



SPECIFICATIONS

POWELL RIVER SOUTH TIMBER PILE REPLACEMENT **2019**

FISHERIES AND OCEANS CANADA
SMALL CRAFT HARBOURS – PACIFIC REGION

200 – 401 Burrard Street
Vancouver, British Columbia
V6C 3S4

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56138-002	Wharf Layout – Pile Replacement Plan
56138-003	Wharf Cross Section Typical – Bearing and Batter Pile Details
56138-004	Float Mooring Pile Dolphin Plan and Detail

END OF SECTION



Part 1 General**1.1 SITE LOCATION**

- .1 Work of this Contract is located at Powell River Small Craft Harbours site located at 6790 Wharf St, Powell River, BC, V8A 1T9.

1.2 WORK INCLUDED

- .1 In general, the nature of work consists of removal of timber piles, installation of timber pile and installation of steel pipe pile for the existing wharf and float structure at Powell River.

1.3 COMMENCEMENT AND COMPLETION

- .1 All work onsite including clean-up and demobilization must be completed within the working window.
- .2 Working window: **September 23rd 2019 – November 1st 2019.**

1.4 DESCRIPTION OF UNIT PRICE ITEM

- .1 Mobilization and Demobilization
 - .1 The lump sum cost for this item shall include the following:
 - .1 Move all crew, equipment/tools and materials on and off site.
 - .2 Site clean up and disposal of general waste generated from the construction work.
 - .2 The Contractor is responsible and shall plan accordingly to move their pile driving equipment (derrick/rig) inside the harbour.
 - .3 At the Contractor's discretion, Float 804 may be temporary moved in order to bring the pile driving equipment (derrick/rig) closer to the wharf.
- .2 Wharf Bearing Timber Pile Replacement
 - .1 The unit cost for this item is based on per bearing timber pile **replaced**.
 - .2 Install OWNER supplied creosote timber pile
 - .1 Timber piles to be shimmed to have full bearing with the wharf.
 - .2 Apply mastic layers on top of pile and cover with tin hat prior to shimming.
 - .3 Supply and install all hardware and complete pile to pile cap connection as per drawing 56138-003 "Typical Pile Cap Strap Detail".
 - .4 Cut, drill and treat all creosote treated timber on site in accordance to Section 06 10 00.
 - .3 Remove and disposed of extracted pile.



.3 Wharf Batter Timber Pile Replacement

- .1 The Unit Cost for this item is based on per batter pile replaced.
- .2 Install OWNER supplied creosote timber pile
 - .1 Apply mastic layers on top of pile and cover with tin hat.
 - .2 Supply and install all hardware and complete pile connection as per drawing 56138-003 detail C.
 - .3 Cut, drill and treat all creosote treated timber on site in accordance to Section 06 10 00.
- .3 Remove and disposed of extracted pile.

.4 Float Mooring Pile Dolphin – Pile AND Blocking Replacement

- .1 The unit cost for this item is based on per mooring location.
- .2 Locations are 802A and 803B.
- .3 Each mooring location shall consists of the following:
 - .1 **Replacement** of 2 out of the 4 timber piles dolphin as indicated in the drawings
 - .2 **Replacement** all (2) of the timber blockings with OWNER supplied plastic lumber.
- .4 Hardware to be supplied by CONTRACTOR.
- .5 No lashing of dolphin is required.
- .6 Removal and disposal of extracted piles and timber blockings.

.5 Float Mooring Pile Dolphin – Blocking Replacement ONLY

- .1 The unit cost for this item is based on per mooring location.
- .2 Each mooring location shall consist of the following:
 - .1 **Replacement** of all (2) creosote timber blockings with OWNER supplied plastic lumber.
- .3 Hardware to be supplied by CONTRACTOR.
- .4 No lashing of dolphin is required.
- .5 Removal and disposal of removed timber blockings.

.6 Supply and Install New Steel Mooring Pile

- .1 The unit cost for this item is based on per steel pile supplied and installed completely.
- .2 Supply and install one (1) 18" x 0.5" x 50ft long steel pipe pile complete with ¼" thick seal welded lids.
- .3 Install of one (1) OWNER supplied anodes.
- .4 Installation of Mooring Well by Others.

.7 Onsite Hourly Rate

- .1 The unit cost for this item is the hourly rate of equipment and man hours that are already mobilized to site for the above pile driving scope of work.



- .2 The Departmental Representative shall direct the work under this line item upon award.

