

1. Site
 - .1 The site of the work is Margaree Harbour, Inverness Co., N.S., in the location shown on the attached plan.
2. Description
 - .1 The work covered under this project consists of furnishing all plant, labour, equipment and materials in accordance with the plans and specifications attached herein.
3. Scope
 - .1 The General Terms of work includes, but is not necessarily limited to the following items:
 - Mobilization and Demobilization.
 - Sitework, demolition & removal of existing timber materials as indicated.
 - Load, supply and installation of new reinforced concrete wheelguard.
 - Refurbish and installation of existing mooring cleats.
 - Load, supply and installation of new treated timber cross bracing.
 - Load, supply and installation of new treated timber wales.
 - Load, supply and installation of new treated timber sheathing.
 - Load, fabrication and installation of new treated timber ladders
4. Examination of Site
 - .1 Contractors who will tender on this work are advised to visit the work site and make their own appraisal of the facilities required for and the difficulties pertaining to the execution of the work, the actual site and soil conditions, the severity, exposure and uncertainty of local weather conditions and all other contingent matters. Submission of a tender will be deemed confirmation that the Contractor is conversant with site conditions.
5. Work Schedule
 - .1 Upon request of S.C.H., the Contractor must submit a schedule of work showing anticipated progress stages and final completion of work within the time period required by Contract documents.
6. Layout of Work
 - .1 The exact limits of work will be determined on site by the S.C.H.
7. Contractor's use of Site
 - .1 Caution will be exercised during the work to avoid damage to private or public property at or near the site. Any damage as a result of Contractor's operations will be repaired to the satisfaction of S.C.H. at the Contractor's expense.
 - .2 Do not unreasonably encumber the site with materials or equipment.
 - .3 At the completion of the work, the area will be restored to its original condition. The Contractor will remove all construction materials, residue, etc., and leave the site in a condition acceptable to S.C.H.
8. Codes & Standards
 - .1 Perform all work in accordance with the National Building Code of Canada (NBC) and any other provincial or local application.
9. Utilities
 - .1 All utilities necessary for the performance of the work such as electricity, water, telephone, etc., will be arranged and paid for by the Contractor.
10. Safety
 - .1 The Contractor will administer the project in a manner that will ensure at all times full compliance with the regulations of all applicable safety codes. In particular, the safety regulations of the Worker's Compensation Board of N.S. will be strictly adhered to.

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- .2 The Contractor must supply and erect any necessary barricades for public safety. The Contractor will be responsible for any damage as a result of the absence or inadequacy of safety barricades.
11. **Safety Certified**
- .1 **S.C.H. requires tenderers and their intended subcontractors which are to be considered for the work shall have a corporate certificate of safety certification as issued by the Dept. of Labour and NSCSA or a written confirmation that the company is considered to be in the process of being certified.**
- .2 **Contractors “in the process” shall submit safety document for review.**
11. **Datum**
- .1 The datum, referred to in this specification and on the accompanying plans is low normal tide (L.N.T.).
12. **Additional Drawings**
- .1 S.C.H. may furnish additional drawings to assist proper execution of the work. These drawings will be issued for clarification only. Such drawings have same meaning and intent as if they were included with plans referred to in the Contract documents.
13. **Measurement For Payment**
- .1 No interim payment will be made due to the length of the performance period. Payment for all work will be processed upon final inspection by S.C.H.
- (1) Mobilization and demobilization to the site will not be measured but paid Lump Sum. Include in this item, the cost to deliver materials and equipment to the site and to carry out all components of the work.
- (2) Removal & disposal of existing timbers (wheelguard, chocks, sheathing, cross bracing, wales, fenders and ladders) will not be measured but paid Lump Sum. Include into this item the cleaning of the existing concrete surface to provide smooth edge for anchoring of rebar and flush surface for new concrete wheelguard.
- (3) Load, supply, fabrication and installation of new reinforced concrete wheelguard will be paid by the cubic meter (m³) of concrete incorporated into the work calculated from the construction drawings. Include into this item drain hole as noted on sheet 2 of 2.
- (4) Refurbish / cleaning, brushing, sandblasting, painting etc. and installation of existing mooring cleats will be measured by the number of units incorporated into the work.
- (5) Load, supply and installation of new treated timber cross bracing (150x200x4880) will be measured by the number of new units incorporated into the work. The exact location of new timber cross bracing as shown on contract drawings.
- (6) Load, supply and installation of new treated timber wales (200x250x3660) will be measured by the number of new units incorporated into the work. The exact location of new wales as shown on contract drawings.

