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## **Small Craft Harbours Branch**

### **Technical Specifications**

**PORT EDWARD, BC**

**HARBOUR DEVELOPMENT**

**PHASE II**

**June, 2018**

**TECHNICAL SPECIFICATIONS**

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**END OF SECTION**

**1 GENERAL**

- .1 PWGSC's General Conditions and related contract documents form an integral part of this section.

**2 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.

**3 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 Engineer. 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.

**4 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.

**5 SITE ACCESS**

- .1 The Contractor shall make his own arrangements subject to the approval of the Engineer, for access to the site. Site access shall be coordinated with the local Harbour Authority.
- .3 The Contractor shall maintain routes of travel, the Engineer 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 workers, or if so ordered by the Engineer.

**6 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 the operations on the site to those areas actually required for the work including routes and regulations approved by the Owner for haulage of materials.

**7 NIGHT WORK**

- .1 The Contractor shall keep proper lights each night between the hours of sunset and sunrise upon all floating plant and false-work, upon all ranges and other stakes 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.

**8 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.

**9 TEMPORARY SERVICES**

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

**10 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 workers, plant and equipment working and work performed.

**11 ENGINEER'S ACCESS**

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

**12 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.

**13 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.

**14 WEATHER**

- .1 No work shall be undertaken by the Contractor when, in the opinion of the Engineer, the weather is unsuitable or unfavourable for a particular class of work. 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.

## **15 PREVENTION OF WATER AND AIR POLLUTION**

- .1 The Contractor shall comply with Federal and Provincial laws, orders and regulations concerning the control and abatement of water and air pollution.

## **16 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.

## **17 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.

## **18 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.

## **19 NOISE BY-LAWS**

- .1 The Contractor shall comply with the requirements of any local or other Noise By-Laws.

## **20 TIMING REQUIREMENTS**

- .1 All off-site work may commence immediately upon award.
- .2 No mobilization of crew or equipment to project site for Mandatory work before October 15<sup>th</sup>, 2018.
- .3 All Mandatory Work Items including clean-up and demobilization must be completed by February 15<sup>th</sup>, 2019.
- .4 All Option Work Items including clean-up and demobilization shall be completed by the later of, 10 weeks after completion of all Mandatory Work Items, or 16 weeks after award of Option Work Items.
- .5 Underwater works shall be conducted in consultation with local DFO officer due to fish habitat/herring conservation window, unless otherwise approved by the Fisheries Protection Program, Fisheries and Oceans.

## **21 CONSTRUCTION WORK SCHEDULE**

- .1 The contractor shall provide to the Owner a Bar Chart (GANTT Chart) schedule of all works to be completed in the contract within 10 days of contract award, and within 5 days of owners request for updated schedules during construction should there be any approved change orders or extension of time.
- .2 The Contractor shall work whatever shifts required in order to ensure the work meet regulatory windows and is completed by the completion date of the contract.
- .3 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.

## **22 CO-OPERATION WITH HARBOUR AUTHORITY AND OTHERS**

- .1 The contractor will give the owner a minimum 48 hours notice for work that may interrupt access to any part of the harbour. The contractor shall maintain a minimum 10m clear width of channel for passage of recreational boaters at all times. Provide and locate necessary buoys or markers to indicate temporary channel for passage.
- .2 The site shall be left in a safe condition at the completion of each work day.
- .3 The Contractor should work together with the Harbour Authority and Engineer's Representative to set up risk management plan for the project. This aims to identify risk of individual work item, streamline communications and minimize the associated risk to safety and operation in the harbour. The plan may include but not limited to revision of schedule and methodology, close monitoring of weather condition, navigation management during construction. Failure to implement the risk management plan may cause liability to the Contractor for damages of the harbour property during construction.
- .4 The cost for use of any Harbour Authority services are those of the Contractor and the cost of any such services should be included in the cost of this tender.

**END OF SECTION**

## 1 GENERAL

- .1 PWGSC's General Conditions and related contract documents form an integral part of this section.

## 2 WORK INCLUDED

- .1 The work under this contract shall include the supply of equipment, labour and materials for the performance of all work as required by the Contract Documents. 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.
- .2 The work to be carried out under this contract includes the demolition and disposal the remaining part of Wharf 408, all of Wharf Approaches 409, 410, and 421, backfilling the area south of Wharf 406 and installation of rip rap slope protection and a lock-block wall. The work generally consists of, but is not limited to the following items:

