HÖRMANN

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Hörmann SPEED-GUARDIAN™ 5000 U – 42

CSI MasterFormat® 2016 - Section 08 33 23.13

OVERHEAD RAPID COILING DOORS

PART 1 – GENERAL

1.01 SUMMARY

A. This Section includes the following types of Overhead Rapid Coiling Doors and assembly components:

1. High-speed, overhead rigid coiling door assemblies, at interior and exterior applications.
2. Operators (motors), control devices, guide tracks, hoods, closures, accessories, conduits and wiring from electric circuit disconnect to operator to control device.
3. Activation devices.

B. System description - High Performance Doors shall include the following characteristics:

1. Non-residential, powered operation.
2. Opening speed of minimum 40 inches per second and/or cycles of minimum 100 per day.
3. Meeting all of the following three:

   a. Made-to-order for exact size and custom features.
   b. Designed to reasonably withstand equipment impact with ease and convenient repair.
   c. Designed to sustain heavy usage with minimal maintenance and downtime.

4. High speed doors shall be defined as a subcategory of high performance doors with a minimum averaged opening speed of 32 inches per second.

1.02 RELATED DOCUMENTS AND SPECIFICATIONS

A. Refer to Door, Frame and Hardware Schedules, related detail drawings, including jamb, head and thresholds as indicated on the Drawings for locations, quantities, and remarks, as well as general provisions of the Contract, General and Supplementary Conditions, and Division 01 which shall apply to the scope of this section.

B. Section 05 10 00 – Structural Metal Framing

C. Section 08 00 00 – Openings

D. Section 08 71 13 – Automatic Door Operators

E. Section 10 14 00 – Signage

F. Section 26 00 00 – Electrical

G. Section 28 10 00 – Access Control

H. Section 32 39 00 – Manufactured Site Specialties (Bollards)

1.03 REFERENCES

A. Refer to the version year of references and standards as adopted by the Authority Having Jurisdiction of the project.

1. ANSI – American National Standards Institute.

2. ASCE / SEI – American Society of Civil Engineers / Structural Engineering Institute.

   a. ASCE 7 – Minimum Design Loads for Buildings and Other Structures.

3. ASTM – American Society for Testing and Materials, International.

4. DASMA – Door & Access Systems Manufacturers' Association, International.

   a. DASMA Standards.
   b. Technical Data Sheets.

5. NEMA - National Electrical Manufacturers Association.
   NEMA Enclosure Types:

   a. Type 4 – Enclosures constructed for either indoor or outdoor use to provide a degree of protection to personnel against access to hazardous parts; to provide a degree of protection of the equipment inside the enclosure against ingress of solid foreign objects (falling dirt and windblown dust); to provide a degree of protection with respect to harmful effects on the equipment due to the ingress of water (rain, sleet, snow, splashing water, and hose directed water); and that will be undamaged by the external formation of ice on the enclosure.
   b. Type 4X – Enclosures constructed for either indoor or outdoor use to provide a degree of protection to personnel against access to hazardous parts; to provide a degree of protection of the equipment inside the enclosure against ingress of solid foreign objects (windblown dust); to provide a degree of protection with respect to harmful effects on the equipment due to the ingress of water (rain, sleet, snow, splashing water, and hose directed water); that provides an additional level of protection against corrosion; and that will be undamaged by the external formation of ice on the enclosure.

6. NFPA – National Fire Protection Association. NFPA 70: National Electrical Code® (NEC).

7. UL – Underwriters Laboratories, Incorporated.

   a. UL 508 – Standard for Industrial Control Equipment – Industrial control devices, and devices accessory thereto, for starting, stopping, regulating, controlling, or protecting electric motors. These requirements also cover industrial control devices or systems that store or process information and are provided with an output motor control function(s). This equipment is for use in ordinary locations in accordance with NFPA 70: National Electrical Code.

1.04 TERMS AND DEFINITIONS

A. **Activation Device**: Any device used to initiate operation.

B. **Control Panel**: An enclosure that houses electrical controls.

C. **Counterbalancing**: A method by which the hanging weight of the door curtain is balanced by springs or weights.

D. **Door Opening**: The clear open width and height.

E. **Hand of Operation**: The side on which the door operator is placed, as viewed from the barrel side of the door. It is either a RH or LH operation.

