

PART 1: OVERVIEW

1.1 RELATED REQUIREMENTS

1. Section 07 92 00 – Joint Sealants
2. Section 08 11 00 – Metal Doors and Frames.

1.2 SHOP DRAWINGS

- 1.2.1 Submit the shop drawings as per the instructions outlined in Section 01 300.
- 1.2.2 The shop drawings shall include all the following information: the type of materials, the type of opening mechanism, the required tolerances, the electrical connections, the structural fastenings executed by the general contractor, and the suitable matching with neighboring materials.

1.3 MAINTENANCE RECORDS

- 1.3.1 Provide the necessary instructions to ensure proper operation and maintenance of all the hardware components for the doors as well as the electric garage door operators, and include these instructions with the manual on use and maintenance described in Section 01 300.

1.4 QUALIFICATIONS

- 1.4.1 The manufacturer of materials shall be fabricated by a manufacturer with a minimum five years documented experience.
- 1.4.2 The installation shall be executed by a company approved by the garage door manufacturer as an installer, using skilled installers with minimum five years documented experience.

PART 2: GARAGE DOORS

2.1 CALCULATION CRITERIA

- 2.1.1 The doors and the hardware system shall be designed to meet or exceed the industry standard AINSI/DASMA 102 (American National Standard Specifications for Sectional Overhead Door Type Doors).
- 2.1.2 Design exterior door assembly to withstand windload of 1 kPa with a maximum horizontal deflection of 1/240 of opening width.
- 2.1.3 The doors shall have a thermal resistance factor of R-16 or RSI 2.8 ($k = 0.357$ W/m²K).
- 2.1.4 Springs shall be designed for the maximum operation cycles over their useful life.

2.2 MATERIALS

2.2.1 Enameled aluminum

Plate aluminum, conforming to the ASTM B 209 and ASTM B 209M standard, 0.02" (0.60 mm) thick, finished according to the manufacturer's standard colors. The finish will have 2 coats of polyester paint and be 1.0 mil thick. The aluminum plate will have a wood grain surface with 4 or 2 decorative horizontal grooves

2.2.2 Insulation

High-pressure, CFC-free, polyurethane foam has been injected between the walls of each section. Its density is 2.5 lb. /in.³ (40.4 kg/m³) with a thermal resistance factor of RSI 1.6 per 1" (25 mm) of thickness. The total insulation factor is R-16, RSI 2.8 (k = 0.357 W/m²K).

2.2.3 Reinforcement plates

Steel reinforcement plates, with a minimum thickness of 14 gauge (0.07" or 1.8 mm) are inserted within the door sections to provide proper fastening for the hinges and plates for an electric garage door operator with central trolley.

2.2.4 Section ends

A block of grade 4 dry pine, guaranteed against cracking and rot, is inserted at both ends of each insulated garage door section for superior strength in the fastening of the lateral hinges. These wood end blocks ensure a thermal break with the door's exterior.

2.2.5 Assembly joints

The aluminum sheets of each door section will be assembled with a mechanically-embedded, triple-contact weatherstripping, known as Interlok™, ensuring a thermal break, and the integrity and strength of the assembly.

2.2.6 Regular windows

Windows have clear, double thermo panes with a total thickness of 3/4" (19 mm). The 1/8" (3 mm) panes are sealed in aluminum extrusions using the Intercept™ system with a 1/2" (13 mm) air space. The windows are inserted in an expanded PVC frame and factory installed by the manufacturer.

2.3 DOORS

2.3.1 The garage doors shall be the model **G-1000** as made by Garaga Inc. or approved equal. The sections are shaped from 0.02" (0.60 mm) aluminum sheet, interior and exterior, on a roll forming machine and electronically injected with high-pressure polyurethane for a total minimum thickness of 1 3/4" (44.5 mm).

2.3.2 Refer to Door Schedule on JML Drawing G-2 for sizes.

2.4 WEATHER TIGHTNESS

2.4.1 Provide and install continuous weatherstripping at the bottom of the lower section. The weatherstripping shall be made of a U-shaped black PVC extrusion as well as semi-circular TPE (thermoplastic elastomer) tubing.

2.4.2 Interlok™ joints, which are triple-contact inset weatherstripping of flexible and rigid PVC, shall be found at the intersection of each section. This type of weatherstripping will ensure an efficient thermal barrier as well as double weather tightness in accordance with the following standards: when submitted to a pressure of 0.075 kPa, which is equivalent to winds of 40 km/h, the air infiltration rating as measured using standard A.S.T.M. E-283 shall be 0.033 liter/second per meter of joint between the door sections.

2.4.3 At the head of the door, provide the top of the section with continuous weatherstripping made up of reinforced aluminum extrusion and a strip of flexible PVC 3" (76 mm) wide.

2.4.4 Provide and install, on the exterior side of the door jambs and lintel, weatherstripping made up of an aluminum extrusion as well as a double-edged strip of arctic vinyl.

2.5 OPTIONS

2.5.1 Steel end caps: made of 16-gauge galvanized steel are installed at the end of each section where the hinges are to be fastened, for car/truck washes or to meet Agriculture Canada requirements.

