



Fisheries and Oceans
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Small Craft Harbours Branch

TECHNICAL SPECIFICATIONS

WHARF CONSTRUCTION REPAIRS

COWICHAN BAY, B.C.

June 23, 2015

TABLE OF CONTENTS**NATURE OF WORK**

SECTION	TITLE
01 01 00	Table of Contents
01 03 00	Nature of Work
01 04 00	Owner Supplied Materials

GENERAL REQUIREMENTS

SECTION	TITLE
02 01 00	General Requirements

TECHNICAL SPECIFICATIONS

SECTION	TITLE
03 01 00	Demolition
03 02 00	Steel
03 03 00	General Timber
03 04 00	Timber Piles

HEALTH AND SAFETY REQUIREMENTS

SECTION	TITLE
04 01 00	Health and Safety Requirements

ATTACHED DRAWINGS

DRAWINGS	TITLE
CB-WR-001	General Arrangement
CB-WR-002	Typical Wharf Details

1 SITE LOCATION

- .1 Cowichan Bay is located on the East side of Vancouver Island, approximately 60km North of Victoria.

2 DEFINITIONS

- .1 The Site:

“The Site” referred to herein is Cowichan Bay Small Craft Harbour, PO Box 52, 1699 Cowichan Bay Road, Cowichan Bay, BC V0R 1N0, Canada.

- .2 The Contract Documents:

“The Contract Documents” referred to herein include all Sections herein, as well as, attached drawings referenced in Section 01 01 00 – Table of Contents.

- .3 Contracting Authority:

“The Contracting Authority” referred to herein is the Department of Fisheries and Oceans Canada – 200 Kent Street, 9th Floor, Ottawa, Ontario.

- .4 The Owner:

“The Owner” (also known as the “Technical Authority” or Client Department) referred to herein is the Department of Fisheries and Oceans Canada – Small Craft Harbours, Suite 200-401 Burrard Street, Vancouver, BC V6C 3S4.

- .5 The Engineer:

“The Engineer” referred to herein is commonly an employee of the Owner assigned by the Client Department as the Engineer and Technical Authority for the project. The Engineer may be a sub-contract Consultant for technical and inspection purposes and the Technical Authority must still be an employee of the Client Department.

- .6 The Contractor:

“The Contractor” referred to herein is the party accepted by the Owner, with whom a formal contract is signed, to complete the work of this project.

3 WORK INCLUDED

- .1 In general, work consists of wharf construction repairs to the wharf within the site. Refer to CB-WR 001 for the location of the wharf.

- .2 All work specified in the Contract Documents shall include the supply of equipment, labour and materials (except owner supplied timber and hardware described in section 01 04 00) necessary for the performance and completion of the work as required by the Contract Documents. All materials shall be new and conform to Technical Specifications in Sections 03 01 00, 03 02 00, 03 03 00 and 03 04 00. A description of materials supplied by the Owner is provided in Section 01 04 00. All replaced items, cut-offs and waste material shall be disposed by the Contractor in accordance to Section 02 01 00, 23.

.3 The principal works for platform to be executed and for which all materials, plant and labour are to be supplied by the Contractor are to:

- .1 Replace select bearing piles.
- .2 Install select fender piles.
- .3 Install select batter piles.
- .4 Replace select sections of caps.
- .5 Replace select sections of subcaps.
- .6 Replace existing corbels under new cap/subcap sections.
- .7 Install corbels at end of new cap/subcap sections.

.4 Description of Items

With reference to items listed in the Schedule of Quantities and Prices, work consists of, but is not limited to, the following items:

.1 Mobilization / Demobilization

The lump sum cost of mobilization/demobilization includes the following:

- .1 Moving all crew, equipment and materials on and off the Site.
- .2 Supply all materials required to complete the Contract, except for Owner supplied materials listed in Section 01 04 00.
- .3 Site clean-up after completion of the work.

.2 Replace Timber Bearing Piles with Steel Telescoping Piles

The unit cost per pile to replace a timber bearing pile with a steel telescoping pile includes the following:

- .1 The Contractor shall provide temporary support for the dead load of the wharf while replacing the pile.
- .2 The Contractor shall be capable of jacking between 0 to 20,000lbs.
- .3 Supply two (2) ten (10) ton (min. working capacity) scales and two (2) ten (10) ton (min. working capacity) jacks – one for each side of the steel pile.
- .4 Where located on CB-WR-001, remove and dispose the timber bearing pile above the mudline as per drawing CB-WR-002.

- .5 Install the steel telescoping pile as per drawing CB-WR-002. **Note: this item requires welding around the pile overlap seam and two jacking plates.**

- .3 Install Timber Batter Piles

The unit cost per pile to install a batter pile includes the following:

- .1 The existing batter pile to remain.
- .2 Installation locations provided on CB-WR-001.
- .3 Adjacent to and in the same direction as the batter pile, drive a new batter pile as per drawing CB-WR-002.
- .4 Cut the new pile to size, treat and install a pile cap as per drawing CB-WR-002.