### Mandatory Work Items:

- .1 **Mobilisation / demobilisation for all Mandatory Work Items**  
The lump sum cost of mobilisation / demobilisation for all Mandatory Work Items, this shall include the supply of materials, equipment, tools, services, labour and all things necessary to complete the following:
- .1 Moving all crew, equipment, and materials on and off the site.
  - .2 Site clean-up after completion of the work.
  - .3 Any overhead costs not identified in other items.
- .2 **Demolition and disposal of the existing Wharf (408) structure**  
The lump sum cost for this item shall include the supply of materials, equipment, tools, services, labour and all things necessary to complete the demolition of approximately 56 m long and 36 m wide remaining section of the existing Wharf (408). The wharf consists of a concrete deck supported by creosote treated timber stringers, pile caps and creosote treated vertical timber bearing piles with bracing; see reference drawings E650-001 and -002. Timber piles to be cut at Elevation + 6.0 m or a minimum of 2 m below finished grade and left in place.
- .3 **Demolition and disposal of the existing Wharf (409 and 410) approach structures**  
The lump sum cost for this item shall include the supply of materials, equipment, tools, services, labour and all things necessary to complete the demolition of two (2) approximately 8.0m long and 1.8m wide existing Wharf (409 and 410) approach structure. The wharf approach consists of a timber deck supported by creosote treated timber stringers, pile caps and creosote treated vertical timber bearing piles; see reference drawing 102901-SUB370590 (7 of 7). Timber piles to be cut at Elevation + 6.0 m or a minimum of 2 m below finished grade and left in place.
- .4 **Demolition and disposal of the existing Wharf (421) approach structure**  
The lump sum cost for this item shall include the supply of materials, equipment, tools, services, labour and all things necessary to complete the demolition of approximately 8.5m long and 3.7m wide existing Wharf (421) approach structure. The wharf approach consists of a steel grate deck supported by steel stringers, pile caps and steel pipe vertical bearing piles; see reference drawing E582-01 to

-05. Steel pipe piles to be cut at Elevation + 6.0 m or a minimum of 2 m below finished grade and left in place.

Option Work Items:

- .5     **Mobilisation / demobilisation for all Option Work Items**  
The lump sum cost of mobilisation / demobilisation for all Option Work Items, this shall include the supply of materials, equipment, tools, services, labour and all things necessary to complete the following:
- .1     Moving all crew, equipment, and materials on and off the site.
  - .2     Site clean-up after completion of the work.
  - .3     Any overhead costs not identified in other items.
- .6     **Supply and installation of Gravel Fill**  
The unit cost per Tonne to supply to site and place gravel fill to lines and grade as shown on the drawings. Crushed concrete from the deck of Wharf 408 may be mixed with the gravel fill as specified in Section 00 22 20. An old storm sewer outfall pipe located about 33 m south of Wharf 406 shall be extended through the fill and slope protection as directed by the Owner.
- .7     **Supply and installation of Road Base**  
The unit cost per Tonne to supply to site and place road base to lines and grade as shown on the drawings.
- .8     **Supply and installation of Filter Rock**  
The unit cost per Tonne to supply to site and place filter rock to lines and grade as shown on the drawings.
- .9     **Supply and installation of Rip-Rap Slope Protection**  
The unit cost per Tonne to supply to site and place fill and rip rap slope protection to lines and grade as shown on the drawings.
- .10    **Supply and installation of Concrete Lock-Blocks**  
The lump sum cost to supply to site and place concrete lock-blocks complete with filter fabric along the north side to lines and grades as shown on the drawings.

**END OF SECTION**



## **1 GENERAL**

- .1 PWGSC's General Conditions and related contract documents form an integral part of this section.
- .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.
- .5 Demolition shall be carried out in accordance with the construction schedule as approved by the Owner.

## **2 REMOVAL OF DEMOLISHED MATERIAL**

- .1 All material, 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 materials shall be disposed of.
- .3 Timber piles shall be left in place. The top shall be cut at elevation + 6.0 m or 2 m below finished grade. All cross bracing and deck structure shall be completely removed. Crushed pieces of concrete deck may be mixed with the gravel fill provided the maximum dimension of the concrete pieces is less than 300 mm and protruding reinforcing bars or wire mesh in the concrete are removed.

## **3 SALVAGE**

- .1 Material to be salvaged for the Owner shall be stored as directed by the Engineer.
- .2 No material is currently identified for salvage.

## **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 PWGSC's General Conditions and related contract documents form an integral part of this section.

**2 MATERIALS**

- .1 Gravel Fill: Gravel fill or quarry tailing comprising well graded granular material with continuous gradation, free of any deleterious material, and conforming to the following grading requirements:

U.S. Standard Sieve Size	Percent Passing by Weight
75 mm Screen	100
50 mm Screen	60 - 90
37.5 mm Screen	40 - 70
19 mm Screen	20 - 40
4.75 mm Screen	10 - 20
1.18 mm Screen	5 - 15

Crushed concrete from the deck of Wharf 408 may be mixed with the gravel fill. The maximum dimension of the crushed concrete pieces shall be 300 mm. Protruding reinforcing bars or wire mesh in the concrete shall be removed.

