



Fisheries and Oceans  
Canada

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Canada

# **Small Craft Harbours Pacific Region**

**F1571-198017/A**

**SPECIFICATIONS**

**HARBOUR REPAIRS**

**TOFINO (ARMITAGE POINT) SMALL CRAFT HARBOUR**

**& TOFINO (WINGEN LANE) SMALL CRAFT HARBOUR**

**TOFINO, BRITISH COLUMBIA**

**August 2019**

**SUMMARY OF WORK**

| <b>SECTION</b> | <b>TITLE</b>             |
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| 01 12 00       | Owner Supplied Materials |

**GENERAL REQUIREMENTS**

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|----------------|----------------------|
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| 00 51 00       | Hardware                 |
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| T-WR-005      | Armitage Point Elevation and Sections |
| T-WR-006      | Wingen Lane Elevation                 |
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T-WR-008      Gangway Installation

**REFERENCE DRAWINGS**

| <b>NUMBER</b> | <b>TITLE</b>                |
|---------------|-----------------------------|
| 2007002       | Gangway Details Drawing Set |

**END OF SECTION**

## 1 SITE LOCATION

- .1 Tofino (Armitage Point) Small Craft Harbour and Tofino (Wingen Lane) Small Craft Harbour are located in Tofino, British Columbia. Refer to Site Plans for the location of each harbour.

## 2 WORK SCHEDULE

- .1 All work including site clean-up and demobilization must be completed by **January 31, 2020**. Refer to Section 01 13 00 - General Requirements.

## 3 DEFINITIONS

- .1 Throughout contract documents, the words "Owner," "Harbour Authority," "Engineer," or "Department," shall be defined as follows:
  - .1 Owner  
Small Craft Harbours, Department of Fisheries and Oceans Canada, 200-401 Burrard Street Vancouver BC V6C 3S4
  - .2 Harbour Authority (HA)  
Tofino Harbour Authority, 40-4<sup>th</sup> Street, Tofino, BC, V0R 2Z0.
  - .3 Engineer  
An employee of the Owner or Consultant assigned by the Owner as the Engineer for this project, or the Engineer's representative assigned by the Engineer as his representative for the project.
  - .4 Contractor  
The party accepted by the Owner with whom a formal contract is entered to complete the work of this project.
  - .5 Department  
The Department of Fisheries and Oceans Canada.

## 4 WORK INCLUDED

- .1 In general, the nature of work consists of light to heavy wharf repairs. Refer to drawing T-FWR-002 for the general arrangement of the work.
- .2 In general, work to be performed under this contract includes, but is not limited to:
  - .1 Replace both gangways at Armitage and Wingen.
  - .2 Replace wharf caps, cross-braces, guard and handrail at Armitage and Wingen.
  - .3 Replace wharf decking and stringers at Armitage
- .3 A list of Owner supplied materials is provided in Section 01 12 00.
- .4 All labour, equipment and materials shall conform to Technical Specifications herein.

## **.5 Description of Items**

With reference to the Unit Price Table in the Invitation to Tender, Appendix 1 – Price Form, work for each item is described as follows:

### **.1 Work Items**

#### **.1 Mobilization / Demobilization**

The lump sum cost of mobilization/demobilization includes all labour, equipment and materials to complete the following:

- .1 Move all crew, equipment and materials on and off Armitage and Wingen Small Craft Harbours.
- .2 Allow the Owner to inspect ALL Contractor supplied materials prior to delivery to the harbours. Provide the Owner with minimum one (1) week notice when materials will be ready for inspection.
- .3 Move materials, including Owner supplied materials, around the site as required to complete the work.
- .4 Cover all crew costs such as food and accommodations.
- .5 Provide site clean-up daily throughout construction.
- .6 Cover all overhead costs not included in other items.
- .7 Cover all disposal costs not included in other items.
- .8 Supply and install a 40" wide pedestrian access way and appropriate barriers to construction at Armitage and Wingen to maintain public access to the floats during construction.