- (7) Load, supply and installation of new treated timber sheathing (150x150x3050) will be measured by the number of new units incorporated into the work.
 - (8) Load, supply, fabrication and installation of new treated timber ladders (150x200x3660 uprights) will be measured by the number of new units incorporated into the work. Include into this item; installing three (3) of the twelve (12) new ladders on adjacent wharf 403, removing existing sheathing prior to installation of the new ladders will be considered incidental to this work.
- .2 All materials removed, shall be disposed of in a proper manner and in accordance with municipal, provincial and federal standards.
- .3 All items that require installation are to include all necessary galvanized hardware such as machine bolts, sheathing bolts, washers, nuts, etc. into that item. The contractor is responsible to supply all hardware required for the refastening of any existing timbers temporarily removed (such as fender piles, wales, utility poles, fenders, etc.).

1. Construction Safety Measures
 - .1 Observe and enforce construction safety measures required by National Building Code, Provincial Government, Workmen's Compensation Board and municipal statutes and authorities.
 - .2 In event of conflict between any provisions of above authorities the most stringent provision will apply.
2. Fire Safety Requirements
 - .1 Comply with requirements of standard for Building Construction Operations FCC No. 301 Standard for Construction Operations, June 1982, issued by Fire Commissioner for Canada.
 - .2 This standard may be viewed at Regional Engineer's office, P.O. Box 2247, 1713 Bedford Row 2nd Floor, Halifax, N.S. B3J 3C9, and copies may be obtained from: Sir Charles Tupper Building, Riverside Drive, Ottawa, Ontario K1A 0M2.
 - .3 Continually maintain on the construction site an approved, workable 2.5 kg or equivalent multi-purpose dry chemical extinguisher for each welding and cutting unit which shall be located so as to be readily accessible to the operator.
 - .4 At least one 10 kg or equivalent multipurpose dry chemical extinguisher should be located on site and be readily available during the working day
3. Overloading
 - .1 Ensure no part of Work is subjected to a load which will endanger its safety or will cause permanent deformation.
 - .2 The Contractor is advised that use of heavy equipment on or close to existing structure is at Contractor's risk and responsibility.
 - .3 Repair any damage to existing structure caused by Contractor.
4. Falsework
 - .1 Design and construct falsework in accordance with CSA S269.1-1975.
5. Scaffolding
 - .1 Design and construct scaffolding in accordance with CSA S269.2-M1980.
6. Hazardous Materials
 - .1 Comply with requirements of Workplace Hazardous Materials Information System (WHMIS) regarding use, handling, storage, and disposal of hazardous materials; and regarding labelling and provision of material safety data sheets acceptable to Labour Canada and Health and Welfare Canada.
 - .2 Deliver copies of WHMIS data sheets to Engineer on delivery of materials.
 - .3 Train staff regarding handling of plant treated wood products and use of field treatment materials.

