## SECTION 08 33 23.13 - OVERHEAD RAPID COILING DOORS

## PART 1 - GENERAL

### 1.1 SUMMARY

A. Section Includes: High performance overhead coiling fabric doors for interior environments.

B. Related Work:
1. Division 05, Section 05 50 00 "Metal Fabrications" for miscellaneous steel supports.
2. Refer to Division 26 and 28 Sections for electrical connections including conduit and wiring for coiling door operators and access control devices.

### 1.2 REFERENCES

A. References: Refer to the version year adopted by the Authority Having Jurisdiction.
1. National Electrical Manufacture's Association (NEMA)
2. Underwriters Laboratories (UL)

B. National Electrical Manufacture's Association (NEMA)
1. Type 4 - Enclosures constructed for either indoor or outdoor use to provide a degree of protection to personnel against access to hazardous parts.

C. Underwriters Laboratories (UL).
1. UL 508 Standard for Industrial Control Panels.

D. Door & Access Systems Manufacturers Association (DASMA)

### 1.3 DEFINITIONS

A. Activation Device: Device that, when actuated, sends an electrical signal to the door operator to open the door.

B. Safety Device: A device that detects the presence of an object or person within a zone where injury could occur and provides a signal to stop the movement of the door.

C. High Performance Door: A powered door characterized by sliding action that is designed to sustain heavy usage at relatively high speeds.

D. High Speed Door: A non-swinging door used primarily to facilitate vehicular access or material transportation, with a minimum opening rate of 32 inches per second and a minimum closing rate of 24 inches per second.

### 1.4 SUBMITTALS

A. Product Data: For each type of high-performance overhead coiling door and accessory.
1. Include construction details, material descriptions, dimensions of individual sub-assemblies (side frames, header, control panel, motor), profiles for slats, and finishes.

2. Include operating characteristics, electrical characteristics, and furnished accessories.
3. Include description of automatic closing device and testing and resetting instructions.

B. Shop Drawings: For each installation and for special components not dimensioned or detailed in manufacturer's product data.
1. Include plans, elevations, sections, and mounting details.
2. Show locations of controls, locking devices, and other accessories.
3. Include diagrams for power, signal, and control wiring.

C. Samples for Initial Selection: Manufacturer's finish charts showing full range of colors and textures available for units with factory-applied finishes.

D. Samples for Verification: For each type of exposed finish on the following components, in manufacturer's standard sizes:
1. Curtain fabric.

E. Informational Submittals: Manufacturer's product information and applicable sustainability program credits that are available to contribute towards a LEED rated project certification.
1. Credit MR 4.1 and 4.2: Manufacturer's or fabricator's certificate indicating percentage of post-consumer recycled content by weight and pre-consumer recycled content by weight for each Product specified under this Section.

F. Operating and Maintenance Manuals: Provide manufacturers operating and maintenance manuals Including a detailed parts list for high performance overhead coiling doors.

G. Fabrication Engineering and Design Data Submittal: Submit for high performance overhead coiling doors to verify compliance with performance requirements and design criteria, including analysis data signed and sealed by the qualified professional engineer responsible for their preparation.

## 1.5 QUALITY ASSURANCE

A. Manufacturers Qualifications: Engage qualified manufacturers with a minimum 10 years of documented experience in manufacturing of doors and equipment of similar to that indicated for this Project and that have a proven record of successful in-service performance.

B. Installer Qualifications: Installers, trained by the primary product manufacturer, with a minimum 3 years documented experience installing and maintenance of units similar in material, design, and extent to that indicated for this Project and whose work has resulted in construction with a record of successful in-service performance.

C. Source Limitations: Obtain each type of door, frame, operator and sensor components specified in this Section from a single source, same manufacturer unless otherwise indicated.

## 1.6 PROJECT CONDITIONS

A. Field Measurements: Verify actual dimensions of openings by field measurements before fabrication and indicate on shop drawings.

