

**Wharf Reconstruction****Chebogue (Town Point Hill) SCH****Yarmouth County****Project No. R.100885.001**

Dimension Timber

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**PART 1 - GENERAL**

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| 1.1 <u>Related Work</u>            | .1 Refer to other Specification Sections for related information.  |
|                                    | .2 Refer to Section 01 33 00 for Shop Drawing/Submissions requirements.  |
| 1.2 <u>Reference Standards</u>     | .1 CAN/CSA-O80 Series-15, Wood Preservation.   |
|                                    | .2 NLGA Standard Grading Rules for Canadian Lumber 2017 edition.   |
|                                    | .3 ASTM A123/A123M-17, Standard Specification for Zinc (Hot-Dip Galvanized) Coatings on Iron and Steel Products.   |
|                                    | .5 ASTM A307-14e1, Standard Specification for Carbon Steel Bolts, Studs, and Threaded Rod 60,000 psi Tensile Strength.   |
|                                    | .6 ASTM F1667-18a, Standard Specification for Driven Fasteners: Nails, Spikes and Staples.   |
|                                    | .7 CSA 086-14, Engineering Design in Wood.   |
|                                    | .8 ASTM D4637/D4637M-15, Standard Specification for EPDM Sheet Used In Single-Ply Roof Membrane.   |
| 1.3 <u>Submissions</u>             | .1 At least two weeks prior to finalizing timber order, submit drawings, clearly indicating installation details. Show splice locations, splice details, fastening arrangements. |
|                                    | .2 Submit methodology for field treatment.   |
|                                    | .3 Provide submissions in accordance with Section 01 33 00.  |
| 1.4 <u>Measurement for Payment</u> | .1 Timber will be measured in accordance with Section 01 29 00.  |
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PART 2 - PRODUCTS2.1 Materials

- .1 Softwood Timber: Graded and stamped to National Lumber Grading Authority (NLGA) No. 1 Structural. Eastern Hemlock, Western Hemlock or Douglas Fir Species, only, will be used.
  - .2 Timber Treatment:
    - .1 Preservative treatment to CAN/CSA-080 Series for Marine Construction.
      - .1 Timber Bracing, Timber Cross-Bracing, Timber Wales, Timber Sheathing, Timber Fenders: Use category 5A.
      - .2 Timber Ladder Uprights and Timber Ladder Extension: Use category 4.1. Preservative to be ACQ-C or CA-B.
    - .2 Make arrangements for testing of timber by:
      - .1 Plant Inspection: Provide treatment plant identification, date of treatment, list of various pieces in the charge, charge number, plant assay testing results, concentration and type of preservative used, duration of treatment, gauge retention, species of wood; and make arrangements with the treatment plant to locate bundles, move bundles, break open bundles and carry out other measures to facilitate the inspection.
      - .2 Filling in and submitting a preprinted form, agreed to by the *Departmental Representative*, containing the above information.
  - .3 Miscellaneous Hardware: Hardware must meet the following specifications:
    - .1 Machine bolts, lag bolts, drift bolts, anchor bolts, nuts, round plate washers: to ASTM A307.
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- .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 - 75 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.
- .3 Spikes: to CSA F1667.
- .4 Hot dip galvanized hardware, bolts, nuts, washers and spikes to ASTM A123/A123M, with minimum zinc coating of 600 g/m<sup>2</sup>.
- .5 All hardware will be galvanized unless otherwise shown on plans.

PART 3 - EXECUTION3.1 General

- .1 Supply and install dimension timbers to details shown on drawings or as specified. Treated timber to be supplied in pre-cut lengths to suit.
- .2 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.

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- .3 All countersunk holes to be recessed as indicated on drawings, and shall receive two coats of Copper naphthenate, allowing sufficient time between applications to permit total absorption. The cost of supply and application of Copper naphthenate will not be measured for payment but will be considered incidental to the work.

3.2 Handling Timber

- .1 Timber will be protected during handling, shipping, offloading and field handling, by use of suitable equipment and procedures. Use rope or fabric strap slings on site for moving bundles or individual timbers, rather than metal grabs, chains or cables.
- .2 Tops of vertical untreated timber to be field treated with minimum two liberal coats of Copper naphthenate.

3.3 Handling  
Treated Timber

- .1 Handle treated material to avoid damage causing alteration in original treatment.
- .2 Treat in field, spike holes, boreholes, plugged holes, cuts and any damage to treated material, using copper naphthenate, as specified herein, regardless of plant treatment type. Fill all unused bored holes and any other holes with tight fitting treated wooden plugs prior to any exposure to water containing marine borers.
- .3 Provide methodology pertaining to heating and application. Apply to dry surfaces, wherever possible.
- .4 Treat boreholes, using a pressurized container with an extension rod, to produce a fine spray in the holes with one application. Alternately a cylindrical brush may be used.
- .5 Treat field cuts and any abrasions with minimum of two liberal applications, using either spray or brush.

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- .6 In addition, field cuts and underwater damaged areas will receive a coating of plastic compound, capped with lead flashing secured with galvanized roofing nails. Plastic compound not to be water soluble and is subject to approval.
- .7 Environmental Concern: Ensure no spillage or excess application of field preservative. Provide workmen with sufficient training and protective gear to properly and safely handle the treated materials and to apply field treatment, so as to prevent undue hazard to themselves, others, or the environment.
- .8 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.

**3.4 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 wale face at connection to piles.

**3.5 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.