

SECTION 08361

SECTIONAL OVERHEAD DOORS

PART 1 - GENERAL

1.01 SUMMARY

- A. This Section includes the following types of sectional overhead doors:
 - 1. Doors with insulated steel-framed steel panels.
 - 2. Tracks configured for standard vertical lift.
- B. Related Sections:
 - 1. Section 08710 "Door Hardware" for lock cylinders and keying.
 - 2. Division 16 Sections for electrical service, connections, disconnect switches and circuit breakers for powered operators.

1.02 REFERENCES

- A. ASTM International (ASTM):
 - 1. ASTM A 36: Specification for Carbon Structural Steel.
 - 2. ASTM A 123: Specification for Zinc (Hot-Dip Galvanized) Coatings on Iron and Steel Products.
 - 3. ASTM A 229: Specification for Steel Wire, Oil-Tempered for Mechanical Springs.
 - 4. ASTM A 653: Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process.
 - 5. ASTM C 1036: Specification for Flat Glass.
- B. National Electrical Manufacturers Association (NEMA):
 - 1. NEMA ICS 1: Industrial Control and Systems: General Requirements.
 - 2. NEMA ICS 2: Industrial Control and Systems: Controllers, Contactors, and Overload Relays Rated 600 Volts.
 - 3. NEMA ICS 6: Industrial Control and Systems: Enclosures.
 - 4. NEMA MG 1: Motors and Generators.
- C. National Fire Protection Association (NFPA):
 - 1. NFPA 70: National Electrical Code.

1.03 DEFINITIONS

- A. 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.

1.04 PERFORMANCE REQUIREMENTS

- A. Code Compliance: Total installation for exterior doors must comply with the requirements of the North Carolina Building Code.
- B. Structural Performance: Provide sectional overhead doors capable of withstanding the effects of gravity loads and the following loads and stresses without evidencing permanent deformation of door components:
 - 1. Wind Load: Uniform pressure (velocity pressure), acting inward and outward, to comply with North Carolina Building Code requirements.
- C. Operation-Cycle Requirements: Design sectional overhead door components and operator to operate for not less than 25,000 cycles.

1.05 SUBMITTALS

- A. Product Data: For each type and size of sectional overhead door and accessory. Include details of construction relative to materials, dimensions of individual components, profiles, and finishes. Provide roughing-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.
- B. Shop drawings for special components and installations which are not fully dimensioned or detailed on manufacturer's data sheets. Shop drawings for each type door installation and for special components and installations not dimensioned or detailed in manufacturer's product data. Include plans, elevations, sections, details, and attachments to other work including details and attachment of steel door track guards.

1. Wiring Diagrams: Detail wiring for power, signal, and control systems. Differentiate between manufacturer-installed and field-installed wiring and between components provided by door manufacturer and those provided by others.
- C. Samples for verification of each type of exposed finish required, prepared on 6 inch lengths and of same thickness and material indicated for Work.
- D. Installer Certificates: Signed by manufacturer certifying that installers comply with specified requirements.

1.06 QUALITY ASSURANCE

- A. Installer's Qualifications: Engage an experienced installer who is an authorized representative of the sectional overhead door manufacturer for both installation and maintenance of units required for this Project.
- B. Manufacturer's Qualifications: Engage a firm experienced in manufacturing sectional overhead doors similar to those indicated for this Project and with a record of successful in-service performance.
- C. Listing and Labeling: Provide electrically operated fixtures specified in this Section that are listed and labeled.
 1. The Terms "Listed" and "Labeled": As defined in NFPA 70, Article 100.

1.07 EXTRA STOCK

- A. Furnish extra materials described below that match products installed, are packaged with protective covering for storage, and are identified with labels describing contents:
 1. Furnish five (5) replacement door panels.
 2. Furnish two (2) spare tracks.
 3. Furnish four (4) spare hinges.
 4. Furnish five (5) spare rollers.
 5. Furnish two (2) spare slide bolts.

PART 2 - PRODUCTS

2.01 ACCEPTABLE MANUFACTURERS

- A. Basis of Design: "Model 524S"; Clopay Building Products Co. Subject to compliance with requirements, equivalent doors by one of the following are also acceptable:

1. Omega.
2. Raynor Garage Doors.
3. Roll-Lite Door Corp.
4. Wayne-Dalton Corp.
5. Windsor Door.
6. C.H.I. Overhead Doors.
7. Haas Door.