B. Electrical: Verify actual job site power (voltage, phase and Hertz).

C. Verify environmental condition extremes.

D. Verify door sequence of operations.

## 1.7 COORDINATION

A. Coordinate sizes and locations of door openings and framing as required for high performance overhead coiling doors.

B. Electrical System Roughing-in: Coordinate layout and installation of high performance overhead coiling doors with connections to building power and access control system as applicable.
   1. Fused disconnect required for each individual door within five feet of respective door (not supplied by door manufacturer).

## 1.8 WARRANTY

A. General Warranty: Special warranties specified in this Article shall not deprive Owner of other rights Owner may have under other provisions of the Contract Documents and shall be in addition to, and run concurrent with, other warranties made by Contractor under requirements of the Contract Documents.

B. High Performance Overhead Coiling Doors shall be free of defects in material and workmanship for a period of one (1) year from the date of substantial completion.

C. Special Product Warranty: Manufacturer's warranty in which manufacturer agrees to repair or replace components which fail to perform as follows:
   1. 5-year / 1,000,000 Cycle Limited Warranty on Drive Motor and Gearbox.
   2. 2-year / 300,000 Cycle Limited Warranty on all other Mechanical and Electrical Components.
   3. Door Fabric: Two-ply monofilament polyester PVC impregnated panels are warranted for two (2) years.

D. During the warranty period a factory-trained technician shall perform service and affect repairs. A safety inspection shall be performed after each adjustment or repair and a completed inspection form shall be submitted to the Commissioner.

# PART 2 - PRODUCTS

## 2.1 HIGH PERFORMANCE OVERHEAD COILING DOORS

A. High-speed industrial door consisting of:
   1. Overhead coiling door with fabric curtain.
   2. Overhead motor and gearbox drive system.
   3. Door side frames.
   4. Control panel, activation devices, and safety sensor devices.

B. Products:
   1. Subject to compliance with requirements, provide one of the following:
      a. D-651 by Dynaco.
      b. Rapid Flex 994 by Overhead Door Corp.
      c. RC300HD by Raynor.
      d. 884 ADV Xtreme by Wayne Dalton

## 2.2 PERFORMANCE REQUIREMENTS

A. Fabrication Engineering and Design Data: Engage a qualified professional engineer, as defined in Section 01 33 16, “Fabrication Engineering Design Data,” to design high performance overhead coiling doors complying with requirements.

B. Opening Speed: Door to operate at a variable speed up to 60 inches per second.

C. Closing Speed: Door to operate at a variable speed up to 24 inches per second.

D. Operation Cycles: Drive motor and gearbox capable of operating for not less than 1,000,000 cycles. One operation cycle is complete when a door is opened from the closed position to the fully open position and returned to the closed position.

E. Usage Classification:
1. Heavy Duty: Minimum sixty (60) cycles per hour and minimum 1,000 cycles per day.

F. Wind Resistance: Up to 4 lbf/ft² static load when closed; equivalent to approximately 40 mph.

## 2.3 DOOR ASSEMBLY

A. Door Curtain Design:
1. Door Fabric: Standard 2-Ply woven monofilament polyester PVC impregnated.
   a. Material is laterally stiff and vertically flexible.
2. Vision Panels: Polyvinyl chloride (PVC).
   a. Easily replaceable, full width 30 inch height vision panel.
3. Fabric panels shall be connected by extruded aluminum ribs to allow for easy panel replacement.
4. Wind Rib Reinforcement:
   a. 4 inch high strength aluminum profile.
5. Bottom Bar: Fully padded, break away bottom bar shall extend the full width of the curtain, sufficient to maintain the bottom edge of the curtain parallel to the door threshold at all times.
   a. Upon impact, the bottom bar releases from side frames and the door operation is stopped. Controller must indicate problem encountered and instruct operator on what steps should be taken to fix the problem.
      1) Bottom bar must be self-repairing. Door must automatically reset itself after impact by pressing a button on control panel, no tools required.
   b. Door to be provided with wireless failsafe electric safety edge (see Safety Devices).

