doors to operate easily, free from warp, twist or distortion and fitting for entire perimeter.

3.4 TESTING

- A. Drop-test rolling steel fire doors in accordance with NFPA 80 and witnessed, attesting to their successful operation at the time of installation.

3.5 MAINTENANCE

- A. Per NFPA 80, paragraph 15-2 4.3: All horizontal or vertical sliding and rolling fire doors shall be inspected and tested annually to check for proper operation and full closure. Resetting of the release mechanism shall be done in accordance with the

manufacturers instructions. A written record shall be maintained by the building owner and made available to the authority having jurisdiction.

3.6 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.

3.7 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.

3.8 PROTECTION

- A. Protect installed products until completion of project.
- B. Touch-up, repair or replace damaged products before Substantial Completion.

3.9 SCHEDULES

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

END OF SECTION