- .4 Install Timber Fender Piles

The unit cost per pile to install a fender pile includes the following:

- .1 Where located on CB-WR-001, remove and dispose the old fender pile.
- .2 In the same location and direction as the pile removed, drive a new fender pile as per drawing CB-WR-002.
- .3 Cut pile to size, treat and install pile cap.

- .5 Replace Caps

The unit cost per meter to replace cap includes the following:

- .1 The Contractor shall provide temporary support for the dead load of the wharf while replacing the cap.
- .2 Where located on CB-WR-001, remove and dispose the old cap section.
- .3 Cut and treat the new timber to match the original length of the removed cap section.
- .4 Install a new cap as per drawing CB-WR-002.

- .6 Replace Subcaps

The unit cost per meter to replace subcap includes the following:

- .1 The Contractor shall provide temporary support for the dead load of the wharf while replacing the subcap.
- .2 Where located on CB-WR-001, remove and dispose the old subcap section.

.3 Cut and treat the new timber to match the original length of the removed subcap section.

.4 Install a new subcap with brackets as per drawing CB-WR-002.

.7 Replace Corbels

The unit cost per corbel to replace a corbel includes the following:

.1 The Contractor shall provide temporary support for the dead load of the wharf while replacing the corbel.

.2 Where located on CB-WR-001, remove and dispose the old corbel.

.3 Install a new corbel with brackets as per drawing CB-WR-002.

.8 Install Corbels

The unit cost per corbel to install a corbel includes the following:

.1 The Contractor shall provide temporary support for the dead load of the wharf while installing the corbel.

.2 Where located on CB-WR-001, cut the existing timber pile undersized to tightly fit the new corbel as per drawing CB-WR-002.

.3 Install a new corbel with brackets as per drawing CB-WR-002.

END OF SECTION

1 OWNER SUPPLIED MATERIALS

The Owner shall supply the following materials to the Site:

- .1 Hardware:
 - .1 An estimated amount of hex bolts, washers, plate washers and nuts for caps, subcaps, corbels and piles required for the work will be supplied by the Owner. A list of supplied hardware is as follows:
 - .1 Bracket Hardware: 146, 19x600 galv. hex bolts, nuts and washers.
 - .2 Batter Piles & Fender Piles Hardware: 15, 25x400 galv. hex bolts, nuts and 30 plate washers (15 flat & 15 curved).
 - .3 Telescoping Pile Hardware: 25, 19x152 galv. lag bolts
 - .2 Telescoping Piles:
 - .1 9, steel telescoping pile assemblies (upper and lower pipe sections) including jacking plates.
 - .3 Brackets:
 - .1 Cap/Subcap/Corbel Brackets: 140, 12x75x100 galv. brackets
 - .4 Wharf Timber:
 - .1 An estimated amount of timber required for the work will be supplied by the Owner. The Owner shall supply additional timber, above and beyond the estimated amount, under the condition that, the Contractor provides a list of required timbers no later than 30 days after award.

2 CONTRACTOR SUPPLIED MATERIALS

- .1 The Contractor shall supply additional hardware, above and beyond those supplied by the Owner (refer to item 1.1), required for the performance and completion of the Contract.
- .2 If the Contractor requires additional timber, above and beyond those supplied by the Owner (refer to item 1.2), for the performance and completion of the Contract and notifies the Owner after 30 days of award, the Contractor will be responsible for supplying the additional timber.

END OF SECTION

1 COMMENCEMENT AND COMPLETION

- .1 Site work may begin on September 1th, 2015.
- .2 All work including clean-up and demobilization must be completed by January 15th, 2016.

2 INSPECTION OF SITE

- .1 It is the responsibility of each bidder to obtain all necessary information pertaining to local site conditions and existing works, beyond the information provided in this Specification and accompanying drawing(s).

3 PERMITS, CERTIFICATES, LAWS AND ORDINANCES

- .1 The Contractor must, at his own expense, procure all permits, certificates and licenses required of him by law for the execution of his work under this contract. He shall comply with all Federal, Provincial or Municipal laws, ordinances or rules and regulations relating to the performance of his work and in force during the duration of this contract.
- .2 The Contractor is required to give all required notices, comply with all local, municipal, provincial, and federal laws, ordinances, codes, by-laws, rules and regulations relating to the work.
- .3 All work to be done in accordance with Work Safe BC regulations.
- .4 The Contractor shall comply with Federal and Provincial laws, orders and regulations concerning the control and abatement of water and air pollution.
- .5 The Contractor shall comply with the requirements of any local or other Noise By-Laws.

4 MINIMUM STANDARDS

- .1 In the absence of other standards specified in the Contract Documents, all work is to conform to, or exceed, the minimum standards of the Canadian Government Specifications Boards, the Canadian Standards Association, the American Society for Testing of Materials, or the National Building Code of Canada, whichever is applicable.
- .2 All work to be done in accordance with Work Safe BC regulations.