2.02 STEEL SECTIONS

- A. Construct door sections from galvanized, structural quality carbon steel sheets complying with ASTM A 653, commercial quality, with a minimum yield strength of 33,000 psi and a minimum G60 zinc coating.
 1. Steel Sheet Thickness: 24 gage.
 2. Exterior Section Face: Ribbed.
- B. Fabricate door panels from a single sheet to provide sections not more than 24 inches high and nominally 2 inches deep. Roll horizontal meeting edges to a continuous, interlocking, tongue-in-groove weathertight seal, with a reinforcing flange return.
 1. Insulation: 1-3/8 inch thick polystyrene board with a prepainted 30 gage steel backcover. R value of 6.6.
- C. Enclose open section with not less than 16 gage galvanized steel channel end stiles welded in place. Provide not less than 18 gage galvanized intermediate stiles, cut to door section profile, spaced at not more than 48 inches o.c. and welded in place.
- D. Reinforce bottom section with a continuous channel or angle conforming to bottom section profile and allowing installation of astragal.
- E. Reinforce sections with continuous horizontal and diagonal reinforcement, as required to stiffen door and for wind loading. Provide galvanized steel bars, struts, trusses or strip steel, formed to depth and bolted or welded in place.
- F. Provide reinforcement for hardware attachment.
- G. Fabricate sections so finished door assembly is rigid and aligned, with tight hairline joints, and free of warp, twist, and deformation.
- H. Finish galvanized steel door sections as follows:
 1. General: Comply with NAAMM's "Metal Finishes Manual for Architectural and Metal Products" for recommendations for applying and designating finishes.

2. Surface Preparation: Clean galvanized surfaces with nonpetroleum solvent so surfaces are free of oil and surface contaminants.
3. Pretreat zinc-coated steel, after cleaning, with a conversion coating of type suited to organic coating applied over it.
4. Apply manufacturer's standard primer and finish coats to interior and exterior door faces after forming, according to coating manufacturer's written instructions for application, thermosetting, and minimum dry film thickness.
 - a. Colors: Exterior color to match Benjamin Moore "#812 Blue." Interior color to match Benjamin Moore's.

2.03 TRACKS, SUPPORTS, AND ACCESSORIES

- A. Tracks: Provide manufacturer's heavy duty galvanized steel track system, sized for door size and weight, and designed for lift type indicated and clearances shown, and complying with ASTM A 653, for minimum G60 zinc coating. Provide complete track assembly including brackets, bracing, and reinforcement for rigid support of ball-bearing roller guides for required door type and size. Slot vertical sections of track at 2 inches o.c. for door-drop safety device. Slope tracks at proper angle from vertical or otherwise design to ensure tight closure at jambs when door unit is closed. Weld or bolt to track supports.
 1. Provide minimum 14 gauge tracks.
 2. Provide track guard for track impact protection. Track guards shall be furnished by the door manufacturer and shipped together with other door components. Track guard to be a minimum of 48 inch tall 1/4 inch thick bent steel plate full welded to 1/4 inch thick steel base plate. Attach base plate to concrete floor slab so that track guard assembly can withstand the impact of a 10,000 lb. vehicle traveling at speeds up to 4 mph.
 - a. **Basis of Design: Pioneer "Track Guard"; TG48, prefinished safety yellow.**
- B. Track Reinforcement and Supports: Provide galvanized steel track reinforcement and support members, complying with ASTM A 36 and ASTM A 123. Secure, reinforce, and support tracks as required for door size and weight to provide strength and rigidity without sag, sway, and vibration during opening and closing of doors.
- C. Support and attach tracks to opening jambs with continuous angle welded to tracks and attached to wall. Support horizontal (ceiling) tracks with continuous angle welded to track and supported by laterally braced attachments to overhead structural members at curve and end of tracks.

- D. Weatherseals: Provide replaceable, adjustable, continuous, compressible weatherstripping gaskets of flexible vinyl, rubber, or neoprene fitted to bottom and at top of overhead door.
 - 1. In addition, provide continuous flexible seals at door jambs for a weathertight installation.
- E. Steel Section Ventilation Gates: Fabricate door sections from commercial quality steel. Fabricate frames from 1 inch by 2 inch by 14 gage steel tube, miter cut and welded. Provide section panels with 16 gate diamond-shaped expanded steel openings, 1/2 inch square, welded to steel frame. Integral 1 inch by 1 inch by 11 gage angle welded horizontally as required by gate size for additional support and security. Provide flat meeting rails.
 - 1. Product/Manufacturer: "Model 801"; Clopay.
 - 2. Size: As indicated on Drawings.
 - 3. Finish: Manufacturer's standard baked polyester enamel. Colors as indicated on Drawings.
 - 4. Hardware: Operation and hardware components similar to vertical lift sectional door. Provide dual track.
- F. Safety Stops: Provide safety stop system for overhead door/ventilation gate assemblies. Locking latch travels with door to automatically activate the "lock-down" feature. Integral handle for manual operation.
 - 1. Product/Manufacturer: "Door Deputy Lock-Down System" WITH "Quick-Flex" handle; Rite-Hite Corporation.

