SECTION 083325 - COMPOSITE SECTIONAL OVERHEAD DOORS

This section specifies a highly thermal efficient insulated door consisting of a steel skin bonded to a solid core of insulation, forming a strong sandwich unit. Recommended where heat loss or gain is an important factor. Check drawings to make sure nomenclature for overhead doors matches this section.

1. GENERAL
	* + 1. RELATED WORK SPECIFIED ELSEWHERE

Coordinate lock cylinders and padlocks with hardware section.

* + - * 1. Door Hardware: Section 087100.
				2. Control-Voltage Electrical Power Cables: Section 260523.
			1. REFERENCES
				1. Sheet Steel Gages: U.S. Standard gage.
			2. PERFORMANCE REQUIREMENTS

Change wind loading pressure in paragraph below as required for high-wind areas.

* + - * 1. Wind Loading: Sectional overhead doors shall withstand a wind loading pressure of 20 psf minimum without damage.
				2. Deflection: Maximum deflection of door in horizontal position shall be 1/120 of door width.
				3. Thermal Transmission: Door section U value shall be 0.10 or less, tested in accordance with ASTM C 236 by an independent testing laboratory. (R value 10 or more.)
				4. Air Infiltration: Rating shall be 0.15 or less cu ft/min per sq ft of door area, tested in accordance with ASTM E 283 at a pressure difference of .112 inch H2O (15 miles/hr) by an independent testing laboratory.
			1. SUBMITTALS
				1. General:

Submittals for this section are subject to the re-evaluation fee identified in Article 4 of the General Conditions.

Manufacturer’s installation instructions shall be provided along with product data.

Submittal shall be provided in the order in which they are specified and tabbed (for combined submittals)

* + - * 1. Shop Drawings: Show application to project.

Delete installation instructions below, unless facility requests instructions, check with Project Team Leader.

* + - * 1. Product Data: Catalog sheets, specifications, manufacturer’s installation instructions for overhead door assemblies, finishes, and operators.

Delete subparagraph below if electric operation is not required.

Include complete data covering motors and controls for electric operation.

Ask for samples only when many doors are required.

* + - * 1. Sample: Full door section end, 1 foot long.
				2. Quality Control Submittals:

Certificates: Furnish door manufacturer’s certifications that the spring life of counterbalance mechanism is 25,000 cycles or more, the door section U value is 0.10 or less, and the R value is 10 or more.

Warranties

Manufacturer and installers qualifications

* + - * 1. Contract Closeout Submittals:

Operation and maintenance data.

Replacement parts list.

1. PRODUCTS
	* + 1. DOORS
				1. Complete sectional overhead door assemblies with door sections, tracks and appurtenances sized and arranged to suit opening sizes, conditions, and clearance limitations indicated on the Drawings.

Door manufacturer’s standard height door sections may be used, except when a trimmed closure section is necessary to fit the opening height.

* + - 1. DOOR SECTIONS
				1. Type: Steel section enclosing and bonded to a solid core of polyurethane or polystyrene insulation and forming a composite rigid panel with a minimum thickness of 1-5/8 inches.
				2. Steel Section:

Exterior Face: Minimum .016 inch thick hot-dipped galvanized steel with horizontal embossed ribs, and factory painted with primer and polyester or acrylic finish coat; or minimum .016 inch thick steel with horizontal embossed ribs, protected with an aluminum/zinc corrosion-resistant coating, and factory painted with a baked-on enamel finish coat.

Manufacturers’ standard doors come with a factory finish. If this is required, add “field painting” under “related work specified elsewhere”. At this time, manufacturers produce only white and brown standard factory finish; modify a. Below if one of these colors is desired.

Color: As selected from door manufacturer’s standard colors.

Interior Face: Minimum .016 inch thick hot-dipped galvanized steel with horizontal ribs, and factory painted with primer and polyester finish coat; or minimum .016 inch thick steel with horizontal ribs, protected with an aluminum/zinc corrosion-resistant coating, with paint finish to match the exterior face.

