

PART 1 - GENERAL

1.1 DESCRIPTION

- .1 This section specifies requirements for supply and installation of structural timber as follows, except the supply of those being supplied by Canada:
 - .1 Supply and installation of treated dimension timber wheelguard, wheelguard blocking, and timber enclosure and associated painting.
 - .2 Supply and installation of untreated dimension hardwood timber fenders.
 - .3 Supply and installation of untreated timber hardwood ladders, ladder handgrips, and associated hardware and painting.
 - .4 Supply and installation of treated cribwork repair timbers.

1.2 RELATED WORK

- .1 Section 01 16 10 – Material Supplied by Canada.
- .2 Section 02 41 16 - Sitework Demolition & Removal.
- .3 Section 03 30 00 - Cast-in-Place Concrete.
- .4 Section 06 05 73 - Wood Treatment.

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 or Irregularly Shaped Articles.
 - .4 CAN/CSA-O80 Series-97 (R2007), Wood Preservation.

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1.3 REFERENCES
(CONT'D)

- .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 three (3) brush coats of preservative to CSA O80.
- .5 Treat bolt holes, cutoffs and field cuts in accordance with CSA O80.

1.6 DELIVERY AND STORAGE

- .1 Store timber horizontally, evenly supported and open piled to permit air 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.
- .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.

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1.7 MEASUREMENT FOR PAYMENT

- .1 Structural Timber (Supply and Install):
 - .1 Treated Dimension Timber - Treated dimension timber for wheelguard and wheelguard blocking, timber enclosure, and cribwork repair timbers will be supplied by Canada, as outlined in Section 01 16 10. The installation of these pieces, as well as the supply and installation of any additionally required pieces, shall be measured by the cubic metre (m³) of timber secured in place, including all timber, fastenings, plant, material, equipment, labour and painting of the wheelguard and wheelguard blocking, and wheelguard bolt hole levelling sealant.
 - .2 Untreated Dimension Hardwood Timber - Untreated dimension hardwood timber for hardwood fenders and ladder uprights, as specified, will be supplied by Canada, as outlined in Section 01 16 10. The installation of these pieces, as well as the supply and installation of any additionally required pieces, shall be measured by the cubic metre (m³) of timber secured in place, including all timber, fastenings, plant, material, equipment, labour, galvanized ladder rungs, galvanized wheelguard hand grips and painting of complete ladder uprights.
- .2 Payment for all dimension timber will be made on volume calculated from nominal sizes as indicated on drawing and specified, eg. 200 mm x 200 mm.

1.8 SAFETY REQUIREMENTS

- .1 Worker protection:
 - .1 Workers must wear gloves, respirators, dust masks, long sleeved clothing, eye protection, protective clothing when handling, drilling, sawing, cutting or sanding preservative treated wood and applying preservative materials.
 - .2 Workers must not eat, drink or smoke while applying preservative material.
 - .3 Clean up spills of preservative materials immediately with absorbent material. Safely discard of absorbent material to sanitary landfill.

1.9 WASTE MANAGEMENT

- .1 Remove from site and dispose of packaging materials at appropriate recycling facilities.
- .2 Dispose of all corrugated cardboard and polystyrene plastic packaging material in appropriate on-site bin for recycling.
- .3 Place materials defined as hazardous or toxic in designated containers.

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1.9 WASTE MANAGEMENT
(CONT'D)

- .4 Ensure emptied containers are sealed and stored safely.
- .5 Do not dispose of preservative treated wood through incineration.
- .6 Do not dispose of preservative treated wood with other materials destined for recycling or re-use.
- .7 Dispose of treated wood, end pieces, wood scraps and sawdust at a sanitary landfill.
- .8 Dispose of unused preservative material at an official hazardous material collections site. Do not dispose of unused preservative material into sewer system, streams, lakes, on ground or in any other location where they will pose a health or environmental hazard.

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 and wheelguard blocks: Hemlock or Douglas Fir (CCA or ACA Treated).
 - .2 Hardwood fenders and ladder uprights: Birch or Maple (Untreated).
- .3 Grade: No. 1 Structural Grade.
- .4 Grading Authority: NLGA
- .5 Preservative Treatment: Treat to CSA O80, for coastal waters and Section 06 05 73. Timbers will be treated in the lengths required. Unnecessary field cutting will not be permitted. Cut and field treat timbers only as may be necessary to suit site conditions. Contractor will have on site sufficient lengths and thickness of treated timber to repair any additional damaged timbers uncovered during demolition.

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2.1 TIMBER MATERIALS
(CONT'D)

- .6 Primer: Alkyd undercoat, exterior primer/sealer similar to Pittsburgh 17-941NFC
- .7 Paint: Alkyd/Oil Resin paint similar to Pittsburgh Paints "Safety Yellow" Product ID 7-808. Paint to conform to CAN/CGSB-1.61-2004.

