

## SECTION 083323 - OVERHEAD COILING DOORS

## PART 1 - GENERAL

## 1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

## 1.2 SUMMARY

- A. Section Includes:
  - 1. Coiling  $\frac{3}{4}$  Hour fire-rated doors (CD1).
  - 2. Coiling security doors (CD2).

## 1.3 PERFORMANCE REQUIREMENTS

- A. Delegated Design: Design overhead coiling doors, including comprehensive engineering analysis by a qualified professional engineer, using performance requirements and design criteria indicated.
- B. Operation Cycles: Provide overhead coiling door components and operators capable of operating for not less than number of cycles indicated for each door. 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.

## 1.4 SUBMITTALS

- A. Product Data: For each type and size of overhead coiling door and accessory. Include the following:
  - 1. Construction details, material descriptions, dimensions of individual components, profiles for slats, and finishes.
  - 2. Rated capacities, operating characteristics, electrical characteristics, and furnished accessories.
  - 3. For fire-rated doors, description of fire-release system including testing and resetting instructions.
- B. Shop Drawings: For each installation and for special components not dimensioned or detailed in manufacturer's product data. Include plans, elevations, sections, details, and attachments to other work.
  - 1. Detail equipment assemblies and indicate dimensions, weights, loads, required clearances, method of field assembly, components, and location and size of each field connection.
  - 2. Show locations of replaceable fusible links.

- C. Delegated-Design Submittal: For overhead coiling doors indicated to comply with performance requirements and design criteria, including analysis data signed and sealed by the qualified professional engineer responsible for their preparation.

- 1. Summary of forces and loads on walls and jambs.

## 1.5 QUALITY ASSURANCE

- A. Installer Qualifications: Manufacturer's authorized representative who is trained and approved for both installation and maintenance of units required for this Project.

- B. Source Limitations: Obtain overhead coiling doors from single source from single manufacturer.

- 1. Obtain operators and controls from overhead coiling door manufacturer.

- C. Fire-Rated Door Assemblies: Assemblies complying with NFPA 80 that are listed and labeled by a qualified testing agency, for fire-protection ratings indicated, based on testing at as close to neutral pressure as possible according to NFPA 252 UBC Standard 7-2.

- 1. Oversize Fire-Rated Door Assemblies: For units exceeding sizes of tested assemblies, provide certification by a qualified testing agency that doors comply with standard construction requirements for tested and labeled fire-rated door assemblies except for size.
  - 2. Temperature-Rise Limit: At vertical exit enclosures and exit passageways, provide doors that have a maximum transmitted temperature end point of not more than 450 deg F above ambient after 30 minutes of standard fire-test exposure.
  - 3. Smoke Control: In corridors and smoke barriers, provide doors that are listed and labeled with the letter "S" on the fire-rating label by a qualified testing agency for smoke- and draft-control based on testing according to UBC Standard 7-2; with maximum air-leakage rate of 3.0 cfm/sq. ft. of door opening at 0.10 inch wg for both ambient and elevated temperature tests.

- D. Regulatory Requirements: Comply with applicable provisions in the U.S. Architectural & Transportation Barriers Compliance Board's ADA-ABA Accessibility Guidelines and ICC/ANSI A117.1.

## 1.6 WARRANTY

- A. Warranty: Furnish two (2) year written warranty signed by the manufacturer and installer agreeing to repair or replace work which has failed as a result of defects in materials or workmanship. Upon notification within the warranty period, such defects shall be repaired at no cost to the owner.

## PART 2 - PRODUCTS

### 2.1 DOOR CURTAIN MATERIALS AND CONSTRUCTION

- A. Door Curtains: Fabricate overhead coiling-door curtain of interlocking metal slats, designed to withstand wind loading indicated, in a continuous length for width of door without splices.