* + - * 1. Core: Tightly packed polyurethane or polystyrene insulation.
				2. End Caps: 16 gage minimum, hot-dipped galvanized steel closures, with a paint finish to match exterior face.
				3. Hardware Reinforcement: Minimum 18 gage hot-dipped galvanized steel.
				4. Fabrication and Manufacture:

Each face shall be fabricated from a single steel sheet and meeting edges of door sections shall be formed with a rabbeted or keyed weather seal.

Insulation shall be placed between the metal faces in a manufacturing process which will bond the insulation to the metal and completely fill the space within the door section, resulting in a rigid metal/insulation/metal sandwich construction.

Each door section shall be reinforced with continuous reinforcing as required by door width and wind loading and deflection requirements. Reinforce bottom section as required by weight of door. Reinforcement shall be galvanized steel strips, bars, struts or trusses, and securely bolted, riveted or welded in place if not an integral part of door section.

* + - 1. ACCESSORIES

Delete paragraph below unless client insists on including it. The safety devices create so many problems they are routinely removed to reduce maintenance problems. Do not use on doors with low headroom tracks.

* + - * 1. Door Drop Safety Device: Safety device mounted to the bottom roller assembly on each side of door which will automatically prevent the door from falling if the cable breaks. Safety device shall allow for full opening of the door, with the door clear of (above) door opening.
				2. Weatherstripping, comply with the air infiltration rating specified:

Sill: Compressible and replaceable; rubber, PVC, or vinyl tubular astragal, attached to bottom of door.

Jambs: Rubber, high density polyethylene or vinyl seals which will prevent metal to metal contact.

Head: Rubber, PVC, or vinyl seal, attached to door or head, designed to provide a firm seal between door and head regardless of exterior/interior temperature variances.

Door Section Joints: Rubber, PVC, or vinyl gasket in joints of meeting edges.

Securely attach sill, jamb, and head weatherstripping with metal fasteners or approved retainers; adhesive application will not be acceptable.

Edit paragraph below if different type of glazing required, check what is available; size varies with manufacturer.

* + - * 1. Vision Panels: Two 1/8 inch thick acrylic sheets separated by an air space, set in a weathertight extruded rubber gasket or molded polymer frame.

Size: Approximately 24 x 10 inches each.

Delete reference in paragraph below to electric operation if not required. Avoid pass doors when possible; when necessary, overhead door opening limitations should be checked. Pass doors do not qualify as an exit door under some codes. Overhead doors with a pass door will not withstand 20 PSF wind load (paragraph 1.03 a.).

* + - * 1. Pass Doors: Same materials and design as overhead door unit, complete with vision panel, operating hardware, and keyed night latch lock (except cylinder). Where overhead door unit is electric operated, equip door with safety interlock switch which will prevent electric operation of overhead door when pass door is open.
			1. TRACKS, SUPPORTS, AND BUMPERS
				1. Tracks and Reinforcement: Galvanized steel tracks and reinforcement. Reinforce vertical tracks with heavy duty mounting brackets 16 inches oc or continuous steel angles welded or through bolted to track. Incline vertical tracks or otherwise design to ensure weathertight closure at jambs when door unit is closed. Reinforce horizontal tracks with continuous steel angles welded to track. Track system shall allow for normal door movement caused by temperature changes.

Track Size: 3 inches.

* + - * 1. Track Supports: Galvanized steel shapes, except as otherwise indicated.
				2. Door Bumpers: Compression spring or leaf spring bumper located at the end of each horizontal track, designed to cushion and stop door at end of opening operation.
			1. HARDWARE
				1. Hinges and Roller Brackets: Minimum 13 gage steel hinges at each end cap, and at intermediate locations as recommended by door manufacturer. Fabricate hinges at end caps for mounting of rollers. Attach hinges to door sections with self-tapping fasteners. Doors exceeding 12 feet in width or 385 pounds in weight shall have double end hinges.
				2. Rollers: Heavy duty rollers with steel ball bearings in case-hardened steel races, mounted with varying projections to suit slope of track. Where double hinges are required, extend roller shaft through both hinges. Roller tires shall suit size of track and be the following type:

Tires: Steel tires, sized to suit track, except as otherwise indicated.