#### **.2 Replace Gangway at Armitage**

The lump sum cost to replace the gangway at Armitage includes all labour, equipment and materials to complete the following:

- .1 Take possession of the Owner Supplied 10.97m long x 1.22m wide gangway including two (2) transition aprons with pins (top and bottom), four (4) drop links with pins and two (2) straps, at French Creek Small Craft Harbour (1055 Lee Road, Parksville, BC V9P 2E1) and deliver to Armitage Small Craft Harbour.
- .2 Supply all remaining parts for the gangway installation. For example: (1) landing pad, two (2) guide rails, two (2) UHMW strips for bottom apron and hardware for the landing pad, UHMW and straps.
- .3 Remove / disconnect services from existing gangway. Do not cut services and maintain services in current condition to allow re-installation on the new gangway.

- .4 Remove and dispose existing gangway and all its components including the landing pad.
- .5 Install new gangway including one (1) landing pad, two (2) guide rails, two (2) UHMW strips for bottom apron, two (2) transition aprons with pins (top and bottom) and two (2) sets of top connections (four (4) drop links with pins and two (2) straps), as per the drawings.
- .6 Reinstall / reconnect existing services to new gangway.
- .7 Supply and install one (1) additional Douglas Fir ACZA stringer, minimum 5 meters long, to provide backing (under the gangway strap) for the gangway installation.
- .8 Provide minimum 1 week notice of the construction date for replacement of the gangway. The maximum allowable out-of-service period due to the gangway being replaced is 48 hours.

### **.3 Replace Gangway at Wingen**

The lump sum cost to replace the gangway at Wingen includes all labour, equipment and materials to complete the following:

- .1 Take possession of the Owner Supplied 19.8m long x 1.8m wide gangway including two (2) transition aprons with pins (top and bottom), four (4) drop links with pins and two (2) straps, at French Creek Small Craft Harbour (1055 Lee Road, Parksville, BC V9P 2E1) and deliver to Armitage Small Craft Harbour.
- .2 Supply all remaining parts for the gangway installation. For example: (1) landing pad, two (2) guide rails, two (2) UHMW strips for bottom apron and hardware for the landing pad, UHMW and straps.
- .3 Remove / disconnect services from existing gangway. Do not cut services and maintain services in current condition to allow re-installation on the new gangway.
- .4 Remove and dispose existing gangway and all its components including the landing pad.
- .5 Install new gangway including one (1) landing pad, two (2) guide rails, two (2) UHMW strips for bottom apron, two (2) transition aprons with pins (top and bottom) and two (2) sets of top connections (four (4) drop links with pins and two (2) straps), as per the drawings.
- .6 Reinstall / reconnect existing services to new gangway.

- .7 Supply and install one (1) additional Douglas Fir ACZA stringer, minimum 5 meters long, to provide backing (under the gangway strap) for the gangway installation.
- .8 Provide minimum 1 week notice of the construction date for replacement of the gangway. The maximum allowable out-of-service period due to the gangway being replaced is 48 hours.

#### **.4 Replace Cross Braces at Armitage and Wingen**

The lump sum cost to replace cross braces at Armitage and Wingen includes all labour, equipment and materials to complete the following:

- .1 Supply new Douglas Fir Creosote cross-braces and galvanized hardware.
- .2 Remove, dispose and replace ALL wharf cross-braces at Armitage.
- .3 Remove, dispose and replace four (4) wharf cross-braces at Wingen (Bents 2 and 5, two braces per bent).

#### **.5 Replace Caps at Armitage and Wingen**

The lump sum cost to replace caps at Armitage and Wingen includes all labour, equipment and materials to complete the following:

- .1 Supply new Douglas Fir creosote caps and galvanized hardware.
- .2 Remove, dispose and replace one (1) wharf cap at Armitage (Bent 2).
- .3 Remove, dispose and replace one (1) wharf cap at Wingen (Bent 5).

#### **.6 Replace Guard and Handrail at Armitage and Wingen**

The lump sum cost to replace guard and handrail at Armitage and Wingen includes all labour, equipment and materials to complete the following:

- .1 Supply new Douglas Fir ACZA guard and handrail and galvanized hardware.
- .2 Remove, dispose and replace ALL wharf guard and handrail at Armitage and Wingen.
- .3 Paint guard and handrail prior to delivery to the sites. Refer to Section 00 99 00, 3.7.

**.7 Replace Decking at Armitage**

The lump sum cost to replace decking at Armitage includes all labour, equipment and materials to complete the following:

- .1 Supply new Douglas Fir ACZA decking and galvanized hardware.
- .2 Remove, dispose and replace ALL wharf decking at Armitage.

