

PART 1 - GENERAL

- 1.1 Related Sections.1 Section 05 50 00 Metal Fabrications
- .2 Section 31 23 10 Excavation, Trenching and Backfill.
- 1.2 Measurement Procedures
- .1 **Treated Dimension Timber:** Treated dimension for wheel guard, sheathing and existing wharf repairs will be measured in cubic metres (M³), of timber secured in place including all galvanized steel fastenings, plant, material, and labour.
- .2 **Treated Timber Cribwork Block** will be measured as a lump sum, fully ballasted and sunk in place.
- .3 Uprights for ladders are included in the price for the ladder.
- 1.3 References
- .1 American Society for Testing and Materials International (ASTM)
- .1 ASTM A307-12, Standard Specification for Carbon Steel Bolts and Studs, 60 000 PSI Tensile Strength.
- .2 .ASTM A123/A123M-12, Standard Specification for Zinc, (Hot-Dip Galvanized) Coatings on Iron and Steel Products.
- .2 American Wood-Protection Association (AWPA)
- .1 Book of Standards (2011).
- .2 AWPA M2-11, Standard for Inspection of Treated Wood Products.
- .3 Canadian Standards Association (CSA)
- .1 CSA-0141-05 (R2009), Softwood Lumber.
- .2 CSA 080 SERIES-08 (2012), Wood Preservation.
- .4 National Lumber Grading Authority (NLGA)
- .1 NLGA-2003 Standard Grading Rules for Canadian Lumber 2010.
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- 1.4 Quality Assurance
- .1 Lumber identification: by grade stamp of an agency certified by Canadian Lumber Standards Accreditation Board.
 - .2 Submit material specification from supplier for all machine bolts, nuts and washers for review by Departmental Representative prior to installation. Include washer dimensions.
- 1.5 Source Quality Control
- .1 The Contractor shall submit, for approval to the Departmental Representative, the location of the Wood Preservation Plant at which the dimension timber is to be treated. This submission shall be within seven, (7), days of award of contract.
 - .2 The Contractor shall facilitate the inspection of the process by the Departmental Representative and, notwithstanding the Contractor's notice of treatment and whether or not the process is inspected by a representative of the Departmental Representative at the time and place of treatment, the Departmental Representative reserves the right to reject, at the point of delivery, any or all timber that does not meet the requirements of the specification.
 - .3 Ordering of material is to follow the requirements of the contract such that field cutting of treated materials is essentially avoided and is used as a last resort and only if authorized by the Departmental Representative.
 - .4 Wood Preservation Plant shall
 - .1 Follow the requirements for quality control procedures outlined in CSA-080.
 - .2 Carry out inspection of all treated timber to AWWA M2 and supplementary requirements as per Clause 7 of CSA-080.
 - .5 For all products treated with preservatives by pressure impregnation, reports shall be provided to the Departmental Representative, at no cost, containing all applicable information outlined in Part 7 of AWWA M2.
 - .1 Results of treatment of each and every charge is required.
 - .2 Retention analysis shall be by the assay method.
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- 1.5 Source Quality Control (Cont'd) .5 (Cont'd)
- .3 When timber is pressure treated a second time, results of both treatments are required.
 - .4 All reports shall be:
 - .1 Certified by an authorized officer of the treatment plant.
 - .2 In the format and the order presented in Part 7 of AWPA M2.
 - .3 In metric (S.I.) units.
 - .6 No treated timber shall be incorporated into the work until all results meet or exceed the requirements specified. No payment will be made for material incorporated into the work until the results are received and approved by the Departmental Representative.

- 1.6 Waste Management and Disposal.1 Do not dispose of preservative treated wood through incineration or with other materials destined for recycling or reuse.

PART 2 - PRODUCTS

- 2.1 Dimension Timber.1 Lumber: to CSA 0141, S4S, S-dry moisture content 19% or less to meet requirements of Wood Preserving Plant, grade stamped in accordance with NLGA and scheduled for use as follows:
 - .1 Hemlock or Douglas Fir.
 - .2 All dimension timber will be dressed all four sides to dimensions indicated on drawing.

- 2.2 Preservative Treatments .1 Treat to CSA 080, with the following minimum assay retention.

Retention ACA		
SPECIES	kg/m3	kg/m ³
Dimension Timber		
Hemlock, Douglas Fir	24	24

Note: Creosote is not acceptable. Dry all dimension timber to max. 25% moisture content after treatment.