Part 2 Products

2.1 OWNER SUPPLIED MATERIAL

- .1 Plastic Lumber Fibre Force black
 - .1 Quantity: 12 pcs
 - .2 Dimension: 12" x 12" x 3.5ft long
 - .3 Specification: Technical Data attached in Appendix A
- .2 Creosote Timber Piles
 - .1 Quantity: 10 pcs
 - .2 Dimension: 14" butt, ~50-60ft long
- .3 Anodes
 - .1 Quantity: 4 pcs
 - .2 Drawings: Attached in Appendix B

Part 3 Execution

3.1 OWNER SUPPLIED MATERIAL

- .1 Delivery
 - .1 Delivery of OWNER supplied material to site will be done by others.
 - .2 Provide two (2) week notification for material delivery.
- .2 Handling and Usage
 - .1 The Contractor must be responsible for handling and transporting the materials around the Site.
 - .2 The Contractor must treat OWNER supplied material with care.
 - .3 Optimize usage and minimize wastage of OWNER supplied material. Additional material required to perform the work due to unnecessary wastage will be supplied by the Contractor.
 - .4 While the Contractor is mobilized on site, the Contractor is responsible for protecting materials (including Owner Supplied Materials) from damage and theft.

END OF SECTION



Part 1 General

1.1 DEFINITIONS

- .1 **Contractor:** The party accepted by the Owner with whom a formal contract is entered to complete the work of this project.
- .2 **Contracting Authority:** Real Property Contracting Acquisitions and Compensation Pacific Region, Public Works and Government Services Canada.
- .3 **Engineer/Departmental Representative:** Employee(s) that represents the Owner who act as the Engineer and Technical Authority for the project.
- .4 **Owner:** Small Craft Harbours Program of the Department of Fisheries and Oceans, 200-401 Burrard Street Vancouver B.C. V6C 3S4.
- .5 **Replacement:** Removal and disposal of existing component including treated timber, hardware and fasteners. Installation of new component including supply and installation of new hardware and fasteners, drilling, field fitting and field treating as required.

1.2 NOTIFICATION

- .1 The Contractor shall give the Departmental Representative **minimum 2 week notice** prior to mobilization to site.

1.3 HOURS OF WORK

- .1 Normal work hours are between 0700 hrs to 1700 hrs Monday through Friday not including statutory holidays.
- .2 Contractor may request to work outside the above-mentioned normal work hours. Submit written request to Departmental Representative to work outside of the normal work hours a minimum of 48 hours in advance.

1.4 CONSTRUCTION WORK SCHEDULE

- .1 The Contractor shall work whatever shifts while abiding to the noise-by-law required in order to ensure the work meets regulatory windows and is completed by the completion date of the contract.
- .2 Within 10 days of award the Contractor shall supply a week-by-week schedule of proposed activities related to the contract.
- .3 The Contractor must notify the Owner immediately whenever a variation from the construction schedule is expected to occur.

1.5 HEALTH AND SAFETY



- .1 Specified in Section 01 35 29.06

1.6 ENVIRONMENTAL PROCEDURES

- .1 Specified in Section 01 35 43

1.7 REGULATORY REQUIREMENT

- .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.
- .2 The Contractor 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.
- .3 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.
- .4 All work to be done in accordance with Work Safe BC regulations.

1.8 EXECUTION REQUIREMENTS

- .1 The Contractor is expected to familiarize themselves with the site, facilities and amenities within.
- .2 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.
- .3 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.
- .4 The Contractor shall have absorbent pads on site in case of any oil leaks or contaminants entering the water.
- .5 The site shall be left in a safe condition at the completion of each workday.

1.9 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.
- .2 The Contractor shall develop a construction plan that minimizes disruption to harbour operations.



- .3 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.

1.10 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.

1.11 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.

1.12 CONSTRUCTION AREA

- .1 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.
- .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.

1.13 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.

1.14 WASTE MANAGEMENT AND DISPOSAL

- .1 Specified in Section 01 74 21.

1.15 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.
- .2 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.

1.16 TEMPORARY SERVICES



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

1.17 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.

1.18 CLOSEOUT PROCEDURES

- .1 Specified in Section 01 77 00.

Part 2 Products

2.1 NOT USED

- .1 Not Used.

Part 3 Execution

3.1 NOT USED

- .1 Not Used.

END OF SECTION



Part 1 General**1.1 MEASUREMENT AND PAYMENT**

- .1 Health and Safety Requirements are considered incidental to the work and will not be measured separately. No separate payment will be made under this Section.