B. Curtain Jamb Guides: Side frame assemblies constructed of galvanized steel and members shall be fully bolted together.
1. Side frame assemblies shall extend a maximum of 8” from the wall.
2. Front column shall have a minimum wall thickness of 0.125” minimize damage if impacted.
3. Side frames to have full length double weather seal so that there is a seal on both the front and back sides of the door panel.
4. Door must have no visible air gaps along the side or top of the door when the door panel is in the closed or down position.

C. Door Header: Top roll assembly constructed of extruded aluminum drum barrel with press-fit steel axles supported in powder coated steel brackets at each end by self-aligning bearings and a boxed extruded aluminum structural head member connected to the end brackets.
   1. Drum Barrel System: Minimum 5 inches diameter 6063-T6 aluminum extrusion with a minimum wall thickness of 0.125 inch.
      a. Drum barrel shafts are constructed from nominal 1-3/8 inches hex AISI 1045 press-fit steel shafts.
   2. Top Plates: Minimum 1/4 inch cold-rolled steel with heavy-duty, self-aligning bearings with cast iron housings to support the drum barrel. 1.25 inch diameter shaft bearing shall be load-rated at 4,350 lbf, 2520 rpm.
   3. Springless System: no balancing springs required to operate the door.
   4. Head Frame: Head member to be minimum 5 inches x 6 inches boxed extruded aluminum and shall be provided with two full width vinyl seals along the top of the door.
   5. Top Roll Enclosure: Sheet metal hood enclosing top, front, and sides of top roll assembly and gearbox. Drive motor not enclosed.
      a. Steel with Matte Black Powder-Coat Finish.

D. Electric Door Operator: Reversible-type motor with controller for motor exposure indicated.
   1. Usage Classification: Heavy duty, rated up to 60 cycles per hour and over 1000 cycles per day.
   2. Motor Exposure: Exterior and Interior use.
   3. Side Mounted: Operator is mounted to the header assembly on the left or right side of door and connected to door drive shaft.
   4. Electrical Characteristics:
      a. Phase: Three phase.
      b. Volts: Contractor to coordinate with available electric supply.
      c. Hertz: 50/60.
   5. Operator: Minimum 1.5 horsepower.
      a. The motor and gearbox shall be designed for high cycle operation.
   6. Drive System: Hollow shaft helical-worm drive.
   7. Hand Crank: Manual brake disengagement lever and hand crank which allows door to be manually opened and closed without electrical power during installation.
   8. Motor Mount Chain Hoist: Motor brake disengagement and chain hoist accessible from the ground level allowing manual opening and closing of the door during a power outage.
   9. Limit Switches: Equip each motorized door with adjustable switches interlocked with motor controls and set to automatically stop door at fully opened position.
   10. Encoder: Equip each motorized door with a rotary encoder mounted on the drive motor for precise positioning and speed regulation of the door in operation.
   11. Timer: Each door to have automatic closing controlled by an adjustable hold open time delay.

## 2.4 CONTROL PANEL

A. Variable frequency control system housed in a NEMA 4 rated enclosure.

B. Controls must include a frequency vector control drive system capable of infinitely variable speed control in both the up and down directions and integrated programmable capability allowing field customization of logic I/O functionality without adding components.

C. Operational parameters must be set from the Graphical User Interface (GUI).

D. Controller comes with factory set parameters, a 64 bit scrollable graphic/text display that shows functional information during normal operation and will advise if maintenance is required or of abnormal situations.

E. Controls must be fully self-diagnostic thru the GUI and provide corrective actions for error conditions.

F. Control interface must display options and guidance in full text displayed language. Language options must be available in English, Spanish, French, German, or Portuguese languages.

G. Door must be provided with electronic encoder. A proximity or rotary switch must be provided to accommodate the top position reference.