- .2 Road Base: Well graded crushed rock, gravel, sand and fines with continuous gradation, free of any deleterious material, having a maximum diameter of 25 mm (1") and gradation conforming to the following requirements:

U.S. Standard Sieve Size	Percent Passing by Weight
25 mm Screen	100
19 mm Screen	60 - 90
9.5 mm Screen	30 - 70
4.75 mm Screen	20 - 50
2.36 mm Screen	15 - 30
1.18 mm Screen	10 - 25
0.300 mm Screen	5 - 15
0.075 mm Screen	0 - 5

- .2 Filter Rock: Well graded quarry rock with continuous gradation, free of any deleterious material, having a maximum diameter of 75 mm (3") and gradation conforming to the following requirements:

U.S. Standard Sieve Size	Percent Passing by Weight
75 mm Screen	100
50 mm Screen	60 - 90
37.5 mm Screen	40 - 70
19 mm Screen	20 - 40
4.75 mm Screen	0 - 15
1.18 mm Screen	0

- .3 Rip Rap: Hard, durable abrasion-resistant quarry rock, free from seams, cracks or other structural defects, with specific gravity not less than 2.65, and free from organics, sand, silt, clay and debris. The quarry rock shall be angular in shape with ratio of maximum to minimum dimensions generally not exceeding 3.

**Gradation:**

Maximum diameter  $D_{100\%} = 600$  mm (24").

Not more than 50% by weight with a diameter smaller than  $D_{50\%} = 300$  mm (12").

Not more than 15% by weight with a diameter smaller than  $D_{15\%} = 75$  mm (3").

- .4 The Contractor shall when and as directed by the Engineer break down into fractions a sample of a representative volume compared to the material. The Contractor shall carry out the necessary weighing of the fractions.
- .5 Material spec sheet for all grades must be submitted and approved by the Engineer before delivery. Material, which does not meet the Specifications and hence is rejected by the Engineer shall be promptly removed from the site and satisfactorily substituted by the Contractor.
6. Contractor to provide weigh scale receipts for all supplied materials. Weigh scale receipts must be from a scale certified by a Measurement Canada Accredited Inspector.

**3 EXECUTION**

- .1 Remove all debris, logs etc. from areas that will be covered by the new fill and slope protection.
- .2 Existing painted steel piles under Wharf 405 and 406 shall be wrapped from top of new slope protection to 2 m below top of new slope in order to protect the paint during the fill operation.
- .3 Placement of Gravel Fill: Place fill material in uniform layers not exceeding 500 mm loose thickness. Fill above mean water level (+ 3.8 m) shall be compacted to a minimum of 97% density Standard Proctor up to grade indicated. Compact each layer before placing succeeding layer.
- .4 Placement of Road Base: Place road base in a uniform layer and compacted to a minimum of 99% density Standard Proctor up to grade indicated.
- .5 Placement of Filter Rock: The Contractor shall place the filter rock in a uniform layer to the lines and grades shown on the drawings.
- .6 Placement of Rip Rap: The Contractor shall place the rip rap in random pattern to the thicknesses as shown on the drawings. Reasonable effort shall be made in the placing to ensure good contact between individual rocks. Rip rap rocks placed in a loose pattern will not be accepted.
- .7 Material which does not meet the Specifications and hence is rejected by the Engineer shall be promptly removed from the site and satisfactorily substituted by the Contractor.

**END OF SECTION**

## 1 General

### 1.1 RELATED REQUIREMENTS

- .1 Not used

### 1.2 REFERENCES

- .1 Not used

### 1.3 IN WATER WORKS

- .1 Construction equipment is to be operated on land or from a floating barge.
- .2 Waterways are to be kept free of excavated fill, waste material and debris.
- .3 Do not skid logs or construction materials across foreshore areas.

### 1.4 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 written notification from Engineer Contractor will propose corrective action and take such action after receipt of written approval by the 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

### 2.1 NOT USED

## 3 Execution

### 3.1 PROJECT SCHEDULING

- .1 Juvenile salmon emerge from the local rivers and can be found along the shoreline in the spring. In addition, most herring spawn between March 15th and May 1st. In late summer and early fall, adult salmon return to their native streams. For those reasons, DFO prefers works to be performed between November 30th and February 15th (DFO for Area 4 – Lower Skeena). However, it is common for many marine construction projects that do not involve dredging to be extended to March 31st and begin construction August 1st. Therefore, it is proposed that any in water works be performed between August 1st and March 31st.
- .2 The Contractor shall provide 5 days notice to the Environmental Monitor prior to any in water works or other works that occur below the high water mark.
- .3 Works generating exposed sediments shall not be scheduled during extreme rainfall events unless appropriate sediment erosion control systems are in place such that no release of sediment into the marine environment will occur.

