

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.

1.2 REFERENCES

- .1 American Society for Testing and Materials International, (ASTM)
 - .1 ASTM A53/A53M-12, Standard Specification for Pipe, Steel, Black and Hot-Dipped, Zinc-Coated Welded and Seamless.
 - .2 ASTM A269-15a, Standard Specification for Seamless and Welded Austenitic Stainless Steel Tubing for General Service.
 - .3 ASTM A307-14, Standard Specification for Carbon Steel Bolts and Studs, 60,000 PSI Tensile Strength.
 - .4 ASTM B241/B241M-16, Standard Specification for Aluminum and Aluminum-Alloy Seamless Pipe and Seamless Extruded Tube.
- .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-G40.20-13/G40.21-13, 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 CAN/CSA-S16-14, Design of Steel Structures.
 - .4 CSA W48-14, Filler Metals and Allied Materials for Metal Arc Welding.
 - .5 CSA W59-13, Welded Steel Construction (Metal Arc Welding).
 - .6 CAN/CSA-S157-05/S157.1-05 (R2015), Strength Design in Aluminum.
 - .7 CSA W59.2-M1991 (R2013), Welded Aluminum Construction.

1.2 REFERENCES
(Cont'd)

- .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.
 - .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.

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| <u>1.5 DELIVERY,
STORAGE, AND
HANDLING
(Cont'd)</u> | .2 | (Cont'd)
.2 Leave protective covering in place until final cleaning of building. Provide instructions for removal of protective covering. |
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| <u>1.6 WASTE
MANAGEMENT AND
DISPOSAL</u> | .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. |
| | .3 | Collect and separate for disposal paper plastic polystyrene corrugated cardboard packaging material for recycling in accordance with Waste Management Plan. |
| | .4 | Divert unused metal materials from landfill to metal recycling facility approved by Departmental Representative. |
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| <u>1.7 MEASUREMENT FOR
PAYMENT</u> | .1 | <u>Bollards (Type 1) (8 Req'd)</u> : All costs associated with the supply and placement of bollards will be measured in fixed price, items including all plant, labour, material required to complete this work. |
| | .2 | <u>Electrical pedestals (4 Req'd)</u> : All costs associated with the supply and placement of electrical pedestals will be measured in fixed price items including plant, labour, material required to complete work as indicated on drawings and specifications. |

PART 2 - PRODUCTS

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| <u>2.1 MATERIALS</u> | .1 | Steel sections and plates: to CAN/CSA-G40.20/G40.21, Grade 350W. |
| | .2 | Aluminum and Aluminum Alloy Sheet and Plate to CAN/CSA W59.2-M1991(R2013). |
| | .3 | Welding materials: to CSA W59. |

2.1 MATERIALS
(Cont'd)

- .4 Welding electrodes: to CSA W48 Series.
- .5 Bolts and anchor bolts: to ASTM A307.
- .6 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 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.

2.3 FINISHES

- .1 Galvanizing: hot dipped galvanizing with zinc coating 600 g/m² to CAN/CSA-G164.
- .2 Shop coat primer: to CAN/CGSB-1.40.
- .3 Zinc primer: zinc rich, ready mix to CAN/CGSB-1.181.
- .4 Finish exposed surfaces of aluminum components in accordance with Aluminum Association (AA), Designation System for Aluminum Finishes.

2.4 SHOP PAINTING

- .1 Apply one shop coat of primer to metal items, with exception of aluminum 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.
- .4 Prepare and coat outdoor fabrications as follows:
 - .1 Surface Preparation: Abrasive blast to SSPC-SP-10 near white metal to achieve an anchor profile of 2.0 mils.

2.4 SHOP PAINTING
(Cont'd)

- .4 (Cont'd)
 - .2 Primer: One coat of Amercoat 68A zinc epoxy primer to 3 mils dry film thickness, or approved equal.
 - .3 Intermediate Coat: One coat of Amerlock # 2 surface tolerant epoxy to 6 mils dry film thickness, or approved equal.
 - .4 Top Coat: One coat of Amershield abrasion resistant urethane to 4 mils dry film thickness, or approved equal. Colour to be safety yellow for bollards, black for other applications unless noted.

2.5 BOLLARDS (TYPE
1)

- .1 Steel pipe: 125 mm Schedule 40 (galvanized) nominal outside diameter. Install bollards at locations as shown on drawings.
- .2 Base Plate: 305 x 305 x 15 mm thick plate, weld to steel pipe, complete with openings for anchoring devices.
- .3 Finish: Galvanized, paint two coats marine enamel, safety yellow.
- .4 Red reflector tape as shown on detail.

2.6 ELECTRICAL
PEDESTALS

- .1 168 mm dia x 11 mm Schedule 80 aluminum piping.
- .2 8 mm aluminum back plate.
- .3 400 mm x 400 mm x 15 mm thick aluminum base plate.

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.

3.1 ERECTION
(Cont'd)

- .3 Provide suitable means of anchorage acceptable to Departmental Representative such as dowels, anchor clips, bar anchors, expansion bolts and shields, and toggles.
- .4 The joints will be spaced such that two (2) 12mm fillet welds can be made all around each channel.
- .5 Exposed fastening devices to match finish and be compatible with material through which they pass.
- .6 Make field connections with bolts to CAN/CSA-S16.1, or weld.
- .7 Touch-up rivets, field welds, bolts and burnt or scratched surfaces after completion of erection with primer.
- .8 Touch-up galvanized surfaces with zinc rich primer where burned by field welding.

3.2 BOLLARDS

- .1 Install bollards at all locations, as indicated on drawings.

3.3 ELECTRICAL
PEDESTALS

- .1 Install electrical pedestals as indicated on drawings.
- .2 Upon completion of installation, remove surplus materials, rubbish, tools and equipment barriers.