- 2.3 Machine Bolts, Nuts, Washers .1 Machine bolts: strength equivalent to ASTM A307. Bolts to have standard heads, nuts and when in position will be of sufficient length to permit a full nut and two washers. Galvanized to ASTM A123/A123M, (610 kg/m²).
- .2 Washers suitable for the size of the bolt specified will be placed under the heads and nuts of all machine bolts and rods bearing on timber surfaces unless noted otherwise on the drawings. Unless otherwise indicated, minimum washer sizes to be as follows:
- .1 For 25mm diameter machine bolts - Timber piles to wales and concrete edge beam - 100 mm diameter by 9 mm thick.
- .2 Other - diameter minimum 3 times bolt diameter by 6 mm thick.
- .3 Allow for galvanized coating thickness in all washer holes.
- .3 Drift pins, various lengths will be galvanized.
- 2.4 Ballast Stone .1 Ballast Stone for filling Cribs, minimum dry bulk density of 2600 kg/cubic metre. Supply stone containing no organic materials, silt, clays. Ballast stone to be well graded with maximum sizes not exceeding 400 mm on any side and not less than 250mm on any side. (R25)

PART 3 - EXECUTION

- 3.1 Installation .1 Install wood members true to line, levels and elevations, square and plumb.
- .2 Construct continuous members from pieces of longest practical length.
- .3 Install spanning members with "crown-edge" up.
- .4 Install and secure as indicated on plans using galvanized bolts, nuts, and washers.
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3.5 CRIBWORK
(Cont'd)

- .1 (Cont'd)
Countersink machine bolts on exterior face above L.N.T.

 - .2 Binder Posts: Vertical posts will be in one length from bottom to top of cribwork. One vertical post will be located at corner of each crib and at intersection of crossties with longitudinals.

 - .3 Blocking: treated timber filler blocking will be placed as indicated on the drawings. It will be the same size and material as crossties or longitudinals and will be fastened with two (2) drift bolts into timber immediately below it. Blocking will be pre-cut and treated at 1220mm lengths.

 - .4 Bolt Sizing and Holing:
 - .1 Drift Bolts: All drift bolts used in 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 and for full length of bolts.
 - .2 Machine Bolts: All 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. All machine bolts will be threaded for 3.6 mm. All holes will be drilled same diameter as bolt.

 - .5 Handling
 - .1 Handle treated material in a manner which will avoid damage causing alteration in original treatment.

 - .6 Field cut only minimum required to suit field conditions. Treat in field, cuts and damage to surface of treated material with an appropriate preservative as described in CSA 080. Ensure that damaged areas such as abrasions, nail and spike holes, are
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- 3.5 CRIBWORK .6 (Cont'd)
 (Cont'd) thoroughly saturated with field-treatment
 solutions as per CSA 080.
 .1 Ripping of treated timber will not be
 permitted.
- .7 Tolerances:
 .1 Construct crib overall dimensions to
 tolerance of 1 in 300.
 .2 Locate cribs in work within 100 mm of
 location indicated on drawings. Horizontal
 misalignment of no greater than 100 mm along
 the outside faces of the structure will be
 permitted.
 .3 Space between ballasted cribs will be no
 greater than 100 mm and no payment for this
- .8 Do not notch or cut timbers. Blocking/shims
 will installed as required or as directed by
 the Departmental Representative.
- 3.6 LADDERS .1 Supply and install ladders on face of wharf
 by Engineer.
- .2 Ladder uprights to be 200 x 200 mm and
 installed from wheel guard elevation and
 extend a distance as to have a minimum of
 two(2) full rung below L.N.T. Uprights to be
 bevelled at on top and bottom as shown on
 drawings.
- .3 Secure timber uprights as shown on drawings.
- 3.7 TIMBER .1 Supply and install new 100 x 150 x 3660 mm
 SHEATHING long sheathing as indicated.
- .2 Secure each sheathing as shown on drawings.
- 3.8 Field Quality .1 Timber which contains rot, splits exposing
 untreated wood, excessive wane, or timbers
 which cannot be fastened in the work so as to
 be structurally sound or if, in the opinion of
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- 3.8 Field Quality (Cont'd)
- .1 (Cont'd)
the Departmental Representative, will not last the life of the unit, are unacceptable.
 - .2 The Departmental Representative reserves the right to carry out field testing of treated timber for penetration and retention of preservative.
 - .3 Timber not meeting the requirements of the specification may be rejected for use and is to be replaced with materials meeting contract specifications, at no additional cost.