

PART 1 - GENERAL

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| <u>1.1 DESCRIPTION</u> | .1 | The work under this section will include: .1 The fabrication, supply and installation of anchor bolts, machine bolts, lag screws and all other miscellaneous bolts, nuts, washers, plates and metal parts required for the completion of the work. |
| <u>1.2 RELATED SECTIONS</u> | .1 | Section 03 30 00 - Cast-in-Place Concrete. |
| | .2 | Section 06 10 10 - Dimension Timber |
| | .3 | Section 35 51 24 - Floating Wavebreak. |
| <u>1.3 REFERENCE STANDARDS</u> | .1 | CSA CAN3-S16.1-M78, Steel Structures for Buildings - Limit States Design. |
| | .2 | ASTM B928/B928-07 Standard Specification for High Magnesium Aluminum-Alloy Sheet and Plate for Marine Service and Similar Environment. |
| | .3 | ASTM D2000 Standard Classification System for Rubber Products in Automotive Applications. |
| | .4 | Do welding work to CSA W59-M1989 unless specified otherwise. Submit welder's certificate for review by Departmental Representative. |
| <u>1.4 SOURCE QUALITY CONTROL</u> | .1 | Prior to commencing of work, submit certified copy of mill reports covering chemical and physical properties of metals used in this work. |
| <u>1.5 SHOP DRAWINGS</u> | .1 | Submit shop details and erection drawings in accordance with Section 01 33 00. |
| | .2 | All submissions shall bear the stamp of qualified Professional Engineer registered in the Province of New Brunswick. |
| | .3 | Indicate cuts, copes, connections, holes, threaded fasteners, welds and other items. Indicate welds and |

other items. Indicate welds using CWB Welding Symbols.

- .4 Submit description of methods, sequence of transportation and type of equipment to be used for installation purposes and method of installation.

1.6 MEASUREMENT FOR PAYMENT

- .1 No separate payment shall be made for spikes, anchor bolts, machine bolts, lagscrews, nuts and washer, inserts, holdfasts, mooring rings, angles, channels, plates, any other metal required to complete the work, will be considered incidental to the contract and no separate payment will be made for these items.
- .2 No separate payment shall be made for inter-float connections for this contract. They will be considered incidental to the contract. Include costs in bid items.
- .3 No separate payment will be made for the supply and installation of anchor chains. Include costs in bid items.

PART 2 - PRODUCTS

2.1 MATERIALS

- .1 Welding materials: to CSA W59-M1989.
- .2 Machine bolts, anchor bolts, nuts, lag screws, carriage bolts, washers: to ASTM A307-83a.
- .3 Wire nails and spikes shall conform to B111-1974.
- .4 Stainless steel bolts: to AISI Steel Products Manual No. 13.
- .5 Cast Iron: to ASTM A48-74.
- .6 Lagscrews and Machine Bolts:
 - .1 Lagscrews shall meet the requirements of B18.23.8-M1979.
 - .2 Machine bolts will have standard heads, nuts, and threads, and when in position will be of sufficient length to permit a full nut and two washers. Threads shall be the Coarse Thread Series as specified in the latest issue of ANSI B1-1 having a Class 2A tolerance.

.3 Standard cast iron washers suitable for the sizes of the bolts specified will be placed under the heads and nuts of all machine bolts bearing on timber surfaces unless noted otherwise on drawings. Ogee washers to Timber Design Manual 1980 issued by Laminated Timber Institute of Canada and as follows: ogee washers to be cast iron free from injuries, defects or impurities.

.4 As an alternative to ogee washers, standard plate washers can be used. The washer is to be three times bolt diameter and a minimum thickness of 6 mm unless noted otherwise.

.7 Galvanizing: hot dipped galvanizing with minimum zinc coating of 610 g/m². to CSA G164-M1981. All anchor bolts, machine bolts, spikes, lagscrews, nuts, washers, to be galvanized.

