

## **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 26 56 19 - Roadway Lighting.

### **1.2 REFERENCES**

- .1 American Society for Testing and Materials International, (ASTM)
  - .1 ASTM A53/A53M-02, Specification for Pipe, Steel, Black and Hot-Dipped, Zinc-Coated Welded and Seamless.
  - .2 ASTM A269-02, Specification for Seamless and Welded Austenitic Stainless Steel Tubing for General Service.
  - .3 ASTM A307-07a, Specification for Carbon Steel Bolts and Studs, 60,000 PSI Tensile Strength.
- .2 Canadian General Standards Board (CGSB)
  - .1 CAN/CGSB-1.40-97, Anti-corrosive Structural Steel Alkyd Primer.
  - .2 CAN/CGSB-1.181-92, Ready-Mixed, Organic Zinc-Rich Coating.
- .3 Canadian Standards Association (CSA International)
  - .1 CAN/CSA-G40.20/G40.21-04, General Requirements for Rolled or Welded Structural Quality Steel.
  - .2 CAN/CSA-G164-M92(R2003), Hot Dip Galvanizing of Irregularly Shaped Articles.
  - .3 CAN/CSA-S16.1-01 (R2007), Limit States Design of Steel Structures.
  - .4 CSA W48-06, Filler Metals and Allied Materials for Metal Arc Welding (Developed in co-operation with the Canadian Welding Bureau).
  - .5 CSA W59-03, Welded Steel Construction (Metal Arc Welding).
- .4 The Environmental Choice Program
  - .1 CCD-047a-98, Paints, Surface Coatings.
  - .2 CCD-048-98, Surface Coatings - Recycled Water-borne.

### **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.

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(CONT'D)**

**1.3 SUBMITTALS  
(CONT'D)**

- .1 (cont'd)
- .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 project. Provide instructions for removal of protective covering.

**1.6 WASTE MANAGEMENT AND DISPOSAL**

- .1 Separate and recycle waste materials in accordance with Section 01 74 21 - Construction/Demolition Waste Management and Disposal.

**PART 1 - GENERAL**  
**(CONT'D)**

**1.6 WASTE MANAGEMENT AND DISPOSAL**  
**(CONT'D)**

- .2 Remove from site and dispose of packaging materials at appropriate recycling facilities.
- .3 Collect and separate for disposal paper, plastic, corrugated cardboard, packaging material in appropriate on-site for recycling in accordance with Waste Management Plan.
- .4 Divert unused metal materials from landfill to metal recycling facility approved by Departmental Representative.

**1.7 MEASUREMENT FOR PAYMENT**

- .1 Protective Posts: No separate payment will be made for the protective posts c/w high density polyethylene cover as detailed on the drawing. Include the cost of all plant, labour, equipment and materials required to completed the work as specified in the lump sum price arrangement.
- .3 Aluminum Electrical Pedestals: No separate payment will be made for aluminum pedestals. Include all costs in the lump sum arrangement for electrical.
- .4 No separate measurement for payment shall be made for all other miscellaneous metal work. Include the cost of all plant, labour, equipment and materials required to complete the work as specified in the lump sum price arrangement.

**PART 2 - PRODUCTS**

**2.1 MATERIALS**

- .1 Steel sections and plates: to CAN/CSA-G40.20/G40.21, Grade 350W, galvanized.
- .2 Steel pipe: to ASTM A53/A53M standard weight and galvanized finish.
- .3 Welding materials: to CSA W59.

**PART 2 - PRODUCTS**  
**(CONT'D)**

**2.1 MATERIALS**  
**(CONT'D)**

- .4 Welding electrodes: to CSA W48 Series.
- .5 Bolts and anchor bolts: to ASTM A307 Grade A.
- .6 Grout: non-shrink, non-metallic, flowable, 28 day compressive strength: 50 MPa.
- .7 Use heavy duty sleeve anchors. Hilt: HSL- M12/25 anchor bolt, or as indicated on the drawings.
- .8 Paint: Alkyd/oil resin paint similar to Pittsburgh paints “Brilliant Red (Safety Red)” product ID 7-801 and “Safety Yellow” product ID 7-808. Paint to conform to CAN/CGSB-1.61-2004.
- .9 Aluminum Sections and Plates: to CSA-5157-05 Grade 6061-T6 for marine application.
- .10 Concrete fill for protective posts: to Section 03 30 00 - Cast-in-Place Concrete.
- .11 Galvanizing: to ASTM A123/A123M-09.

**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.
- .5 All welding shall be carried out in accordance with CSA W59 by a fabricator fully approved under CSA W47-1 latest edition No. 1 and No. 2.

**PART 2 - PRODUCTS  
(CONT'D)**

**2.3 FINISHES**

- .1 Galvanizing: hot dipped galvanizing with zinc coating 600 g/m<sup>2</sup> to ASTM A123/A123m-09.
- .2 Shop coat primer: to CAN/CGSB-1.40.

**2.4 SHOP PAINTING**

- .1 Apply one shop coat of primer to metal 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.

**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 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 Provide components for building by other sections in accordance with shop drawings and schedule.
- .6 Make field connections with bolts to CAN/CSA-S16.1, or weld.
- .7 Hand items over for casting into concrete or building into masonry to appropriate trades together with setting templates.

**PART 3 - EXECUTION  
(CONT'D)**

**3.1     ERECTION  
(CONT'D)**

- .8     Touch-up rivets, field welds, bolts and burnt or scratched surfaces after completion of erection with primer.
- .9     Touch-up galvanized surfaces with zinc rich primer where burned by field welding.

**3.2     PROTECTIVE POSTS**

- .1     Install protective posts as detailed and in locations indicted on the drawings.
- .2     Install high density polyethylene cover, yellow c/w two (2) red reflective stripes.

**3.3     ALUMINUM PEDESTALS**

- .1     Install electrical pedestals as detailed in Division 26 - Electrical.

**3.4     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.