7. Project Safety Plan

- .1 Notwithstanding other safety requirements specified in this section or in any other section of the Specifications, Contractor shall prepare a written site specific Project Safety Plan outlining all safety rules, procedures and safe work practices which must be followed by all personnel working on or accessing the project site. These safety rules, procedures and safe work practices must be accompanied by an outline of all known and potential hazards. The Safety Plan shall address and conform to the applicable Provincial Safety Act, Codes and Regulations, except where a requirement to conform to a more stringent Act or Regulation has been specified elsewhere in the contract Documents. Develop the Safety Plan in collaboration with all sub-contractors who will be carrying out work at the site at any given time during the construction period, to ensure that all pertinent types of work activities are addressed in the Safety Plan by related safety rules, procedures and practices. It is the Contractor's responsibility to be familiar with all applicable Safety Acts, Regulations, Codes and contract requirements. The requirements of the Acts, Regulations, Codes and contract must be identified and addressed in the Safety Plan, by identifying Standard Operating Procedures (SOP) and safe work practices (SWP) which incorporate clear and specific control measures, applicable safety rules, procedures and practices, all of which shall become mandatory.
- .2 Retain all copies of the formal Hazard assessment conducted by the contractor throughout the duration of the project and make available to the Engineer immediately upon request.
- .3 Post the Project Safety Plan at a common location on the Project Site visible to all workers and persons accessing the site. Ensure that all employees, including sub-contractors' personnel, are advised of such Project Safety Plan and of the posted location.
- .4 Contractor shall ensure all workers and authorized persons entering the work site are notified of and abide by the posted Project Safety Plan, safety rules, procedures, safe work practices and applicable Safety Acts, Regulations, and Codes. Any persons not complying with applicable Acts, Regulations, Codes, or the Project Safety Plan shall not be permitted on the site.
- .5 Develop the Project Safety Plan immediately upon notification of contract award and submit it to the Engineer for information prior to the commencement of work. Revise such Plan when any potential or new hazards are identified, prior to sub-contractors not covered in the original plan commencing work or when requested by the Engineer or his representative. Submit the Project Safety Plan and any revised version to the Engineer, or his representative, for information, retention and reference purposes only. Submission of the Safety Plan to the Engineer does not imply approval and shall not relieve Contractor of any legal obligations for the provision of construction safety as specified by the Provincial safety Acts, Codes or Regulations..

PART 1 - GENERAL

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|-----|--------------------------------|----|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 1.1 | <u>Related Work</u> | .1 | Refer to other specification sections for related information. |
| 1.2 | <u>Submissions</u> | .1 | Methodology:
(1) When requested provide methodology for carrying out the work. |
| 1.3 | <u>Protection</u> | .1 | Prevent debris from going adrift and becoming a menace to navigation. |
| | | .2 | Any damage to existing structures, utility poles, electrical system, derrick/offloading devices not specified for removal to be repaired at the Contractor's cost to the satisfaction of S.C.H. |
| | | .3 | Protect existing mooring cleats for refurbishing. |
| 1.4 | <u>Measurement for Payment</u> | .1 | Refer to General Instructions, Section 13, Measurement For Payment. |

PART 2 - PRODUCTS

Not applicable.

PART 3 - EXECUTION

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|-----|-----------------------------|----|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 3.1 | <u>Preparation</u> | .1 | Inspect site and verify with Small Craft Harbours items designated for removal and items to be preserved. |
| | | .2 | Locate and protect utility lines / water lines. Preserve in operating condition active utilities traversing site. |
| | | .3 | Provide temporary power and lighting as shown on the plan or as required by S.C.H. |
| 3.2 | <u>Removal</u> | .1 | Remove items indicated. |
| | | .2 | Do not disturb adjacent structures designated to remain in place. |
| | | .3 | At end of each day's work, leave work in safe condition so no part is in danger of toppling or falling. |
| 3.3 | <u>Disposal of Material</u> | .1 | Disposal of materials not designated for salvage or re-use in work, will be the contractor's responsibility, and must be disposed of off-site. |
| | | .2 | The material to be disposed is to be transported and disposed of in an environmentally acceptable manner to the satisfaction of the H.A., and in accordance with any local, Municipal, Provincial and Federal restrictions and regulations. |
| 3.4 | <u>Restoration</u> | .1 | Upon completion of work, remove debris, trim surfaces and leave work site clean. |
| | | .2 | Reinstate areas and existing works outside areas of demolition to conditions that existed prior to commencement of work. |