5 INTERFERENCE WITH OPERATION

- .1 The Contractor shall obey all navigation regulations and conduct operations so as to interfere as little as possible with the use of berthing spaces, fairways and passages. Install and maintain any and all protection to navigation as may be required by any properly constituted authority or by the Owner. During the course of construction and clean-up, do not dispose of surplus, waste or demolished materials in navigable waters.
- .2 The Contractor shall upon instruction of the Owner or Engineer, promptly remove any of the Contractor's equipment located outside the specified work area and obstructing any harbour operation.

6 COMPLIANCE WITH STANDARD SPECIFICATIONS CODES AND REGULATIONS

- .1 Unless expressly stated to the contrary, all materials, equipment and articles furnished by the Contractor shall comply with the applicable provisions of the standards of the Canadian Standards Association (CSA) or the Canadian Government Specification Board (CGSB) with the applicable provisions of the American Society for Testing Materials (ASTM), National Dredging Association (NFPA), American Concrete Institute (ACI) and the American Water Works Association (AWWA).
- .2 The Contractor shall follow all regulations in accordance with the Fisheries Act. Care shall be taken not to release any deleterious materials to fish habitat, into the water.
- .3 All work to be done in accordance with Work Safe BC regulations.

7 CONTRACTOR'S PERSONNEL

- .1 The Contractor's representative on site shall be completely familiar with the method of work to be employed. Such personnel shall remain on site for the duration of the work.

8 RESPONSIBILITY TO PERSONNEL

- .1 The Contractor shall have full responsibility for the board, lodging and transportation of his personnel and subcontractors. The cost for this shall be incorporated into his unit prices. He shall comply with all labor requirements, and Worker's Compensation regulations.

9 BARRIERS, LIGHTS AND WATCHING

- .1 The Contractor shall provide all requisite barriers, fences, warning signs, lights and watching for the protection of persons and property on or adjacent to the Site.

10 SITE ACCESS

- .1 The Contractor shall provide access to the work for the Owner's inspectors and surveyors as required.
- .2 General site access shall be coordinated with the Owner.
- .3 The Contractor shall maintain routes of travel, with the Owner being the sole judge as to what may be deemed reasonable.
- .4 The Contractor shall erect and maintain barriers, fences, lights, warning devices, and other protective devices as may be required for prevention of theft or damage of goods and protection of the public and workmen, or if so ordered by the Owner.

11 CONSTRUCTION AREA

- .1 The Contractor shall regulate construction traffic on public areas and comply with all local ordinances in connection therewith, including load limitation and removal of debris.
- .2 The Contractor shall confine his operations on the Site to those areas actually required for the work including routes and regulations approved by the Owner for haulage of materials.

12 NIGHT WORK

- .1 The Contractor shall keep proper lights each night between the hours of sunset and sunrise upon all floating plants, false-work and other obstructions where necessary, and upon all buoys of such size and in such locations as required by a governing authority. When work is done at night, maintain from sunset to sunrise such lights on or about the work and plant as necessary for the proper observation of the work and the efficient prosecution thereof.

13 CLEAN-UP

- .1 At all times the Contractor shall keep the Site free from accumulation of waste material and debris and leave the Site clean and tidy on completion.

14 TEMPORARY SERVICES

- .1 On site the Contractor shall make his own arrangements for supply of water and electricity.
- .2 The Contractor shall supply for his own use; sanitary, first aid, and all other temporary services and facilities required for the work.

15 PROGRESS REPORT

- .1 The Contractor shall keep a daily record of progress of the work available for inspection by the Engineer.
- .2 The daily record shall include particulars of weather conditions, number of men working, plant and equipment working and work performed.

16 ENGINEER'S ACCESS

- .1 The Contractor shall provide access to the work for the Engineer's inspectors and surveyors as required.

17 PERMITS AND ROYALTIES

- .1 Permits and licenses required for the Contractors work are the responsibility of the Contractor and shall be for the Contractor's account. The Contractor shall have the appropriate business license.

18 PROTECTION OF EXISTING STRUCTURES

- .1 Existing structures, adjacent marine facilities, roads, services, piping or equipment within the work area which are not to be replaced shall be properly protected from any injury or damage, direct or indirect. Any damage that is caused as a result of the operations of the Contractor shall be repaired and made good at the Contractor's expense to the satisfaction of the Engineer.

19 WEATHER

- .1 Time lost by the Contractor due to stoppage on account of adverse weather conditions may be allowed the Contractor, at the discretion of the Engineer, as an extension of time for the completion of the work over and above the date of completion specified in the contract agreement.

20 SOIL DATA AND EXISTING TOPOGRAPHY

- .1 The Contractor shall notify the Engineer of any subsurface conditions at the place of the work that may differ materially from those indicated in the Contract Documents.

