

PART 1 - GENERAL

- 1.1 REFERENCES
- .1 American Society for Testing and Materials International, (ASTM)
    - .1 ASTM A53/A53M-10, Standard Specification for Pipe, Steel, Black and Hot-Dipped, Zinc-Coated Welded and Seamless.
    - .2 ASTM A307-10, Specification for Carbon Steel Bolts and Studs, 60,000 PSI Tensile Strength.
    - .3 ASTM A123/A123M-09-Zinc (hot dip galvanized) Coatings on Iron and Steel Procedures.
  - .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(R2009), General Requirements for Rolled or Welded Quality Steel/Structural Quality Steel.
    - .2 CAN/CSA-S16.1-01 (R2007), Limit States Design of Steel Structures.
    - .3 CSA W48-06, Filler Metals and Allied Materials for Metal Arc Welding (Developed in co-operation with the Canadian Welding Bureau).
    - .4 CSA W59-03 (R2008), Welded Steel Construction (Metal Arc Welding) metric.
  - .4 The Environmental Choice Program
    - .1 CCD-047-98, Paints, Surface Coatings.
    - .2 CCD-048-98 (R2006), Surface Coatings - Recycled Water-borne.
- 1.2 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

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| 1.2 SUBMITTALS<br>(Cont'd)                | .2 | (Cont'd)  |
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|   |    | anchors, supports, reinforcement, details, and accessories.   |
| <br>                                      |    |   |
| 1.3 QUALITY<br>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.  |
| <br>                                      |    |   |
| 1.4 DELIVERY,<br>STORAGE, AND<br>HANDLING | .1 | Packing, Shipping, Handling and Unloading:<br>.1 Deliver, store, handle and protect materials in accordance with Division 1 and with manufacturer's written instructions.<br>.2 Delivery and Acceptance Requirements: Deliver materials to site in original factory packaging with manufacturer's name and address.   |
|   | .2 | Storage, Protection and Handling:<br>.1 Cover exposed stainless steel surfaces with pressure sensitive heavy protection paper or apply strippable plastic coating, before shipping to job site.<br>.2 Leave protective covering in place until final cleaning of building. Provide instructions for removal of protective covering.<br>.3 Store materials off ground, in dry location and in accordance with manufacturer's recommendations in clean, dry, well-ventilated area.<br>.4 Replace defective or damaged materials with new. |
| <br>                                      |    |   |
| 1.5 WASTE<br>MANAGEMENT AND<br>DISPOSAL   | .1 | Separate and recycle waste materials in accordance with Division 1.   |
|   | .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.  |
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1.5 WASTE  
MANAGEMENT AND  
DISPOSAL  
(Cont'd)

- .4 Divert unused metal materials from landfill to metal recycling facility approved by Departmental Representative.

1.6 MEASUREMENT FOR  
PAYMENT

- .1 Removable Bollards - Supply and installation of removable bollards shall be measured by the each. Include, incidental to this cost, all costs for excavating, backfill, concrete, formwork, mounting kit, padlock and accessories and any other plant, equipment, labour or material required to complete the work as provided in the Contract Documents.
- .2 Litter Container - Supply and installation of litter container shall be measured by the each. Include, incidental to this cost, all costs for fabrication, framing, wood, coatings, anchors, epoxy, and any other plant, equipment, labour or material required to complete the work as provided in the Contract Documents.

PART 2 - PRODUCTS

2.1 MATERIALS

- .1 Steel sections and plates: to CAN/CSA-G40.20/G40.21, Grade 350W.
- .2 Steel pipe: to ASTM A53/A53M double extra strong, black galvanized finish.
- .3 Welding materials: to CSA W59.
- .4 Welding electrodes: to CSA W48 Series.
- .5 Bolts and anchor bolts: to A325 and 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 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.

- 2.2 FABRICATION (Cont'd) .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 600 g/m<sup>2</sup> to ASTM A123/A123M-90.
- .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.
- .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 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. color to be safety yellow for bollards, black for other applications unless noted.

PART 3 - EXECUTION

- 3.1 EXAMINATION .1 Verification of Conditions: verify conditions of substrates previously installed under other Sections or Contracts are acceptable for metal fabrications 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.

3.1 EXAMINATION  
(Cont'd)

- .1 (Cont'd)
- .3 Proceed with installation only after unacceptable conditions have been remedied and after receipt of written approval to proceed from Owenr's Representative.

3.2 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 CSA-S16, or weld.
- .7 Hand items over for casting into concrete or building into masonry to appropriate trades together with setting templates.
- .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.

3.3 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.

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