

Part 1 General

1.1 RELATED SECTIONS

- .1 Section 01 33 00 – Submittal Procedures
- .2 Section 01 74 21 – Construction/Demolition Waste Management and Disposal
- .3 Section 03 30 00 – Cast-in-Place Concrete
- .4 Section 34 71 15 – Metal Traffic Barriers and Metal Railings for Structures

1.2 REFERENCES

- .1 American Society for Testing and Materials International (ASTM)
 - .1 ASTM A53/A53M-18, Standard Specification for Pipe, Steel, Black and Hot-Dipped, Zinc-Coated Welded and Seamless.
 - .2 ASTM A307-21, Standard Specification for Carbon Steel Bolts and Studs, 60,000 PSI Tensile Strength.
 - .3 ASTM F1554-20, Standard Specification for Anchor Bolts, Steel, 36, 55, and 105 ksi Yield Strength.
- .2 Canadian General Standards Board (CGSB)
 - .1 CAN/CGSB-1.181-99, Ready-Mixed, Organic Zinc-Rich Coating.
- .3 Canadian Standards Association (CSA International)
 - .1 CSA G40.20-13/G40.21-13(R2018), General Requirements for Rolled or Welded Structural Quality Steel/Structural Quality Steel.
 - .2 CAN/CSA G164-M92 (R2003), Hot Dip Galvanizing of Irregularly Shaped Articles.
 - .3 CSA-S16-14(R2019), Design of Steel Structures.
 - .4 CSA W48-18, Filler Metals and Allied Materials for Metal Arc Welding.
 - .5 CSA W47.1-19, Certification of Companies for Fusion Welding of Steel.
 - .6 CSA W59-18, Welded Steel Construction (Metal Arc Welding).
 - .7 CSA S6-19, CSA S6 Canadian Highway Bridge Design Code (CHBDC)

1.3 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 specifications and data sheet in accordance with Section 01 33 00 – Submittal Procedures.
- .3 Shop Drawings:
 - .1 Submit shop drawings in accordance with Section 01 33 00 – Submittal Procedures.
 - .2 Submit drawings stamped and signed by professional engineer registered or licensed in the Province of Nova Scotia, Canada.

- .3 Indicate materials, all necessary geometric details, core thicknesses, finishes, connections, joints, method of anchorage, number of anchors, supports, reinforcement, details, and accessories.
- .4 Proposed welding procedures to be stamped and approved by Canadian Welding Bureau.
 - .1 Provide valid Canadian Welding Bureau certification of each welder and welding operator for the positions and processes intended.

1.4 QUALITY ASSURANCE

- .1 Test Reports: submit certified test reports showing compliance with specified performance characteristics and physical properties.
- .2 Certifications: submit product certificates signed by manufacturer certifying materials comply with specified performance characteristics and criteria and physical requirements.
- .3 Pre-installation Meetings: Conduct pre-installation meeting to verify project requirements, manufacturer's installation instructions and manufacturer's warranty requirements.

1.5 DELIVERY, STORAGE AND HANDLING

- .1 Packing, Shipping, Handling and Unloading:
 - .1 Deliver, store, handle and protect materials from damage.
- .2 Storage and Handling Requirements:
 - .1 Store materials off ground and in accordance with manufacturer's recommendations.
 - .2 Replace defective or damaged materials with new.
- .3 Packaging Waste Management: as much as possible, remove for reuse by manufacturer any pallets, crates, padding and packaging materials.

1.6 Waste Management Disposal

- .1 Separate and recycle waste materials in accordance with Section 01 74 21 – Construction/Demolition Waste Management and Disposal.
- .2 Remove from site and dispose of packaging materials at appropriate recycling facilities.

Part 2 Products

2.1 MATERIALS

- .1 Steel plates, and armour angles: to CSA G40.20/G40.21, Grade 350W.
- .2 Roller Steel Sections: to CSA G40.20/G40.21, Grade 350W.
- .3 All HSS members to ASTM A500 Grade C.
- .4 Welding materials: to CSA W59.
- .5 Welding electrodes: to CSA W48 Series.

- .6 High strength Type 1 bolts, nuts and washers: to ASTM A325M. Bolts to ASTM A490M approved by Departmental Representative. Bolt assemblies to be galvanized.
- .7 Anchor bolts: to ASTM F1554 Grade 55 or better.
- .8 Stud shear connectors: to CSA W59, Clause 5.5.6 and Appendix H.
- .9 Hot dip galvanizing: to CAN/CSA G164, minimum zinc coating of 763 g/m².
- .10 Grout: non-shrink, non-metallic, flowable, 15 MPa at 24 hours, 50 MPa at 28 days.

2.2 FABRICATION

- .1 Fabricate work square, true, straight and accurate to required size, with joints closely fitted and properly secured.
- .2 Where possible, fit and shop assemble work, ready for erection.
- .3 Ensure exposed welds are continuous for length of each joint. File or grind exposed welds smooth and flush.
- .4 All items under this Section to be hot-dipped galvanized.

2.3 FINISHES

- .1 Galvanizing: hot dipped galvanizing with zinc coating 763 g/m² to CAN/CSA-G164.

Part 3 Execution

3.1 ERECTION

- .1 Do welding work in accordance with CSA W59 unless specified otherwise.
- .2 Erect metal work square, plumb, straight, and true, accurately fitted, with tight joints and intersections.
- .3 Provide suitable means of anchorage acceptable to Departmental Representative such as dowels, anchor clips, bar anchors, expansion bolts and shields, and toggles.
- .4 Exposed fastening devices to match finish and be compatible with material through which they pass.
- .5 Supply components for work by other trades in accordance with shop drawings and schedule.
- .6 Make field connections with bolts to CSA-S6, or weld.
- .7 Hand items over for casting into concrete to appropriate trades together with setting templates.
- .8 Touch-up damaged galvanized surfaces with zinc rich primer where burned by field welding.
- .9 Install items as per Contract Drawings / Approved Shop Drawings.

3.2 CLEANING

- .1 Perform cleaning after installation to remove construction and accumulated environmental dirt. Cleaning to meet approval of Departmental Representative.

- .2 Upon completion of installation, remove surplus materials, rubbish, tools and equipment barriers.

3.3 PROTECTION

- .1 Protect installed products and components from damage during construction.
- .2 Repair damage to adjacent materials caused by metal fabrications installation.

END OF SECTION