### 3.2 SITE PREPARATION

- .1 During site preparation and construction, a number of materials may be removed from the site. Mitigation measures that shall be employed during these works include:
  - .1 Where a risk of debris entering the water exists, a containment boom will be deployed to capture any debris.
  - .2 All debris will be collected and removed from the site at an appropriate upland disposal facility.
  - .3 The site shall be left in a clean condition each day.
  - .4 Works shall be conducted in a safe manner to ensure the safety of both work crews and the public. The Contractor must have a Safety Plan in place.
  - .5 Proper marking of the site shall be in place to ensure that all areas being demolished are clearly visible.
  - .6 No heavy machinery shall be permitted to enter the water unless appropriate mitigation measures are identified by the Contractor and authorized by the Engineer in writing.
  - .7 A spill kit will be on site at all times.
  - .8 The Contractor will have a Spill Management Plan and will carry out that plan in the event of a spill.
  - .9 Water quality conditions resulting from these works shall not exceed water quality criteria in Part 5.
  - .10 The works shall not generate vibrations (pressure waves) that exceed 30 kPa in the marine environment.
  - .11 Saw dust and particles shall be cleaned up daily so as to prevent their release into the marine environment.
  - .12 The Contractor shall create an Environmental Management Plan.

### 3.3 MATERIALS

- .1 All rip rap shall be inspected by the Contractor to ensure that it is free of excess fines prior to use.
- .2 The Contractor to ensure that any fill material used does not result in acid leachate or is not from a source that can reasonably be suspected of causing acid leachate.
- .3 The Contractor shall only use fill material from sources that have not been used for Industrial or Commercial purposes unless a Phase I ESA has concluded that the materials are not likely to be contaminated.

### 3.4 CONSTRUCTION

- .1 Conduct works in a manner that complies with the law and avoids, mitigates or lessens potential impacts to aquatic and riparian habitats, water quality and quantity, fish and wildlife populations, and public safety and property.
- .2 Enforce good housekeeping, worker's compensation board, and relevant codes and by-laws, for site services and conditions.
- .3 Rip rap or infill materials will be placed during periods of low tide wherever possible.
- .4 If the water quality requirements identified in Section 3.5 cannot be met, a 4.5m tall silt curtain will be required around the area being filled.
- .5 The Contractor shall inspect equipment to ensure it is in good working order, clean and free of leaks.

- .6 Heavy equipment is to be kept out of the water. This is defined as the tracks of the machines out of the water itself.
- .7 Clearly survey and mark infill boundaries onsite prior to construction to ensure the correct areas are worked on.
- .8 All stockpiled materials shall be placed away from any drainage or the high water mark wherever possible.
- .9 All stock piled materials shall remain covered with polyethylene or tarps during any rainfall event, or, after 3 days of dry weather if no rainfall has occurred.
- .10 Public roadways must be kept clean. Daily cleaning will be required if any observed sedimentation has occurred.
- .11 Perform all works within the project footprint only.
- .12 The Contractor shall develop a Sediment and Erosion Control Plan to ensure any stock piled materials or exposed sediments to not generate unnecessary sediment laden waters.
- .13 Plan project to minimize exposure of fines to tide cycles which will generate plume during high tides.
- .14 Have an Environmental Monitor onsite when there is potential for juvenile salmon to be onsite as defined by the DFO Fisheries Window typically after March 15th.
- .15 Where practical, remove invertebrates from the project footprint to an adjacent site of equal habitat conditions.
- .16 Following Best Management Practices for Pile Driving.
- .17 Use a vibratory hammer if driving conditions permit.
- .18 Employ bubble curtain if required.
- .19 Preventing grounding of barges or equipment on foreshore.

#### **4 Environmental Impact Mitigation**

##### **4.1 SEDIMENT CONTROL DEVICES**

- .1 A silt curtain will be deployed at the discretion of the Environmental Monitor in consultation with Small Craft Harbours based on water quality readings. If water quality is not an issue, as defined below in Part 5, no silt curtain will be deployed.
- .2 Gravel pads shall be placed where trucks pull out onto paved areas.
- .3 Sand bags shall be placed beside catchment basins during the works to collect any sediment.
- .4 Any upland works shall be isolated from the marine environment with the use of a silt fence if that surface slopes towards the High Water Mark.

