

Wharf Construction**Port Bickerton East****Guysborough County, Nova Scotia****Project No. R.082082.001**

Miscellaneous Items

PART 1 – GENERAL

- 1.1 Description of Work .1 This section specifies requirements for the following items:
- .1 Ladders
 - .2 Mooring Cleats
 - .3 Strong Arm Assemblies
 - .4 Gangways
 - .5 Floating Wharves
 - .6 Mooring Rings
- 1.2 Reference Standards .1 ASTM A307-14, Specification for Carbon Steel Bolts, Studs, and Threaded Rod 60,000 psi Tensile Strength.
- .2 CSA G40.21-13, Structural Quality Steel.
- .3 ASTM A123/A123M-15, Specification for Zinc (Hot-Dip Galvanized) Coatings on Iron and Steel Products.
- .4 ASTM A48/A48M-03(2016), Standard Specification for Gray Iron Castings.
- .5 CSA W59-13, Welded Steel Construction (Metal Arc Welding).
- .6 CSA W47.2-11 (R2014) – Certification of Companies for Fusion Welding of Aluminum.
- .7 CAN/CGSB-1.212-2004 – Heavy-Metal-Free Marine Primer for Steel and Light-Alloy Surfaces.
- .8 CAN/CGSB-1.61-2004 – Exterior and Interior Marine Alkyd Enamel.
- 1.3 Related Work .1 Refer to other Specification Sections for related information.
- .2 Refer to Section 01 33 00 for Shop Drawing/Submissions requirements.
- .3 Section 05 50 00 – Metal Fabrications.
- .4 Section 06 05 73 – Dimension Timber.
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1.4 Submissions

- .1 Shop Drawings:
 - .1 Clearly indicate the following items:
 - .1 General arrangements, dimensions, clearance locations and directions of assemblies as installed on structures.
 - .2 Locations, sizes and installation tolerances of anchor bolts, eye bolts and embedded parts.
 - .3 Types of materials used, finishes and core thickness.
 - .4 All other pertinent details and accessories.
 - .2 Product Data/Samples:
 - .1 Provide product data and manufacturers brochures for the mooring cleats and bollards.
 - .3 Test Results:
 - .1 Provide test results for the galvanized items.
 - .4 Submissions
 - .1 Provide submissions in accordance with Section 01 33 00.

1.5 Measurement
For Payment

- .1 Ladders, including timber, rungs, and fasteners will be measured in accordance with Section 01 29 00.
- .2 Mooring cleats, including anchor bolts, will be measured in accordance with Section 01 29 00.
- .3 Mooring rings, including anchor bolts, will be measured in accordance with Section 01 29 00.
- .4 Strong Arm Assemblies, including fastenings will be measured in accordance with Section 01 29 00.
- .5 Gangways, including fastenings, will be measured in accordance with Section 01 29 00.
- .6 Floating Wharves, including timber, floatation billets, and fasteners, will be measured in accordance with Section 01 29 00.

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PART 2 - PRODUCTS

- 2.1 Materials
- .1 Timber: Any timber supplied by Contractor must conform to Section 06 05 73 - Dimension Timber.
 - .2 Hardware and miscellaneous items must meet the following specifications:
 - .1 Machine bolts, lag bolts, drift bolts, anchor bolts, nuts, washers to ASTM A307.
 - .2 Steel plates, ladder rungs, holdfasts and miscellaneous steel: to CSA G40.21, Grade 300W.
 - .3 Mooring cleats (B1): cast iron to ASTM A48, Class 30, with a safe working load of 35 tons Use approved high strength anchor bolts.
 - .4 Do not use items manufactured or fabricated from scrap steel of unknown chemical composition or physical properties.
 - .5 Hot dip galvanize bolts, anchor bolts, nuts, washers, pip sleeves, steel plates, rungs, holdfasts, U-bolts and any other miscellaneous steel to ASTM A123/A123M with minimum zinc coating of 610 g/m². All sharp corners, edges and weld splatter to be ground smooth prior to galvanizing.
 - .6 The material requirements for installation of light poles are given in the electrical sections/drawings.
 - .7 Weld quality and workmanship shall comply with CSA standard W47.1 and W59. Welders to be certified by Canadian Welding Bureau.
 - .8 Aluminum to consist of 6061-T6 marine alloy.
 - .9 Welding of aluminum to be mig welding with S356 filling alloy in accordance with CSA W47.2,

PART 3 - EXECUTION

- 3.1 Ladders
- .1 Assemble ladder units including uprights and install completed units in locations shown on plan or as indicated by *Departmental Representative*.
 - .2 Countersink bolts on exterior face of ladder.
 - .3 Apply preservative to areas of unprotected wood exposed during course of work in accordance with Section 06 05 73.

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- .4 Ladder upright joint design capacities are as follows, unless specified otherwise:
 - .1 Tension members: 100% of member maximum capacity.
 - .2 Shear members: 100% of member maximum capacity.
 - .3 Compression members:
 - .1 Grind member flush, fillet weld (min 5mm) all around, 60% of members thickness.
 - .2 Complete penetration weld.

- .5 Ladder upright shop drawing required.

3.2 Mooring Cleats

- .1 Install mooring cleats as shown on drawings and fasten to concrete deck and curb using anchor bolts as recommended by the manufacturer. Allow for 25 mm of grout under base.
- .2 Paint:
 - .1 Shop prime coat: to CAN/CGSB-1.212.
 - .2 Two finish coats: to CAN/CGSB-1.61, colour as directed by Departmental Representative.
- .3 Do not make alternations to any components without written permission of *Departmental Representative*.

3.3 Steel Strong-arm Assembly

- .1 Supply galvanized steel strong-arm assembly and install completed units in locations shown on plan or as indicated by *Departmental Representative*.
- .2 Do not make alternations to any components without written permission of *Departmental Representative*.

3.4 Aluminum Gangways

- .1 Supply aluminum gangways and install completed units in locations shown on plan or as indicated by *Departmental Representative*.
- .2 Do not make alternations to any components without written permission of *Departmental Representative*.

3.5 Floating Wharves

- .1 Supply floating wharf and install completed units in locations shown on plan or as indicated by *Departmental Representative*.
- .2 Do not make alternations to any components without written permission of *Departmental Representative*.

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.3 Installation of anti-slip material on the deck of floats considered incidental to the work and will not be paid for separately.

3.6 Mooring Rings

.1 Install mooring rings as shown on drawings and fasten to concrete deck and curb using anchor bolts as indicated.

.2 Do not make alternations to any components without written permission of *Departmental Representative*.

3.7 Buoyancy Billets

.1 Float Billets formed from expanded Polystyrene Type II foam.

.2 Billets to be coated with Poly Urethane Plastic Coating 1.27mm (50 mil) thickness.

3.8 Installation General

.1 Boreholes for drift bolts to be 1.5mm smaller in diameter than bolt and for full length of bolt. Boreholes for machine bolts to be same diameter as bolts. Boreholes for lag bolts to be same diameter as shank for unthreaded portion and 0.70 times the shank diameter for the threaded portion. Threaded portion of lag bolts will be installed using a wrench, not by driving.

.2 Contain all debris and leachates (films on water surface) within the area of the work by using containment facilities such as floating booms or screens.

END OF SECTION