PART 1 GENERAL

1.1 Reference Standards

- .1 CAN/CSA-080 Series -08 (R2012) (or latest edition), Wood Preservation.
- .2 AWPA P7-85 (or latest edition), Creosote for Brush or Spray Treatment for Field Cuts (American Wood Preservers Association)
- .3 NLGA standard grading rules for Canadian Lumber 2014 edition or most recent edition at time of tendering
- .4 CAN/CSA-G164-M92 (or latest edition), Hot Dip Galvanizing of Irregularly Shaped Articles
- .5 ASTM A307-14 (or latest edition), Specification for Carbon Steel Bolts and Studs, 60,000 psi Tensile
- .6 CAN/CSA B111-1974 (or latest edition), Wire Nails, Spikes and Staples
- .7 CAN/CSA 086-14 (or latest edition), Engineering Design in Wood (Limit States Design)\
- .8 CAN/CSA G40.21M (or latest edition), Structural Quality Steels
- .9 CAN/CSA A23.1-14 (or latest edition), Concrete Materials and Methods of Concrete Construction (Limit States Design)
- .10 CAN/CSA A23.3-14 (or latest edition), Design of Concrete Structures
- .11 CAN/CSA G30.18-09 (or latest edition), Carbon Steel Bars for Concrete Reinforcement
- .12 CAN/CSA A3000-13 (or latest edition), Cementitious Materials Compendium
- .13 ASTM A1064-15 (or latest edition), Standard Specification for Carbon-Steel Wire and Welded Wire Reinforcement, Plain and Deformed, for Concrete
- .14 ASTM A260-10a (or latest edition), Standard Specification for Air-Entraining Admixtures for Concrete
- .15 ASTM A494-13 (or latest edition), Standard Specification for Chemical Admixtures for Concrete
- .16 ASTM A48-03 (or latest edition), Standard Specification for Gray Iron Castings
- .17 CSA W59-13 (or latest edition), Welded Steel Construction (Metal Arc Welding)

1.2 Measurement for Payment

- .1 Refer to General Instructions, Section 13, Measurement For Payment.

PART 2 PRODUCTS

2.1 Treated Timber

Materials

- .1 Contractor is responsible to supply all treated timber.
- .2 Softwood Timber: Graded and stamped to National Lumber Grading Authority (NLGA) No. 1 Structural. Eastern Hemlock, Western Hemlock or Douglas Fir Species, only, will be used.
- .3 Timber Treatment:
- | | CCA
(kgs/m ³) | ACA
(kgs/m ³) |
|-----------------------------|------------------------------|------------------------------|
| Coast Douglas Fir | 24 | 24 |
| Western/Eastern Hemlock 300 | 24 | 24 |
| Jack/Longpole Pine | 24 | 24 |
| Red, Ponderosa | 30 | 30 |
| Southern Yellow Pine | | |
- .4 Make arrangements for testing of timber by:
Plant Inspection: Provide treatment plant identification, date of treatment, list of various pieces in the charge, charge number, plant assay testing results, concentration and type of preservative used, duration of treatment, gauge retention, species of wood; and make arrangements with the treatment plant to locate bundles, move bundles, break open bundles and carry out other measures to facilitate the inspection.

2.2 Galvanized Hardware:

Materials

- .1 Contractor is responsible to supply all galvanized hardware.
- .2 Hardware must meet the following specifications:
- (1) Machine bolts, lag screws, sheathing bolts, nuts, holdfasts, ladder rungs and round plate washers: to ASTM A307.
 - (2) Spikes: to CSA B111.
 - (3) Hot dip galvanized hardware, machine bolts, lag screws, sheathing bolts, nuts, holdfasts, ladder rungs, washers and spikes to CSA G164-1981, with minimum zinc coating of 610 g/m².
 - (4) All hardware will be galvanized unless otherwise shown on plans.