21 UTILITIES AND SERVICES

- .1 The Contractor shall be responsible for any damage to overhead, underwater and/or underground utilities and/or services caused by the Contractor's operations and shall repair and make good the repairs at the Contractor's own expense.
- .2 The Contractor shall be responsible, unless otherwise agreed to by the Engineer, for all temporary or construction services and utilities, and first aid facilities.

22 CARE OF FINISHED WORK

- .1 The Contractor shall protect all finished work from injury, defacement, unauthorized entry, or trespass until such time as the work described in the Contract Documents is substantially complete.

23 DISPOSAL

- .1 All material designated to be replaced or removed will become the property of the Contractor and will be disposed of in an environmentally acceptable manner so that they neither become a menace to marine navigation nor a nuisance to the public on adjacent or any other property.
- .2 All replaced items, cut-offs and waste material shall be disposed of by the Contractor in strict accordance with provincial, local, and municipal regulations and Part 8 of the National Building Code and with the Canadian Construction Safety Code.
- .3 Conduct clean-up and disposal operations to comply with local ordinances and antipollution laws.

24 MATERIAL HANDLING AND STORAGE

- .1 Any materials damaged by the Contractor during handling, transportation and storage shall be replaced at the Contractor's expense.

25 MATERIALS AND EQUIPMENT SUPPLIED BY THE CONTRACTOR

- .1 The Contractor shall supply all hardware, labor, hand tools, power tools, generators, equipment and all other materials required to complete this Contract.

26 CONSTRUCTION WORK SCHEDULE

- .1 The Contractor shall work whatever shifts required in order to ensure the work meets regulatory windows and is completed by the completion date of the contract.
- .2 The Contractor shall normally perform all work within the hours of daylight except in instances where the Contractor has requested and received approval for shift changes from the Owner.
- .3 Within 7 days of award the Contractor is to supply a week by week schedule of proposed activities related to the contract.
- .4 The Contractor must notify the Owner immediately whenever a variation from the construction schedule is expected to occur or when the submission of the submittals will be delayed.

27 SETTING OUT OF WORK

- .1 The Contractor is expected to familiarize themselves with the Site, facilities and amenities within.
- .2 The Contractor shall not enter on nor occupy with men, tools, equipment or material, any ground outside the property of the Harbour Authority without the written consent of the party owning such ground. Other Contractors or employees or representatives of the Department may, for all necessary purposes, enter upon the work and premises used by the Contractor, and the Contractor shall conduct his work so as not to impede unnecessarily any work being done by others nor adjacent to the Site.

28 AS-BUILT DRAWINGS

- .1 The Contractor shall mark up one set of plans with any changes or amendments implemented during the Contract. These plans shall be submitted to the engineer before the Final Certificate of completion is issued.

29 SITE SECURITY

- .1 The Contractor is responsible for all materials and equipment either supplied by the Contractor, the Client Department, or the Owner. The Contractor is responsible for the repair and replacement of stolen or damaged items.

30 SITEWORK

- .1 All work shall be completed as per direction of on-site Owner or representative.
- .2 All heavy construction equipment shall be free of leaks and cleaned prior to construction.
- .3 The Contractor shall have absorbent pads on site in case of any oil leaks or contaminants entering the water.

31 CO-OPERATION WITH HARBOUR AUTHORITY

- .1 The Contractor will give the Harbour Authority a minimum 24 hours notice for work that may interrupt access to the harbour.
- .2 The site shall be left in a safe condition at the completion of each work day.

32 CONDITION OF STRUCTURE

- .1 Existing structures, adjacent marine facilities, roads, and all other structures, services, piping or equipment within the work area shall be properly protected from any injury or damage, direct or indirect. Any damage that is caused as a result of the operations of the Contractor shall be repaired and made good at the Contractors expense to the satisfaction of the Owner.

33 INSPECTION OF STRUCTURE

- .1 The Owner or inspector, shall inspect the completed works. The Contractor shall be responsible for the costs of any re-inspections that may be required due to errors or omissions of the Contractor.

END OF SECTION

1 GENERAL

- .1 This section refers to demolition specifications required as part of this Contract.
- .2 Where existing works are to be removed, they shall be removed and salvaged or disposed of to the satisfaction of the Engineer.
- .3 The Contractor shall furnish all labour, materials, tools, plant and services required incidental to the completion to the full extent of the drawings and specifications for the execution of all demolition salvage and protection work specified herein.
- .4 Demolition and disposal shall be carried out in strict accordance with provincial, local, and municipal regulations and Part 8 of the National Building Code and with the Canadian Construction Safety Code.

2 REMOVAL OF DEMOLISHED MATERIAL

- .1 All materials, which are not to be salvaged for the Owner, shall become the Contractor's property and the Contractor must remove it from the Site.
- .2 It shall be the Engineer's decision as to which material shall be salvaged and which material shall be disposed of.

3 SALVAGE

- .1 The Owner may request the Contractor to salvage materials. The Contractor shall store materials on Site as directed by the Engineer.