Unless otherwise indicated, provide slats of thickness and mechanical properties recommended by door manufacturer for performance, size, and type of door indicated, and as follows:

1. Stainless-Steel Door Curtain Slats: ASTM A 666, Type 304; sheet thickness of 0.025 inch and as required to meet requirements.
  2. Aluminum Door Curtain Slats: ASTM B 209 sheet or ASTM B 221 extrusions, alloy and temper standard with manufacturer for type of use and finish indicated; thickness of 0.050 inch and as required to meet requirements.
  3. Gasket Seal: Provide insulated slats with manufacturer's standard interior-to-exterior thermal break or with continuous gaskets between slats.
- B. Endlocks and Windlocks for Service Doors: Malleable-iron casings galvanized after fabrication, secured to curtain slats with galvanized rivets or high-strength nylon. Provide locks on not less than alternate curtain slats for curtain alignment and resistance against lateral movement.
- C. Endlocks for Counter Doors: Manufacturer's standard locks on not less than alternate curtain slats for curtain alignment and resistance against lateral movement.
- D. Bottom Bar for Service Doors: Consisting of two angles, each not less than 1-1/2 by 1-1/2 by 1/8 inch thick; fabricated from manufacturer's standard hot-dip galvanized steel, stainless steel, or aluminum extrusions to match curtain slats and finish.
- E. Bottom Bar for Counter Doors: Manufacturer's standard continuous channel or tubular shape, fabricated from manufacturer's standard hot-dip galvanized steel, stainless steel, or aluminum extrusions to match curtain slats and finish.
- F. Astragal for Interior Doors: Equip each door bottom bar with a replaceable, adjustable, continuous, compressible gasket of flexible vinyl, rubber, or neoprene as a cushion bumper.
- G. Curtain Jamb Guides: Manufacturer's standard angles or channels and angles of same material and finish as curtain slats unless otherwise indicated, with sufficient depth and strength to retain curtain, to allow curtain to operate smoothly, and to withstand loading. Slot bolt holes for guide adjustment. Provide removable stops on guides to prevent over travel of curtain, and a continuous bar for holding windlocks.
1. Removable Posts and Jamb Guides for Counter Doors: Manufacturer's standard.

## 2.2 HOOD

- A. General: Form sheet metal hood to entirely enclose coiled curtain and operating mechanism at opening head. Contour to fit end brackets to which hood is attached. Roll and reinforce top and bottom edges for stiffness. Form closed ends for surface-mounted hoods and fascia for any portion of between-jamb mounting that projects beyond wall face. Equip hood with intermediate support brackets as required to prevent sagging.
1. Include automatic drop baffle on fire-rated doors to guard against passage of smoke or flame.
  2. Exterior-Mounted Doors: Fabricate hood to act as weather protection and with a perimeter sealant-joint-bead profile for applying joint sealant.

### 2.3 COUNTER DOORS

- A. Integral Frame, Hood, and Fascia for Counter Door: Welded sheet metal assembly of the following sheet metal:
  - 1. Stainless Steel: 22 gauge minimum thick stainless-steel sheet, Type 304, complying with ASTM A 666.
- B. Integral Metal Sill for Counter Door: Fabricate sills as integral part of frame assembly of Type 304 stainless steel in manufacturer's standard thickness with No. 4 finish.

### 2.4 LOCKING DEVICES

- A. Locking Device Assembly: Fabricate with cylinder lock, spring-loaded dead bolt, operating handle, cam plate, and adjustable locking bars to engage through slots in tracks.
  - 1. Lock Cylinders: Provide cylinders standard with manufacturer and keyed to building keying system.
  - 2. Keys: Provide three (3) for each cylinder.
- B. Safety Interlock Switch: Equip power-operated doors with safety interlock switch to disengage power supply when door is locked.