## 2.5 ACTIVATION DEVICES

A. General: Provide activation devices for condition of exposure and for long-term, maintenance-free operation under normal traffic load for type of occupancy indicated. Coordinate activation and safety devices with door operation and door operator mechanisms.

B. Vehicular Type Activation Devices:
1. Motion Sensor: BEA Falcon, microwave scanner, field adjustable wide angle.
    a. Differentiates between pedestrian and vehicular traffic.
    b. Prevents false activation from cross traffic,
    c. Remote control for set-up.

## 2.6 SAFETY DEVICES

A. General: Provide safety devices for condition of exposure and for long-term, maintenance-free operation under normal traffic load for type of occupancy indicated. Coordinate safety devices with door operation and door operator mechanisms.

B. Door to be provided with Safety Light Curtain System.
1. Light curtain must have two fields of infrared beams:
    a. 1 set of beams housed inside of the side jamb guide assembly and cover an area to a height of no less than six (6) feet.
    b. 1 set of beams mounted to the face of the side jamb guide assembly and cover an area to a height of no less than six (6) feet.
2. Light curtain system must have a minimum of 40 infrared thru-beam optical sensors.
3. Control panel interface must indicate safety device errors in full text displayed language in the event of an abnormal condition.

## 2.7 DOOR FABRIC

A. Door Fabric Material: Orange 2-Ply.

## 2.8 FINISH REQUIREMENTS

A. Comply with NAAMM/NOMMA's "Metal Finishes Manual for Architectural and Metal Products ( for recommendations for applying and designating finishes.

B. Appearance of Finished Work: Noticeable variations in same piece are not acceptable. Variations in appearance of adjoining components are acceptable if they are within the range of approved Samples and are assembled or installed to minimize contrast.

C. Metal Finish:
1. Powder-Coat Finish on Side Frames: Manufacturer's standard baked-on finish consisting of prime coat and thermosetting topcoat. Comply with coating manufacturer's written instructions for cleaning, pretreatment, application, and minimum dry film thickness.
a. Color and gloss: Safety yellow, manufacturer’s standard gloss.

## PART 3 - EXECUTION

### 3.1 EXAMINATION

A. Examine substrates areas and conditions, with Installer present, for compliance with requirements for substrate construction and other conditions affecting performance of the Work.

B. Examine locations of electrical connections.

C. Proceed with installation only after unsatisfactory conditions have been corrected.

### 3.2 INSTALLATION

A. Install high performance overhead coiling doors and operating equipment complete with necessary hardware, anchors, inserts, hangers, and equipment supports; according to manufacturer's written instructions and as specified.

B. Install high performance overhead coiling doors, hoods, controls, and operators at the mounting locations indicated for each door.

C. Accessibility: Install high performance overhead coiling doors, switches, and controls along accessible routes in compliance with regulatory requirements for accessibility.

### 3.3 STARTUP SERVICE AND DEMONSTRATION

A. Engage a factory-authorized service representative to perform startup service.
1. Perform installation and startup checks according to manufacturer's written instructions.
2. Test and adjust controls and safety devices. Replace damaged and malfunctioning controls and equipment.

B. Engage a factory-authorized service representative to train Owner's maintenance personnel to adjust, operate, and maintain high performance overhead coiling doors.

### 3.4 ADJUSTING

A. Adjust hardware and moving parts to function smoothly so that doors operate easily, free of warp, twist, or distortion.
1. Adjust exterior doors and components to be weather-resistant.

B. Lubricate bearings and sliding parts as recommended by manufacturer.

C. Adjust seals to provide tight fit around entire perimeter.

## 3.5 CLEANING AND PROTECTION

A. Clean adjacent surfaces soiled by door installation.

B. Clean glass and metal surfaces promptly after installation. Remove excess sealants, compounds, dirt and other substances. Repair damages finish to match original finish.

**END OF SECTION**