2.2 MISCELLANEOUS STEEL AND FASTENINGS

- .1 Miscellaneous Steel: All steel and fastenings to be CSA G40.21, Grade 300W, 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 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 ASTM A123/123M-09 Standard Specification for Zinc (Hot-Dip Galvanized) coatings on Iron and Steel Products.
- .7 Ladder Rungs and Hand Grips: to CSA G40.21, galvanized.
- .8 Lag Screws: to CSA B34 and be galvanized. Lag screw washers will conform to CSA B19.1.
- .9 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).

PART 3 - EXECUTION

3.1 PREPARATION

- .1 Install structural timbers to details shown on drawings or as specified.
- .2 Inform Departmental Representative of any additional damaged crib timbers uncovered during demolition.

3.2 WHEELGUARD AND WHEELGUARD BLOCKING

- .1 Wheelguard timbers to be 150 mm by 200 mm and will be in minimum lengths of 6100 mm or as specially required with butt joints made over wheelguard blocking sized as shown on the drawings. Wheelguard timbers to be chamfered on top, 25 mm on each horizontal and vertical surface, as detailed on drawings.
- .2 Wheelguard blocks will be installed at 1200 mm on centre as support for wheelguard and to measure 150 mm x 55 mm x 600 mm.
- .3 Wheelguard will be secured through wheelguard blocking, one (1) deck timber, one 250 mm timber beam, and two (2) crib timbers below with two (2) 25 mm diameter x 875 mm long drift bolts per block, as shown on detail drawings.
- .4 Wheelguard and wheelguard blocking to be primed and painted, as per the drawings.

3.3 TIMBER ENCLOSURE

- .1 New timber enclosure to match existing.
- .2 Timber enclosure to consist of 19 mm thick treated timber, with a 38 mm x 38 mm blocking piece at the intersection with the existing deck, as per existing and as shown on the drawings.
- .3 Enclosure to be fastened to the existing deck through the blocking piece. All joints in the timber enclosure to be fastened with 63.5 mm (minimum) long galvanized nails.

3.4 FENDERS

- .1 Vertical Fenders:
 - .1 Install 100 x 150 mm hardwood timber fenders spaced at 300 mm on centre along face of the wharf, except for exterior corners and timber crib repair area where fenders will be closed face for 1500 mm as directed. See drawings for clarification.

PART 3 - EXECUTION **(CONT'D)**

3.4 FENDERS **(CONT'D)**

- .1 (cont'd)
- .2 Secure each fender with three (3) each 16 mm diameter lag screws evenly spaced from L.N.T. to underside of bottom deck timber and staggered in longitudinals between adjacent fenders. All lag screws to be countersunk.
- .3 All fenders to extend from underside of bottom deck timber to 300 mm below L.N.T.
- .4 Fenders to be bevelled at 45° on top, as specified on drawings.
- .5 Do not notch or cut fenders to provide straight wharf face. Continuous blocking will be installed behind fenders to provide straight face.

3.5 LADDERS

- .1 Install ladders on face of wharf in locations shown on drawings or as designated by Departmental Representative.
- .2 Ladder uprights to be 150 x 150 mm and installed from 1100 mm below L.N.T. to wheelguard elevation. Uprights to be bevelled at 45° on top and primed/painted as specified.
- .3 Construction details and steel hand-grips as per detail.
- .4 Secure each upright with four (4) evenly spaced 19 mm diameter galvanized lag screws. All lag screws to be countersunk.

3.6 CRIB REPAIR

- .1 Install new timber crib repair pieces as required, and as depicted on the drawings.
- .2 Timber size to be 200 mm x 200 mm, length as required for repair, to match existing.
- .3 Secure all new timbers with 19mm diameter lag screws.
- .4 Rip 200 mm x 200 mm timbers, as required, for proper fitting.
- .5 New timber blocking pieces to be cut to suit and to extend into cribwork a minimum of 300 mm. Contractor to provide temporary blocking for cribwork during demolition and construction activities.
- .6 Inform Departmental Representative of any additional damaged cribwork uncovered during demolition. Coordinate any additional repairs with Departmental Representative.

PART 3 - EXECUTION
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3.7 PAINING

- .1 Paint wheelguard, wheelguard blocking, and complete ladder uprights as directed by the Departmental Representative.
- .2 Use one (1) coat of alkyd undercoat exterior primer/sealer 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.

3.8 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 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: Lag screws used in work will have a length equal to thickness of timbers being fastened less 50 mm and the depth of countersinking. Holes for lag screws to be drilled same diameter as shank for 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 Countersink drift bolts and/or lag screws in hardwood fenders and ladders to the extent that the minimum distance from face of timber to head of bolt is 12 mm.
- .5 Bolting of timbers without properly drilled bolt holes will not be accepted.