Fill in door number or delete subparagraph below (and exception phrase in subparagraph above) if not required. Delete underline before entering information.

Tires for Door No. \_\_\_\_\_\_\_\_: Neoprene or bronze tires for hazardous atmospheres, sized to suit track.

Delete next three paragraphs below if no manual push-up operated doors; only use for doors up to 12’ high or 120 sq ft maximum.

* + - * 1. Lifting Handles and Step Plates: Heavy duty, steel or cast aluminum or reinforced PVC.
				2. Pull Rope: Door manufacturer’s standard 1/2 inch diameter rope.

Select paragraph below for door manufacturers’ standard options.

* + - * 1. Locking Devices: Furnish the following at each jamb:

Spring-loaded slide bolt with chromium-plated operating handle, operable from inside only.

Select subparagraph above or subparagraph below.

Five pin, 1-1/8 inch rim cylinder lock assembly (except cylinder) with chromium-plated operating handle and die cast aluminum plate retainers, operable from inside and outside.

Select paragraph below for special orders.

* + - * 1. Locking Device: Assembly with keyed spring-loaded dead bolt lock, chromium-plated operating handle(s), cam plate, and adjustable locking bar to engage through slots in track.

Locking Bar: Cremone type, operable from inside and outside.

Select subparagraph above or below. If only inside operation is specified below, delete “keyed” from paragraph above.

Locking Bar: Cremone type, operable from inside only.

* + - * 1. Finish: Galvanized, unless otherwise indicated.

Fasteners: Galvanized, cadmium plated or stainless steel, and compatible with door material.

* + - 1. COUNTERBALANCING MECHANISM

Check drawings for provision for supporting counter-balancing mechanism above door head. Mounting brackets have to be fastened to some structural member, such as a masonry wall or steel framing. Special items required for mounting, such as mounting plates (pads) or auxiliary steel members, must be clearly indicated. Long life springs (50,000 or 100,000 cycles) are available; if desired, edit paragraph below and coordinate with 1.04 d. 1.

* + - * 1. Type: Torsion spring counterbalance mechanism consisting of helical wound oil-tempered steel torsion springs having a minimum spring life of 25,000 cycles, mounted on a solid steel keyed shaft, and connected to door with aircraft quality grade galvanized steel lift cable having a minimum safety factor of 7 to 1. Required operation force shall not exceed the following:

Manual Push-Up Operation: 25 lb pull or lift, maximum.

Select subparagraph above or below. Delete both subparagraphs and last sentence in paragraph above if electrically operated.

Chain Hoist Operation: 35 lb pull, maximum.

* + - * 1. Drums and Brackets: Cast aluminum or grey iron casting cable drums, grooved to receive and hold proper diameter cable. Counterbalance mechanism shall be mounted with adjustable ball-bearing brackets at each end of shaft and one additional mid-point bracket for shafts up to 16 feet long and 2 additional brackets at 1/3 points to support shafts over 16 feet long, unless closer spacing recommended by door manufacturer.

Article below used for manual operation (emergency chain hoist for electric operation is in next article)

* + - 1. CHAIN HOIST OPERATION

Reduction drive below is generally recommended for doors over 12 feet high, not exceeding 22 feet wide or 308 sq ft.

* + - * 1. Chain Hoist Operator: Gear reduction drive chain hoist unit, side-mounted on counterbalance shaft, including an endless cadmium-plated alloy steel hand chain, cast iron pocket wheel and guard, reduction unit of at least 3 to 1, and roller chain and sprocket drive.