F. **Helical Extension Spring**: A spring in a counterbalance assembly, used to counterbalance the curtain.

G. **High Performance Door**: A power-operated rolling, folding or sliding non-residential door, generally characterized by either 100 or more cycles per day or 20 or more inches per second opening speed, and typically made-to-order and/or designed for higher durability, and/or designed to break away due to equipment impact. Overhead Rapid Coiling Doors may be referred to herein as High Performance Doors.

H. **High Speed Door**: A type of high performance door with a minimum opening rate of 32-inches per second, a minimum closing rate of 24-inches per second, and a means to automatically reclose the door. Overhead Rapid Coiling Doors may be referred to herein as High Speed Doors.

I. **Hood**: A housing that mounts horizontally, serving as an enclosure for the door header.

J. **Light Curtain (Grid)**: An optical sensor that consists of a multi-point light-emitting transmitter and a light-receiving detector. If the beams of light are blocked by an obstruction, the sensor signals the operator to stop and/or reverse the door immediately.

K. **Operation Cycle**: One complete cycle of a door begins with the door in the closed position. The door is then moved to the open position and back to the closed position.

L. **Operator**: A powered mechanism that opens and closes a door.

1.05 PERFORMANCE REQUIREMENTS

A. Structural Performance Requirements: Provide overhead rapid coiling door assemblies capable of withstanding the effects of gravity loads and the following loads and stresses without evidencing permanent deformation of the door components:

1. Wind Load: Uniform pressure (velocity pressure) of 37.0 lbf/sq. ft., or 120 mph, acting inward (pressure) and outward (suction) of wind acting normal to plane of wall as determined in accordance with ASTM E330, FBC-TAS 202, or ANSI/DASMA 108, exposure B.
2. Windborne Debris Resistance: If required, may be determined in accordance with either ANSI/DASMA 115 or FBC-TAS 201/203.
3. Design of overhead rapid coiling door panel sections to be constructed of sandwiched steel faces and injected urethane foam and have cross sectional thickness of 42 mm to be fully thermally isolated from adjacent components. Products not including this design feature will not be accepted.

B. Operation-Speed Requirements: Design overhead rapid coiling door to perform open cycle operation with a variable rate of speed, no less than 80 in./sec. (2 m./sec.) and close cycle operation at 20 in./sec. (0.5 m./sec.).

C. Operation-Cycle Requirements: Design overhead rapid coiling door materials and workmanship to act for a period of 5 full years minimum, and all other mechanical and electrical components for a period of 2 full years minimum, but not less than 750,000 cycles and for 400 cycles per day. Products not meeting a 5 /2-year warrantee will not be accepted. Product cycle life may be determined in accordance with ANSI/DASMA 109.

D. R-value of Door Section: Provide overhead rapid coiling door panel sections with R-value of no less than 13.6 calculated in accordance with procedures outlined in DASMA TDS-163.

E. U-value of Door Assembly: Provide overhead rapid coiling doors with U-value of no greater than 1.04 calculated in accordance with procedures outlined in either DASMA TDS-105 or NFRC 100/102.

F. Air infiltration: Provide overhead rapid coiling doors with minimum air permeability (sill, jamb, and header) value 1.5 $m^3/(m^{2*}h)$, Class 5 at a pressure difference of 50pa at a 25 m^2 opening per test EN 12427 or ASTM E283. No air leakage shall be detected between panel joints.

G. Water Tightness: Provide overhead rapid coiling doors with water tightness meeting minimum value of Class 2, with 15 minutes of water spray at a pressure difference of 55pa per test EN 12489 or ASTM E547.

H. Acoustic Insulation: Provide overhead rapid coiling doors with minimum through curtain acoustic performance value STC-R_w 26; OITC 24, and installed system acoustical performance value STC-R_w 21; OITC 19 as per test method ISO 140-3 or ASTM E90.

I. Safety Performance Requirements: Provide overhead rapid coiling door assemblies with Light Curtain systems, to be fully housed inside of guide tracks and shall allow the door to close normally but shall reverse the door if any obstruction breaks the light beam grid. Products not including this technology will not be accepted.

J. Control Device Requirements: Provide overhead rapid coiling door assemblies capable of plug-and-play or Smart Start™ electrical connection to simplify installation. Products not including this design feature will not be accepted.

1.06 ADMINISTRATIVE REQUIREMENTS

A. Coordinate the work of this Section with the respective trades responsible for installing interfacing and adjoining work for proper sequence of installation and ensure that the work performed hereunder is acceptable to such trades for the installation of their work.