**.8 Replace Stringers at Armitage**

The lump sum cost to replace stringers at Armitage includes all labour, equipment and materials to complete the following:

- .1 Supply new Douglas Fir ACZA stringers and galvanized hardware.
- .2 Remove, dispose and replace ALL wharf stringers at Armitage.

**END OF SECTION**



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**1 OWNER SUPPLIED MATERIALS**

This section provides a list of Owner Supplied materials. All other materials required to complete the work shall be supplied by the Contractor.

**.1 Armitage Gangway**

- .1 The Owner shall supply a 11.0m long x 1.2m wide steel gangway including two (2) transition aprons with pins (bottom and top), four (4) drop-down links with pins and two (2) straps. The gangway will be stored at French Creek Small Craft Harbour (1055 Lee Road, Parksville, BC V9P 2E1).

**.2 Wingen Gangway**

- .1 The Owner shall supply a 19.8m long x 1.8m wide steel gangway including two (2) transition aprons with pins (bottom and top), four (4) drop-down links with pins and two (2) straps. The gangway will be stored at French Creek Small Craft Harbour (1055 Lee Road, Parksville, BC V9P 2E1).

**END OF SECTION**

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**1 COMMENCEMENT AND COMPLETION**

- .1 Work shall commence upon **Contract Award**.
- .2 All work including clean-up and demobilization must be completed by **January 31, 2020**.

**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, 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 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.

- .2 While the Contractor is mobilized on site, the Contractor is responsible for protecting all materials (including Owner supplied materials) from damage and theft. As a minimum, the Contractor shall provide fencing around any stored materials that are accessible to the general public.

## **25 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 daylight hours, 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 shall 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.

## **26 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.

## **27 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.

## **28 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.

## **29 SITEWORK**

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

- .3 The Contractor shall develop a construction plan that minimizes disruption to harbour operations.
- .4 The site shall be left in a safe condition at the completion of each work day.

### **30 CO-OPERATION WITH HARBOUR AUTHORITY**

- .1 The Contractor shall give the Harbour Authority **minimum 1 week notice** for start of construction.
- .2 The Contractor shall give the Harbour Authority **minimum 48 hours notice** for work that requires vessels to be moved.
- .3 The Contractor shall give the Harbour Authority **minimum 48 hours notice** for work that may interrupt harbour operations including access to floats.

### **31 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.

### **32 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**

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

- .1 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 EQUIPMENT**

- .1 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 execution of all demolition salvage and protection work specified herein.
- .2 Demonstrate that tools and machinery are being used in manner which allows for salvage of materials in best condition possible or reinstatement of temporarily relocated structures.

## **3 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 work site.
- .2 If not specifically identified, the Owner and/or Engineer shall decide as to which material shall be salvaged and which materials shall be disposed of.

## **4 SALVAGED MATERIAL**

- .1 Material to be salvaged for the Owner shall be stored as directed by the Engineer.
- .2 Remove items to be reused, stockpile and re-install as directed by Engineer.
- .3 Designate appropriate security resources/measures to prevent vandalism, damage and theft of salvaged items.
- .4 Contractor is responsible for lost, stolen or damaged materials.

## **5 PROTECTION OF STRUCTURES TO REMAIN**

- .1 Protect remaining structural elements, services and equipment against damage from demolition works.
- .2 Contractor is liable for any damage caused to structures not specified for removal as a result of completing work.

## **6 SERVICES**

- .1 All services that must be removed from existing structures in order to perform work must be removed so as not to damage them.



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- .2 All service materials including miscellaneous hangers, fasteners and supplies required to reinstall the services shall be supplied by the Contractor and will be of equivalent quality to the new conditions of such materials being replaced.
  - .3 All materials that are not reusable shall be disposed of by the Contractor.
  - .4 The Contractor shall be responsible for the handling and storage of services lines, lamps standards and other equipment during construction. All materials damaged by the Contractor shall be replaced at the Contractor's expense.

## **7 CLEANING AND RESTORATION**

- .1 Keep site clean and organized throughout demolition procedure.
- .2 Upon completion of project or as appropriate, reinstate gangway, floats, walkways, light standards, electrical and water services and other items affected by Work to condition which existed prior to beginning of Work.

