

PART 1 - GENERAL

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|---------------------------------------|----|--|
| <u>1.1 Related Sections</u>           | .1 | Section 01 74 21<br>Construction/Demolition, Waste<br>Management and Disposal  |
|                                       | .2 | Section 02 41 13 Site Work, Preparation<br>and Removal.  |
| <u>1.2 Description</u>                | .1 | The work under this section covers the<br>miscellaneous supply and fabrication<br>of metals components, and demolition<br>of steel sheet piling.   |
| <u>1.3 Measurement<br/>Procedures</u> | .1 | No measurement of payment under this<br>section.   |
| <u>1.4 References</u>                 | .1 | American Welding Society (AWS)<br>.1 AWS D3.6M:2010, Underwater<br>Welding Code.   |
|                                       | .2 | American Society for Testing and<br>Materials International (ASTM).<br>.1 ASTM A123/A123M-12, Standard<br>Specification for Zinc, (Hot-Dip<br>Galvanized) Coatings on Iron and<br>Steel Products.<br>.2 ASTM A307-14e1 Standard<br>Specification for Carbon Steel<br>Bolts and Studs, 60 000 PSI<br>Tensile Strength.<br>.3 ASTM F3125/F3125M-15a Standard<br>Specification for High Strength<br>Structural Bolts, Steel and Alloy<br>Steel, Heat Treated, 120 ksi<br>(830 MPa) and 150 ksi (1040 MPa)<br>Minimum Tensile Strength, inch<br>and metric dimensions. |
|                                       | .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.
- .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).

1.5 Source Quality Control

- .1 The Contractor is to provide written documentation from the Canadian Welding Bureau certifying that all welders used for this work are qualified to the requirements of CSA-W47.1, Division 1 or 2.1 or CSA-W47.2.
- .2 Provide written procedures to Departmental Representative for review and approval indicating methods to be used for all welding on this project.
- .3 Provide evidence to the Department Representative of current qualifications of welders.

1.6 Procedure and Welder Qualification for Underwater Welding

- .1 No underwater welding is to proceed until qualification of welding procedure and performance qualifications to Section 5, "Qualification" and verification of procedure and performance qualification to Section 6, "Inspection" as per AWS D3.6M, has taken place.

- .2 Contractor is responsible to provide satisfactory evidence to the Departmental Representative that the procedure and welders have been qualified and a verification of procedure and performance qualification has been carried out. No production welding is to be done prior to this submission being approved by the Departmental Representative.

1.7 Shop Drawings

- .1 Submit fabrication and erection documents and material lists in accordance with Section 01 33 00 Submittal Procedures.
- .2 It is the responsibility of the Contractor to field confirm the exact locations and construction of related work to which work under this section connects to, or is supported on.
- .3 Each drawing submission shall bear signature and stamp of qualified Professional Engineer registered or licensed to practice in the Province of New Brunswick, for all assemblies, components, details and connections not shown on the drawings.
- .4 Review of procedure and erection drawings will extend to general design concept 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.

1.8 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.
- .3 Provide manufacturer's product specifications and written instructions for cleaning, surface preparation and application for field touch-up of all galvanized steel supplied under this section.

1.9 Waste Management  
and Disposal

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

PART 2 - PRODUCTS

2.1 Materials

- .1 Steel angles, plates and Channels to CSA G40.20/G40.21, Grade 300W.
- .2 HSS sections to CSA G40.20/G40.21, Grade 350W, class C.
- .3 Welding Electrodes (underwater): to be wet welding electrodes, Thyssen Nautica 20, Hydroweld FS, or approved equal.
- .4 Welding Electrodes (above water): to CSA W48 Series.
- .5 Structural Bolts, nuts and washers: to ASTM F3125, grade A325.
- .6 Galvanizing: Hot Dip to ASTM A123/A123M. (610g/m<sup>2</sup>).
- .7 Galvanizing Touch-Up/Repair:
  - .1 Touch-up galvanizing for repair

to damaged galvanized surfaces shall be with a purpose-made cold-applied film galvanizing system consisting of zinc powder, aromatic hydrocarbon and binder. Coating system to meet the following minimum requirements:

- .1 Dry film content 96% by weight with zinc purity of 99.995% to ISO 3549.
- .2 Recognized for use as repair coating for hot-dip galvanizing.
- .3 Dry film non-toxic to AS/NSZ 4020.
- .4 UV resistant.

2.2 Fabrication -  
General

- .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 Provide adequate drainage at low points of all closed sections. Indicate drain hole locations on shop drawings.

PART 3 - EXECUTION

3.1 General

- .1 Do steel work in accordance with CSA-S16.
- .2 Do welding work in accordance with CSA W47.1 or CSA W47.2 unless specified otherwise.
- .3 Erect metal work square, plumb, square, 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 Touch-up of  
Galvanized  
Surface

.1 Touch up all damaged, scratched or exposed steel at welds of galvanized components in field with cold applied film galvanizing system.

.2 Prepare all surfaces to be touched-up by de-greasing and cleaning to SSPC-SP12.

.3 Refer to manufacturers written instructions for additional cleaning, surface preparation and application requirements.

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.

.2 Quality assurance inspection and testing of welds will be carried out by a Testing Agency designated by Departmental Representative.

.3 Provide safe access and working areas for inspection and testing on site, as required by Testing Agency and as authorized by Departmental Representative.

.4 Inspection or testing by Departmental

Dredging and Rock  
Protection  
Shippagan Gully, NB  
R.076592.003

METAL FABRICATIONS

Section 05 50 00

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Representative will not augment or  
replace Contractor's quality control  
nor relieve him of his contractual  
responsibility.

END OF SECTION