

PART 1 - GENERAL

- 1.1 DESCRIPTION
- .1 This section specifies requirements for supply and installation of structural timber as follows:
 - .1 Supply and installation of treated dimension timber wheelguard, wheelguard blocking, coping, 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.
- 1.2 RELATED WORK
- .1 Section 02 41 16 - Sitework, Demolition and Removal.
 - .2 Section 03 30 00 - Cast-in-Place Concrete.
 - .3 Section 06 05 73 - Wood Treatment.
 - .4 Section 31 53 13 - Timber Cribwork.
- 1.3 REFERENCES
- .1 American Society for Testing and Materials (ASTM International)
 - .1 ASTM A307-12, Specification for Carbon Steel Bolts and Studs, 60,000 PSI Tensile.
 - .2 ASTM-A123/A123M, Standard Specification for Zinc (Hot Dip Galvanized) Coatings on Iron and Steel Products.
 - .3 ASTM F1667-13, Standard Specification for Driven Fasteners: Nails, Spikes, and Staples.
 - .4 American Wood-Preserver's Association (AWPA)
 - .1 AWPA M4-11, Standard for the Care of Preservation - Treated Wood Products.
 - .5 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.
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1.6 DELIVERY AND
STORAGE
(Cont'd)

- .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.

1.7 MEASUREMENT
FOR PAYMENT

- .1 Structural Timber (Supply and Install):
- .1 Treated Dimension Timber: The supply and installation of treated dimension timber for wheelguard, wheelguard blocking and coping will be measured by the cubic metre (m³) of timber secured in place, including all timber, fastenings, plant, material, equipment, labour, wheelguard bolt hole levelling sealant, painting of wheelguard and wheelguard blocking.
- .2 Untreated Dimension Hardwood Timber: The supply and installation of untreated dimension hardwood timber for vertical hardwood fenders, and horizontal fenders as specified will be measured by the cubic metre (m³) of timber secured in place including all timber, fastenings, plant, material, equipment, and labour.
- .3 Ladders - (Untreated): The supply and installation of untreated ladders will be measured by the unit secured in place. Contractor will provide all timber, fastenings, plant, material, equipment, and labour, including untreated timber hardwood ladder uprights, ladder rungs, ladder handgrips, and painting of ladder uprights.

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, wheelguard blocks, coping, : 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

2.2 MISCELLANEOUS
STEEL AND
FASTENINGS
(Cont'd)

- .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).

2.3 ANCHOR BOLTING
SYSTEM

- .1 Anchor bolts, where required, for anchoring coping and/or wheelguard to existing concrete deck will be 19 mm diameter resin cartridge anchors.
- .2 Submit shop drawings and manufacturer's specification for anchor bolts for approval.
- .3 Anchor bolts to be installed with strict adherence to manufacture specifications.

PART 3 - EXECUTION

3.1 PREPARATION

- .1 Install structural timbers to details shown on drawings or as specified.

3.2 WHEELGUARD AND
WHEELGUARD BLOCKING

- .1 Wheelguard timbers to be 200 mm x 200 mm and will be in minimum lengths of 6100 mm or as specially required with butt joints made over wheelguard blocking. Wheelguard timbers to be chamfered on top, 25 mm on each horizontal and vertical surface.
- .2 Wheelguard blocks will be installed at 1500 mm on centre or as required to support the wheelguard.
- .3 Wheelguard will be secured through wheelguard blocking, coping and two (2) crib timbers below with two (2) 25 mm diameter drift bolts as shown on detail drawings.
- .4 The installation of wheelguard and wheelguard blocking as per detail.

3.3 COPING

- .1 Install 200 mm x 250 mm treated timber coping in minimum length of 7620 mm around perimeter of wharf as directed.
- .2 Secure coping to timber below with 19 mm diameter drift bolts spaced at 1500 mm on centre and to concrete deck with 19 mm diameter by 600 mm long machine bolts spaced at 1500 mm on centre. The machine bolts will be countersunk on the exterior face; the nut installed on the outside and each bolt equipped with 2 washers.
- .3 Secure coping to concrete deck using coping anchor bolts where approved by Departmental Representative. Secure coping 1500 mm on centre. All bolts to be countersunk on the exterior face. All countersinking to be drilled.

3.4 FENDERS

- .1 Horizontal Fenders:
 - .1 Install hardwood timber fenders in minimum length of 4880 mm along top perimeter of wharf. Stagger joints in coping from joints in horizontal fender.
 - .2 Top horizontal fender to be chamfered 25 mm on top seaward face.
 - .3 Secure horizontal fender to coping with 16 mm diameter lag screws, minimum of four (4) each drift bolts per fender, spaced at 1500 mm on centre. All lag screws to be countersunk on the exterior face.
- .2 Vertical Fenders:
 - .1 Install hardwood timber fenders spaced at 300 mm on centre along face of wharf.
 - .2 Secure each fender with four (4) each 16 mm diameter lag screws evenly spaced from LNT to underside of horizontal fender. All lag screws to be countersunk.
 - .3 All fenders to extend from underside of horizontal fender to 300 mm below LNT.
 - .4 Do not notch or cut fenders to provide straight wharf face. Continuous blocking will be installed behind fenders and chocks to provide straight face.

3.5 LADDERS

- .1 Install ladders on face of wharf in locations shown on drawings or designated by Departmental Representative.
- .2 Ladder uprights to be 2-150 mm x 200 mm installed from 900 mm below LNT to wheelguard elevation. Uprights to be bevelled at 45° on top and painted as specified.
- .3 Construction details and steel handgrips as per detail.
- .4 Secure each upright with four (4) each evenly spaced 19 mm diameter galvanized lag screws. All lag screws to be countersunk.

3.6 PAINTING

- .1 Paint four (4) sides and exposed ends of wheelguard, exposed sides of wheelguard blocking, tops of fenders, and complete ladder uprights as directed by the Departmental Representative.
- .2 Use one (1) coat of exterior oil wood primer 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.

3.7 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.
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3.7 BOLT SIZING
(Cont'd)

- .3 Lag Screws: All lag screws used in the work will have a length equal to thickness of timbers being fastened less 50 mm and depth of countersinking. Holes for lag screws to be drilled same diameter as 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, chocks, ladders, and slipway runners 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.

3.8 INFILLING

- .1 Install treated structural timber full length sections in areas as indicated on drawings or as indicated by Departmental Representative.
- .2 Cut and remove damaged, split, rotten, loose timber as indicated on drawings or as indicated by Departmental Representative.
- .3 Secure treated structural timber infill with drift bolts, lag screws, and spikes as required, shown on drawings or as indicated by Departmental Representative.
- .4 All splicing, leveling, and infilling to be approved by Departmental Representative prior to installation of new fendering.