

Part 1 General

1.1 DESCRIPTION

- .1 This section specifies requirements for supply and installation of Structural Timber.
- .2 Structural timber consists of, but not necessarily limited to, wheelguard, wheelguard blocking, coping, hardwood fenders, and ladder uprights.

1.2 RELATED SECTIONS

- .1 Section 03 30 00 – Cast in Place Concrete
- .2 Section 06 05 73 – Wood Treatment.
- .3 Section 31 53 13.01 – Timber Cribwork.

1.3 DIMENSIONS

- .1 Check existing site dimensions and report discrepancies to Departmental Representative before commencing work.

1.4 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 080.
- .5 Treat bolt holes, cutoffs and field cuts in accordance with CSA 080.

1.5 DELIVERY AND STORAGE

- .1 Store timber horizontally, evenly supported and open piled to permit air circulation when stored for prolonged periods.
- .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 approved 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.

1.6 MEASUREMENT OF PAYMENT

- .1 Treated Dimension Timber - The supply and installation of treated dimension timber for wheelguard, wheelguard blocking, vertical posts and wales, wheelguard bolt hole sealing compound, and coping will be measured by the cubic metre (m³) of timber secured in place, including all fastenings, plant, material and labour. The painting of the wheelguard and wheelguard blocking are incidental to the cost of supply and installation of treated dimension timber.
- .2 Untreated Dimension Timber - The supply and installation of untreated dimension timber for hardwood fenders and ladders as specified, will be measured by the cubic metre (m³) of timber secured in place, including all fastenings, plant, material and labour.
- .3 Payment for all dimension timber will be made on volume calculated from nominal sizes as indicated on drawing and specified, e.g. 250 mm x 250 mm.

Part 2 Products

2.1 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 Accreditation Board of CSA.
- .2 Species:
- .1 Wheelguard, wheelguard blocks: Hemlock or Douglas Fir (CCA or ACA Treated).
 - .2 Hardwood fenders, chocks, and ladder uprights: Birch or Maple (Untreated).
 - .3 Coping: Douglas Fir, Pacific Coast Hemlock or Eastern Hemlock (CCA or ACA Treated).
- .3 Grade: No. 1 Structural Grade.
- .4 Grading Authority: NLGA
- .5 Preservative Treatment: Treat to CSA 080, for coastal waters and Section 06 05 73. Timbers will be treated in the lengths required. Unnecessary field cutting will not be permitted.
- .6 Primer: Alkyd undercoat, exterior oil wood primer, similar to Pittsburgh 6-9.

- .7 Paint: Alkyd/Oil Resin paint similar to Pittsburgh Paints "Safety Yellow" Product ID 7-808. Paint to conform to 1-GP-61Ma.

2.2 MISCELLANEOUS STEEL AND FASTENING

- .1 All miscellaneous steel and fastenings to be CSA G40.21, Grade 300W and galvanized.
- .2 Nails and Spikes: to CSA B111 latest edition.
- .3 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 diameter respectively. Washers to conform to G40.21. All washers to be galvanized.
 - .2 Plain Washers: to CSA B19.1, Class 2.
 - .3 Square washers are not permitted.
- .6 Galvanizing: will conform to ASTM-A123/A123 latest edition, Zinc (hot dip galvanized) coatings on iron and steel products.
- .7 Ladder Rungs and Hand Rail: to CSA G40.21.
- .8 Lag Screws: to CSA B34 and be galvanized. Lag screw washers will conform to CSA B19.1.
- .9 Welding: will be in accordance with the C.S.A. Standards. The operators will be qualified to the appropriate classification as stated in C.S.A. W47.1 "Certification of Companies for Fusion Welding of Steel Structures." The welding will conform to all appropriate requirements and recommendations of C.S.A. 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.

3.2 WHEELGUARD AND WHEELGUARD BLOCKING

- .1 Wheelguard timbers for new construction to be 200 mm by 200 mm and will be in minimum lengths 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 blocking for new construction (200 mm x 600 mm x 75 mm).
- .3 Wheelguard to be secured with 25 mm x 825 mm long drift bolts (2 per wheelguard block) as indicated on drawings.

3.3 COPING

- .1 Minimum lengths of coping to be 7620 mm.
- .2 Secure coping to the timber below with 19 mm diameter drift bolts, 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 will be installed on the outside and each bolt will be equipped with two (2) washers.

3.4 FENDERS

- .1 Vertical Fenders
 - .1 Install 100 x 150 mm hardwood fenders spaced as indicated on the drawings along the face of the wharf.
 - .2 Where vertical fenders are spaced 300 mm secure each fender with four (4) 16 mm diameter lag screws evenly spaced from L.N.T. to underside of horizontal fender. All lag screws will be countersunk.
 - .3 All fenders to extend from underside of horizontal fender to 300 mm below L.N.T.
 - .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.
- .2 Horizontal Fenders
 - .1 Install 100 x 150 mm hardwood timber fenders in minimum length of 4880 mm around perimeter of wharf, except on corners, as shown on drawings. Stagger joints in coping from joints in horizontal fender.
 - .2 Horizontal fender will have a 25 mm chamfer on top seaward edge.
 - .3 Secure horizontal fender to coping with 16 mm diameter lag screws or to concrete deck with 13 mm diameter machine bolts, spaced at 1500 mm on centre. All bolts will be countersunk on the exterior 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 150 x 200 mm and installed from 900 mm below L.N.T. to wheelguard elevation. Uprights to be bevelled at 45° angle on top.
- .3 Details of construction and steel hand- grip to be as detailed on drawings.
- .4 Secure each upright with four (4) evenly spaced 19 mm diameter lag screws - countersunk.

3.6 PAINTING

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

- .1 Drift Bolts - All 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 - 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 64 mm. All holes will be drilled same diameter as bolt.
- .3 Lag Screws - All 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 will 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 a washer under the head.
- .4 Countersink lag screws in hardwood fenders and ladders to the extent that the minimum distance from the face of the timber to the head of the bolt is 12mm.
- .5 Bolting of timbers without properly drilled bolt holes will not be accepted.

END OF SECTION