

## PART 1 - GENERAL

<u>1.1</u>	<u>Related Sections</u>	.1	Section 05 50 00 Metal Fabrications
		.2	Section 31 62 19 Timber Piles
<u>1.2</u>	<u>Description</u>	.1	This section specifies the requirements for the supply and installation of all treated dimension timber and their fasteners.
<u>1.3</u>	<u>Measurement Procedures</u>	.1	<u>Treated Dimension Timber</u> : Treated dimension timber will be measured in cubic metres, (M <sup>3</sup> ), of timber secured in place including all galvanized steel fastenings, plant, material, and labour. To include all timber supplied and installed to complete the work, apart from the wood uprights for ladders.
<u>1.4</u>	<u>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.
<u>1.5</u>	<u>Quality Assurance</u>	.1	Lumber identification: by grade stamp of an agency certified by Canadian Lumber Standards Accreditation Board.

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- 1.6 Source Quality Control
- .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 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 AWPA 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 AWPA M2.
- .1 Results of treatment of each and every charge is required.
- .2 Retention analysis shall be by the assay method.
- .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.

- 1.7 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 Dimension Timber to be No.1/No.2 grade, 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.

SPECIES	Retention	
	kg/m <sup>3</sup>	kg/m <sup>3</sup>
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/m<sup>2</sup>).

- .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 25 mm diameter machine bolts – Timber piles to wales and concrete edge beam – 100 mm diameter by 9 mm thick.
  - .2 For 25 mm diameter machine bolts – Diagonal bracing to piles – 100 mm square by 9 mm thick.
  - .3 Other – minimum 3 times bolt diameter by 6 mm thick.
  - .4 Allow for galvanized coating thickness in all washer holes.

## 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.

### 3.2 Field Cutting Treated Timber

- .1 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 thoroughly saturated with field treatment solutions as per CSA 080.
- .2 Treat bolt 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.

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- 3.4 Fender Pile Installation .1 Coordinate connection of fender piles with Section 31 62 19 Timber Piles.
- .2 Connect timber fender piles to longitudinal wale with galvanized machine bolts as detailed on plans.
- .3 Provide preservative treated wood filler block and shims as required to achieve vertical installation.
- .4 Notching of wale or pile not acceptable.
- .5 Installation of filler blocks and shims to be as reviewed and approved by Departmental Representative.
- 3.5 Ladder Installation .1 Coordinate installation of ladders on face of wharf with Section 05 50 00 Metal Fabrications.
- .2 Connect timber ladder uprights to longitudinal wale with galvanized machine bolts as detailed on plans.
- .3 Provide preservative treated filler blocks and shims as required to achieve vertical installation.
- .4 Notching of wale or timber uprights not acceptable.
- .5 Installation of filler blocks and shims to be as reviewed and approved by Departmental Representative.
- 3.6 Longitudinal Wale Installation .1 Install longitudinal wale along face of wharf to details indicated on plans.
- .2 Galvanized machine bolt heads to be countersunk in pile face at connection to longitudinal wales.
- 3.7 Diagonal Brace Installation .1 Install diagonal transverse bracing to all bents to details indicated on plans.
- .2 Galvanized machine bolt heads, nuts and washers to be surface mounted at transverse bracing.
- 3.8 Bridle Installation .1 Install horizontal bridle timber between all fender piles and either side of ladder uprights.

- .2 Provide snug fit to prevent rotation of piles.
- 3.9 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 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.

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END OF SECTION

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