1.2 REFERENCES

- .1 Government of Canada:
 - .1 Canada Labour Code – Part II
 - .2 Canada Occupational Health and Safety Regulations.
- .2 National Building Code of Canada (NBC):
 - .1 Part 8, Safety Measures at Construction and Demolition Sites.
- .3 Canada Standards Association (CSA):
 - .1 CSA S269, Falsework for Construction Purposes.
 - .2 CSA-S350, Code of Practice for Safety in Demolition of Structures.
- .4 Province of British Columbia:
 - .1 Workers Compensation Act. Part 3 Occupational Health and Safety.
 - .2 Occupational Health and Safety Regulation
- .5 Health Canada/Workplace Hazardous Materials Information System (WHMIS):
 - .1 Material Safety Data Sheets (MSDS).

1.3 WORKERS 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.

1.4 COMPLIANCE WITH REGULATIONS

- .1 PSPC may terminate the Contract without liability to PSPC where Contractor, in the opinion of PSPC, refuses to comply with a requirement of the Workers' Compensation Act or the Occupational Health and Safety Regulations.



- .2 It is 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.

1.5 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 On-site Contingency and Emergency Response Plan: address standard operating procedures to be implemented during emergency situations
- .2 The Engineer 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.
- .3 Submit copies of incident and accident reports when requested.

1.6 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.
- .4 Report all safety and environmental incident to the Department Representative as soon as it happened.

1.7 BARRICATION

- .1 Provide safety barricades around work site as required to provide a safe working environment for workers and protection for pedestrian traffic.

1.8 FILING OF NOTICE

- .1 File Notice of Project with Provincial authorities prior to beginning of Work.
- .2 Provide copies of notices to Departmental Representative.

1.9 SAFETY ASSESSMENT



- .1 Perform site-specific safety hazard assessment related to project.
- .2 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.
- .3 Schedule and administer Health and Safety meeting prior to commencement of Work.

1.10 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 Engineer verbally and in writing.

1.11 CORRECTION OF NON-COMPLIANCE

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

Part 2 Products

2.1 NOT USED

- .1 Not Used.

Part 3 Execution

3.1 NOT USED

- .1 Not Used.

END OF SECTION



Part 1 General**1.1 MEASUREMENT AND PAYMENT**

- .1 Environmental Procedures are considered incidental to the work and will not be measured separately. No separate payment will be made under this Section.

1.2 SUBMITTALS

- .1 Contractor shall submit a Spill Response Emergency Plan for review and acceptance by Departmental Representative within fourteen (14) calendar days following Contract Award.

1.3 ENVIRONMENTAL RESPONSIBILITY

- .1 Contractor shall demonstrate in the performance of the work that it is environmentally responsible by complying with environmental legislation, regulations, and authorizations.
- .2 Take all reasonable and necessary measures in the performance of the work to avoid causing negative impacts to the environment. Where negative impacts occur, Contractor must immediately advise Departmental Representative and must be solely liable to undertake all reasonable and necessary measures to minimize the effect of such negative impacts and restoring the site to pre-impact conditions.
- .3 Maintain a neat work area free of unnecessary debris, tools, equipment, or materials; dispose of sewage, refuse, and chemical wastes in compliance with the BMPs and applicable federal, provincial, and municipal or local legislation, regulations, or laws.
- .4 Ensure that workers and supervisory staff are knowledgeable with the provisions of the proposed Spill Emergency Response Plan and are adequately trained to implement the measures contained therein.

1.4 FIRES

- .1 Fires and burning of rubbish on Site is not permitted.

1.5 WASTE MANAGEMENT AND DISPOSAL

- .1 Specified in Section 01 74 21

1.6 SPILL OR RELEASE OF DELETERIOUS SUBSTANCES

- .1 Contractor must immediately contain and assess the spill, provide appropriate notifications, and take the necessary steps to prevent further discharge.



Contractor is responsible for immediate cleanup of the spill and restoration of the area to the satisfaction of Departmental Representative and other regulatory agencies, where involved.

- .2 Departmental Representative must be immediately informed of all spills that occur at the Work Site.
- .3 Spill kits must be kept at the Work Site at all times.
- .4 Contractor shall take due care to ensure no deleterious materials, including sediment-laden runoff, leave the Work Site or enter any surface water.
- .5 Equipment fueling must NOT occur within the Work Site in accordance.

1.7 ENVIRONMENTAL MONITOR

- .1 The Owner may retain a third party environmental monitor for the project.