B. Coordinate Overhead Rapid Coiling Doors operating controls with specified activation devices.

C. Pre-Installation Coordination: Schedule a conference to occur not less than 14 days prior to installation commences for all high performance doors to establish procedures to maintain optimum working conditions and to coordinate this work with related and adjacent work. Provide not less than 7 days' advance notice to attendees, Owner, and Architect.

D. Conference participants shall include the Contractor, Owner's Representative, Architect, Door Installer, Manufacturer's Sales Representative, Electrician, and representatives of other trades affected by installation of Overhead Rapid Coiling Doors.

E. Conference topics to be discussed shall include:

1. A review of Contract Documents and accepted Submittals shall be made and deviations or differences shall be resolved.
2. If conflict should exist between what is considered good practice and Contract Documents, these differences shall be defined.
3. Pre-Installation Conference and observation of site conditions shall serve to clarify Contract Documents, application requirements and what work should be completed before installation can begin.
4. Prepare and submit to all invited parties including those not in attendance, Owner's Representative, Architect a written report of the Pre-Installation Conference. The Report shall be submitted within 3 days following the conference.

F. Take field measurements before preparation of shop drawings and fabrication of doors, where possible to enable proper fitting of the work. Allow for adjustments within specified tolerances wherever taking of field measurements before fabrication may delay work.

1.07 SUBMITTALS

A. Product Data: For each type and size of Overhead Rapid Coiling Door and accessory, include 3 set(s) details of construction relative to materials, dimensions, component connections, profiles and finishes. Provide rough-in diagrams, operating instructions and maintenance information. Include the following:

1. Setting Drawings, templates, and installation instructions for built-in or embedded anchor devices.
2. Summary of forces and loads on walls and jambs.
3. Motors: Show nameplate data and ratings.
4. Operation & Maintenance Manual.

B. Shop Drawings: Indicate pertinent dimensioning, anchorage methods, hardware locations, and installation details and include information for special components and installations not dimensioned or detailed in manufacturers data sheets.

1. Wiring Diagrams: Detail wiring for power, signal, and control systems. Differentiate between manufacturer-installed and field-installed wiring and components provided by the door manufacturer and those provided by others.
2. Include design drawings fully detailing each door assembly; indicate size, clearances, and load diagrams, construction details for head, jambs, and threshold; material types, sizes, shapes, thicknesses, joints and connections; hardware, horsepower, voltage, phase, and hertz; location of control devices and drive units; and all design and detail data for work of other trades affected by the installation of overhead rapid coiling doors.
3. Coordinate Shop Drawings submittal with submittals for related portions of work.

C. Samples: Submit 1 set(s) of sample door materials, made available upon request to the owner's representative, and Architect.

1. Submit selection color samples displaying manufacturer's full range of standard colors and finishes for initial selection by Architect. Submit actual cross sectional metal door panel samples of colors and finishes available. Samples sizes to be not less than 3" (76mm) x 3" (76mm).
2. Submit 3 verification samples demonstrating actual materials, finishes, colors and textures of each selected Overhead Rapid Coiling Door model specified. Sample sizes to be 12" (305mm) long, 6" (152mm) x 6" (152mm), or full size as appropriate to materials.

D. Informational Submittals: Overhead rapid coiling door manufacturer shall indicate installation sequences, procedures, adjustments, and alignment procedures in written form.

1. Submit manufacturers' written installation procedures that shall be the basis for accepting or rejecting actual installation procedures.
2. In addition to installation methods, and guidelines, manufacturers' information shall include storage and handling requirements, preparation, site care, cleaning, and maintenance instructions and recommendations.
3. Maintain one copy of manufacturer's installation instructions on-site to be readily available upon request.

E. Qualification Statements: Submit documentation to demonstrate installer's capabilities and experience working with Overhead Rapid Coiling Doors and accessories.

F. Sustainable Design Submittals: Provide documentation verifying that components, processes, and/or assemblies provided are in compliance with specified requirements; refer to Division 01.

1. Submit certification/letter of documentation from manufacturer indicating percentages by weight of post-consumer and pre-consumer recycled content for products as part of project documentation for verification in Green Building Certification Programs which this project may participate.

G. Closeout Submittals: Submit instructions to be followed in operating and maintaining components of Overhead Rapid Coiling Doors. Include a copy of instruction in Operation and Maintenance Data Manual; refer to Division 01.

