

PART 1 - GENERAL

- 1.1 RELATED SECTIONS
- .1 Section 01 33 00 - Submittal Procedures.
 - .2 Section 03 30 00 - Cast-in-Place Concrete.
- 1.2 REFERENCES
- .1 American Society for Testing and Materials International, (ASTM)
 - .1 ASTM A 53/A53M-latest edition, Specification for Pipe, Steel, Black and Hot-Dipped, Zinc-Coated Welded and Steamless.
 - .2 ASTM A 269-latest edition, Specification for Seamless and Welded Austenitic Stainless Steel Tubing for General Service.
 - .3 ASTM A307-latest edition, Specification for Carbon Steel Bolts and Studs, 60,000 PSI Tensile Strength.
 - .2 Canadian General Standards Board (CGSB)
 - .1 CAN/CGSB-1.40-latest edition, Anti-corrosive Structural Steel Alkyd Primer.
 - .2 CAN/CGSB-1.181-latest edition, Ready-Mixed, Organic Zinc-Rich Coating.
 - .3 Canadian Standards Association (CSA International)
 - .1 CAN/CSA-G40.20/G40.21-latest edition, General Requirements for Rolled or Welded Structural Quality Steel.
 - .2 CAN/CSA-G164-latest edition, Hot Dip Galvanizing of Irregularly Shaped Articles.
 - .3 CAN/CSA-S16.1-latest edition, Limit States Design of Steel Structures.

.4 CSA W48-latest edition, Filler Metals and Allied Materials for Metal Arc Welding (Developed in co-operation with the Canadian Welding Bureau).

.5 CSA W59-latest edition, Welded Steel Construction (Metal Arc Welding).

1.3 SUBMITTALS

- .1 Product Data:
 - .1 Submit manufacturer's printed product literature, specifications and data sheet in accordance with Section 01 33 00 - Submittal Procedures.
 - .2 Submit two copies of WHMIS MSDS - Material Safety Data Sheets in accordance with Section 01 33 00 - Submittal Procedures. Indicate VOC's:
 - .1 For finishes, coatings, primers and paints.
- .2 Shop Drawings:
 - .1 Submit shop drawings in accordance with Section 01 33 00 - Submittal Procedures.
 - .2 Indicate materials, core thicknesses, finishes, connections, joints, method of anchorage, number of anchors, supports, reinforcement, details, and accessories.

1.4 QUALITY ASSURANCE

- .1 Test Reports: Certified test reports showing compliance with specified performance characteristics and physical properties.
- .2 Certificates: Product certificates signed by manufacturer certifying materials comply with specified performance characteristics and criteria and physical requirements.

- 1.5 DELIVERY, STORAGE, AND HANDLING .1 Packing, Shipping, Handling and Unloading:
- .1 Deliver, store, handle and protect materials in accordance with Section 01 61 00 - Common Product Requirements.
 - .2 Storage and Protection:
 - .1 Cover exposed stainless steel surfaces with pressure sensitive heavy protection paper or apply strippable plastic coating, before shipping to job site.
 - .2 Leave protective covering in place until final cleaning of building. Provide instructions for removal of protective covering.

PART 2 - PRODUCTS

- 2.1 MATERIALS
- .1 Steel sections and plates: to CAN/CSA-G40.20/G40.21, Grade 300W or better, galvanized finish.
 - .2 Welding materials: to CSA W59.
 - .3 Welding electrodes: to CSA W48 Series.
 - .4 Bolts and anchor bolts: to ASTM A 307.
 - .5 Grout: non-shrink, non-metallic, flowable, 15 MPa at 24 hours.

- 2.2 FABRICATION
- .1 Fabricate work square, true, straight and accurate to required size, with joints closely fitted and properly secured.
 - .2 Use self-tapping shake-proof flat headed screws on items requiring assembly by screws or as indicated.

- .3 Where possible, fit and shop assemble work, ready for erection.
- .4 Ensure exposed welds are continuous for length of each joint. File or grind exposed welds smooth and flush.

2.3 FINISHES

- .1 Galvanizing: hot dipped galvanizing with zinc coating 600g/m² to CAN/CSA-G164. All steel used shall be hot dipped galvanized.
- .2 Shop coat primer: to CAN/CGSB-1.40.
- .3 Zinc primer: zinc rich, ready mix to CAN/CGSB-1.181.

2.4 SHOP PAINTING

- .1 Apply one shop coat of primer to metal items, with exception of galvanized or concrete encased items.
- .2 Use primer unadulterated, as prepared by manufacturer. Paint on dry surfaces, free from rust, scale, grease. Do not paint when temperature is lower than 7 degrees C.
- .3 Clean surfaces to be field welded; do not paint.

2.5 MOORING BOLLARD DEAD MAN

- .1 Channel: Sizes and shapes as indicated.
- .2 W-Section: Size and shape as indicated.
- .3 Steel Plate: Sizes and shapes as indicated.

PART 3 - EXECUTION

3.1 ERECTION

- .1 Do welding work in accordance with CSA W59 unless specified otherwise.
- .2 Erect metalwork square, plumb, straight, and true, accurately fitted, with tight joints and intersections.
- .3 Exposed fastening devices to match finish and be compatible with material through which they pass.
- .4 Make field connections with bolts to CAN/CSA-S16.1, or weld.
- .5 Hand items over for casting into concrete or building into masonry to appropriate trades together with setting templates.
- .6 Touch-up rivets, field welds, bolts and burnt or scratched surfaces after completion of erection with primer.
- .7 Touch-up galvanized surfaces with zinc rich primer where burned by field welding.

3.2 MOORING BOLLARD
DEAD MAN

- .1 Install steel plates, channels and w-sections on all pipe bollards as indicated.

3.3 CLEANING

- .1 Perform cleaning after installation to remove construction and accumulated environmental dirt.
- .2 Upon completion of installation, remove surplus materials, rubbish, tools and equipment barriers.