

Breakwater Construction and
Floating Docks
Petite Forte, NL
P/N: R.714115

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PART 1 - GENERAL

- 1.1 DESCRIPTION .1 This section specifies requirements for supply and installation of structural timber as follows:
- .1 Supply and installation of treated dimension timber wheelguard, wheelguard blocking, beams, and associated painting.
 - .2 Supply and installation of treated timber decking.
 - .3 Supply and installation of the floating docks.
- 1.2 RELATED WORK .1 Section 02 41 16 - Sitework, Demolition and Removal.
- .2 Section 06 05 73 - Wood Treatment.
 - .3 Section 31 53 13 - Timber Cribwork.
- 1.3 REFERENCES .1 American Society for Testing and Materials (ASTM International)
- .1 ASTM A307-07b, Specification for Carbon Steel Bolts and Studs, 60,000 PSI Tensile.
 - .2 American Wood-Preserver's Association (AWPA)
 - .1 AWPA M4-06, Standard for the Care of Preservation - Treated Wood Products.
 - .3 Canadian Standards Association (CSA International)
 - .1 CSA B111-1974(R2003), Wire Nails, Spikes and Staples.
 - .2 CAN/CSA-G40.21-04, General Requirements for Rolled or Welded Structural Quality Steel/Structural Steel.
 - .3 CAN/CSA G164-M92(R2003), Hot Dip Galvanizing of Irregularly Shaped Articles.

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.4 CAN/CSA-080 Series-97 (R2007), Wood
Preservation.

.4 Canadian Wood Council
.1 Wood Design Manual.

.5 National Lumber Grades Authority (NLGA)
.1 Standard Grading Rules for Canadian
Lumber 2000 edition.

1.4 DIMENSIONS

.1 Check existing site dimensions and report
discrepancies to Departmental Representative
before commencing work.

1.5 PROTECTION

.1 Avoid dropping, bruising or breaking of wood
fibres.

.2 Avoid breaking surfaces of treated timber.

.3 Do not damage surfaces of treated timber by
boring holes or driving nails or spikes into
them to support temporary material or
staging.

.4 Treat cuts, breaks or abrasions on surfaces
of treated timber with 3 brush coats of
preservative to CSA 080.

.5 Treat bolt holes, cutoffs and field cuts in
accordance with CSA 080.

1.6 DELIVERY AND STORAGE

.1 Store timber horizontally, evenly supported
and open piled permit circulation when stored
for prolonged period.

.2 When handling long timber, provide support
at sufficient number of points, properly
located to prevent damage due to excessive
bending.

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- .3 Handle treated timber with hemp, manila or sisal rope slings or other approved means of support that will not damage surface.
- .4 Do not use sharp pointed tools to handle treated timber. Any timber so handled will be rejected and be replaced at Contractor's expense.

1.7 MEASUREMENT FOR PAYMENT

- .1 Structural Timber:
 - .1 Treated Dimension Timber: The supply and installation of treated dimension timber for wheelguard (on crib), wheelguard blocking (on crib), and beams (on crib) will be measured by the cubic metre (m³) of timber secured in place, including all timber, fastenings, plant, material, equipment, labour, wheelguard bolt hole levelling sealant, painting of wheelguard and wheelguard blocking. All timber associated with the floating docks (including framing, wheelguard and decking), to be considered incidental to the unit cost for "floating dock".
 - .2 Treated Timber Decking: The supply and installation of treated timber deck (on the crib) will be measured by the cubic metre (m³) of timber secured in place. Contractor will provide all timber, fastenings, plant, material, equipment, and labour, including all spacers and blocking where required. Decking on the floating dock is to be included incidental to the unit price for "floating dock".
- .2 Floating Docks: The supply and installation of the floating docks will be measured by the unit (one unit being a complete assembled +/-

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16.5m long dock). Include all equipment, material and labour, including all timber, stringers, wheelguard on docks, lifting hooks, eight Type B1 cleats per dock, skids, buoyancy compartments, chocks, decking on docks, splice blocks, hardware, etc.

PART 2 - PRODUCTS

2.1 TIMBER MATERIALS

- .1 Timber: Use timber graded and stamped in accordance with applicable grading rules and standards of associations or agencies approved to grade lumber by Canadian Lumber Standards Administration Board of CSA.
- .2 Species
 - .1 Wheelguard, wheelguard blocks, beams and floating dock timber: Hemlock or Douglas Fir (CCA or ACA treated).
 - .2 Decking: Hemlock (CCA or ACA treated).
- .3 Grade: No. 1 Structural Grade
- .4 Grading Authority: NLGA
- .5 Preservative Treatment: Treat to CSA 080, for coastal waters and Section 06 05 73. Timbers will be treated in the lengths required. Unnecessary field cutting will not be permitted.
- .6 Primer: Alkyd undercoat, exterior oil wood primer.
- .7 Paint: Alkyd/Oil Resin paint similar to Pittsburgh Paints "Safety Yellow". Paint to conform to CAN/CGSB-1.61-2004.