### 2.5 CURTAIN ACCESSORIES

- A. Smoke Seals: Equip each fire-rated door with smoke-seal perimeter gaskets for smoke and draft control as required for door listing and labeling by a qualified testing agency.
- B. Weatherseals: Equip each exterior door with weather-stripping gaskets fitted to entire perimeter of door for a weathertight installation, unless otherwise indicated.
  - 1. At door head, use 1/8-inch- thick, replaceable, continuous sheet secured to inside of hood.
  - 2. At door jambs, use replaceable, adjustable, continuous, flexible, 1/8-inch- thick seals of flexible vinyl, rubber, or neoprene.
- C. Push/Pull Handles: Equip each push-up-operated or emergency-operated door with lifting handles on each side of door, finished to match door.
  - 1. Provide pull-down straps or pole hooks for doors more than 84 inches high.

### 2.6 COUNTERBALANCING MECHANISM

- A. General: Counterbalance doors by means of manufacturer's standard mechanism with an adjustable-tension, steel helical torsion spring mounted around a steel shaft and contained in a spring barrel connected to top of curtain with barrel rings. Use grease-sealed bearings or self-lubricating graphite bearings for rotating members.
- B. Counterbalance Barrel: Fabricate spring barrel of manufacturer's standard hot-formed, structural-quality, welded or seamless carbon-steel pipe, of sufficient diameter and wall thickness to support rolled-up curtain without distortion of slats and to limit barrel deflection to not more than 0.03 in./ft. of span under full load.

- C. Spring Balance: One or more oil-tempered, heat-treated steel helical torsion springs. Size springs to counterbalance weight of curtain, with uniform adjustment accessible from outside barrel. Secure ends of springs to barrel and shaft with cast-steel barrel plugs.
- D. Torsion Rod for Counterbalance Shaft: Fabricate of manufacturer's standard cold-rolled steel, sized to hold fixed spring ends and carry torsional load.
- E. Brackets: Manufacturer's standard mounting brackets of either cast iron or cold-rolled steel plate.

## 2.7 MANUAL DOOR OPERATORS

- A. Equip door with manufacturer's recommended manual door operator unless another type of door operator is indicated.
- B. Push-up Door Operation: Design counterbalance mechanism so required lift or pull for door operation does not exceed 25 lbf.

## 2.8 COILING FIRE-RATED DOORS: (CD1) –UL label for 45 minute fire rating classification

- A. Fire-Rated Door: Fire-rated coiling door formed with curtain of interlocking metal slats.
  - 1. Basis-of-Design Product: Subject to compliance with requirements, provide Model No. CERD-11 as manufactured by Clopay Building Products Co. 8585 Duke Blvd, Mason, OH 45040-3101 800-282-2260-Underwriters Laboratories Inc. (UL) ISO 9001:2000-Registered. or comparable product by one of the following:
    - a. ACME Rolling Doors.
    - b. Alpine Overhead Doors, Inc.
    - c. AlumaTek, Inc.
    - d. C.H.I. Overhead Doors.
    - e. City-Gates.
    - f. Cookson Company.
    - g. Cornell Iron Works, Inc.
    - h. McKeon Rolling Steel Door Company, Inc.
    - i. Mahon Door Corporation.
    - j. Overhead Door Corporation.
    - k. Raynor.
    - l. Southwestern Steel Rolling Door Co.
    - m. Wayne-Dalton Corp.
    - n. Windsor Door.
- B. Operation Cycles: Not less than 20,000.
  - 1. Include tamperproof cycle counter.
- C. Curtain: Shall be assembled of interlocking galvanized steel slats, cold rolled. Slats shall have endlocks locking each end of alternate slats to act as a wearing surface, and maintain slat alignment. Curtain shall be 20 gauge minimum (.036 thick) or gauge required by UL, WH, or FM whichever is greater.