1. Warrantee documentation shall include final executed warranty document as approved or accepted by Owner. Include a copy of warranty in Warranties and Bonds Manual. Refer to Division 01.

1.08 QUALITY ASSURANCE

A. Maintenance Data: Follow and comply fully with manufacturer's scheduled maintenance program, including periodic required adjustments, suggested maintenance intervals, and retention of manufacturer's data sheets, and equipment inter-connection diagrams.

B. Installer Qualifications: Engage experienced installers having demonstrated successful application on projects of similar scope and complexities for both installation and maintenance of units required for this project. Installers should be trained and authorized by the overhead rapid coiling door manufacturer to perform the work of this section.

C. Source Limitations: Obtain overhead rapid coiling doors, including all components and accessories though one source from a single manufacturer. Use only new doors, components and accessories for this project.

1. Obtain operators and controls from the overhead rapid coiling door manufacturer.

D. Regulatory Requirements: Listing and labeling shall be provided for electrically operated fixtures specified in this section.

1. The terms "Listed" and "Labeled": as defined in NFPA 70, Article 100.
2. Listing and Labeling Agency Qualifications: A "Nationally Recognized Testing Laboratory" as defined in OSHA Regulation 1910.7.
3. Electrical door components shall be UL Listed.
4. Electrical control devices shall be minimum NEMA 4 approved.

E. Field Measurements: Verify field measurements are as indicated on shop drawings prior to beginning fabrication. Verify power supply conforms with overhead rapid coiling door electrical requirements prior to fabrication.

F. Coordination: Coordinate the work with installation of electrical power locations, and sizes of conduit.

1.09 DELIVERY, STORAGE AND HANDLING

A. Delivery of materials shall be in original rolls, packages, boxes or crates bearing the manufacturer's name, brand, model number, and installation location. Store all materials in dry locations with adequate ventilation, free from dust and water, and available for inspection and handling. Handle doors carefully to prevent damage. Remove damaged items that cannot be restored to the acceptance of the owner's representative and Architect, and replace with new items.

1.10 WARRANTY

A. Warranty: Manufacturer's standard form in which manufacturer and installer agree to repair or replace overhead rapid coiling door assemblies, components, and accessories that fail in materials or workmanship within specified warrantee periods.

1. Warranty Period: Provide the following:

a. The motor is guaranteed against defects in materials and workmanship for a period of 5 full years (excludes catch system). All other mechanical and electrical components are warranted against defects for a period of 2 full years. Vision panels are warranted against defects for a period of 7 full years. Products with less than a 5/2/7-year warranty will not be accepted. During the warranty period, labor is covered for the first year.

PART 2 – PRODUCTS

2.01 MANUFACTURERS

A. Manufacturers: Subject to compliance with requirements, provide overhead rapid coiling door assemblies as manufactured by the following:

Acceptable Manufacturers: Hörmann High Performance Doors:

1. Manufacturer of Overhead Rapid Coiling Doors: Hörmann Flexon LLC,
Starpointe Business Park, 117 Starpointe Boulevard, Burgettstown, PA 15021-9506
Phone: (800)-365-3667 / 770-380-0489
Fax: (724) 385-9151
Website: www.hormann-flexon.com / Email: sales@hormann-flexon.com

B. Selected Products: Provide the following:

1. Model: Speed-Guardian™ Series – Model 5000 U - 42. No substitutions or exceptions shall be approved.

2.02 MATERIALS AND CONSTRUCTION

A. Guide Tracks

1. Fabricated jamb guides to be constructed with the manufacturers standard heavy-duty materials arranged to meet the specified performance criteria; allowing door panels to operate smoothly as follows:

a. Continuous, vertical oriented guide tracks must be a one-piece design with removable front covers and the following dimensions: 12-⅝" (320mm) wide X 12-⅛" (308mm) projection.
b. Guide tracks must be self-supporting, 11-gauge hot-dipped galvanized (0.9 oz./SF) steel and include a light grid built in up to 8'-0" (2.4m) high. Front covers shall be 16-gauge hot-dipped galvanized (0.9 oz./SF) steel. Lighter gauge guide tracks will not be accepted.
c. Exterior Mounted doors to include full roll and motor cover (hood) to be made of galvanized steel, finish to match guide tracks.
d. Provide guides with rubber weather strips to seal against interior and exterior faces of door curtain.

