

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 Steamless.
  - .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.
- .4 The Environmental Choice Program
  - .1 CCD-047a-98, Paints, Surface Coatings.



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.
- .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.

1.7 MEASUREMENT FOR  
PAYMENT

- .1 Gate: All costs associated with the supply and installation of the gate will be measured by unit. Contractor will supply all fasteners, timber, support post brackets, connections as detailed on drawings.
- .2 Bollards: All costs associated with the supply and placement of bollards for the lightpoles will be measured in the lump sum items associated with the wooden pole. Contractor to include all plant, labour, material required to complete this work.
- .3 Protection Plates: All costs associated with the supply and placement of electrical pedestals and light pole will be measured in the lump sum items. Contractor to include all plant, labour, material required to complete work as indicated on drawings and specifications.
- .4 Electrical Pedestals: All costs associated with the supply and placement of electrical pedestals will be measured by unit. Contractor to include all plant, labour, material required to complete work as indicated on drawings and specifications.
- .5 Gangway Plate Ramp/Flip Plates: All costs associated with the supply and placement of gangway connection plate will be measured in the lump sum items including plant, labour, materials required to complete work as indicated on drawings and specifications.

1.7 MEASUREMENT FOR .6  
PAYMENT  
(Cont'd)

- .6 Chain Anchor Bracket: All costs associated with the supply and placement of chain anchor bracket will be measured in the lump sum items including paint, labour, materials required to complete work as indicated on drawings and specifications.
- .7 Steel Eyebolts: All costs associated with the supply and installation of the eyebolts will be measured in the lump sum items including plant, labour and materials required to complete work as indicated on drawings and specifications.
- .8 Chain Guide/Mooring Plates: All costs associated with the supply and installation of the chain guide/mooring plate will be measured in the lump sum items including plant, labour and materials required to complete work as indicated on drawings and specifications.
- .9 Floating Dock Connection Plates: All costs associated with the supply and installation of the floating dock connection plate including in the lump sum items including plant, labour and materials required to complete work as indicated on drawings and specifications.

PART 2 - PRODUCTS

2.1 MATERIALS

- .1 Steel sections and plates: to CAN/CSA-G40.20/G40.21, Grade 350W, galvanized finish.
- .2 Welding materials: to CSA W59.
- .3 Welding electrodes: to CSA W48 Series.
- .4 Bolts and anchor bolts: to ASTM A307.

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/m<sup>2</sup> to CAN/CSA-G164. ASTM-A123/A123M. All steel used to be hot piped galvanized.
- .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, 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. Colour to be safety yellow for bollards, black for other applications unless noted.

2.5 GATE

- .1 50 mm dia. Schedule 40 pipe frame.
- .2 100 mm dia. Schedule 40 concrete filled support post.
- .3 Metal gate attachment bracket as detailed on tender drawings.

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- 2.5 GATE  
(Cont'd)
- .4 Wooden post (pressure treated), 150 mm x 150 mm x 3000 mm long bolted to wharf, including gate stop brackets as detailed on drawings.
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- 2.6 BOLLARDS (TYPE 1)
- .1 Steel pipe: 125 mm dia. x 1200 mm long Schedule 40 galvanized nominal outside diameter pipe. Install bollards at locations as shown on drawings.
- .2 Base Plate: 305 mm x 305 mm x 15 mm thick plate, weld to steel pipe, complete with openings for anchoring devices.
- .3 Finish: Paint two coats marine enamel, safety yellow.
- .4 Supply and install reflector tape, 50 mm wide, color red.
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- 2.7 BOLLARDS (TYPE 2)
- .1 Steel pipe: 152 mm O.D. x 9.53 galvanized steel pipe inserted into cement footing.
- .2 168.3 mm dia. O.D. x 6.4 mm thick galvanized pipe bollard as detailed.
- .3 Finish: Galvanized, paint two coats marine enamel, safety yellow.
- .4 Provide 50 mm wire reflection tape at top of bollard as detailed.
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- 2.8 PROTECTION PLATE
- .1 6 mm aluminum plate. See details on accompanying drawings.
- .2 Attach plate to electrical pedestal with 4-6 mm dia x 64 mm long stainless steel light duty expansion anchors.
- .3 Attach protection plates to pole with 75 mm long stainless steel screws at 300 mm c/c.
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- 2.9 ELECTRICAL PEDESTALS
- .1 168 mm dia x 11 mm Schedule 80 aluminum piping.
- .2 15 mm x aluminum base plate.
- .3 400 mm x 400 mm x 15 mm aluminum base plate.
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2.9 ELECTRICAL PEDESTALS  
(Cont'd) .4 Refer to details on project drawings.

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 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.
- .9 All holes to be drilled/bored in field.

3.2 GANGWAY PINTLE HOOK/DOCK CONNECTION PLATE/RAMP PLATE

- .1 Gangway pintle hook/dock connection plate/flip plate: sizes and shapes as indicated.
- .2 Galvanize steel gangway pintle hook/dock connection plate/flip plate after fabrication.

3.3 STEEL EYEBOLTS .1 Steel eyebolts and associated hardware: sizes as indicated.

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- 3.3 STEEL EYEBOLTS .2 All steel eyebolts and associated hardware shall  
(Cont'd) be galvanized.
- 3.4 CHAIN ANCHOR .1 Chain anchor plates: sizes and shapes as  
PLATES indicated.
- .2 Galvanized steel gap plates shall be galvanized.
- 3.5 GALVANIZED .1 Galvanized steel chain: sizes as indicated.  
STEEL CHAIN .2 Galvanized steel chain and associated hardware  
shall be galvanized.
- 3.6 CHAIN .1 Chain Guide/Locking Mechanism: sizes and shapes as  
GUIDE/MOORING PLATE indicated.
- .2 Chain guide, locking mechanism, and associated  
hardware shall be galvanized.
- 3.7 FLOATING DOCK .1 Floating dock connection plate 1: sizes and shapes  
CONNECTION PLATE as indicated on drawings.
- .2 Floating dock connection plate 2: sizes and shapes  
as indicated on drawings.
- .3 Connection pin: size as indicated on drawings.
- 3.8 GATE .1 Install gate as indicated on drawings.
- .2 Provide 300 mm dia., 30 MPA concrete anchor  
supports for gate as shown on drawings.
- .3 Provide 150 mm x 150 mm x 3000 mm pt attachment  
post, install and secure as indicated on drawings.
- 3.9 BOLLARDS .1 Install bollards at locations, as indicated on  
drawings.
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- 3.10 PROTECTION PLATE .1 Install electrical pedestals as indicated on drawings.
- .2 Upon completion of installation, remove surplus materials, rubbish, tools and equipment barriers.
- 3.11 ELECTRICAL PEDESTALS .1 Install electrical pedestals as indicated on drawings.
- .2 Upon completion of installation, remove surplus materials, rubbish, tools and equipment barriers.
- 3.12 GANGWAY PINTLE HOOK/DOCK CONNECTION PLATE/RAMP PLATE .1 Install new galvanized steel gangway pintle hook/dock connection plate/flip plate at the top of the gangway as indicated.
- 3.13 STEEL EYEBOLTS .1 Install new galvanized steel eyebolts in locations as indicated.
- 3.14 STEEL CHAIN .1 Install new galvanized steel chain as indicated.
- 3.15 CHAIN GUIDE/MOORING PLATE .1 Install new chain guide/locking mechanism as indicated.
- 3.16 FLOATING DOCK CONNECTION PLATE .1 Install floating dock connection plates and pin as indicated on accompanying drawings.