#### **5 Water Quality**

##### **5.1 WATER QUALITY TESTING**

- .1 Turbidity shall not exceed 8 NTU above background located at any point outside of the Small Craft Harbour water lot as measured by the Environmental Monitor.

#### **6 Spill Response Plan**

##### **6.1 EQUIPMENT AND SUPPLIES**

- .1 At a minimum, the following equipment and supplies shall be onsite during any construction activities:
  - .1 Absorbent pads

- .2 Spill booms
- .3 Clearly marked spill kit
- .4 Gloves
- .5 Hard copy of this Spill Response Plan

## 6.2 TRAINING

- .1 All personnel on the project must have been trained to use the equipment and supplies listed above and be familiar with these spill response procedures to ensure a spill is avoided and immediate action is taken in the event of a spill.

## 6.3 PLANNING

- .1 The Contractor shall ensure that when planning the project:
  - .1 Only equipment that is free of leaks are used on the project
  - .2 The equipment is of sufficient size and capable of performing the work without becoming overloaded.
  - .3 All equipment is inspected prior to daily use
  - .4 All equipment and work surfaces are in a clean condition.
  - .5 The location of the spill kit has clearly been communicated to all work crew members.
  - .6 Ensure that a skiff is available to perform cleanup.

## 6.4 CLEAN UP PROCEDURE

- .1 In the event of a spill, the Contractor shall perform the following immediately:
  - .1 Stop the source of the spill. If the spill is from a machine in or near the marine environment, remove it to a contained upland area.
  - .2 Contain the spill by deploying the spill booms from a skiff if in water.
  - .3 Use absorbent pads to collect the spilled material.
  - .4 Collect photographs of both the site impacted and the equipment that failed.
  - .5 Report the findings to a designate as determined by Small Craft Harbours.
  - .6 Document the events, including:
    - .1 Name of Contractor personnel(s) present and contact phone number;
    - .2 Name and telephone number of the person who caused the spill;
    - .3 Location and time of the spill;
    - .4 Type and quantity of the substance spilled;
    - .5 Cause and effect of the spill;
    - .6 Details of action taken or proposed;
    - .7 Description of the spill location and surrounding area;
    - .8 Names of agencies on scene; and
    - .9 Names of other persons or agencies advised concerning the spill.

- .2 If the spill exceeds the values in B.C. Reg. 63/88 below, the following must be contacted:

B.C. Ministry of Environment Environmental Emergency: 1-800-663-3456  
 Marine Spill Reporting: 1-800-OILS-911  
 Canadian Coast Guard: 1-800-889-8852  
 Port Edward Harbour Authority: 1-250-628-9220  
 Small Craft Harbours – Andrew Cornell: 1-604-666-6724  
 Fisheries and Oceans Canada: 1-250-627-3499

## 6.5 SPILL REPORTING REGULATION

- .1 If the spill exceeds any of the following, it must be reported to the provincial government

### B.C. Reg. 63/88.

Item	Column 1 Substance spilled	Column 2 Specified amount
1	Class 1, Explosives as defined in section 2.9 of the Federal Regulations	Any quantity that could pose a danger to public safety or 50 kg
2	Class 2.1, Flammable Gases, other than natural gas, as defined in section 2.14 (a) of the Federal Regulations	10 kg
3	Class 2.2 Non-Flammable and Non-Toxic Gases as defined in section 2.14 (b) of the Federal Regulations	10 kg
4	Class 2.3, Toxic Gases as defined in section 2.14 (c) of the Federal Regulations	5 kg
5	Class 3, Flammable Liquids as defined in section 2.18 of the Federal Regulations	100 L
6	Class 4, Flammable Solids as defined in section 2.20 of the Federal Regulations	25 kg
7	Class 5.1, Oxidizing Substances as defined in section 2.24 (a) of the Federal Regulations	50 kg or 50 L
8	Class 5.2, Organic Peroxides as defined in section 2.24 (b) of the Federal Regulations	1 kg or 1 L
9	Class 6.1, Toxic Substances as defined in section 2.27 (a) of the Federal Regulations	5 kg or 5 L
10	Class 6.2, Infectious Substances as defined in section 2.27 (b) of the Federal Regulations	1 kg or 1 L, or less if the waste poses a danger to public safety or the environment
11	Class 7, Radioactive Materials as	Any quantity that could pose a danger to public safety and



