

PART 1 - GENERAL

- 1.1 REFERENCES
- .1 ASTM International
 - .1 ASTM A 123/A 123M-15, Standard Specification for Zinc (Hot-Dip Galvanized) Coatings on Iron and Steel Products.
 - .2 ASTM E 935-13e1, Standard Test Methods for Performance of Permanent Metal Railing Systems and Rails for Buildings.
 - .2 Canada Green Building Council (CaGBC)
 - .1 LEED Canada 2009 for Design and Construction-2010, LEED Canada 2009 for Design and Construction Leadership in Energy and Environmental Design Green Building Rating System Reference Guide.
 - .3 CSA International
 - .1 CSA W59-13, Welded Steel Construction, (Metal Arc Welding).
- 1.2 ACTION AND INFORMATIONAL SUBMITTALS
- .1 Submit in accordance with Section 01 33 00 - Submittal Procedures.
 - .2 Product Data:
 - .1 Submit manufacturer's instructions, printed product literature and data sheets for handrails and include product characteristics, performance criteria, physical size, finish and limitations.
 - .3 Shop Drawings:
 - .1 Submit drawings stamped and signed by professional engineer registered or licensed in the Province of Newfoundland and Labrador, Canada.
 - .1 Indicate profiles, sizes, connection attachments, anchorage, size and type of fasteners, and accessories.
 - .4 Samples:
 - .1 Submit for review and acceptance of each unit.
 - .2 Samples will be returned for inclusion into work.
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- 1.2 ACTION AND INFORMATIONAL SUBMITTALS
(Cont'd)
- .5 Sustainable Design Submittals:
.1 LEED Canada- Submittals: in accordance with Section 01 35 21 - LEED Requirements.
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- 1.3 QUALITY ASSURANCE
- .1 Perform welding to CSA W59.
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- 1.4 DELIVERY, STORAGE AND HANDLING
- .1 Deliver, store and handle materials in accordance with Section 01 61 00 - Common Product Requirements and with manufacturer's written instructions.
- .2 Delivery and Acceptance Requirements: deliver materials to site in original factory packaging, labelled with manufacturer's name and address.
- .3 Storage and Handling Requirements:
.1 Store materials off ground, indoors, in dry location and in accordance with manufacturer's recommendations in clean, dry, well-ventilated area.
.2 Store and protect railings from nicks, scratches, and blemishes.
.3 Replace defective or damaged materials with new.
- .4 Develop Construction Waste Management Plan related to Work of this Section and in accordance with Section 01 35 21 - LEED Requirements.
- .5 Packaging Waste Management: remove for reuse or return of pallets, crates, padding, banding, and packaging materials as specified in Construction Waste Management Plan in accordance with Section 01 74 21 - Construction/Demolition Waste Management and Disposal and Section 01 35 21 - LEED Requirements.
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PART 2 - PRODUCTS

- 2.1 DESIGN CRITERIA .1 Installed hand rail assembly and attachments to resist loads on guards and handrails as required by the National Building Code of Canada (current edition) without damage or permanent set. Test in accordance with ASTM A 935.
- 2.2 STEEL RAILING .1 Rails and Posts: pipe with welded joints. Sizes as indicated on drawings.
- .2 Fittings: elbows, T-shapes, wall brackets, escutcheons; machined steel.
- .3 Mounting: brackets and flanges. Prepare backing plate for mounting in wall construction.
- .4 Exposed Fasteners: as indicated.
- .5 Splice Connectors: steel welding collars.
- .6 Galvanizing: to ASTM A 123, provide minimum 600 g/sq m galvanized coating.
.1 Touch-Up Primer for Galvanized Surfaces: SPCC 20 Type II Organic zinc rich.
- 2.3 FABRICATION .1 Fit and shop assemble components in largest practical sizes for delivery to site.
- .2 Fabricate components with joints tightly fitted and secured. Provide spigots and sleeves to accommodate site assembly and installation.
- .3 Provide anchors, plates and angles required for connecting railings to structure.
- .4 Exposed Mechanical Fastenings: as indicated; consistent with design of component, except where specifically noted otherwise.
.1 Supply components required for anchorage of fabrications. Fabricate anchors and related
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- 2.3 FABRICATION .4 Exposed Mechanical Fastenings: (Cont'd)
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- .1 (Cont'd)
 components of same material and finish as fabrication, except where specifically noted otherwise.
 - .2 Continuously seal joined pieces by continuous welds. Drill condensate drainage holes at bottom of members at locations that will not encourage water intrusion.
 - .3 Grind exposed joints flush and smooth with adjacent finish surface. Make exposed joints butt tight, flush, and hairline. Ease exposed edges to small uniform radius.
 - .4 Accurately assemble components to each other and to building structure.
 - .5 Accommodate for expansion and contraction of members and building movement without damage to connections or members.

PART 3 - EXECUTION

- 3.1 EXAMINATION .1 Verification of Conditions: verify conditions of substrates previously installed under other Sections or Contracts are acceptable for handrail installation in accordance with manufacturer's written instructions.
- .1 Visually inspect substrate in presence of Departmental Representative.
 - .2 Inform Departmental Representative of unacceptable conditions immediately upon discovery.
 - .3 Proceed with installation only after unacceptable conditions have been remedied and after receipt of written approval to proceed from Departmental Representative.
- 3.2 INSTALLATION .1 Install handrails in accordance with manufacturer's instructions.
- .2 Coordinate with other roofing work to produce a weathertight assembly. Cooperate with roof installers to maintain weathertight temporary covering and final roof assembly.
 - .3 Install components plumb and level.
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- 3.2 INSTALLATION
(Cont'd)
- .4 Anchor railings to structure as indicated.
 - .5 Provide anchors as indicate:
 - .1 Grind welds smooth.
 - .2 Touch-up welds with primer.
 - .6 Conceal bolts and screws whenever possible.
 - .7 Assemble with spigots and sleeves to accommodate tight inconspicuous joints and secure installation.
- 3.3 ERECTION TOLERANCES
- .1 Maximum Variation From Plumb: 6 mm.
 - .2 Maximum Out-of-Position: 6 mm.
- 3.4 CLEANING
- .1 Progress Cleaning: clean in accordance with Section 01 74 11 - Cleaning.
 - .1 Leave Work area clean at end of each day.
 - .2 Final Cleaning: upon completion remove surplus materials, rubbish, tools and equipment in accordance with Section 01 74 11 - Cleaning.
 - .3 Waste Management: separate waste materials for reuse and recycling in accordance with Section 01 74 21 - Construction/Demolition Waste Management and Disposal and Section 01 35 21 - LEED Requirements.
 - .1 Remove recycling containers and bins from site and dispose of materials at appropriate facility.
- 3.5 PROTECTION
- .1 Protect installed products and components from damage during construction.
 - .2 Repair damage to adjacent materials caused by hand rail installation.