

1 GENERAL**1.1 GENERAL REQUIREMENTS**

General Conditions and Division 01 apply to this section.

1.2 RELATED WORK

Section 05500: Miscellaneous Metal Fabrication

Section 07900: Joint Sealers

Section 09900: Painting and finishing

Section 11169: Loading Dock Equipment

Division 16: Electrical power supply to Electrical Operators

1.3 QUALITY ASSURANCE

1.3.1 Design doors and tracks to withstand basic wind load while in the closed position of 0.47 kPa (10 psf). Maximum deflection while the door is in open horizontal position shall not exceed 1/120 of the span.

1.3.2 Installation shall be only by the specified manufacturer or an authorized representative for the region.

1.4 SUBMITTALS

1.4.1 Submit detailed shop drawings to the Consultant for review, in accordance with Section 01300.

1.4.2 Shop drawings shall clearly show and describe in detail, detailed door assemblies and adjacent construction. Show elevations, sections and details and clearances required for the door assemblies.

1.4.3 Shop drawings shall be of best quality craftsmanship, specifically prepared on one standard size drawing sheet.

1.4.4 Door manufacturer shall provide complete installation instructions for doors and hardware.

1.4.5 Provide a letter of conformance indicating that the doors are installed in accordance to the drawings and the specifications

2 PRODUCTS**2.1 MANUFACTURER**

1. Standard of Acceptance: Thermatite door model "T200C MR" 51 mm (2") thick Multi-rib design, polyurethane insulated, tongue-and groove sections joint as manufactured by Richards-Wilcox Canada Inc., with minimum requirements as specified herein:

2. Alternates will be considered provided they meet the minimum specification within and are approved & accepted in writing prior to tender closing.

2.2 MATERIALS**2.3 Door Sections:**

2.3.1 Steel skins with polyurethane core sandwich type construction, interior and exterior skins separated by continuous thermal break and shall feature WeatherLoc™ tongue-and-groove joint for weather-tight seal between sections. Sections shall have a minimum thermal insulating value of RSI 3.22 (R18.28).

- 2.3.2 Exterior Skin: Structural quality hot-dipped galvanized steel, 0.36 mm (0.014") minimum, factory applied baked on polyester paint finish, shall have stucco texture and Multi-Ribbed profile.
- 2.3.3 Interior Skin: Structural quality hot-dipped galvanized steel, 0.33 mm (0.013") minimum, baked-on acrylic paint finish, non-repeating random stucco texture and rib pattern.
- 2.3.4 Ends of each door section shall be capped with 1.6 mm (0.0625") hot dipped galvanized steel full height end caps. Doors width 16'-3" (4953 mm) and over shall all have double end caps.
- 2.3.5 Insulation: Cavity shall be filled on continuous process, formed-in-place, CFC and HCFC free rigid polyurethane core, interior and exterior skins shall feature thermal break.
- 2.3.6 Reinforcements: Provide 0.9 mm (0.039") minimum, continuous reinforcing strip, within core of door sections, for all hardware, accessories and mounting locations. Reinforcing strip must be of adequate width to enable the attachment of all fasteners and screws to penetrate both door interior skin and reinforcing strip. Fasteners or screws etc., secured only to the door skin will not be acceptable.
- 2.3.7 Weather-stripping: Doors shall be equipped with a heavy duty, factory installed continuous top seal to seal against header, continuous replaceable seals between sections and vinyl bulb shaped astragal on the bottom edge of the bottom section. Dual Durometer vinyl jamb weather seal bolted to the continuous adjustable mounting angle (ADCA) for easy replacement, as **supplied by Richards-Wilcox Canada**.
- 2.3.8 Glazing: Provide type CPL: 610 x 203 (24" x 8"), type D: 864 x 406 (34" x 16"), type E: 610 x 304 (24" x 12") clear thermal glass or Full View (FV) Alumatite section with thermal glazing as shown on the architectural drawings.
- 2.3.9 Door Finish: Exterior finish shall be manufacturers standard Almond, Black, Bronze, Brown, Café, Desert Tan, Slate Grey, Sandstone, White colours and the interior face shall be standard White colour.
- 2.3.10 Trusses: If required, provide adequate number of galvanized steel linear type reinforcing trusses to meet the wind loading.

