

## **Part 1        General**

### **1.1            REFERENCES**

- .1        Reference Standards:
  - .1        National Building Code of Canada, 2010, Part 4.

### **1.2            QUALITY ASSURANCE**

- .1        Railings Structural Requirements:
  - .1        Handrail, wall rail and guardrail assemblies and attachments shall withstand a minimum concentrated load of 90.7 kg applied in any direction on the top rail.
  - .2        Infill area of guardrail system capable of withstanding a horizontal concentrated load of 976.5 kg applied to one square metre (200 pounds / sq. ft.) at any point in the system. Load not to act concurrently with loads on top rail of system in determining stress on guardrail.

### **1.3            ACTION AND INFORMATIONAL SUBMITTALS**

- .1        Shop Drawings
  - .1        Indicate construction details, sizes and thickness of steel members.
  - .2        Each shop drawing shall bear a stamp of approval from a qualified Professional Engineer registered in the Province of Manitoba.
- .2        Provide maintenance data for incorporation into manual.
- .3        Submit shop drawings: Drawings showing fabrication and installation of handrails and guardrails including plans, elevations, sections, details of components, anchor details, and attachment to adjoining units of work.

### **1.4            PROJECT CONDITIONS**

- .1        Maintain environmental conditions (temperature, humidity, and ventilation) within limits recommended by manufacturer for optimum results. Do not install products under environmental conditions outside manufacturer's absolute limits.
- .2        Field Measurements: Where handrails and railings are indicated to fit to other construction, check actual dimensions of other construction by accurate field measurements before fabrication; show recorded measurements on final shop drawings.
- .3        Where field measurements cannot be made without delaying the railing fabrication and delivery, obtain guaranteed dimensions in writing by the Contractor and proceed with fabrication of products to not delay fabrication, delivery and installation.
- .4        Coordinate fabrication and delivery schedule of handrails with construction progress and sequence to avoid delay of railing installation.

### **1.5            DELIVERY STORAGE AND HANDLING**

- .1        Materials to be delivered to the job site in good condition and adequately protected against damage as handrails are a finished product.

- .2 Store products in manufacturer's unopened packaging until ready for installation.

## **Part 2 Products**

### **2.1 EDGE PROTECTION SYSTEM**

- .1 Non-Penetrating into the roof system.
- .2 Freestanding counterweighted guardrail system with 1070 mm minimum height to provide a pedestrian egress barrier on the roof to withstand a minimum load of 90.7 kg (200 lb) in any direction to the top rail per OSHA Regulation 29 CFR 1910.23.
- .3 Pipe: Steel, 48 mm schedule 40, galvanized.
- .4 Tube: Galvanized tube, 12 gauge, 25-38 mm, 48 mm OD.
- .5 Rails and Posts: Galvanized Tube, 12 gauge, 38 mm, 48 mm diameter.
- .6 Counterweight Levers: Galvanized Tube, 12 gauge, 32 mm, 42 mm diameter.
- .7 Mounting Bases: Steel bases are galvanized and are supplied with a rubber pad on underside of the component.
- .8 Counterweights: Molded recycled PVC with one fixing collar per counterbalance.
- .9 Fasteners: stainless steel or galvanized.
- .10 Colour: galvanized.

### **2.2 MATERIALS**

- .1 Pipe:
  - .1 Steel Pipe: Steel, 38 mm schedule 40, galvanized.
  - .2 Tube: Galvanized tube, 12 gauge, 25-38 mm, 48 mm OD.
- .2 Fittings, Including Elbows, Crossovers, Wall flanges, Tees, Couplings:
  - .1 Galvanized Malleable Cast Iron: structural pipe fittings, to ASTM A447 with ASTM A153 galvanizing.
- .3 Finish: Polyester factory applied spray coating.
- .4 Fasteners: Type 304 or 305 stainless steel or galvanized.

### **2.3 FABRICATION**

- .1 Fit and shop assemble components in largest practical sizes for delivery to site.
- .2 Upright tops shall be plugged with weather and light resistant material.
- .3 Assemble components with joints tightly fitted and secured. Accurately form components to suit installation.

**Part 3 Execution**

**3.1 PREPARATION**

- .1 Prepare surfaces using the methods recommended by the manufacturer for achieving the best result.

**3.2 INSTALLATION**

- .1 Install items plumb and level, accurately fitted, free from distortion or defects.
- .2 Provide for erection loads, and for sufficient temporary bracing to maintain true alignment until completion of erection and installation of permanent attachments.
- .3 install in accordance with manufacturer's instructions.
- .4 Fit exposed connections accurately together to form tight joints. For all connections with Manufacturer's fittings, each set screw is to be tightened to 39 N-m of torque.
- .5 Perform cutting, and fitting required for installation of handrails. Set handrails and accurately in location, alignment, and elevation, measured from established lines and levels.

**3.3 PROTECTION OF FINISHED WORK**

- .1 Protect finished Work from damage.

**END OF SECTION**