**END OF SECTION**

## 1 GENERAL

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

### .1 Reference Standards

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

- .1 CSA B-111-M: Wire nails, spikes and staples
- .2 CSA-G164-M: Hot dip galvanizing of irregularly shaped articles
- .3 CSA-G40.21-M81: Drift bolts, machine bolts, washers, and miscellaneous iron
- .4 ASTM A307: Specification of carbon steel bolts and studs
- .5 ASTM A153: Hot dipped galvanizing
- .6 CSA B34: Lag screws

## 2 PRODUCTS

### .1 Steel Hardware

- .1 Bolts, nuts, and washers through timber shall conform to ASTM A307.
- .2 Drift pins shall conform to CSA G40.21-M81 Grade 260W.
- .3 All spikes, nails, and staples to conform to CSA B-111-M.
- .4 All lag screws to conform to CSA B34.
- .5 Hot-dip galvanize all miscellaneous metal and fasteners in accordance with CSA G164-M, unless noted otherwise.
- .6 Unless noted otherwise, use plate washers under heads and nuts of all bolts bearing on timber; plate washers against piles shall be curved to match the rounded surface.
- .7 All bolts shall be National Course Thread, unless shown otherwise.
- .8 Unless noted otherwise, all bolts shall have minimum 152mm (6") of thread.
- .9 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/m<sup>3</sup> (2oz/ft<sup>2</sup>).

### .2 Fabrication Steel

- .1 Fabrication steel shall comply with Section 05 50 00.

### 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 Predrill all timbers that require bolting (hex or lag) and end timbers that require nails prior to installation to prevent splitting.
- .4 Holes for machine bolts shall be bored to provide a driving fit.
- .5 All field drilled holes shall be treated with preservative as specified prior to bolting.

#### .2 Decking

- .1 Lay boards heart side down, spaced 6mm to 10mm apart.
- .2 Secure each contact point with 2 – 102mm (4") galvanized RDOX nails.
- .3 Pre-drill deck boards for nails nearest board ends.

#### .3 Rub Board (Fascia)

- .1 Secure each contact point with 3 – 152mm (6") galvanized RDOX nails.
- .2 Contact points every 500mm maximum.
- .3 Pre-drill rub boards for nails nearest board ends. Do not pre-drill into the float timbers (stringer and flanges).

#### .4 UHMW Liners

- .1 Hardware heads shall be fully countersunk and an additional 6mm (1/4") below flush.
- .2 Pre-drill through UHMW and mooring well timber to avoid splitting.
- .3 Fasteners shall not interfere with piling wear surfaces.

#### .5 pontoons

- .1 Secure pontoon webbing to top of each crosstie with two #6 Stainless 316 Grade Pan Head Wood Screws, 25.4mm (1") long, complete with #6 Stainless 316 Grade Flat Washers.

**END OF SECTION**

## 1 GENERAL

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

### .1 Reference Standards

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

- .1 American Wood Preservers' Association (AWPA)
  - .1 AWPA M2, Standard for Inspection of Wood Products Treated with Preservatives.
  - .2 AWPA M4, Standard for the Care of Preservative Treated Wood Products.
- .2 ASTM International
  - .1 ASTM A153M-09, Standard Specification for Zinc Coating (Hot Dip) on Iron and Steel Hardware.
  - .2 ASTM A307-14, Standard Specification for Carbon Steel Bolts, Studs and Threaded Rod, 60,000 PSI Tensile Strength.
  - .3 ASTM D256-10, Standard Test Methods for Determining the Izod Pendulum Impact Resistance of Plastics
  - .4 ASTM D638-10, Standard Test Method for Tensile Properties of Plastics
  - .5 ASTM D790-10, Standard Test Methods for Flexural Properties of Unreinforced and Reinforced Plastics and Electrical Insulating Materials
- .3 CSA International
  - .1 CSA B111-03, Wire Nails, Spikes and Staples. (Note: This standard is actually discontinued but there is no equivalent replacement – consequently have chosen to make reference to the old version.)
  - .2 CSA O80 Series-12, Wood Preservation.
  - .3 CSA O86-09 Consolidated – Engineering Design in Wood
  - .4 CAN/CSA Z809-13, Sustainable Forest Management.
  - .5 CAN/CSA G164-03, Hot Dip Galvanizing of Irregularly Shaped Articles.
- .4 Health Canada / Workplace Hazardous Materials Information System (WHMIS)
  - .1 Material Safety Data Sheets (MSDS).
- .5 National Lumber Grades Authority (NLGA)
  - .1 Standard Grading Rules for Canadian Lumber 2014.

