

PART 1 - GENERAL

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| <u>1.1 DESCRIPTION</u> | .1 | The work under this section will include the supply, fabrication and installation of all machine bolts, nuts, washers, anchor bolts, angles, plates, bars, embedded metals in concrete, tie-rods and channels, steel angles, and all other miscellaneous steel. |
| | .2 | The work under this section will include the supply, fabrication and installation of the H-Pile Connection brackets. |
| <u>1.2 RELATED SECTIONS</u> | .1 | Section 01 33 00 - Submittal Procedures. |
| | .2 | Section 01 74 21 - Construction/Demolition Waste Management And Disposal. |
| | .3 | Section 03 30 00 - Cast-in-Place Concrete. |
| | .4 | Section 31 62 16 Steel H Piles. |
| | .5 | Section 06 30 00 Treated Dimension Timber. |
| <u>1.3 REFERENCES</u> | .1 | American Welding Society (AWS) AWS D3.6M:2010, Underwater Welding Code. |
| | .2 | American Society for Testing and Materials International (ASTM).
.1 ASTM A123/A123M-12, Standard Specification for Zinc, (Hot-Dip Galvanized) Coatings on Iron and Steel Products.
.2 ASTM A307-12 Standard Specification for Carbon Steel Bolts and Studs, 60 000 PSI Tensile Strength.
.3 ASTM A325-10, Standard Specification for Structural Bolts, Steel, Heat Treated, 120/105 ksi Minimum Tensile Strength. |
| | .3 | Canadian Standards Association (CSA)
.1 CSA-G40.20/G40.21-04 (R2009), General Requirements for Rolled or Welded Structural Quality Steels.
.2 .CSA-S16-09, Design of Steel Structures.
.3 CSA-W47.1-09, Certification of Companies for Fusion Welding of Steel Structures.
.4 CSA-W48-06 (R2011), Filler Metals and Allied Metals for Metal Arc Welding. |
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<u>1.3 REFERENCES</u> (Cont'd)	.3	(Cont'd) .5 CSA-W55.3-08, Certification of companies for resistance welding of steel and aluminum. .6 CSA-W59-03 (R2008), Welded Steel Construction (Metal Arc Welding).
<u>1.4 MEASUREMENT FOR PAYMENT</u>	.1	<u>Wharf to H-Pile to Float Connection Assembly:</u> The supply and/or fabrication of brackets and their installation into the work, and the modifications to wharf and floating wharf to incorporate connections will be lump sum.
	.2	<u>Ladder:</u> Galvanized steel ladder to be paid by the unit. Include timber uprights in price.
<u>1.5 SOURCE QUALITY CONTROL</u>	.1	Supply proof that the fabrication shop in which this work is to be constructed is currently certified by the Canadian Welding Bureau to the requirements of the above.
	.2	Identify all welding personnel to be used in the fabrication of this work, together with proof of their current welding qualifications and certification under the Canadian Welding Bureau.
<u>1.6 SUBMITTALS</u>	.1	Shop Drawings .1 Submit shop drawings in accordance with Section 01 33 00 - Submittal Procedures. .2 Indicate materials, core thicknesses, finishes, connections, joints, method of anchorage, number of anchors, supports, reinforcement, details, and accessories. .3 Each shop drawing submittal shall bear the stamp and signature of a qualified Professional Engineer registered in the province of New Brunswick. .4 It is the responsibility of this Contractor to field confirm the exact locations and construction of related work to which work under this section connects to, or is supported on. .5 Review of procedure and erection drawings will extend to general design concept

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1.6 SUBMITTALS
(Cont'd)

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.5 (Cont'd)
only. This review does not relieve the Contractor of the responsibility for accuracy of the detail dimensions, general fit-up of parts to be assembled, adequacy of proposed methods and procedures or for errors or defects contained in the details.

1.7 QUALITY
ASSURANCE

- .1 Test Reports: Certified test reports showing compliance with specified performance characteristics and physical properties.
.2 Certificates: Product certificates signed by manufacturer certifying materials comply with specified performance characteristics and criteria and physical requirements.

1.8 TRANSPORTATION
STORAGE AND HANDLING

- .1 Exercise care in storing, transporting, handling and erecting all material and support all materials properly at all times so that no piece will be bent, twisted or otherwise damaged structurally or visually.
.2 Correct damaged material and, where damage is deemed irreparable by the Engineer, replace the affected item at no additional expense to the Owner.
.3 Fabricate large assemblies so they can be safely and easily handled to their place of installation in the work.
.4 Store assemblies above ground and so as not to be damaged.