B. Light Curtain

1. Safety Systems: Provide the following without exceptions:

a. Light grid up to 8'-0" (2.4m) is standard and built into the guide tracks. The light curtain system shall consist of a self-contained transmitter detector and receiver detector. The transmitter and receiver are positioned on opposite sides of the door opening. The range can accommodate door openings from 3'-0" (0.9m) up to 32'-0" (9.75m). The detectors are housed in an aluminum profile which is weather resistant with an IP 67 (occasional submersion) rating. Light beams shall be spaced at 1 ¾" (45mm) equal intervals.
b. The light curtain system shall be installed inside the guide tracks and allow the door to close normally but reverse the door if any object breaks the light beam. Photo cell and electric reversing edges not acceptable.

C. Door Headers, Spiral Guides, Drive Shaft Support and Bearing Mechanisms

1. Headers: Provide the following Header assemblies:

a. Spiral Guides (2): Provide one non-contact galvanized spiral panel guide per each jamb. Panel wheel guides shall be aluminum.
b. Spiral Mounting Brackets (2): Provide one galvanized steel spiral mounting bracket per each jamb.
c. Motor Bracket: One motor bracket at the operator side of the door shall be provided.
d. Drive Shaft: Provide one drive shaft, to be fabricated of galvanized cold rolled steel, 1 ½" (38mm) diameter.
e. Top/Bottom Spiral Supports: Provide one top and one bottom 11-gauge galvanized steel spiral support channel(s).
f. Drive Shaft Support: Doors up to a width of 11'-6" (3.5m) and to 16'-5" (5m) shall have one drive shaft support. Doors greater than 16'-5" (5m) shall have two drive shaft supports.

D. Counterbalance Assemblies

1. Provide the following:

a. Oil tempered helical extension springs, housed in guide tracks supporting the curtain with a deflection not exceeding 0.03 inch per foot of width.
b. Door may require up to eight counter-balance springs, up to two nylon straps, and up to two pulleys, based upon the design of each door opening size.
c. Springs shall assist motor in operation of door.
d. Doors using torsion springs for counterbalance or doors with springs located within a barrel sleeve will not be accepted.

E. Weather Seals

1. Provide the following manufacturers standard assemblies:

a. Twin rubber seals must be provided for within the guide tracks.
b. Non-contact lintel seal shall be provided for the full width of the top of the door. Substitutions will not be accepted.
c. A rubber, field serviceable seal shall be provided for the bottom of the door to ensure close fit with uneven floors.

F. Door Panel

1. Fabricate overhead rapid coiling door panels of heavy-duty materials, designed to withstand wind loading indicated, in a continuous length for width of each door opening (without splices). Unless otherwise indicated provide panel material thickness recommended by door manufacturer for performance, size, and type of door indicated, as follows:

a. Solid Panel(s) interlocking flat-faced insulated steel panels. Material to be minimum 22-gauge steel, hot-dipped galvanized, with sandwiched foamed-in-place urethane insulation having no voids or air pockets in sections. Include foam thermal breaks at panel joints.
b. Finish: Solid panel exterior to be painted, powder coated, with Micrograin™ texture. Solid Panel interior to be painted, powder coated, with Stucco texture.
c. Color: White Aluminum RAL 9006. Lighter weight, non-thermally broken panels will not be accepted.
d. Vision Panel(s): Provide 1-inch (26 mm) double pane, polycarbonate, clear or tinted vision panel sections to be finished with manufacturers standard, high quality, Duratec® abrasion-resistive coating. Provide vision panels to be configured as indicated on drawings.
e. Ventilation Panel(s): Provide double walled, perforated clear anodized aluminum ventilation panels as indicated on drawings. Perforation pattern to be ½" square grid pattern allowing for minimum 56.3% open area.
f. Bottom Profile: Provide bottom profile consisting of minimum 22-gauge steel, hot-dipped galvanized, with sandwiched foamed-in-place urethane insulation having no voids or air pockets in sections. Provide a one and a half inch replaceable, self-adjusting, continuous, compressible gasket of flexible EPDM weatherproofing loop. Do not provide fail-safe type automatic reversing edge mechanism in bottom profile.