PART 3: HARDWARE WITH TORSION SPRINGS

3.1 PRODUCTS

3.1.1 Tracks

The tracks are made of 12-gauge (0.1" (2.6 mm)) galvanized steel 3" (76 mm) wide. The horizontal track is reinforced with a 2" X 2" (50 x 50 mm) steel angle.

3.1.2 Hardware

The hinges are made of 13-gauge galvanized steel. Industrial rollers 3" (76 mm) long with 10 ball bearings are used.

3.1.3 Struts

Doors **12' 4" (3759 mm)** wide or wider shall have 22-gauge galvanized steel horizontal struts, and 13-gauge double hinges at each end.

3.1.4 Torsion-type springs

The torsion spring lifting system will consist of all the parts and accessories needed for its installation. All doors weighing more than 1000 lb. (454 kg), including hardware parts, must be approved by an installation professional as to the choice of hardware (drums, galvanized cables, springs, anchor plates, 1" (25 mm) solid shaft).

3.2 OPTIONS (TO CHOOSE FROM)

3.2.1 3"-long (76 mm) rubber rollers, in UHMW (*for workshop door*)

Garage door rollers for 3" (76 mm) tracks will have a UHMV head. They also include a sealed 6202-2RS precision ball bearing and are mounted on an SAE 1020 galvanized zinc-plated steel rod.

3.2.2 3"-long (76 mm) precision rollers, machined steel (*for boathouse door*)

Garage door rollers for 3" (76 mm) tracks will have a machined steel head. They also include a sealed 6202-2RS precision ball bearing and are mounted on steel rod.

3.2.3 Track guards, Z-shaped

The vertical tracks are protected non-galvanized, Z-shaped track guards 5' x 0.3" (1524 mm x 5.0 mm) in order to avoid accidental breaking. Often, track guards are painted with a bright color after installation.

3.2.4 Chain hoist

Doors will come equipped with a back-up chain hoist mounted on the wall in case of power failure.

3.2.8 Pusher springs

For doors exceeding 161 ft² (15 m²), standard movement or low headroom hardware will come with pusher springs at the end of the horizontal tracks in order to prevent the cables from falling off the drums.

3.2.9 "C" bumper springs

For workshop door, the vertical lift movement hardware will come with "C" bumper springs at the end of the vertical tracks.

3.2.10 Flanged bearing

The end bearing plates will come equipped with flanged bearings for doors weighing more than **660 lb (300 kg)**. Center plate (football bearings) will also be included with doors over this weight.

3.2.11 Tension bridge reinforcements

Boathouse storage door will come equipped with tension bridge reinforcements. They will be mounted at each end of the top section and held in the center by a

support whose height is adjusted according to the width of the door. These reinforcements must be installed according to Garaga's exact specifications.

PART 4: TROLLEY-TYPE OPERATORS FOR COMMERCIAL USE

4.1 PRODUCTS

- 4.1.1 These are trolley-type electric operators that come equipped with a quick-release device which instantly disconnects the door from the operator to enable manual operation in the event of a power failure. The system consists of a carriage that slides between dual galvanized steel angle tracks.
- 4.1.2 The electric motors, control mechanisms, relays, and electrical devices of the operator shall be approved according to CSA and UL standards.
- 4.1.3 The electrical power supply is of 240 volts, 1 phase(s) and 60 Hz. Motor frame to comply with NEMA 56 $\frac{3}{4}$ and 1 hp, all phases, UL listed.
- 4.1.4 The operators come equipped with an instantly reversible motor, which has built-in thermal protection mechanism. The electrical control circuit shall be 24 volts.
- 4.1.5 The door shall travel at approximately 7.9 to 11 in. / sec. (200 to 280 mm/sec).
- 4.1.6 The control panel for the door operator shall be the push-button type for Up/Down/Stop control and surface mounted on the inside wall.
- 4.1.7 A safety mechanism with photocells shall be added to each operator in order to stop and reverse the movement of the door in the event an object cuts off the light beam.

4.2 OPTIONS

- 4.2.1 A control station with a key switch for Up/Down/Stop shall be surface mounted on the outside of the building.
- 4.2.3 All side latches will be equipped with an electrical interlock switch to prevent use of the electric operator when the door is locked.

PART 5: INSTALLATION

- 5.1 Before starting, make sure that the frames and the fixtures prepared by the general contractor are square.
- 5.2 Install the doors and the related hardware.
- 5.3 Apply some touch-up paint to areas where the finish might have been damaged during the mounting.
- 5.4 Install the electric motors, control devices, push-button control stations, relays, and other electrical equipment needed for operating the door.
- 5.5 All electrical connections must be done by a certified electrician.

- 5.6** Adjust all movable parts in such a way as to get good weather tightness against all conditions.
- 5.7** Adjust the weatherstripping with the exterior jambs in such a way as to get good weather tightness against all conditions.
- 5.8** Make sure all of the mechanisms that have been installed work properly.
- 5.9** Clean doors as recommended by the manufacturer, and get rid of all leftover materials and debris found near the openings and the hardware.

END OF SECTION