Execution

- .1 Boreholes for machine bolts and sheathing bolts to be same diameter as bolts. Boreholes for lag bolts to be same diameter as shank for unthreaded portion and 0.70 times the shank diameter for the threaded portion. Threaded portion of lag bolts will be installed using a wrench, not by driving.
- .2 All countersunk holes to be recessed 25 mm and shall receive two coats of Pentox Green Product (2.39% copper naphthenate), allowing sufficient time between applications to permit total absorption. The cost of supply and application of Pentox Green Product will not be measured for payment but will be considered incidental to the work.
- .3 Timber will be protected during handling, shipping, offloading and field handling, by use of suitable equipment and procedures. Use rope or fabric strap slings on site for moving bundles or individual timbers, rather than metal grabs, chains or cables.
- .4 Tops of vertical untreated timber to be field treated with minimum two liberal coats of Pentox Green Product.

- .5 Handle treated material to avoid damage causing alteration in original treatment.
- .6 Treat in field, spike holes, boreholes, plugged holes, cuts and any damage to treated material, using Pentox Green Product, as specified herein, regardless of plant treatment type. Fill all unused bored holes and any other holes with tight fitting treated wooden plugs prior to any exposure to water containing marine borers.
- .7 Treat boreholes, using a pressurized container with an extension rod, to produce a fine spray in the holes with one application. Alternately a cylindrical brush may be used.
- .8 Treat field cuts and any abrasions with minimum of two liberal applications, using either spray or brush.
- .9 Environmental Concern: Ensure no spillage or excess application of field preservative. Provide workmen with sufficient training and protective gear to properly and safely handle the treated materials and to apply field treatment, so as to prevent undue hazard to themselves, others, or the environment.
- .10 Contain all debris and leachates (films on water surface) within the area of the work by using containment facilities such as floating booms or screens.

2.3 Concrete Formwork

.1 Materials

- .1 Formwork: form lumber clean, free from loose knots, warp and splits to conform to CAN/CSA A23.1-14.
- .2 Form release agent: chemically active release agents containing compounds that react with free lime present in concrete to provide water soluble soaps, preventing set of film of concrete in contact with forms.

.2 Execution

- .1 Verify lines, levels and crack control centers before proceeding with formwork and ensure dimensions agree with drawings.
- .2 Construct forms to produce finish concrete to conforming to shape, dimensions, locations and levels indicated on the plans and within tolerances required by CAN/CSA A23.1-14.
- .3 Leave formwork in place a minimum of five (5) days after placing concrete.

2.4 Concrete Reinforcement

.1 Materials

- .1 Reinforcing steel: to CAN/CSA G30.18-09 carbon steel, grade 400, deformed bars.
- .2 Wire ties: to ASTM A1064-15 plain, cold drawn annealed steel wire.
- .3 Bar supports: approved supports and chairs of strong, durable, non-corrodible materials, which fasten or tie securely to reinforcing steel. Galvanized metal or plastic chairs, concrete blocks or other devices may be used provided they satisfy requirements of this section and all approved by the S.C.H.

.2 Execution

- .1 No field bend reinforcement steel except where indicated or authorized by S.C.H.
- .2 Accurately place reinforcing steel in positions indicated and hold firmly during placing, compacting and setting of concrete.

- .3 Tie reinforcement at each intersection for 12" spacing.
- .4 Keep all reinforcing steel at least 3" back from formwork.
- .5 Splice reinforcing bars to CAN/CSA A23.3-14.
- .6 No welding reinforcing steel unless authorized by the S.C.H.
- .7 Clean reinforcing steel before placing concrete.
- .8 Do not place concrete until S.C.H. has inspected and approved reinforcement work in place.

2.5 Concrete

.1 Materials

- .1 Aggregates: to CAN/CSA A23.1-14
- .2 Portland Cement: to CAN/CSA A3000-13 normal, type 10.
- .3 Water: to CAN/CSA A23.1-14.
- .4 Admixtures:
 - (1) Air entraining admixture: to ASTM C260-10a.
 - (2) Chemical admixtures: to ASTM C494-13.
- .5 Airing compounds to CGSB90-GP-1a.