1.9 WASTE
MANAGEMENT AND
DISPOSAL

- .1 Divert unused metal materials from landfill to metal recycling facility approved by Departmental Representative.
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PART 2 - PRODUCTS

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| <u>2.1 MATERIALS</u> | .1 | Steel sections and plates: to CSA G40.20/G40.21-98, Grade 300W. |
| | .2 | Welding materials: to CSA W59-1989 (R2001). |
| | .3 | Welding electrodes: to CSA W48-01 Series. |
| | .4 | Strutural bolts to ASTM A307. |
| | .5 | Galvanizing: hot-dipped galvanizing with zinccoating, 6minimum 600 g/m2 to ASTM A123/A 2.2 M, Specification for Zinc (Hot-Dip Galvaniz ed) Coatings on Iron and Steel Products. |
| <u>2.2 BOLTS, NUTS AND WASHERS</u> | .1 | Carriage bolts, nuts and washers shall be in accordance with the latest edition ASTM A307, unless otherwise indicated or approved. |
| | .2 | Carriage bolts shall have round, concave heads. |
| | .3 | Structural bolts shall have standard heads. |
| | .4 | Structural bolts shall have national coarse thread with allowance for hot dipped galvanizing. |
| | .5 | Structural Bolts shall be supplied with heavy duty nuts to ASTM A5 2.3 Grade A, and washer to AISI 1010/1020. |
| | .6 | When in position, bolts will be of sufficient length to permit a full nut and two washers. |
| | .7 | Plate washers shall be to CSA Standard G40.21, minimum 4 mm thick, size as indicated, drilled to suit the bolt diameter with suitable allowance for galvanizing. |
| | .8 | Drift Bolts: All drift bolts used in work will have a length equal to thickness of timbers being fastened less 50 mm unless otherwise specified. |
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2.3 FABRICATION

- .1 Fabricate work square, true, straight and accurate to required size, with joints closely fitted and properly secured.
- .2 Where possible, fit and shop assemble work, ready for erection.
- .3 Ensure exposed welds are continuous for length of each joint. File or grind exposed welds smooth and flush.
- .4 Machine bolts will have standard heads, nuts and when in position will be of sufficient length to permit a full nut and two washers. Treads shall be Coarse Thread Series as specified in latest ANS/B1-1 having a Class 2A tolerance.
- .5 Standard cast iron washers suitable for the size of the bolt specified will be placed under the heads and nuts of all machine bolts bearing on timber surfaces unless noted otherwise on the drawings. Ogee washers to Timber Design Manual issued by Laminated Timber Institute of Canada and to be cast iron, free from injurious defects or impurities. As an alternative to Ogee washers, standard galvanized plate washers can be used. The washer is to be three times the bolt diameter and a minimum thickness of 8 mm. Square washers are not permitted.

2.4 FINISHES

- .1 Galvanizing: all galvanized hardware as identified dipped galvanizing with zinc coating 610 g/m² to CAN/CSA-G164.
 - .2 Zinc primer: zinc rich, ready mix to CAN/CGSB-1.181.
 - .3 All Metals or materials specified in this section are either hot dip galvanized and/or Stainless Steel. All anchoring to concrete will be Stainless Steel.
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PART 3 - EXECUTION

3.1 ERECTION

- .1 Do welding work in accordance with CSA W47.1-M1987 (R1998) unless specified otherwise.
- .2 Do steel fabrication work in accordance with CAN/CSA-S16.
- .3 Erect metalwork square, plumb, straight, and true, accurately fitted, with tight joints and intersections.
- .4 Take necessary care in the handling of all galvanized steel parts to prevent damage to the galvanized coating. Evidence of damage shall be cause for rejection. Damage may be touched-up if approved by Departmental Representative.
- .5 Touch-up galvanized surfaces with zinc rich primer where burned by field welding.

3.2 HANDLING
GALVANIZED PARTS

- .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 damaged members if requested by the Departmental Representative. If not rejected, touch up galvanized surfaces with cold-applied

3.3 Welding
Inspection

- .1 The Contractor is responsible to assure that materials, fabrication, and examination procedures for all welding conforms to CSA W59 or W59.2.