4 PROTECTION

- .1 The Contractor shall protect the remaining structural elements and adjacent structures against damage from falling debris or other causes.
- .2 The Contractor shall take precautions to guard against movement or settlement of adjacent structures and remaining structural elements, provide and place shoring or bracing as required, and be responsible for the safety and support of such structures, be liable for any damage or injury caused thereby or resulting therefore. If at any time safety of any adjacent structure appears to be endangered; the Contractor shall cease operations and notify the Engineer.

END OF SECTION

1 GENERAL

.1 This section refers to steel specifications required as part of this Contract.

.2 Reference Standards

Unless specified otherwise, all steel shall be new and conform to the current edition of the following standards:

- CSA B-111-M: Wire nails, spikes and staples
- CAN/CSA-G164-M: Hot dip galvanizing of irregularly shaped articles
- CAN/CSA-G40.21-M81: Drift bolts, machine bolts, washers, and miscellaneous iron
- ASTM A307: Specification of carbon steel bolts and studs
- ASTM A153: Hot dipped galvanizing

2 PRODUCTS

.1 Steel Hardware

.1 Unless otherwise specified, all bolts shall be installed with round flat washers, with an OD no greater than 2.5", under the head and nut.

.2 All bolts shall be National Course Thread, unless shown otherwise.

.3 All bolts shall have minimum 76mm (3") of thread, unless shown otherwise.

.4 All hardware including, but not limited to, bolts, drift bolts, spikes, carriage bolts, lag bolts, nuts and washers shall be hot dipped galvanized in accordance with the ASTM – A153. Galvanize to 610gm/m³ (2oz/ft²).

.2 Pile Banding

.1 All pile bands shall be 19mm (3/4") wide and made of 316 grade stainless steel.

.3 Fabrication Steel

.1 Items manufactured or fabricated from scrap steel of unknown chemical or physical properties are not acceptable.

.2 All fabrication steel such as brackets shall be galvanized in accordance to CAN/CSA-G164-M.

3 EXECUTION

.1 Assembly

.1 All bolts shall be tightened to 100 newton meters (80 lbs feet.)

.2 Care shall be taken not to damage the treated wood finish. All treatment damaged by the Contractor shall be repaired at his own expense.

.3 All caps, sub caps, corbels and piles shall be predrilled prior to installation to prevent splitting.

.4 Holes for machine bolts will be bored to provide a driving fit.

- .5 All holes drilled for caps, sub caps, corbels and piles shall be treated with preservative as specified prior to bolting.

END OF SECTION

1 GENERAL

.1 This section refers to timber specifications required as part of this Contract.

.2 Reference Standards

Unless specified otherwise, timber shall conform to the current edition of the following standards:

- NLGA: Standard Grading Rules for Canadian Lumber
- CAN/CSA-080: Wood Preservation
- ASTM D25: Timber Specifications
- Best Management Practices for the use of Treated Wood in Aquatic Environments

2 PRODUCTS

.1 Except as otherwise noted, only new materials will be used in, and remain an integral part of the structures.

.2 The Engineer may inspect materials and products at his discretion at all stages of their manufacture, and transportation to the Site. Satisfactory inspection at any stage does not preclude future rejection if the materials or products are subsequently found to lack uniformity or fail to conform to the requirements specified. Acceptance will not be made until the materials or products are satisfactorily installed in the completed structures as specified.

.3 The Contractor shall be responsible to repair all materials damaged by his handling, storage and installation of materials.

.4 Salvaged materials deemed to be reusable shall remain property of the Owner.

3 TIMBER

.1 All timber for the purpose intended shall conform to the requirements of the NLGA Standard Grading Rules for Canadian Lumber.

.2 All timber shall be Coast Douglas Fir. No. 1 or Better Structural Grade; unless specified otherwise.

4 TREATMENT OF MATERIAL

.1 Creosote-treated Materials:

.1 All creosote treated timber will be treated in accordance with CSA 080 and will follow the Best Management Practices for Creosote as outlined in "Best Management Practices for the use of Treated Wood in Aquatic Environments", Canadian Version January 1997.

.2 All creosote treated materials will have a minimum retention of 225kg per cubic meter (14lb. per cubic foot).

.2 Salt-treated Materials:

- .1 All timber specified to be treated with water-soluble salts will be treated in accordance with CSA 080-1989, "Wood Preservation", and its current amendments CSA 080.14, for materials in contact with ground or water. (Only non-leachable ACA salts will be accepted).
- .2 All salt treatment will follow the Best Management Practices for ACA and ACZA as outlined in "Best Management Practices for the use of Treated Wood in Aquatic Environments", Canadian Version January 1997.
- .3 All salt-treated timber will have a minimum retention of 6.4 kg/m³ (0.40 lb. per cubic foot) and a depth of penetration of 10mm as specified in CSA 080.14.