.2 Concrete Mixes

- .1 Use ready mix concrete designed to produce air entrained concrete to comply with CAN/CSA A23.1-14.
- .2 Concrete Mix:
 - .1 28 day cylinder compressive strength: 35 MPa
 - .2 Class of exposure: C - 1.
 - .3 Minimum cement content: 400kg/m³ of concrete.
 - .4 Maximum size of coarse aggregate: 20 mm.
 - .5 Slump at point of discharge: 50-80 mm.
 - .6 Max. water/cement ratio: 0.40.
 - .7 Air content: 6 - 8%.
- .3 Admixtures:
 1. Obtain approval of S.C.H. before using chemical admixtures.
 2. Do not use calcium chloride or compounds containing calcium chloride.

.3 Structural Concrete

A. General

- .1 Do not commence placing concrete until S.C.H. has inspected and approved forms, foundations, reinforcing steel, joints; conveying, spreading, consolidation and finishing equipment; and curing and protective methods. Provide 48 hour notice to S.C.H. prior to placement of concrete.
- .2 In cold weather, place concrete in accordance with CAN/CSA A23.1-14.
- .3 Keep concrete surfaces moist continually during protective stage.
- .4 Reduce temperature after initial curing stage at a rate not exceeding 10°C per day until outside temperature has been reached.
- .5 Comply with additional requirements of CAN/CSA A23.1-14 for concrete placed near seawater.

B. Placing Concrete

- .1 Place and consolidate concrete to CAN/CSA A23.1-14 and the following:
 1. Do not place concrete against frozen material.
 2. Place concrete continuously from joint to joint.
 3. Unless otherwise specified, consolidate plastic concrete with high speed internal vibrations.
 4. Provide a smooth riding surface of uniform texture, true to required grade and cross section.
 5. Do not place concrete until S.C.H. is satisfied that rate of placing is sufficient to complete proposed placing, finishing, and curing operations within scheduled time.

6. Exercise care to ensure that settlement and deflection due to added weight if concrete is kept to a minimum.
7. Place concrete in a uniform manner heading approximately normal to the structure center line. Limited rate of placing to that which can be finished before beginning of initial set.
8. Immediately after concrete has been placed and consolidated, strike off surface with equipment capable of finishing within a specified surface tolerances.
9. Finish uniformed surfaces true to grade and free of surface irregularities exceeding 3/8" under a 10 foot straight edge placed in any direction.

C. Protection and Curing

- .1 Exposed surfaces of the concrete shall be protected against evaporation of water from the mass as soon as free water ceases to appear on the surface of the concrete in accordance with CAN/CSA A23.1-14. The concrete after being placed must be protected for a period of at least seven (7) days.
- .2 The means used to protect or cure the concrete may be any of the following and the method selected must be approved by S.C.H.
 1. Cover with burlap, curing blankets, hay or straw kept continuously wet.
 2. Wetting with continuous water spray.
 3. Spraying or painting with water sealing compound conforming to ASTM-C309-74 (1990) Type 1-D.
- .3 Comply with additional requirements of CAN/CSA A23.1-14 for cold weather protection requirements.

D. Field Quality Control

- .1 Inspection and testing of concrete and concrete materials will be carried out by S.C.H. to CAN/CSA A23.2-14.
- .2 If tests do not meet requirements of S.C.H. take such measures as indicated in CAN/CSA A23.2-14.

E. Defective Work

- .1 Concrete is defective when:
 1. Failure to meet all requirements of this specification.
 2. Concrete contains excessive honeycombing or embedded debris.
 3. Twenty-eight (28) day cylinder strength (compressive) in any defined area is less than 95% of the specified minimum strength (35 MPa).
- .2 Repair defective concrete while concrete is still plastic, otherwise until curing is complete.
 1. Chip down edges perpendicular to surface.
 2. Wet area and apply grout mixture approved by S.C.H.
 3. Where directed, remove defective work and replace with new concrete.
 4. Where directed, grind off high surface irregularities.