	defined in section 2.37 of the Federal Regulations	an emission level greater than the emission level established in section 20 of the "Packaging and Transport of Nuclear Substances Regulations"
12	Class 8, Corrosives as defined in section 2.40 of the Federal Regulations	5 kg or 5 L
13	Class 9, Miscellaneous Products, Substances or Organisms as defined in section 2.43 of the Federal Regulations	25 kg or 25 L
14	waste containing dioxin as defined in section 1 of the Hazardous Waste Regulation	1 kg or 1 L, or less if the waste poses a danger to public safety or the environment
15	leachable toxic waste as defined in section 1 of the Hazardous Waste Regulation	25 kg or 25 L
16	waste containing polycyclic aromatic hydrocarbons as defined in section 1 of the hazardous Waste Regulation	5 kg or 5 L
17	waste asbestos as defined in section 1 of the Hazardous Waste Regulation	50 kg
18	waste oil as defined in section 1 of the Hazardous Waste Regulation	100 L
19	waste containing a pest control product as defined in section 1 of the Hazardous Waste Regulation	5 kg or 5 L
20	PCB Wastes as defined in section 1 of the Hazardous Waste Regulation	25 kg or 25 L
21	waste containing tetrachloroethylene as defined in section 1 of the Hazardous Waste Regulation	50 kg or 50 L
22	biomedical waste as defined in section 1 of the Hazardous Waste Regulation	1 kg or 1 L, or less if the waste poses a danger to public safety or the environment
23	A hazardous waste as defined in section 1 of the Hazardous Waste Regulation and not covered under items 1 – 22	25 kg or 25 L
24	A substance, not covered by items 1 to 23, that can cause pollution	200 kg or 200 L
25	Natural gas	10 kg, if there is a breakage in a pipeline or fitting operated above 100 psi that results in a sudden and uncontrolled release of natural gas

## 7 Environmental Monitoring

### 7.1 QUALIFICATION OF THE ENVIRONMENTAL MONITOR

- .1 Appropriate qualifications for the Environmental Monitor shall include knowledge and experience relating to:
  - .1 Local marine biology and ecology,

- .2 Experience and background in the limitations and abilities of the equipment performing the project,
- .3 The potential adverse environmental effects of the Project,
- .4 Measures that can be employed to mitigate known and unknown adverse environmental effects that are likely to occur, and,
- .5 Relevant legislation, guidelines, and best management practices.

## **7.2 ROLE OF THE ENVIRONMENTAL MONITOR**

- .2 The Environmental Monitor will:
  - .1 Have written authority from the Proponent to modify or halt any construction activity as required to minimize impacts to fish or fish habitat,
  - .2 Explain the conditions of any permits including authorizations, letters of advice or aquatic environment effects determinations to each contractor prior to that contractor starting work at the project site,
  - .3 Monitor the project for compliance with the conditions of any permits including authorizations, letters of advice or aquatic environment effects determinations, guidelines, and best management practices,
  - .4 Direct project construction works as necessary to ensure compliance with any permits including authorizations, letters of advice or aquatic environment effects determinations, guidelines, and best management practices. This includes stopping or altering project works and directing works to avoid or mitigate adverse environmental effects, and,
  - .5 Provide written reports describing the findings of the monitoring program.
  - .6 Note: the Environmental Monitor does not have the authority to change the Project or the terms or conditions of any permits including authorizations, letters of advice or aquatic environment effects determinations.

## **7.3 TIMING OF MONITORING**

- .1 The Environmental Monitor will be onsite whenever there are works with the potential to adversely affect the aquatic environment or, at any time during the course of the project when there is the potential for adverse impacts to fish or fish habitat or the potential deposit of a deleterious substance into the aquatic environment.

## **7.4 MONITORING SPECIFICS**

- .1 The monitoring will include the following:
  - .1 The works undertaken each day and wildlife present,
  - .2 Assessment of the effect of the project on the project environment, including observation, photography and physical measurements,
  - .3 Assessment of compliance with the conditions of any permits including authorizations, letters of advice or aquatic environment effects determinations, guidelines, and best management practices, and,
  - .4 Identification of any significant environmental issues and impacts and details of specific mitigation measures put in place to address those issues and impacts.

## 7.5 CONSTRUCTION MONITORING

- .1 The monitor will create written daily monitoring reports describing the findings for each day the monitor is onsite including:
  - .1 A summary of the works and activities carried out or undertaken that day,
  - .2 Commentary on the works and activities conducted from a fish and fish habitat perspective,
  - .3 Identification of any potential issues or impacts to fish or fish habitat that arose or occurred, and details of specific mitigatory measures put in place to address these issues and impacts.
- .2 The monitor will keep the daily reports on file to be provided upon request. In addition to the daily monitoring reports, the monitor will provide a written summary monitoring report for the project works.