5 FIELD TREATING

- .1 Creosote treated timber members that have fresh cut surfaces exposed in the structure shall be treated as specified. All cuts or breaks in the surfaces of creosote treated timber shall be treated with two separate coats of creosote oil. Where bolt holes must be bored through creosote treated piles, the holes shall be filled with creosote oil and the bolts shall be dipped in hot creosote oil before the bolts are placed. Other alternative field wood treatment should be approved by the Engineer before application. Ensure the creosote or other preservatives are properly stored and protected in case of spillage (ie: place in tray).
- .2 All salt treated members that are modified (cut or drilled) shall be field treated with two coats of Copper Naphthenate or pentachlorophenol. When field treating by brushing, spraying, dipping or soaking do so in such a manner that the preservative does not drip into the water or onto the ground. Ensure the creosote or other preservatives are properly stored and protected in case of spillage. (ie: place in tray)

6 HANDLING OF MATERIALS

- .1 Treated material will not be accepted if damaged in any manner in handling. This includes damage from strapping and slings.
- .2 The Contractor shall be responsible to repair or replace all materials damaged by his handling, storage and installation of materials.

7 PILE CAP AND SHIM REPLACEMENT

- .1 Field cuts in treated material comprising the wharf will be treated as specified.
- .2 Contractor will submit a proposed construction method to the Engineer prior to construction.
- .3 All blocking and shims shall be creosote treated and supplied by Contractor.

8 EXISTING STRUCTURES

- .1 Any structures damaged by the Contractor during the works shall be repaired and made good at the Contractor's expense to the satisfaction of the Engineer.

9 SERVICES

- .1 All services shall be removed from the floats/wharf as not to damage them. All service materials misc. hangers, fasteners and supplies required to reinstall the services shall be supplied by the Contractor. All materials that are not reusable shall be disposed of by the Contractor.
- .2 The Contractor shall be responsible for the handling and storage of the service lines, lamp standards and other equipment during construction. All materials damaged by the Contractor shall be replaced at the Contractor's expense.

10 PATCHING AND REPAIRS

- .1 All unused bolt holes or damaged areas of creosote treatment shall be patched with creosote treated dowels, mastic, ships felt and copper patches as specified.

11 PAINTING

- .1 Timber specified to be painted will receive one brushed undercoat. After 48 hours, two brushed finish coats of 2-part urethane paint will be applied with a minimum of 48 hours between finish coats. Paint will be applied to clean, dry surfaces only.
- .2 Provide paint specifications to Owner to be approved before construction.
- .3 Paint colours will match the following:
 - .1 "Signal Red"
 - .2 "Safety Yellow"

END OF SECTION

1 GENERAL

.1 Reference Standards

Unless specified otherwise, timber piles shall conform to the current edition of the following standards:

- CAN/CSA-056-M: Round Wood Piles
- CAN/CSA-080: Wood Preservation
- ASTM D25: Timber Specifications
- BC Marine and Pile Driving Contractors Association: Best Management Practices
- CAN/CSA 086.1-M: Lag bolt hole sizes

.2 The Contractor shall confirm piling elevations.

.3 The Contractor shall be responsible for planning work around tides.

2 PRODUCTS

.1 Materials

.1 Round wood piles to CAN/CSA-056, with minimum butt size of 350mm, and tip diameter related to length as indicated in ASTM D25.

.2 Butt diameter for 350mm piles shall be to within +/- 20 mm

.3 Type of peeling: clean peeled.

.4 Pile species: Coastal Douglas Fir.

.5 Preservative Treatment: to CAN/CSA –080 full cell creosote treatment to a minimum net retention of 225 kg/cu meter (14 lb/ft³)

.6 The Engineer will be the sole judge as to quality and dimension of piles. Rejected piles shall be removed from the Site of work.

.2 Miscellaneous Materials

.1 Wire nails, spikes, staples in accordance with Section 03 02 00.

3 EXECUTION

- .1 Equipment
 - .1 Prior to commencement of pile installation operation, submit to TA for review details of equipment for installation of piles.
 - .2 The Contractor shall provide temporary support for the dead load of the wharf and approach while removing and installing piles.
- .2 Field Measurements
 - .1 Maintain accurate records of installation for each pile, including:
 - .1 Pile size and length, location of pile in pile group, designation of pile group.
 - .2 Final tip and cut off elevation.
- .3 Preparation and Handling
 - .1 Protect treated piles to avoid breaking through the treated surface. Cant hooks and rafting dogs may be used only in the end of piles. No spikes shall be driven into the piles below high-water level. All cuts or breaks in the surfaces of creosote treated piles shall be treated with two separate coats of creosote oil. Where bolt holes must be bored through creosote treated piles, the holes shall be filled with creosote oil and the bolts shall be dipped in hot creosote oil before the bolts are placed. Other alternative field wood treatment should be approved by the Engineer before application.
 - .2 Where timber piles have to be cut for plate washers, the cut surface shall be treated with two coats of hot creosote oil and a further coat of mastic before washers are placed.
- .4 Installation Tolerances
 - .1 Piles shall be installed to their intended locations as shown on the drawings and specifications.
 - .2 Pile heads to be within 75mm (3") of locations as indicated on drawings.
 - .3 Piles not to be more than 2% of length out of alignment.
 - .4 Pile cut off elevations to be within 25mm (1") of elevations shown on drawings.
 - .5 Pile installation record to be supplied by the Contractor.