1.8 HISTORICAL/ARCHAEOLOGICAL CONTROL

- .1 The Owner may retain a third party archaeological monitor for the project.
- .2 Contractor must notify the archaeological monitor and the Owner if potential historical archaeological, cultural resources and biological resources are discovered during construction.

Part 2 Products

2.1 NOT USED

- .1 Not Used.

Part 3 Execution

3.1 NOT USED

- .1 Not Used.

END OF SECTION



Part 1 General**1.1 MEASUREMENT AND PAYMENT**

- .1 Waste Management and Disposal are considered incidental to the work and will not be measured separately. No separate payment will be made under this Section.

1.2 GENERAL REQUIREMENT

- .1 Accomplish maximum control of solid construction waste.
- .2 Preserve environment and prevent pollution and environment damage.

1.3 STORAGE, HANDLING AND PROTECTION

- .1 Unless specified otherwise, materials for removal become Contractor's property.
- .2 Transport and deliver non-salvageable items to licensed disposal facility.
- .3 Protect structural components not removed for demolition from movement or damage.
- .4 Separate and store materials produced during dismantling of structures in designated areas.
- .5 Do not dispose of waste into waterways, storm, or sanitary sewers.
- .6 Remove materials from deconstruction as deconstruction work progresses.

Part 2 Products**2.1 NOT USED**

- .1 Not Used.

Part 3 Execution**3.1 NOT USED**

- .1 Not Used.

END OF SECTION

Part 1 General**1.1 MEASUREMENT AND PAYMENT**

- .1 Closeout Procedures are considered incidental to the work and will not be measured separately. No separate payment will be made under this Section.

1.2 INSPECTION AND DECLARATION

- .1 Contractor's Inspection: conduct inspection of Work, identify deficiencies and defects, and repair as required to conform to Contract Documents.
- .2 Notify Owner in writing of satisfactory completion of Contractor's inspection and submit verification that corrections have been made.
- .3 Request inspection by Departmental Representative.
- .4 Representative, accompanied by Contractor, will inspect the work to identify defects or deficiencies in the work and then compile a deficiency list describing all noted defects and deficiencies.
- .5 Contractor shall correct work accordingly, as advised by Departmental Representative, at no cost to the Owner.
- .6 Final Inspection: When items noted above are completed, request Final Inspection of work by Departmental Representative, accompanied by Contractor. If work is still deemed incomplete by Departmental Representative, complete outstanding items and request re-inspection. Repeat this process until the work is complete to Departmental Representative's satisfaction.

Part 2 Products**2.1 NOT USED**

- .1 Not Used.

Part 3 Execution**3.1 NOT USED**

- .1 Not Used.

END OF SECTION

Part 1 General**1.1 MEASUREMENT AND PAYMENT**

- .1 Removal of treated timber piles and blockings are measured to be part of the unit price tendered for:
 - .1 Wharf Timber Pile Replacement
 - .2 Float Mooring Pile and Blocking Replacement
 - .3 Float Blocking Replacement
- .2 No separate payment will be made for incidental materials (such as bolts, steel brackets, etc.) that are recovered during structure demolition.

1.2 REFERENCES

- .1 Canadian Standards Association: CAN/CSA S350-M1980 (R2003), Code of Practice for Safety in Demolition of Structures.
- .2 National Building Code of Canada (NBCC), Part 8 - Safety Measures at Construction and Demolition Sites.
- .3 WorkSafeBC, Occupational Health & Safety Regulations.

1.3 SITE CONDITIONS

- .1 Contractor shall inspect the work site to thoroughly familiarize himself with site conditions before starting structure demolition work.
- .2 Should material resembling spray or trowel-applied asbestos or other designated substance listed as hazardous be encountered, stop work, take preventative measures, and notify Departmental Representative immediately. Do not proceed until written instructions have been received from Departmental Representative.

Part 2 Products**2.1 NOT USED**

- .1 Not used.

Part 3 Execution**3.1 PREPARATION AND PROTECTION**

- .1 Do work in accordance with Section 01 35 29.06 (Health and Safety Requirements).



- .2 Prevent debris from blocking surface drainage system, mechanical and electrical systems.
- .3 Keep noise, dust, and inconvenience to occupants to a minimum and in accordance.
- .4 Install and maintain temporary structural safety barricades and work site procedures throughout the demolition work, in accordance with WorkSafeBC requirements.
- .5 Do not allow buoyant items that have been demolished or detached from their original position (i.e. floating debris) to float beyond the work site. Do not allow such floating debris to cause any hindrance or obstacle to marine traffic. Identify and collect such floating debris, and dispose in accordance with the Specification.