1. Slats: Shall be of a cross section not less than 3" wide by 7/8" deep. Slat galvanizing shall be of a hot process with a high grade zinc coating (minimum 1.25 oz. per sq ft).
- D. Bottom Bar: Shall consist of two angles, not less than 2" x 2" x 1/8" steel formed to fit slats. Bottom bar shall be provided with slotted holes to allow for thermal expansion.
- E. Guides: Each guide assembly shall be fabricated of a minimum 3" x 3" support angle or tube, a 2" x 3" inner guide angle and a 3" x 3" outer guide angle. Guides shall be provided with slotted holes to allow for thermal expansion.
  1. Provide UL classified smoke seals on each guide assembly. Assembly shall have been tested and approved under UBC 7-2-1997 Part II.
- F. Mounting Brackets: Fabricated of hot rolled 3/16" steel plate minimum, brackets shall be provided to house ends of the counterbalance barrel assembly.
- G. Hood: Shall be provided to entirely enclose curtain and counterbalance barrel assembly. Hood shall be fabricated 22 gauge galvanized steel and designed to match brackets. Top and bottom shall be bent and reinforced for stiffness.
  1. Provide UL approved lintel smoke seals. Assembly shall have been tested and approved under UBC 7-2-1997 Part II.
- H. Electric Motor Operator: Fire door shall be provided with a compact power unit designed and built by the door manufacturer. Operator shall be equipped with an adjustable screw type limit switch to break the circuit at termination of travel. High efficiency planetary gearing running in an oil bath, shall be furnished together with a centrifugal governor, spring-set solenoid operated brake and a fail safe magnetic release device, completely housed to protect against damage, dust, and moisture. Operator is to be NEMA Type 1 enclosure. An efficient overload protection device, which will break the power circuit and protect against damage to the motor windings shall be integral with the unit.
  1. Motor: Shall be totally, intermediate duty, thermally protected, ball bearing type with a Class A or better insulation. Single phase motors shall be capacitor start; polyphase shall be squirrel cage induction. Horsepower or motor is to be 1/2 hp minimum or of manufacturer's recommended size, which ever is greater.
  2. Starter: Shall be size "0" magnetic reversing starter, across the line type with mechanical and electrical interlocks, with 10 amp continuous rating and 24 volt control circuit.
  3. Reducer: Planetary gear type, 90% efficiency minimum, 77:1 reduction.
  4. Brake: Double shoe type, continuous duty, solenoid activated, integral within the operator's housing.
  5. Control Station: Provide flush mount key switch control station marked open, close and stop.
- I. Self-Closing Mechanism: The fire door is to be designed with a centrifugal governor as an integral part of the operator's construction. The automatic release mechanism shall be triggered by a fusible link, smoke detector or fire alarm. When triggered the door is released and begins

to close due to gravitational force. The speed of the door is governed by a centrifugal governor, designed to match the normal operating speed of the door, at a rate of not greater than 9" per second or less than 6" per second.

- J. Magnetic Release with 10 Second Time Delay: A fail-safe magnetic release device shall be built into the operator as an integral part of the release mechanism. When power is interrupted to the release mechanism by the smoke detector or fire alarm, the door shall begin to self-close. In the event of power failure, the time delay shall prevent the fire door from closing for a period of 10 seconds. Once the 10 seconds have lapsed, the fire door shall self-close. Once power has been restored, the automatic reset time delay as well as the fire door shall reset themselves, and the door shall automatically power itself back to the fully open position.
- K. Safety Edge: The fire door shall be designed so that once the fire door begins to self-close, the safety edge shall continue to operate as long as electrical power is provided to the motor operator. In the event that the safety edge meets an obstruction during the self-closing operation, the door shall reverse, return to the open position, momentarily stop, and then begin to self-close again.
- L. Easy Drop Test Feature: The fire door shall be designed to that it may be drop-tested simply by cutting power to the operator. By turning the power switch off, the door shall self-close. Once the fire door has satisfactorily closed, it shall be reset and power itself back to the fully open position simply by turning the power back on. No ladders or tools shall be needed to set the door or the time delay unit.
- M. True Test Panel: Fire doors shall be provided with a True Test panel. The test panel shall activate all the fire doors to close via gravity not power and shall be accordance with NFPA Bulletin #80. Only one test panel shall be required to test all the fire doors on this project.
- N. Painting: After completion of fabrication, clean all metal surfaces to remove dirt and chemically treat to provide for paint adhesion. Slats are to receive a prime coat of .2 mils of Urethane primer and .6 mils of Polyester paint.