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2.2 MISCELLANEOUS
STEEL AND
FASTENINGS

- .1 Miscellaneous Steel: All steel and fastenings to be CSA G40.21, Grade 300 W, galvanized.
- .2 Nails and Spikes: to CSA B111.
- .3 Machine Bolts and Nuts: to ASTM A307. All machine bolts and nuts to be galvanized.
- .4 Drift Bolts: to G40.21 from round stock button head and diamond or wedge point. All drift bolts to be galvanized.
- .5 Washers:
 - .1 Round Plate Washers: for 16 mm machine bolts will be 76 mm diameter by 6.4 mm thick, for 19 mm machine bolts will be 79 mm diameter by 7.9 mm thick and have a hole diameter of 18 mm and 21 mm diameter respectively. Washers to conform to G40.21. All washers to be galvanized.
 - .2 Plain Washers: to CSA B19.1, Class 2. All washers to be galvanized.
 - .3 Square washers are not permitted.
- .6 Galvanizing: will conform to CSA G164 "Hot Dip Galvanizing of Irregularly Shaped Articles." Unless otherwise specified, minimum weight of zinc coating will be as stated in Table 1 of this standard. Fabricator is to adhere to recommendations of Appendix A and Appendix B of standard.
- .7 Welding in accordance with CSA Standards. The welders will be qualified to the appropriate classification as stated in CSA W47.1 "Certification of Companies for Fusion Welding of Steel Structures." Conform welding to all appropriate requirements and recommendations of CSA Standard W59 "Welded Steel Construction" (metal arc welding).

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PART 3 - EXECUTION

3.1 PREPARATION

- .1 Install structural timbers to details shown on drawings or as specified.

3.2 WHEELGUARD AND WHEELGUARD BLOCKING

- .1 Wheelguard timbers to be 200 mm x 200 mm with butt joints made over wheelguard blocking. Wheelguard timbers to be chamfered on top, 25 mm on each horizontal and vertical surface.
- .2 Wheelguard blocks will be installed at 1500 mm on centre as support for wheelguard.
- .3 Wheelguard will be secured with drift bolts as shown on detail drawings. Bolts to be countersunk and filled with leveling sealant following installation.

3.3 BEAMS

- .1 Install beams as shown on the drawings.

3.4 PAINTING

- .1 Paint four (4) sides and exposed ends of wheelguard and exposed sides of wheelguard blocking as directed by the Departmental Representative.
- .2 Use one (1) coat of exterior oil wood primer and two (2) coats of alkyd/oil resin paint as specified. Paint materials for each coat to be product of a single manufacturer as specified. Ensure previous coat of primer or paint is dry before second coat is applied.

3.5 BOLT SIZING

- .1 Drift Bolts: Drift bolts used in the work will have a length equal to thickness of timbers being fastened less 50 mm unless otherwise specified. Holes for drift bolts will be bored 2 mm smaller diameter than size of steel used

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and for full length of bolts.

- .2 Machine Bolts: Machine bolts used in work will have a length equal to thickness of timbers being fastened plus thickness of washers plus 40 mm. Where bolts are countersunk, the length will be as above less depth of countersinking. Machine bolts will be threaded for 64 mm. Holes will be drilled same diameter as bolt.
- .3 Lag Screws: All lag screws used in the work will have a length equal to thickness of timbers being fastened less 50 mm and depth of countersinking. Holes for lag screws to be drilled same diameter as shank portion of screw and to inside thread diameter for threaded portion of screw and for full length. All lag screws will be countersunk, screwed, not driven in place, and will have one (1) standard washer under the head.
- .4 Bolting of timbers without properly drilled bolt holes will not be accepted.

3.6 DECKING

- .1 Install timber deck plank having a uniform thickness of 75 mm to detail shown or specified.
- .2 Deck planks to be laid at right angles to deck beams.
- .3 Deck planks to be in width specified and will cross structure in one length.

3.7 FLOATING DOCKS

- .1 Install floating docks as shown on the drawings. Note that the eight Type B1 cleats on each dock will not be measured separately for payment and are incidental to the unit

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cost for "floating docks". Type B1 cleats
to be galvanized cast iron cleats, 36.2kg
weight.