Chain Locking Device: Keeper type, for use with padlock, operated from inside. Locking device shall be located 3 feet above floor.

Delete article below if no electric door operators. Select operators to suit project.

* + - 1. ELECTRIC OPERATION
				1. UL listed electric operator assembly, complete with operator/motor unit, factory pre-wired motor controller, limit devices, and remote control stations. Motor shall be removable without disturbing the limit switch adjustment and without affecting the emergency release mechanism.

Include only one operator type. Trolley/drawbar type below is suitable for standard lift doors and up to 24 inch high lift doors, up to 400 sq ft in light and medium duty applications. Also used on doors with low headroom tracks if there is sufficient headroom for operator. Unit is mounted above and to rear of door track; check for clearance and interference.

* + - * 1. Trolley/Drawbar Operator: V-belt or gear primary drive to suit door load and job conditions, chain and sprocket secondary drive, adjustable safety clutch, solenoid operated brake, emergency release mechanism with an auxiliary steel chain hoist which can be engaged/disengaged from floor level for mechanical operation, provide an interlock device to prevent motor from operating when release mechanism is activated. Chain to remain motionless during electric operation.

Reinforce door section for operator attachment.

Jackshaft/hoist type below should be used for high lift and vertical lift doors and where trolley type cannot be used. Edit specifically for side-mounted or center-mounted if so required; center-mounted requires more headroom.

* + - * 1. Jackshaft/Hoist Operator: Side-mounted or center-mounted with V-belt, chain, or gearhead primary drive to suit door load and job conditions, roller chain secondary drive, adjustable safety clutch, solenoid operated brake, emergency release mechanism with an auxiliary steel chain hoist which can be engaged/disengaged from floor level for mechanical operation, provide an interlock device to prevent motor from operating when release mechanism is activated. Chain to remain motionless during electric operation.

Gear hoist type below is for high frequency and heavy duty door operation. Edit specifically for side-mounted or center-mounted if so required. Consult manufacturer’s catalogs for specific recommendations.

* + - * 1. Gear Hoist Operator: Side-mounted or center-mounted with heavy duty worm and gear reduction drive in oil bath, solenoid operated brake, emergency release mechanism with an auxiliary steel chain hoist which can be engaged/disengaged from floor level for mechanical operation and provide interlock device to prevent motor from operating when release mechanism is activated. Chain to remain motionless during electric operation.
				2. Motor: Horsepower rating as required to open and close door at a speed not less than 3/4 foot or more than 1-1/4 feet per second without overload under any condition of operation.

Motors shall comply with NEMA standards.

Review subparagraph below with Electric Designer and coordinate with electric drawings.

Motors shall be designed to operate on single phase, 60 Hertz, 120 volt circuit (NEMA standard motor voltage 115V).

Mount motor separate from reduction mechanism.

Bearings: Equip motors 1/2 HP and larger with ball bearings.

Edit subparagraph below if other type housing required.

Housing: Drip-proof.

* + - * 1. Reversing Magnetic Motor Controller:

Manufacturer: Allen-Bradley Co.; Cutler-Hammer, Inc.; General Electric Co.; Square D Co.; Westinghouse Electric Corp.

Edit subparagraph below if other type enclosure required.

Enclosure: NEMA 1.

Control Power: Control power transformer (maximum control voltage 120 volts) mounted within motor controller enclosure.

All control stations should be indicated on the drawings. Exterior type also suitable for indoor security purpose.

* + - * 1. Remote Control Stations (Interior): Momentary-contact, 3 push buttons labeled OPEN, CLOSE, STOP.

Enclosure: NEMA 1, surface mounted unless otherwise indicated.

Manufacturer: Allen-Bradley Bulletin 800S; Cutler-Hammer, Inc. Bulletin 10250; General Electric Co. CR-2943; Westinghouse Electric Corp. Type HD.