## 2.9 COILING SECURITY DOORS

- A. Security Door: Over-counter coiling door formed with curtain of interlocking metal slats.
  - 1. Basis-of-Design Product: Subject to compliance with requirements, provide Model No. CESC-10 as manufactured by Clopay Building Products Co. 8585 Duke Blvd, Mason, OH 45040-3101 800-282-2260-Underwriters Laboratories Inc. (UL) ISO 9001:2000-Registered. or comparable product by one of the following:
    - a. ACME Rolling Doors.
    - b. Alpine Overhead Doors, Inc.
    - c. AlumaTek, Inc.
    - d. C.H.I. Overhead Doors.
    - e. City-Gates.
    - f. Cookson Company.
    - g. Cornell Iron Works, Inc.
    - h. McKeon Rolling Steel Door Company, Inc.
    - i. Mahon Door Corporation.
    - j. Overhead Door Corporation.

- k. Raynor.
  - l. Southwestern Steel Rolling Door Co.
  - m. Wayne-Dalton Corp.
  - n. Windsor Door.
- B. Operation Cycles: Not less than 20,000.
- 1. Include tamperproof cycle counter.
- C. Curtain: Shall be assembled of interlocking galvanized steel slats, cold rolled. Slats shall have endlocks locking each end of alternate slats to act as a wearing surface, and maintain slat alignment. Curtain shall be 20 gauge minimum (.036 thick) or gauge required by UL, WH, or FM whichever is greater.
- 1. Slats: Shall be of a cross section not less than 3" wide by 7/8" deep. Slat galvanizing shall be of a hot process with a high grade zinc coating (minimum 1.25 oz. per sq ft).
- D. Bottom Bar: Shall consist of two angles, not less than 2" x 2" x 1/8" steel formed to fit slats. Bottom bar shall be provided with slotted holes to allow for thermal expansion.
- E. Guides: Each guide assembly shall be fabricated of a minimum 3" x 3" support angle or tube, a 2" x 3" inner guide angle and a 3" x 3" outer guide angle. Guides shall be provided with slotted holes to allow for thermal expansion.
- F. Mounting Brackets: Fabricated of hot rolled 3/16" steel plate minimum, brackets shall be provided to house ends of the counterbalance barrel assembly.
- G. Hood: Shall be provided to entirely enclose curtain and counterbalance barrel assembly. Hood shall be fabricated 22 gauge galvanized steel and designed to match brackets. Top and bottom shall be bent and reinforced for stiffness.
- H. Manual push-up operation: Manual lift, locking thumb wing latch located on coil side of bottom bar at each jamb extending lock bolt through slots in guides. Keyed.
- I. Painting: After completion of fabrication, clean all metal surfaces to remove dirt and chemically treat to provide for paint adhesion. Slats are to receive a prime coat of .2 mils of Urethane primer and .6 mils of Polyester paint.

### 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 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 overhead coiling doors, hoods, and operators at the mounting locations indicated for each door.
- C. Accessibility: Install overhead coiling doors, switches, and controls along accessible routes in compliance with regulatory requirements for accessibility.
- D. Fire-Rated Doors: Install according to NFPA 80.
- E. Smoke-Control Doors: Install according to NFPA 80 and NFPA 105.

3.3 ADJUSTING

- A. Adjust hardware and moving parts to function smoothly so that doors operate easily, free of warp, twist, or distortion.
- B. Lubricate bearings and sliding parts as recommended by manufacturer.
- C. Adjust seals to provide weathertight fit around entire perimeter.

END OF SECTION 083323