.5 Pile Completion

- .1 Apply two coats of hot creosote to top of dry pile, allowing as much creosote to soak in as possible. Apply a coat of coal tar pitch or mastic after creosote application.
- .2 Install a sheet of 0.8mm annealed aluminum sheeting, on all new piles, cut 150mm larger than pile top, with edges turned down and secure to the pile with ten to twelve copper nails.
- .3 Treat all end cut offs and field drilled holes with creosote preservative.
- .4 Do not damage surfaces of treated piles below cut off elevation by boring holes or driving nails or spikes into them to support temporary material or staging.
- .5 Support staging in rope slings carried over tops of piles or by pile clamps of approved design.
- .6 Treat cuts, breaks or abrasions on surface of treated piles, bolt holes and field cuts in accordance with CAN/CSA-080.

.6 Pile Hardware

- .1 Hardware shall be in accordance to specifications in Section 03 02 00.
- .2 Bolt holes in timber piles shall be bored to provide driving fit. Holes for drift pins shall be 2 mm undersize and longer than the drift pins. Hole sizes of lag screws are to be as specified in Standard CAN/CSA 086.1-M.
- .3 Unless otherwise specified, connection bolts, lag screws or drift bolts shall be placed through the centre of the timber piles and shall not be less than seven times the bolt diameter from the end of the timber pile.
- .4 Plate washers shall be used under the heads and nuts of all bolts against timber piles.

.7 Pile Removal

- .1 All piles to be removed will be fully extracted from the concrete and disposed of as specified unless approved by the Engineer. Piles that are removed and are considered in good condition may be reused subject to the Engineer's approval. Any holes or damage to the treated surface shall be repaired. The Engineer shall decide on the condition of all piles.

END OF SECTION

1 GENERAL

- .1 Health and safety requirements are mandatory to ensure that Small Craft Harbours shows due diligence towards health and safety on construction sites.

2 REFERENCES

Unless specified otherwise, Health and Safety Requirements shall conform to the current edition of the following standards:

- .1 Government of Canada
Canada Labour Code, Part II
Canada Occupational Health and Safety Regulations.
- .2 National Building Code of Canada (NBC):
Part 8, Safety Measures at Construction and Demolition Sites.
- .3 Canadian Standards Association (CSA):
CSA S269, Falsework for Construction Purposes.
CSA S269.2, Access Scaffolding for Construction Purposes.
CSA-S350, Code of Practice for Safety in Demolition of Structures.
- .4 Fire Protection Engineering Services, HRSDC:
FCC No. 301, Standard for Construction Operations.
FCC No. 302, Standard for Welding and Cutting.
HRSDC website:
http://www.hrsdc.gc.ca/eng/labour/fire_protection/policies_standards/commissioner/index.shtml
- .5 American National Standards Institute (ANSI):
ANSI A10.3, Operations – Safety Requirements for Powder-Actuated Fastening Systems.
- .6 Province of British Columbia:
Workers Compensation Act. Part 3 Occupational Health and Safety.
Occupational Health and Safety Regulation
- .7 Health Canada/Workplace Hazardous Materials Information System (WHMIS)
 - .1 Material Safety Data Sheets (MSDS).

3 GENERAL CONDITIONS

- .1 Provide safety barricades around work site as required to provide a safe working environment for workers and protection for pedestrian traffic.
- .2 Ensure that non-authorized persons are not allowed to circulate in designated construction areas of the work site.
- .3 Provide appropriate means by use of barricades, fences, and warning signs as required.
- .4 Secure site at night time as deemed necessary to protect site against entry.
- .5 Mark floating equipment with lights in accordance with International Rules of Road and maintain radio watch on board.
- .6 Place and maintain buoys, markers and lights required to define work and disposal areas.

4 RESPONSIBILITY

- .1 Assume responsibility as the Prime Contractor under this Contract.
- .2 Be responsible for health and safety of persons on site, safety of property on site and for protection of persons adjacent to site and environment to extent that they may be affected by conduct of Work.
- .3 Comply with and enforce compliance by employees with safety requirements of Contract Documents, applicable federal, provincial, territorial and local statutes, regulations, and ordinances, and with site-specific Health and Safety Plan.