## 7.6 SPECIES AT RISK MONITORING

- .1 Species at risk that have the potential to be in the general area of the site include:
  - .1 Northern Resident Killer Whale
  - .2 Fin Whale
  - .3 Bigg's Killer Whale
  - .4 Northern Abalone
- .2 A 1km buffer zone will be established around the project site, if any cetaceans are observed within 1km during pile driving, work will be stopped until 30 minutes after they have left the safety zone. A 500m safety zone around the project site will be established for all other marine mammals, within which their behaviour will be observed and reported to the Environmental Monitor immediately. If the animal is deemed to be at risk or in distress, works will be stopped until the animal is considered no longer at risk or has left the buffer zone.
- .3 An Environmental Monitor will be onsite whenever the project is producing in water pressure waves in excess of 30 kPa or when a plume occurs that is expected to exceed the perimeter of the project water lot boundary. When on site, the Environmental Monitor shall use binoculars during the day and a hydrophone during the night to monitor the presence of any cetaceans in the area during periods of the work likely to impact cetaceans.
- .4 The Environmental Monitor shall be empowered in writing by the Contractor to stop work in the event that any species at risk are observed at or near the site within the Safety Zone.
- .5 If a species at risk is observed, information on the species observed, location, behaviour, and duration on site, shall be recorded. The report will include a description of the Contractor's activities, the times that work stopped and started, and if the works appeared to have an impact on the species at risk.

## 8 Pile Works

### 8.1 PILE DRIVING BEST PRACTICES

- .1 Have a preconstruction meeting to go over environmental requirements.
- .2 Machinery is to arrive on site in a clean, washed condition and be free of fluid leaks.

- .3 All equipment is maintained in good proper running order to prevent leaking or spilling of potentially hazardous or toxic products.
- .4 Wash, refuel and service machinery and store fuel and other materials for the machinery at least 30 metres away from the water in order to prevent any deleterious substance from entering the water.
- .5 Any water-based equipment or machinery (for example, clamshell dredge or pile driver on a barge) moored or used during the Project must not ground on the intertidal foreshore or subtidal seabed. The only exception to this condition is that use may be made of vertical spuds or other anchors to hold the water-based machinery or equipment in place.
- .6 Storage of fuels and petroleum products will comply with safe operating procedures, including containment facilities in case of a spill.
- .7 Pile cut-offs, waste or any miscellaneous unused materials must be recovered for either disposal in a designated facility or placed in storage.
- .8 On site emergency spill equipment available whenever working near or on the water.
- .9 Position water borne equipment in a manner that will prevent damage to identified fish habitat.
- .10 Report any incidents of habitat damage to the Environmental Monitor or DFO. to ensure that appropriate action (restoration) is taken.
- .11 If fish spawn in the area or on equipment all work should stop and the Environmental Monitor or DFO notified.
- .12 Work in least risk timing windows for fish and employ silt or bubble curtains to prevent harm to fish or fish habitat.
- .13 Environmental monitoring of pressure waves is not required if appropriate vibratory hammer equipment is employed.
- .14 For any extraction of existing piles, reasonable efforts are to be applied to remove the entire length of the pile from the intertidal foreshore or subtidal seabed.
- .15 If pile driving is results in pressure waves above 30 kpa bubble curtains or other mitigation measures should be employed to reduce or pressure wave values or maintain marine life at a distance where pressure waves do not exceed 30 kpa.
- .16 Follow any project plans including Environmental Management, Water Quality Monitoring, Environmental Monitoring, Spill Prevention and Emergency Response Plan.
- .17 Best Practices are guidelines only.
- .18 All permits, authorizations, laws and regulations take precedence over this document.

## **8.2 PILE REMOVAL BEST PRACTICES**

- .1 Measures should be implemented to control turbidity and sediments re-entering the water column during pile removal, and to dispose of removed piles and debris.
- .2 Existing pilings within the project footprint should be extracted using direct pull and/or vibratory techniques in accordance with the following resource protection measures.
- .3 Vibratory extraction is the preferred method of piling removal and should be used where available and feasible depending on piling condition and substrate type. Vibration reduces friction between the pile and substrate to avoid disturbing large amounts of sediment. Typically little or no sediment remains attached to the pile during vibratory withdrawal.