2.4 HARDWARE

- 2.4.1 Standard of Acceptance: Linear Hardware System as manufactured by Richard-Wilcox Canada. Doors shall be equipped with double end roller brackets and long stem rollers.
- 2.4.2 Finish: Door tracks and track mounting hardware and torsion assembly mounting brackets shall be hot-dip galvanized.
- 2.4.3 Track: 2.7 mm (12ga), thick commercial galvanized track, formed track 80 mm (3 1/8") overall outside dimension. Vertical track sloped for weather tight closing.
- 2.4.4 Track Angle: Continuous adjustable track angle (ADCA), bolted type, field adjustable to ensure weather tight seal and serviceability, fabricated from 2.4 mm (13ga) commercially galvanized steel, designed to provide continuous support to the vertical track. **Combination angle and clip mounting not acceptable.**
- 2.4.5 Hinges: Linear type, fabricated from 2.75 mm (12ga) thick galvanized steel with embossments designed to resist higher load and to provide greater stability and improved performance. Doors width 16'-3" (4953 mm) and over shall have double end hinges featuring full width bushing for both the hinge pivot and roller carries to allow for ease installation and eliminating any possibility of misalignment of the hinges.

- 2.4.6 Track Hangers: Minimum 32 x 32 mm (1 1/4" x 1 1/4") steel angles roll formed from 2.0 mm (0.078") commercially galvanized steel.
- 2.4.7 Weather-stripping: Doors shall be equipped with a heavy duty, factory installed continuous top seal to seal against header, continuous co-polymer joint bulb seal between sections and vinyl bulb shaped astragal on the bottom edge of the door. Dual Durometer vinyl jamb weather seal bolted to the continuous adjustable mounting angle (ADCA) for easy replacement, as supplied by Richards-Wilcox Canada
- 2.4.8 Rollers: Steel rollers 73 mm (2 7/8") diameter, with ten (10), 8 mm (5/16") diameter ball bearings, 11 mm (7/16") diameter roller axles and both inner and outer ball races of hardened steel. Length of roller stem as required.
- 2.4.9 Linear Roller Brackets: Fabricated from 2.7 mm (12 ga) galvanized steel.
- 2.4.10 Shaft and Counter Balance Springs: Helically wound torsion springs manufactured from oil tempered spring wire stress relieved, minimum 10,000 cycles. Aluminum die cast grooved drums and flexible galvanized aircraft cables, 7 x 19 construction, mounted on minimum 25 mm (1") CRS solid steel shaft, keyed full length, rolling on flange bearings.
- 2.4.11 Bumper springs to be installed at the end of each horizontal track to prevent door over travel.
- 2.4.12 Track Guards: Continuous 4.7 mm, thick x 1524 mm, high (3/16" x 5'-0") chamfered at top at 45 degrees, painted safety yellow finish.
- 2.5 Doors quantity, size and the lift type as shown on door schedule and/or architectural drawings.

2.6 ELECTRIC OPERATORS

- 2.6.1 Provide Jack shaft type electric operators for doors as shown on Drawings, having sufficient power to operate the door at an approximate speed of 200 mm (8") per second.
- 2.6.2 Jack Shaft Operator: Manaras Opera industrial duty logic control type operator with on board radio receiver, model "OPERA-H" to NEMA 1, shall be equipped with an adjustable friction clutch, time delay on reverse, solenoid brake integral enclosure containing the controls and floor level disconnect and emergency manual chain hoist assembly with electrical interlock, motor ___ HP minimum, suitable for ___ volts, _ Ph, 60 Hz power supply.
- a) Provide one push button station "OPEN/CLOSE/STOP" to NEMA 1, for inside wall mounting near the door jamb on the operator side.
- b) Provide and install a "Featheredge" Reversing Safety Edge along the bottom edge of door to reverse on contact with an object as supplied by Service Door Industries. **Hose type pneumatic safety edges will not be accepted.** Power to the safety edge shall be supplied by a reelite.
- 2.6.3 Power supply and fused disconnect near the opening on the operator side by division 16. Wiring from the fused disconnect to the operator and to the controls by the door contractor.

3 FABRICATION

- 3.1 Fabricate the work true to dimensions detailed and square, and to reviewed shop drawings, free from distortion and defects detrimental to the appearance and performance.
- 3.2 Ensure that Site dimensions are taken prior to the fabrication of the doors.
- 3.3 Door shall be 25 mm (1") higher than finished opening height and extend 25 mm (1") beyond jamb on either side of finished opening.
- 3.4 Use shop and field connections complying with CAN/CSA S16.1-M.
- 3.5 Accurately fit joints and intersecting members with adequate fastenings.