* + - * 1. Remote Control Stations (Exterior): Key operated switch having OPEN, OFF, CLOSE positions, and with STOP push button.

Enclosure: NEMA 3R, surface mounted unless otherwise indicated.

Manufacturer: Allen-Bradley Security Push Button Station 800H-NX22A.

* + - * 1. Remote Control Stations (Security): Key operated switch having OPEN, OFF, CLOSE positions (door movement automatically stops when key is in center OFF position); Square D Co. , Class 9001, Type KZC-192 for flush mounted applications and Type KY-192 for surface mounted applications, maximum security control stations having:

Momentary contacts with spring return to center.

Key removable in center OFF position only.

* + - * 1. Handheld Radio Control Units: Three channel units for full control of OPEN, CLOSE, STOP. Power 24 V AC. Each door to have its own frequency. Provide two units for each door.
				2. Safety Edge Device: Electric or pneumatic/electric safety switch, extending full width of door bottom, located within a neoprene or vinyl astragal mounted to bottom rail. Contact with safety edge device shall immediately stop the downward travel of the door.
1. EXECUTION

Delete article below if openings are existing.

* + - 1. EXAMINATION
				1. Verification of Conditions: Examine door openings for defects that will adversely affect the execution and quality of the Work. Do not proceed until unsatisfactory conditions are corrected.
			2. INSTALLATION
				1. Install the Work of this Section in accordance with manufacturer’s printed instructions, except as shown or specified otherwise.

Field connections and fastening shall be as recommended by the door manufacturer for the conditions, unless otherwise indicated.

* + - * 1. Secure and support tracks as required to prevent sag, sway, and detrimental vibration during opening and closing of door.

Fasten vertical track assembly to framing with continuous steel angles 24 inches oc, or with mounting brackets 16 inches oc.

Support horizontal (ceiling) track assembly with laterally-braced hanger at end of track, secured to overhead structural members. For doors 10 feet high and over, install an additional laterally- braced hanger at the center of horizontal tracks. Also secure horizontal track reinforcement at wall.

* + - * 1. Install bracing and supports as necessary to rigidly secure door operating equipment and appurtenances.

Delete paragraph below if no electric operation.

* + - * 1. Install junction box for wiring of safety edge device at mid-point of door travel. Connect flexible wiring to safety edge device and junction box with strain relief grips.

Install flexible wiring to be free from obstruction, with no excess wiring, when door is fully opened or fully closed.

* + - * 1. Coordinate location of chains or pulls so they will not interfere with door operation.
			1. ADJUSTING
				1. Adjust and lubricate doors and operating equipment to operate smoothly. Adjust door fit and weatherstripping seals to make a weathertight fit for the door perimeter.
				2. Repair cut, welded, and abraded galvanized surfaces with a minimum 2 mil thick coating of cold galvanizing compound (containing 93 percent zinc) applied in accordance with compound manufacturer’ instructions.

Delete article below if no radio units.

* + - 1. FIELD QUALITY CONTROL
				1. Test all doors for proper operation of radio control units. Turn units over to the Director’s Representative after testing.
			2. CLEANING
				1. Clean doors, and clean work area surfaces that have been soiled performing the Work.

END OF SECTION

The remainder of this document is for information only; not to be included in project specifications.

List of manufacturers

The following doors are among those that can meet the requirements of this section:

Thermacore 591 door by Ohd-Thermacore, inc., 3200 reach rd., Williamsport, pa 17701.

Thermospan door by Wayne-Dalton corp., mt. Hope, oh 44660.

Tri-core door by Raynor manufacturing company, east river rd., Dixon, il 61021.

Clopay 3300 door by Clopay corp. , 101 east fourth St., Cincinnati, oh 45202.

Haas-Therm 716 door by Haas door company, 26202 Glenwood rd., Perrysburg, oh 43551.

Iso-Dor steel door by Fimbel door corp., Coddington rd., Whitehouse, NJ 08888.

END OF INFORMATION 083325