**.2 Protection**

- .1 Deliver, store and handle materials in a manner that protects products from damage. Replace damaged or defective materials with new products conforming to the requirements of this section.

**2 PRODUCTS****.1 General**

- .1 All timber shall be suitable for the purpose intended and shall conform to the Standard Grading Rules for Canadian Lumber, (NLGA), of the Canadian Lumber Standards Administration Board.
- .2 Except as otherwise noted, only new materials will be used in, and remain an integral part of the structures.
- .3 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.

**.2 Cedar**

- .1 All cedar shall be No. 2 Grade or Better, tight knot one side, pencil wane back face and no shake.
- .2 The Contractor shall supply to the Engineer documentation indicating the grade class and species of all timber delivered to the site.
- .3 Cedar shall have a length tolerance of +0-12". Any boards that measure less than the specified length shall be rejected.
- .4 All timber shall be surfaced four sides (S4S), except for decking which shall be surfaced one face and two edges (S1S2E).
- .5 The Engineer shall be the sole judge as to the acceptability of timber incorporated into the work. Timber not accepted by the Engineer shall be removed from the site.

**.3 Douglas Fir**

- .1 All Douglas Fir shall be No. 1 Structural Grade Coast Douglas Fir.
- .2 The Contractor shall supply to the Engineer documentation indicating the grade class and species of all timber delivered to the site.
- .3 All timber shall be surfaced four sides (S4S), except for decking which shall be surfaced one face and two edges (S1S2E).
- .4 The Engineer shall be the sole judge as to the acceptability of timber incorporated into the work. Timber not accepted by the Engineer shall be removed from the site.

#### **.4 Treatment of Material**

##### **.1 General**

- .1 All timber specified for treatment shall be pressure preservative treated in accordance with CSA-O80-M 'Wood Preservation', its applicable subsections and amendments. The use category to which timber elements will be exposed is UC5A (Marine (salt water) applications).
- .2 The contractor shall provide certification that the specified treatment retention has been achieved.
- .3 Preservative treatment of timber shall be undertaken in compliance with the latest revision of the 'Best Management Practices (BMP's) for the Use of Treated Wood in Aquatic Environments', as published by The Canadian Institute of Treated Wood and the Western Wood Preservers Institute. The Contractor shall provide assurance to the Engineer that preservative treatment has been undertaken in accordance with these BMP's.

##### **.2 Creosote-treated Materials:**

- .1 All joists, stringers, lower stringer splice blocks, crossties, well blocking, flanges, flange splice blocks (upper and lower) shall be creosote treated, unless specified otherwise.
- .2 All creosote treated materials will have a minimum retention of 225kg per cubic meter (14lb. per cubic foot).

##### **.3 Salt-treated Materials:**

- .1 All decking, rub board, guards, bull rails, risers and upper stringer splice blocks shall be ACZA treated, unless specified otherwise.
- .2 All timber specified to be treated with water-home salts will be treated in accordance with CSA-080-M, "Wood Preservation", and its applicable subsections and amendments, for materials in contact with ground or water. Only non-leachable ACA salts will be accepted.
- .3 All salt-treated timber will have a minimum retention of 6.4 kg/m<sup>3</sup> (0.40 lb. per cubic foot) and a depth of penetration of 10mm as specified in CSA 080.14.

### **3 EXECUTION**

#### **.1 Field Treating**

- .1 All field cut creosote members shall also be protected by covering the ends with caps consisting of 12mm (1/2") of Roof Patch mastic and two thicknesses of tar-saturated fabric and a cap consisting of .050 inch thick copper sheeting. The cap shall extend 100mm from the end of the timber. Attach with minimum ten copper nails (copper deters marine borers). All field drilled holes in creosote timbers shall be protected by installing a bolt fully covered in Roof Patch mastic.

- .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.
- .3 Ensure field preservatives are properly stored and protected in case of spillage. (ie: place in tray).

## **.2 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.

## **.3 Pile Cap and Shim Replacement**

- .1 Contractor shall submit a proposed construction method to the Engineer prior to construction.
- .2 After the old cap is removed, allow the Owner or Engineer to inspect the condition of the pile heads and wait for approval before installing the new cap.
- .3 For each pile under the cap being replaced, dry the top of the pile, apply two coats of Roof Patch mastic and install a sheet of 0.8mm annealed aluminum sheeting. Cut the sheeting 150mm larger than pile top, with edges turned down and secure to the pile with eight roofing nails.
- .4 Creosote treated blocking and shims shall be supplied by the Contractor.
- .5 Install 19mm x 610mm (3/4" x 24") galvanized drift pins at every pile and stringer contact, through the center of each timber.