.8 Galvanized primer: to CGSB 1-GP-183M.

.9 Steel sections, bars, tie rods, anchor dowels, plates and washers: to CSA G40.21-M1981, Type 300W.

.10 Shackles to fit as indicated on the drawings: grade 30.

.11 Galvanized steel mooring chain, as indicated on the drawings.

2.2 FABRICATION

.1 All steel members and assembled units shall be hot dip galvanized to CSA G164-M81 (610 g/m².) unless specified otherwise. All welded units are to be completed, including punching of connection bolt holds, prior to the units being hot dip galvanized. Pre-assembly of the framework shall be carried out to ensure no cutting, welding, or other fabrication will be necessary subsequent to hot dip galvanizing.

.2 The fabrication of all structural steel shall conform to the requirements of CSA CAN3-S16.1-M78.

PART 3 - EXECUTION

3.1 ERECTION

.1 Erect metalwork square, plumb, straight, and true,

accurately fitted, with tight joints and intersections.

- .2 Obtain written permission from Departmental Representative prior to field cutting or altering of structural members.
- .3 Provide suitable and acceptable means of anchorage such as dowels, anchor clips, bar anchors, bolts and washers, etc. as shown on drawings.
- .4 Touch-up galvanized surfaces with zinc primer where damaged.
- .5 All work to conform to CSA CAN3-S16.1-M78.
- .6 Do welding work in accordance with CSA W59.2 except where specified otherwise.
 - .1 Do not deviate the size, length and location of welds from details shown on reviewed shop drawings.
 - .2 Use qualified fabricators and welders in accordance with CSA W47.2.
 - .3 All welds will be subject to visual inspection requirements of CSA W59.2.
 - .4 Welds which fail the visual inspection will be subject to further non-destructive testing. This testing may be radiographic, magnetic particle investigation, ultrasonic, or other appropriate testing. The full length of the weld will be examined.
 - .5 If more than 50% of the welds fail the visual inspection requirements all welds will be tested by non-destructive testing methods.
 - .6 The Contractor will be responsible for all costs for non-destructive testing, resulting from visual inspection failure.
 - .7 The Contractor will be responsible for all costs for welding repairs as a result of faulty workmanship or materials as determined from visual inspection and or subsequent non-destructive testing.
 - .8 Departmental Representative will not approve any weld until all required inspection is completed, found acceptable and marked as such.
- .7 Inspection and testing of materials and workmanship may be carried out by testing laboratory designated by Departmental Representative.
- .8 Surface preparation of aluminum in contact with dissimilar materials to CAN3-S157. All locations to be treated as if they were in presence of moisture.
 - .1 Obtain written permission from Departmental

Representative prior to field cutting or altering of structural members.

3.2 INSTALLATION

- .1 Predrill holes for lagscrews in accordance with CSA 086-M84.
- .2 Machine bolts will have standard heads, nuts and threads, and when in position will be of sufficient length to permit a full nut and two washers. Holes for machine bolts will be bored to the same diameter as that of the bolts.
- .3 Machine bolts will be placed in the work with their heads on the outside. The heads of the machine bolts that interfere with succeeding parts of the work being placed, or where directed by the Departmental Representative or shown on the drawings will be countersunk.
- .4 Standard cast iron washers or steel washers of the sizes indicated will be placed under the heads and nuts of all machine bolts bearing on timber surfaces, except where specified otherwise.
- .5 Where indicated, use steel washers of size shown.
- .6 Holes for spikes will be bored 1.5 mm smaller than diameter of spike and 50 mm less than the length of spike.
- .7 Provide suitable and acceptable means of anchorage, such as dowels, anchor clips, bar anchors, bolts and washers, etc. as indicated on the drawings.

3.3 PROTECTION

- .1 Take necessary care in the handling, packing and shipping of all galvanized steel members to prevent damage to the galvanized coating. Evidence of damage to the galvanized members due to mishandling or lack of adequate protection shall be cause for rejection of the members.