5 GENERAL REQUIREMENTS

- .1 Comply with specified codes, acts, bylaws, standards and regulations to ensure safe operations at site.
- .2 In event of conflict between any provision of the above authorities, the most stringent provision will apply. Should a dispute arise in determining the most stringent requirement, the Departmental Representative will advise on the course of action to be followed.
- .3 Mark floating equipment with lights in accordance with requirements and directives of Queen's Harbour Master.
- .4 Develop written site-specific Health and Safety Plan based on hazard assessment prior to beginning site Work and continue to implement, maintain, and enforce plan until final demobilization from site. Health and Safety Plan must address project specifications.
- .5 Departmental Representative may respond in writing, where deficiencies or concerns are noted and may request re-submission with correction of deficiencies or concerns

6 COMPLIANCE REQUIREMENTS

- .1 Comply with Workers Compensation Act, B.C.
- .2 Comply with Occupational Health and Safety Regulations.
- .3 Comply with Canada Labour Code, Canada Occupational Safety and Health Regulations.
- .4 Small Craft Harbours may terminate the Contract without liability to Small Craft Harbours where the Contractor, in the opinion of Small Craft Harbours, refuses to comply with a requirement of the Workers' Compensation Act or the Occupational Health and Safety Regulations.
- .5 It is the Contractor's responsibility to ensure that all workers are qualified, competent and certified to perform the work as required by the Workers' Compensation Act or the Occupational Health and Safety Regulations.

7 WORKER'S COMPENSATION BOARD COVERAGE

- .1 Comply fully with the Workers' Compensation Act, regulations and orders made pursuant thereto, and any amendments up to the completion of the work.
- .2 Maintain Workers' Compensation Board coverage during the term of the Contract, until and including the date that the Certificate of Final Completion is issued.

8 SUBMITTALS

- .1 Submit site-specific Health and Safety Plan: Within 7 days after date of Notice to Proceed and prior to commencement of Work. Health and Safety Plan must include:
 - .1 Results of site specific safety hazard assessment.
 - .2 Results of safety and health risk or hazard analysis for site tasks and operation found in work plan.
 - .3 Risk Management and Safety Procedure for possible events including but not limited to storm, fire, and fall.
- .2 Submit one copy of Contractor's authorized representative's work site health and safety inspection reports to Departmental Representative weekly.
- .3 Submit copies of reports or directions issued by Federal, Provincial and Territorial health and safety inspectors.
- .4 Submit copies of incident and accident reports.
- .5 Submit WHMIS MSDS - Material Safety Data Sheets if requested.
- .6 Departmental Representative may review Contractor's site-specific Health and Safety Plan and provide comments to Contractor within 5 days after receipt of plan. Revise plan as appropriate and resubmit plan to Departmental Representative within 5 days after receipt of comments from Departmental Representative.
- .7 Departmental Representative review of Contractor's final Health and Safety plan should not be construed as approval and does not reduce the Contractor's overall responsibility for construction Health and Safety.
- .8 Medical Surveillance: where prescribed by legislation, regulation or safety program, submit certification of medical surveillance for site personnel prior to commencement of Work, and submit additional certifications for any new site personnel to Departmental Representative.
- .9 On-site Contingency and Emergency Response Plan: address standard operating procedures to be implemented during emergency situations.

9 FILING OF NOTICE

- .1 File Notice of Project with Provincial authorities prior to beginning of Work.

10 SAFETY ASSESSMENT

- .1 Perform site specific safety hazard assessment related to project.

11 MEETINGS

- .1 Schedule and administer Health and Safety meeting prior to commencement of Work.

12 PROJECT/SITE CONDITIONS

- .1 Work at site will involve contact with:

- .2 Harbour Manager.
- .3 Departmental Representative.

13 UNFORSEEN HAZARDS

- .1 When unforeseen or peculiar safety-related factor, hazard, or condition occur during performance of Work, follow procedures in place for Employee's Right to Refuse Work in accordance with Acts and Regulations of Province having jurisdiction and advise Departmental Representative verbally and in writing.

14 HEALTH AND SAFETY CO-ORDINATOR

- .1 Employ and assign to Work, competent and authorized representative as Health and Safety Co-ordinator. Health and Safety Co-ordinator must:
 - .1 Have site-related working experience specific to activities associated with the repairs.
 - .2 Have working knowledge of occupational safety and health regulations.
 - .3 Be responsible for completing Contractor's Health and Safety Training Sessions and ensuring that personnel not successfully completing required training are not permitted to enter site to perform Work.
 - .4 Be responsible for implementing, enforcing daily and monitoring site-specific Contractor's Health and Safety Plan.
 - .5 Be on site during execution of Work.

15 POSTING OF DOCUMENTS

- .1 Ensure applicable items, articles, notices and orders are posted in conspicuous location on site in accordance with Acts and Regulations of Province having jurisdiction, and in consultation with Departmental Representative.

16 CORRECTION OF NON-COMPLIANCE

- .1 Immediately address health and safety non-compliance issues identified by authority having jurisdiction or by Departmental Representative.
- .2 Provide Departmental Representative with written report of action taken to correct non-compliance of health and safety issues identified.
- .3 Departmental Representative may stop Work if non-compliance of health and safety regulations is not corrected.

17 WORK STOPPAGE

- .1 Give precedence to safety and health of public and site personnel and protection of environment over cost and schedule considerations for Work.

END OF SECTION