4 EXECUTION**4.1 EXAMINATION**

- 4.1.1 Prior to commencement of work of this Section, thoroughly examine location where door(s) and all other related components are to be installed. To ensure a satisfactory installation, the door installer must inspect the opening to ensure it is square and true, and that the floor is level to ensure proper seal at the floor.
- 4.1.2 Report in writing, to the Consultant, any condition adversely affecting this work.
- 4.1.3 Proceed with work only when conditions are satisfactory for the installation.

4.2 INSTALLATION

- 4.2.1 **Installation shall be by door manufacturer or by authorized manufacture's representative for the region, as specified herein.**
- 4.2.2 Install doors, tracks and operating equipment complete with necessary hardware, weather-stripping, anchors, hangers, brackets and accessories, in accordance to manufacturer's printed instructions.
- 4.2.3 Assemble and erect work plumbs, true, square, straight, level and accurate as per Drawings and reviewed shop drawings.
- 4.2.4 Isolate metals where necessary to prevent corrosion due to contact with dissimilar metals and between metals, masonry and concrete. Use bituminous paint or butyl tape or as recommended by the door manufacturer.
- 4.2.5 Supply written instructions, drawings, and where necessary provide supervision for the installation of items to be built in by work of other Sections.
- 4.2.6 Steel member's etc. including jamb extensions and spring pads, by Division 5 and as per structural drawings. All other mounting brackets, angles etc., required for the proper installation of work of this Section, shall be the responsibility of the door manufacturer.
- 4.2.7 Complete installation must be to the satisfaction of the Consultant. Any and all aspects of installation adversely affecting appearance and/or performance of such installation shall be deemed unacceptable and shall be fully replaced at no additional cost to the Owner

4.3 DOOR:

- 4.3.1 Install sectional door in strict accordance with final reviewed shop drawings, manufacturer's instructions and as specified herein.
- 4.3.2 Fit, align and adjust overhead door assemblies, level and plumb, to ensure smooth operation and to provide correct closure to the satisfaction of the Consultant.
- 4.3.3 Ensure that complete installation includes tracks, operating equipment, necessary hardware, weather-stripping, anchors, hangers, brackets and any other accessories deemed necessary. Include any other items, not specified herein, but is required for a complete installation.

4.4 HARDWARE:

- 4.4.1 Install all necessary hardware, jamb and head mold strips, anchors, inserts, hangers and equipment supports in accordance with final reviewed shop drawings, manufacturer's instructions and as specified herein.
- 4.4.2 Mount counterbalancing mechanism with brackets at each end of shaft and at maximum 2438 mm (8'-0") o/c. in between.
- 4.4.3 Fasten vertical track assembly to opening frame at maximum 508 mm (1'-8") o/c. vertically. Install additional track anchors where deemed necessary by the Consultant.
- 4.4.4 Support the horizontal track to transmit the door dead and operating loads to the building structure. Install sufficient supports, anchors, fasteners etc. so that the track assembly is rigid and free from undue movement as required by the door manufacturer and to the satisfaction of the Consultant. Install additional track anchors where deemed necessary by the Consultant.
- 4.4.5 Provide bumper springs at the end of each track of manually operated doors.
- 4.4.6 Ensure weather-stripping properly fastened and it forms a continuous weather-tight seal at perimeter.

4.5 ADJUSTMENT AND DEMONSTRATION

- 4.5.1 Lubrication:
- 4.5.2 Upon completion of installation of doors and operating equipment, lubricate moving parts before operation.
- 4.5.3 Grease sprockets, bearings, cables, link chains and guides. Lubricant shall be as recommended by the manufacturer.
- 4.6 Demonstration:
- 4.6.1 Test the door operation and adjust it for smooth operation, free from warp, twist or distortion. Demonstrate the operation to the satisfaction of the Consultant at the same time of acceptance of the completed work.
- 4.6.2 Submit to the Owner a copy of proposed preventative maintenance program for overhead doors and other related components requiring regular maintenance and check-ups.

END OF SECTION 08360 – SECTIONAL INSULATED STEEL DOORS