

PART 1 - GENERAL

- 1.1 Reference Standards
- .1 Do welding work in accordance with CSA W59-1989 unless specified otherwise. Welding qualifications to CSA W47.1-1983.
 - .2 Steel for structural and other shapes shall conform to CAN3-G40.21M. Bolts and nuts shall conform to CSA B35.1-1976.
- 1.2 Measurement For Payment
- .1 Railing: as specified including all plant, material, labour and equipment will constitute a unit price per linear metre (lm) for measurement purposes.
 - .1 Include incidental to this work all costs associated with the supply and installation of metal railing and metal railing drop-in-sections including materials, fabrication, hot dipped galvanizing and fastenings.
 - .2 Hand Railing: no separate measurement for payment shall be made for steel galvanized railing on new staircase. Include all costs in the lump sum portion of the work on the bid and acceptance form.
 - .3 Footpath Grating: as specified including all plant, material, labour and equipment will constitute a unit price per square metre (m²) for measurement purposes.
 - .1 Include incidental to this work all costs associated with confirming the as-built dimensions/conditions supply and installation of the grating including support angles, grading, fabrication, fastenings and steel riser plate at pool #5.
 - .2 When reinstalling timber trap, new grating in area of Pool No. 4 and 5 (within footprint of timber trap area) shall be fitted, labelled, removed and stored onsite as directed by the Departmental Representative. Include all costs to complete this work incidental to

the unit of measure for grating.

- .4 Attraction Flow Grating: As specified including all plant, material, labour and equipment will constitute a unit price per square meter (m²) for measurement purposes.
 - .1 Include incidental to this work all costs associated with confirming the as-built dimensions/conditions, supply and installation of the grating including support angles, and channels, grading, fabrication and fastenings.
 - .5 Trash Rack: as specified including all plant, material, labour and equipment will be measured per unit acceptably installed in the work.
 - .1 Include incidental to this work all costs associated with the supply and installation of the trash rack including materials, fabrication, hot dipped galvanizing and fastenings.
 - .6 All costs for concrete repair work required around the grading perimeter, railing, trash rack guides, and all other miscellaneous metals, shall be included in the respective unit price items for deep and shallow concrete repairs, and crack repairs, as per Section 03 30 07 - Concrete Repairs, as approved by the Departmental Representative.
-
- 1.3 Shop Drawings
 - .1 Submit shop drawings in accordance with Section 01 33 00.
 - .2 Indicate materials, core thicknesses, finishes, connections, joints, method of anchorage, number of anchors, supports, reinforcement, details, and accessories.
 - 1.4 Site Measurements
 - .1 Take critical measurements at site to facilitate installation and fitting.

PART 2 - PRODUCTS

2.1 Materials

- .1 All railing, handrail, grating, and miscellaneous metals materials to be galvanized.
- .2 Steel sections and plates: to CSA-G40.21-M97, Grade 350W.
- .3 Steel galvanized pipe for railing: to ASTM A53-84a. Extra strong (SCH 80) and standard (SCH 40) with minimum yield strength of 240 Mpa. See drawings for details.
- .4 Steel pipe for handrail: to ASTM A53-84a, galvanized standard wt.
- .5 Welding materials: to CSA W59.
- .6 Bolts and anchors bolts: to ASTM A307-84a.
- .7 Galvanizing: hot dipped galvanizing with zinc coating 705 g/m² to ASTM A123/A123M.
- .8 Shop coat primer: to CGSB 1-GP-40M.
- .9 Zinc primer: zinc rich, ready mix to CGSB 1-GP-181M+Amdt-Mar-78.
- .10 Grout: non-shrink, non-metallic, flowable, 28 day compressive strength: 40 Mpa.
- .11 Concrete anchors
 - .1 15.9 & 12.7 mm diameter hot-dip galvanized kwik bolt 3 by Hilti or approved equal.
 - .2 Galvanized Hit-RE 500 epoxy adhesive anchoring system with super HAS Rods by Hilti or approved equal. Size as indicated on the drawings.

2.2 Grating

- .1 Galvanized pressure locked type grating with serrated edge, sized to fit as-built dimensions to be confirmed by Contractor prior to ordering. Grating

shall be capable of supporting loads with deflections as per grating schedule indicated on the drawing. All grating to be fully banded and fastened with Borden standard fasteners or approved equal. Standard of acceptance for grating: Borden, Type WB, with serrated edge to sizes to suit existing openings.

- 2.3 Miscellaneous Angles, Brackets and Supports .1 Supply and install all rods, angles, brackets, nuts, bolts, and other such ancillary supports and fastenings not specifically mentioned elsewhere in contract documents.
- 2.4 Fabrication .1 Do not commence fabrication until shop drawings have been reviewed.
- .2 Fabricate work square, true, straight and accurate to required size, with joints closely fitted and properly secured.
- .3 Use self-tapping shake-proof flat headed screws on items requiring assembly by screws or as indicated. Use screws for interior metal work. Use welded connections exterior metal work unless otherwise approved by Departmental Representative.
- .4 Where possible, fit and shop assemble work, ready for erection.
- .5 Ensure exposed welds are continuous for length of each joint. File or grind exposed welds smooth and flush. Seal exterior steel fabrications to provide corrosion protection in accordance with CAN3-S16.1-M84.
- 2.5 Pipe Railings .1 Steel pipe: to size, weight and dimensions indicated on the drawings.

PART 3 - EXECUTION

- 3.1 Erection
- .1 Erect metalwork square, plumb, straight, and true, accurately fitted, with tight joints and intersections.
 - .2 Provide suitable means of anchorage acceptable to Departmental Representative such as dowels, anchor clips, bar anchors, expansion bolts and shields, and toggles.
 - .3 Make field connections with high tensile bolts to CAN3-S16.1, or weld.
 - .4 Hand items over for casting into concrete or building into masonry to appropriate trades together with setting templates.
 - .5 Touch-up galvanized surfaces with zincrich primer where burned by field welding.
 - .6 Isolate dissimilar metal with bituminous paint or an alternative isolation material approved by the Departmental Representative.
- 3.2 Miscellaneous Supports
- .1 Install all angles, channels, brackets, plates, nuts, bolts, anchors and other such ancillary items as detailed on drawings and as specified.
 - .2 Ensure they are adequately secured to structure.