

PART 1 - GENERAL

<u>1.1 Related Sections</u>	.1	Section 05 50 00 Metal Fabrications
	.2	Section 31 23 10 Excavation, Trenching and Backfill.
<u>1.2 Measurement Procedures</u>	.1	<u>Treated Dimension Timber:</u> Treated dimension for wheel guard, sheathing and existing wharf repairs will be measured in cubic metres (M ³), of timber secured in place including all galvanized steel fastenings, plant, material, and labour.
	.2	<u>Treated Timber Cribwork Block</u> 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.
<u>1.3 References</u>	.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.

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 AWPB 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 AWPB M2.
 - .1 Results of treatment of each and every charge is required.
 - .2 Retention analysis shall be by the assay method.

- 1.5 Source Quality .5 (Cont'd)
Control
(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.1 Do not dispose of preservative treated wood
and Disposal 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 .1 Treat to CSA 080, with the following minimum
Treatments 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.

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- 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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3.2 Field Cutting .1 Treat, in field, cuts and damage to surface
 Treated Timber of treated material with an appropriate
 preservative as described in CSA 080. Ensure
 that damaged areas such as abrasions, nail and
 spike holes are thoroughly saturated with
 field treatment solutions as per CSA 080.

 .2 Treat bolt holes, counter sunk holes, cutoffs
 and field cuts in accordance with CSA 080.

3.3 Cutting .1 Field cuts, if authorized by the Departmental
 Representative, are to receive three (3)
 liberal coats of the applicable preservative
 applied to dry wood on each application.

3.4 WHEELGUARDS AND .1 Wheelguard timbers to be 200 mm by 200 mm and
WHEELGUARD CHOCKS will be in minimum lengths 4880 mm or as
 specially required with butt joints made over
 wheelguard chocks sized as shown on the
 drawings. Wheelguard timbers to be chamfered
 on top, 25 mm on each horizontal and vertical
 surface.

 .1 Wheelguard chocks will be installed at
 1500 mm on centres as support for wheelguard.

 .2 Wheelguard will be secured through
 wheelguard blocking, to concrete deck with 22
 mm diameter galvanized anchor bolts as shown
 on drawings.

3.5 CRIBWORK .1 Horizontal Timbers: all longitudinals and
 cross ties will be a minimum of 4880 mm long,
 or pre-cut lengths to limit the number of
 field cuts. Where cribs are married together,
 the timbers will be of sufficient length to
 span a minimum of a half of a bay of one crib
 and one and a half bays of the adjacent crib.
 Butt join exterior and interior timbers a
 minimum distance of 600 mm from crosstie and
 secure block to timber below with drift bolt
 at centre and secure timbers to be spliced to
 block with drift bolts at ends. Stagger joints
 in cribwork so that spliced timbers are not
 directly above or below in same bay.

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

3.5 CRIBWORK
(Cont'd)

- .6 (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
SHEATHING

- .1 Supply and install new 100 x 150 x 3660 mm
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

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.