## **.4 Decking**

- .1 Decking shall be supplied and installed in continuous lengths. Intermediate joints will not be permitted.

## **.5 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.

## **.6 Services**

- .1 All services that must be removed from existing structures in order to perform work must be removed so as not to damage them.
- .2 All service materials, misc. hangers, fasteners and supplies required to reinstall services shall be supplied by the Contractor.
- .3 All materials that are not reusable shall be disposed of by the Contractor.

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- .4 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.

**.7 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

This section refers to Environmental Procedures required as part of this Contract.

### .1 References

#### .1 Definitions:

- .1 Environmental Pollution and Damage: presence of chemical, physical, biological elements or agents which adversely affect human health and welfare; unfavourably alter ecological balances of importance to human life; affect other species of importance to humans; or degrade environment aesthetically, culturally and/or historically.
- .2 Environmental Protection: prevention/control of pollution and habitat or environment disruption during construction.

### .2 In Water Works

- .1 Construction equipment to be operated on land or from floating barge equipment.
- .2 Waterways to be kept free of excavated fill, waste material and debris.

### .3 Notification

- .1 Engineer will notify Contractor in writing of observed noncompliance with Federal, Provincial or Municipal environmental laws or regulations, permits, and other elements of Contractor's Environmental Protection plan.
- .2 Contractor: after receipt of such notice, Engineer of proposed corrective action and take such action for approval by Engineer.
  - .1 Take action only after receipt of written approval by Engineer.
- .3 Engineer will issue stop order of work until satisfactory corrective action has been taken.
- .4 No time extensions granted or equitable adjustments allowed to Contractor for such suspensions.

## 2 PRODUCTS

- .1 Not Used

## 3 EXECUTION

### .1 Cleaning

- .1 Leave work area clean at end of each day.
- .2 Ensure public waterways, storm and sanitary sewers remain free of waste and volatile materials.
- .3 Final Cleaning: upon completion remove surplus materials, rubbish, tools and equipment to the approval of the Owner.

**END OF SECTION**

**1 GENERAL**

This section provides metal fabrication specifications required as part of this Contract.

**2 WORKMANSHIP**

- .1 All fabrication and erection of structural steel shall comply with CSA Standard CAN3-S16.1, latest revision.

**3 MATERIALS**

- .1 Hollow structural steel sections shall conform to CSA Standard G40.20/G40.21-M, Class "C", Grade 350W.
- .2 All other rolled sections and miscellaneous plate shall be grade 300W, unless noted otherwise on the drawings, in conformance with CSA Standard G40.20/G40.21-M.
- .3 All structural steel members shall be made of the size and weight shown on the drawings unless written approval for any change is first obtained from the Engineer.
- .4 Items manufactured or fabricated from scrap steel of unknown chemical or physical properties are not acceptable.
- .5 All fabrication steel such as straps and brackets shall be galvanized in accordance to CSA G164-M.
- .6 Hardware shall comply with Section 00 51 00.

**4 WELDING**

- .1 Welding practice and qualifications of welders and erectors of welded construction shall conform to the requirements of CSA Standards W47, W48, and W59 latest editions. The metallurgy of weld metal shall be similar to the parent material.
- .2 Unless noted otherwise, all welds shall develop the full strength of the connected members, and shall be continuous seal welds with a minimum 6mm leg length.
- .3 Where on the drawings it is called for double sided welding; the welding details called for on the near side shall be duplicated on the far side if not called up otherwise.

**5 INSPECTION**

- .1 The Contractor shall furnish all facilities for inspecting and testing the weight, dimensions and quality of workmanship at the shop where the material is fabricated.
- .2 The Engineer shall be notified well in advance of the start of work, in order to allow sufficient time for inspection of material and workmanship.

**6 CORROSION PROTECTION**

- .1 Steel piles shall be protected by sacrificial anodes. Steel pipe piles shall not be painted.

**END OF SECTION**

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## 1 GENERAL

This section provides Health and Safety Requirements, required as part of this Contract.

## 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](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.

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**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.

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**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**