2.04 HARDWARE

- A. General: Provide heavy-duty, corrosion-resistant hardware, with hot-dip galvanized, stainless steel, or other corrosion-resistant fasteners, to suit door type.
- B. Hinges: Provide heavy-duty galvanized steel hinges, not less than 0.0747 inch thick uncoated steel, at each end stile and at each intermediate stile, per manufacturer's written recommendations for door size. Attach hinges to door sections through stiles and rails with bolts and lock nuts or lock washers and nuts. Use rivets or self-tapping fasteners where access to nuts is not possible. Provide double-end hinges, where required, for doors exceeding 16 feet in width, unless otherwise recommended by door manufacturer.

- C. Rollers: Provide heavy-duty rollers, with steel ball bearings in case-hardened steel races, mounted with varying projections to suit slope of track. Extend roller shaft through both hinges where double hinges are required. Provide 3-inch diameter roller tires for 3 inch track, and as follows:
 - 1. Case-hardened steel tires.
- D. Push/Pull Handles: Manufacturer's standard.
- E. Slide Bolt: Fabricate with side locking bolts to engage through slots in tracks for locking by padlock, located on single-jamb side, operable from inside only.
 - 1. Locking Bars: Single-jamb side, operable from inside only.
- F. Where door unit is power operated, provide safety interlock switch to disengage power supply when door is locked.
- G. Use lock nuts and/or lock washers throughout.

2.05 COUNTERBALANCING MECHANISM

- A. Extension Spring: Operation by extension -spring counterbalance mechanism with aircraft-type steel cable over ball-bearing sheaves. Provide oil-tempered wired springs with internal safety rods.
- B. Torsion Spring: Operation by torsion-spring counterbalance mechanism consisting of adjustable-tension springs, fabricated from oil-tempered-steel wire complying with ASTM A 229, Class II, mounted on a cross -header tube or steel shaft. Connect to door with galvanized aircraft-type lift cables with cable safety factor of at least 5 to 1. Provide springs calibrated for 25,000 cycles minimum.
- C. Cable Safety Device: Include a spring-loaded steel or bronze cam mounted to bottom door roller assembly on each side, designed to automatically stop door if either cable breaks.
- D. Bracket: Provide anchor support bracket, as required to connect stationary end of spring to the wall, to level shaft and prevent sag.
- E. Provide a spring bumper at each end of horizontal or vertical track to cushion door and/or gate at end of opening operation.

2.06 MANUAL DOOR OPERATION

- A. Push-Up Operation: Provide lift handles and nonrotting 1/2 inch diameter nylon pull rope for raising and lowering doors, operating with not more than 25 lbf lift or pull.

PART 3 - EXECUTION

3.01 EXAMINATION

- A. Examine wall and overhead areas, including opening framing and blocking, with Installer present, for compliance with requirements for installation tolerances, clearances, and other conditions affecting performance of Work of this Section.
 - 1. Proceed with installation only after unsatisfactory conditions have been corrected.

3.02 INSTALLATION

- A. General: Install door, track, and operating equipment complete with necessary hardware, jamb and head mold strips, anchors, inserts,

hangers, and equipment supports according to shop drawings, manufacturer's written instructions, and as specified.

- B. Fasten vertical track assembly to wall construction at not less than 24 inches o.c., and as indicated on Drawings. Hang horizontal track from structural overhead framing with angle or channel hangers welded and bolt fastened in place. Provide sway bracing, diagonal bracing, and reinforcement as required for rigid installation of track and door operating equipment.
- C. Fasten vertical track assembly to concrete floor slab. Provide an additional wall bracket at bottom of track. Rotate wall bracket and attach one end to the track and anchor the other end to the concrete floor slab.

3.03 ADJUSTING

- A. Lubricate bearings and sliding parts; adjust doors to operate easily, free from warp, twist, or distortion and fitting weathertight for entire perimeter.

3.04 DEMONSTRATION

- A. Startup Services: Engage a factory-authorized service representative to perform startup services and to train Owner's maintenance personnel as specified below:
 - 1. Test and adjust controls and safeties. Replace damaged and malfunctioning controls and equipment.
 - 2. Train Owner's maintenance personnel on procedures and schedules related to startup and shutdown, troubleshooting, servicing, and preventive maintenance.
 - 3. Review data in the maintenance manuals. Refer to Section 01770 "Contract Closeout."
 - 4. Startup services shall also include a one year service and maintenance agreement with service and maintenance provided quarterly.

END OF SECTION 08361