G. Drive System, Electric Door Operators

1. Provide heavy-duty electric door operator assemblies of size and capacity recommended and provided by the overhead rapid coiling door manufacturer for each door and its operating life specified, with electric motor and factory prewired motor control devices, starter, gear reduction unit, solenoid-operated break, clutch, remote-control stations, integral worm-gear and accessories for proper operation; as follows:

a. Drive unit shall be electrically operated, and equipped with a minimum 3-phase variable speed direct-drive motor of continuous duty and have positive brake release for manual override operation. The motor and gearbox shall be designed for high cycle operation. Door position shall be controlled by top and bottom limit switch. Basic operation features manual disengagement buttons to place door in manual operation mode. A safety disengagement push button shall be included with the disengagement mechanism. Drive assembly shall include back up safety top and bottom limits. Other basic operating features shall include inverter for soft start and stopping, automatic closing timer, emergency stop, one actuating push button.
b. Main roller assembly shall be spin tested. Ball bearings to be permanently lubricated type with drive shaft keyed directly into unitized motor/gearbox.
c. Drive system shall be fully IP67 and NFPA 70 Class 2 control circuit, compliant.

2. Electric Motors: Provide the following:

    a. Provide high starting torque, reversible, continuous duty, Class A insulated, 2 HP, variable-speed electric motors, complying with IP67, with overload protection, sized to start, accelerate, and operate the door in either direction, from any position, at not less than the following speeds; without exceeding nameplate ratings or considering service factor.
    b. Speed: Opening speed shall be up to 80-inches per second for Speed-Guardian™ 5000 U 42, unless otherwise acceptable to the commissioning party.
    c. Type: 3 Phase, 60Hz, 9.9amps; Voltage as recommended by the manufacturer.
    d. Service Factor: According to IP67, unless otherwise indicated.
    e. Coordinate wiring requirements and electrical characteristics of motors with building electrical system.

3. Remote Control Station: Provide momentary contact 2 button control stations with push buttons labeled “Open” and “Close” at remote locations to be surface mounted as indicated on drawings and schedules.
4. Door to use encoder to regulate door travel limits. Door limits to be adjustable without the use of tools from floor level at the control panel. Doors using mechanical limits switches or doors that require tools to set the limits will not be accepted.

H. Emergency Operation / Disconnect Device:

1. Emergency operation shall be via manual disconnect of power to the motor and chain hoist for manual opening of the door. Hand crank operation will not be acceptable. Provide hand-operated disconnect or mechanism for automatically engaging sprocket-chain operator and releasing brake for emergency manual operation while disconnecting motor, without affecting timing of limit switch. Mount disconnect and operator so they are accessible from floor level. Include interlock device to automatically prevent motor from operating when emergency operator is engaged.

I. Door Control Devices

1. Control Panel: Provide the overhead rapid coiling door controls as specified herein, as scheduled in related specification sections, and as indicated on the drawings. Coordinate the installation, and interface of these controls with any relevant trades.
2. Provide the manufacturer’s standard drive controller assemblies. Assemblies shall be a variable frequency drive (VFD) fully programmable type controller. Control Panels shall be pre-wired to the greatest extent possible, and be CUL listed. Control Panels shall accommodate soft/hard start ability. Control Panels shall allow for top and bottom limit adjustment via the control panel. Control Panels shall include an adjustable, automatic closing timer, emergency stop, one actuating push button and tamper proof cycle counter.

    a. Provide a manufacturer supplied controller, mounted as shown, which will control the door, one per door. The controller shall include all opening and closing logic, including all safety related logic. Language interface shall be English.
    b. The controller shall include front panel mounted items; open and close push buttons, emergency stop push button, reset buttons and power disconnect lever.
    c. Supply manufacturer's standard HFC1 hardwired Smart Start™ control box with a 208-230v or 440-480v / 3-phase / 60 HZ requirement. Doors with contactor boxes will not be accepted.
    d. Provide additional unit controls whereas indicated on door and hardware schedules.
    e. Control Panel to be equipped with a programmable drive system, with variable Speed operation, and includes soft opening and closing.
    f. Must include an adjustable time delay.
    g. Must include tamper-proof cycle counter.
    h. Must include self-monitoring and self-diagnostic features and LCD to provide quick and straightforward information.
    i. Control panels that require a portable computer unit, additional components or other devices for programming and/or troubleshooting will not be accepted.
    j. Maximum control box dimensions of 11 ¾" (298mm) wide x 15 ¾" (400mm) high x 6" (152mm) deep allowing for applications with limited space.
    k. Actuation by motion detector or pull cord per door schedule.
    l. Interior doors are available with optional Amber LED warning light. Confirm with Door & Hardware Schedule for locations, quantities, and other applicable information.
    m. Mount actuating control devices in compliance with any applicable accessibility codes and regulations in the jurisdiction having authority, including any required audible alarms and visual indicator lights.