3.2 DEMOLITION, SALVAGE AND DISPOSAL

- .1 Demolish and remove existing timber, steel and concrete structures, portions of existing structures, attachments and utilities as shown on the Drawings, to permit new construction.
- .2 Prevent debris, dust, and any sediment laden waters from entering any drainage system, water course or marine environment.
- .3 Ensure that selective demolition work does not adversely affect adjacent watercourses, groundwater and wildlife, or contribute to excess air and noise pollution.
- .4 Do not dispose of waste or volatile materials including but not limited to, mineral spirits, oil, petroleum based lubricants, or toxic cleaning solutions into watercourses, storm or sanitary sewers.
- .5 Sort materials into appropriate piles for re-use and/or recycling.

3.3 DISASSEMBLY, AND DEMOLITION PROCEDURES

- .1 Materials removed from Work Site, and from items designated for structural demolition and disposal off-site, are property of Contractor, except where salvage and re-use is specified.
- .2 Ensure workers and subcontractors are trained to carry out work in accordance with appropriate demolition techniques.
- .3 Workers must utilize adequate fall protection as required by WorkSafeBC.
- .4 Remove and store materials to be salvaged, in manner to prevent damage.
- .5 Store and protect in accordance with requirements for maximum preservation of material.



- .6 Waste Management and Disposal:
 - .1 Dispose of removed materials, to appropriate recycling or re-use facilities except where specified otherwise, in accordance with authority having jurisdiction.
 - .2 Dispose of creosoted or treated timber components in accordance with Provincial regulations.

3.4 REMOVAL FROM SITE AND DISPOSAL

- .1 Remove materials that cannot be salvaged for re-use or recycling, and dispose of in accordance with applicable codes at licensed facilities.
- .2 Transport material designated for alternate disposal by approved haulers to receiving organizations.

3.5 CLEANING AND RESTORATION

- .1 Keep site clean and organized throughout demolition procedure.
- .2 Upon completion of project, remove debris, trim surfaces and leave work site clean.
- .3 Repair damage to adjacent structures and utilities caused by disassembly or demolition of structures in the work.

END OF SECTION



Part 1 General**1.1 MEASUREMENT AND PAYMENT**

- .1 Rough Carpentry are considered incidental to the work and will not be measured separately. No separate payment will be made under this Section.

Part 2 Products**2.1 Lumber Material**

- .1 All lumber shall be D.Fir-L(N), No. 2 Structural grade..
- .2 All lumber, unless specified otherwise, shall be properly air-dried and seasoned, containing not more than 19% moisture.
- .3 All timber specified for treatment shall be pressure preservative treated in accordance with CSA-080-M 'Wood Preservation', its application subsections and amendments. The use category to which timber elements will be exposed is UC5A (Marine salt water applications)
 - .1 All creosote treated materials must have a minimum retention of 225kg per cubic meter (14lb. per cubic foot).
 - .2 All salt treated timber will have a minimum retention of 6.4 kg/m³ (0.40 lb. per cubic foot) and depth of penetration of 10mm as specified in CSA 080.14.

2.2 Fasteners and Hardware

- .1 All bolts, nuts and washers shall be hot dip galvanised in accordance with Specification CAN/CSA G164-M.
- .2 Bolt holes in timber shall be bored to provide driving fit. Holes for drift bolts shall be 2 mm undersize and longer than the drift bolts.
- .3 All bolts to meet the requirements of Standard ASTM - A325.
- .4 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.
- .5 Unless noted otherwise, all bolts shall have minimum 152mm (6") of thread.
- .6 All hardware including, but not limited to bolts, drift bolts, spikes, carriage bolts, lag bolts, nuts and washers shall be hot dipped galvanized to 610gm/m³ (2oz/ft²).



Part 3 Execution

- .1 All timber, which has been given a preservative treatment, shall be carefully handled to avoid breaking through the treated surfaces. Hooks and rafting dogs shall not be used on timbers. No spikes shall be driven into timbers except to tack the timbers in their final position. If spikes are used, they shall be fully driven and left in.
- .2 Bolt holes and countersunk holes shall be filled with CCA or ACZA preservative and the bolts shall be dipped in CCA or ACZA preservative concentrate before the bolts are placed.
- .3 Bolt holes with a final position at an elevation below water level shall be filled with approved mastic before the bolts are placed.
- .4 All bolts shall be tightened to 100 newton meters (80 lbs feet).

3.2 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.
- .3 Ensure field preservatives are properly stored and protected in case of spillage.

3.3 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 handling, storage and installation of materials.

END OF SECTION

Part 1 General**1.1 MEASUREMENT AND PAYMENT**

- .1 Wharf timber pile replacement: measured per timber pile (bearing/batter) completely replaced and secured.
- .2 Installation of mooring timber piles in the floats are measured based on per location. Each location has two (2) timber pile installation.
- .3 Supply and installation of steel pipe piles will be measured per pile installed complete with seal top lids and anode installation.
- .4 All cost associated with design, installation, extraction of any temporary works that Contractor chooses to undertake will be considered as incidental to the Work.

Part 2 Products**2.1 STEEL PILES**

- .1 Refer to Section 31 62 16.19 for Steel Piles specification.

Part 3 Execution**3.1 INSTALLATION OF PILES**

- .1 Piles shall be installed in accordance with Best Management Practice for Pile Driving and Related Operations – BC Marine and Pile Driving Contractors Association.
- .2 All piles shall be driven to the pile tip elevation. It is expected that all piles to be installed to final tip elevation with a drop hammer.
- .3 Piles shall be driven without excessive deformation of the head of the pile. The head of the pile shall be cut square and cover with a fully welded steel lid and covered with 2 layers of mastics and tin hats for timber piles.
- .4 Piles shall be driven in the mooring well of the new timber float. Piles shall be driven and installed within a tolerance of +/- 75 mm in location and within 0.5% from the specified axial alignment. The Engineer may reject piles driven out of alignment or damaged in any way after inspection. Cost of remedial measures decided by the Engineer shall be borne by the Contractor.

3.2 CUT OFFS

- .1 Allow 2-3 feet of length above cut off so that no part of the head of the pile damaged or deformed during driving remains in the work.
- .2 Piles shall be cut in a flat plane.

END OF SECTION



Part 1 General**1.1 DESCRIPTION**

- .1 This Section describes the requirements for supply of steel pipe piles for additional mooring of the float.
- .2 No coating or painting of the steel pipe piles are required.

1.2 MEASUREMENT AND PAYMENT

- .1 No separate payment for shop splice and delivery.
- .2 All cost associated with quality control and quality control testing will be considered as incidental to the Work.
- .3 No separate payment for handling of steel piles **off** Steveston Work Site.
- .4 Seek for approval from Departmental Representative to confirm steel pipe size and quantity prior to material procurement.

1.3 REFERENCES

- .1 American Petroleum Institute (API) Spec 5L, Specification for Line Pipe.
- .2 ASTM A27/A27M, Standard Specification for Steel Castings, Carbon, for General Application.
- .3 CSA G40.20/G40.21, General Requirements for Rolled or Welded Structural Quality Steel/Structural Quality Steel.

1.4 SUBMITTALS

- .1 Prior to start of fabrication, submit to Departmental Representative for review of the following:
 - .1 Mill certificates for steel piles signed by manufacturer certifying that materials comply with specified performance characteristics and physical properties.

Part 2 Products**2.1 MATERIALS**

- .1 Steel pipe for piling shall have minimum yield strength of 310 MPa meeting the requirements of the latest edition of at least one of the following specifications:
 - .1 ASTM A252 Grade 3



- .2 API 5L Grade X46
- .3 CSA Z245.1-M

.2 Steel pipes can be either straight seam or spiral seam welds.

2.2 FABRICATION

- .1 Fabricate and supply full-length 50ft piles to eliminate splicing during installation.
- .2 No pipe splicing is allowed.
- .3 Tolerances shall conform to the following:
 - .1 Straightness: Deviation from straight line over total length of fabricated pile shall not exceed $L/1000$, where L is the total length of the pile.
 - .2 End Squareness: When any pile section is placed with its end in contact with a plane perpendicular to the pile axis, no part of the circumference shall be more than 2.0 mm away from the plane.

2.3 DELIVERY, STORAGE AND HANDLING

- .1 Piles shall be handled and stored so as to avoid over stressing or injury, and any piles bent or damaged, or in any way made defective in the opinion of the Owner or Engineer, shall be made good to his satisfaction or replaced.
- .2 Deliver new, undamaged materials to site, accompanied by certified test reports, with manufacturer's logo and mill identification mark provided on pipe piles.
- .3 Store piles above ground on wood supports or dunnage. Contact surfaces of supports or dunnage shall be smooth and covered with suitable padding material.

Part 3 Execution

3.1 INSTALLATION OF PILES

- .1 Refer to Section 31 61 13 for Pile Driving General Requirements.

END OF SECTION