K. Activation Devices

1. Object Detection: Provide the following activations (per door, see Door and Hardware Schedules for locations, quantities and types.)

a. Object detection and door activation shall be a radar motion sensor system and shall include standoff mounting brackets, and associated radar remote controls.
b. Manufacturer recommends BEA Industrial, model Falcon. See related specification Section 08 71 13 Automatic Door Operators, and included product cut sheet for further detail.
c. Overhead rapid coiling doors to be ready to receive compatible security radio frequency (RF) activation card reading devices. Refer to Door and Hardware schedule, Drawings for locations, quantities, types. Refer to related specification sections for further detail.

2.03 HOODS AND ACCESSORIES

A. Hood: Form to entirely enclose coiled curtain panels and operating mechanism at opening head and act as weather stop. Contour to suit end brackets to which hood is attached. Roll and reinforce top and bottom edges for stiffness. Provide closed ends for surface mounted hoods and fascia for any portion between jamb mounting projecting beyond the wall face. Provide intermediate support brackets as required to prevent sag.

1. Fabricate hoods of hot-dipped galvanized (0.9 oz./SF) steel sheet, complying with ASTM A153, and not less than 0.06-inch thick.
2. Shape as indicated on drawings. See Door and Hardware schedule for locations, quantities, and sizes.

2.04 FINISHES, GENERAL

A. General: Comply with NAAMM's "Metal Finishes Manual for Architectural and Metal Products" for recommendations for applying and designating finishes.
B. All components of overhead rapid coiling doors shall be factory finished.

C. Appearance of Finished Work: Variations in appearance of abutting or adjacent pieces are acceptable if they are within one-half of the range of approved Samples submitted. Noticeable variations in the same piece are not acceptable. Variations in appearance of other components are acceptable if they are within the range of approved Samples submitted and are assembled or installed to minimize contrast.

D. Finish for steel rapid overhead coiling doors (shop finish) to be hot-dipped galvanized (0.9 oz./SF) steel, standard. Optional finishes include phosphate treatment with baked-on polyester powder coat paint, minimum 2.5 mils (0.065 mm) cured film thickness; ASTM D-3363 pencil hardness: H or better. Color as selected by Architect from manufacturer's standard color range, RAL color system.

2.05 FABRICATION

A. Do not fabricate doors until all specified submittal materials have been reviewed, processed, and returned by the Architect.

PART 3 – EXECUTION

3.01. PREPARATION

A. Coordinate installation of overhead rapid coiling doors with other trades prior to commencement of work. Examine the conditions under which the doors are to be installed and do not proceed with the work until unsatisfactory conditions have been corrected.

3.02 INSTALLATION

A. General: Comply with manufacturer's detailed written instructions for the installation of overhead rapid coiling doors.

1. All relevant electrical field wiring to be performed by registered electricians experienced, trained and qualified to perform the work.
2. Install doors true, level, and plumb, without evident warping, twisting, bending, or excessive abrasion.
3. Handle all materials with care. Should there be any damage to components during installation, do not attempt to rectify or otherwise reuse damaged parts without express approval from the manufacturer. Failure to do so may result in voiding of product warrantees.
4. Install doors and operating equipment complete with necessary hardware, jamb and head molding strips, anchors, inserts, spacers, leveling shims, hangers, and equipment supports according to the approved Shop Drawings, manufacturer's written instructions, and as specified in this project manual.

C. FINAL ADJUSTMENT

A. Make necessary adjustments for safe, efficient operation of overhead rapid coiling doors.

1. Lubricate bearings and sliding parts; adjust doors to operate easily, free from warp, twist, or distortion and fitting weather-tight for entire perimeter of opening.

3.03 DEMONSTRATION AND TRAINING

A. Start-up Services: Engage a factory-authorized service representative to perform start-up services and to train facilities maintenance personnel as specified below:

1. Test and adjust controls and safeties. Replace damaged and malfunctioning controls and equipment.
2. Train designated personnel on procedures and schedules related to start-up and shutdown, troubleshooting, servicing, preventative maintenance, and procedures for testing and resetting release devices.
3. Review data in the maintenance manuals. Refer to related sections regarding project closeout, and operation and maintenance manuals.
4. Schedule training with personnel with at least 7 days' advance notice.

- END OF SECTION 08 33 23.13 -