- .4 When appropriate for the substrate type and structural integrity of the piling, a crane or excavator may be used to pull the pilings out of the sediment. To the extent practicable, pilings should be removed in their entirety; however, no jetting, excavation, or other significant disturbance of the sediment should occur to facilitate piling removal.
- .5 Work should be done during low water/low tide to the extent possible. Individual piles should be removed slowly to ensure sediment disturbance and resulting turbidity in the water column is minimized. All sediment and contaminants associated with removed piles should be contained during handling and transport to prevent re-introduction to the water. No effort should be made to remove sediment or other material from chemically treated piles, either in or over the water.
- .6 In the event that the pile breaks at or near the existing mudline and cannot be removed, the pile should be cut off at least 1 foot below the mudline. For creosote treated piles, the remaining stump should be covered with clean sediment. Any other holes remaining after piling removal should not be filled.
- .7 All floating surface debris should be collected and disposed of along with the piling. All wooden piling treated with preservatives, together with associated sediments, and debris from piling removal should be permanently removed from the water and disposed of at a facility approved for collection of hazardous waste.
- .8 Extracted piles and debris should be placed in a lined stockpile area or directly loaded into transport container or vehicle.
- .9 Appropriate controls should be used to prevent runoff from leaving the stockpile and entering surface water or ground water. Steel pipe piling may be recycled or reused if the piling condition is suitable for reuse.
- .10 Best Management Practices are guidelines only.
- .11 All permits, authorizations, laws and regulations take precedence over this document.

## 9 Concrete Works

### 9.1 CONCRETE USE BEST PRACTICES

- .1 Ensure that all works involving the use of concrete, cement, mortars, and/or other Portland cement or lime-containing construction materials will not deposit (directly or indirectly) sediments, debris, concrete, leachate concrete fines, wash or contact water into or about any watercourse.
- .2 Cast in place concrete must remain isolated from water inside sealed formed structures until cured (approximately 48-72 hours), as concrete leachate is highly toxic to fish and other aquatic life.
- .3 Ensure a carbon dioxide (CO<sub>2</sub>) tank with regulator, hose and gas diffuser (bubbler) is readily available during concrete work to neutralize pH levels should a spill occur. Staff must be trained in its proper use.
- .4 Provide containment facilities for wash-down water from concrete delivery trucks, concrete pumping equipment, and other tools and equipment.
- .5 Immediately report any spills of sediments, debris, concrete fines, wash or contact water of reportable quantities to the Provincial Emergency Program Environmental Emergency Management Plan Incident Reporting Hotline 1-800-663-3456 and DFO's Observe, Record and Report Hotline 1-800-465-4336.
- .6 Implement emergency mitigation and clean-up measures (such as use of CO<sub>2</sub> and immediate removal of the material).

- .7 Monitor pH frequently within worksite and immediately downstream of the isolated worksite until the works are completed. Emergency measures should be implemented if downstream pH has changed more than 1.0 pH unit, measured to an accuracy of +/- 0.2 pH units from the background level, or is below 6.0 or above 9.0 pH units.
- .8 Prevent any water that contacts deleterious uncured or partly cured concrete (during activities like exposed aggregate wash-off, wet curing, or equipment washing) from directly or indirectly entering any watercourse or stormwater system.
- .9 Isolate and hold any water that contacts uncured or partly cured concrete until the pH is between 6.5 and 8.0 pH units and the turbidity is less than 25 nephelometric turbidity units (NTU), measured to an accuracy of +/- 2 NTU.

## 10 Cleaning

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

## **Part 1 General**

### **1.1 SECTION INCLUDES**

- .1 Health and safety considerations required to ensure that Small Craft Harbours/DFO shows due diligence towards health and safety on construction sites, and meets the requirements laid out in PWGSC/RPB Departmental Policy DP 073 - Occupational Health and Safety - Construction.  
<http://publiservice.tpsgc-pwgsc.gc.ca/ipm-dpi/politique-policy/p073-eng.html>

### **1.2 RELATED SECTIONS**

### **1.3 REFERENCES**

- .2 Canada Labour Code, Part 2, Canada Occupational Safety and Health Regulations
- .3 Health Canada/Workplace Hazardous Materials Information System (WHMIS)
  - .1 Material Safety Data Sheets (MSDS).
- .4 Province of British Columbia
  - .1 Workers Compensation Act, RSBC 1996 - Updated 2006.
  - .2 Occupational Health and Safety Act, S.N.S. [1996].

### **1.4 SUBMITTALS**

- .5 Make submittals in accordance with Section 01 33 00 - Submittal Procedures.
- .6 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.
- .7 Submit one copy of Contractor's authorized representative's work site health and safety inspection reports to Departmental Representative weekly.
- .8 Submit copies of reports or directions issued by Federal, Provincial and Territorial health and safety inspectors.
- .9 Submit copies of incident and accident reports.
- .10 Submit WHMIS MSDS - Material Safety Data Sheets if requested.
- .11 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.
- .12 Departmental Representative's 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.
- .13 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.

- .14 On-site Contingency and Emergency Response Plan: address standard operating procedures to be implemented during emergency situations.

## **1.5 FILING OF NOTICE**

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

## **1.6 SAFETY ASSESSMENT**

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

## **1.7 MEETINGS**

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

## **1.8 REGULATORY REQUIREMENTS**

- .18 Do Work in accordance with Section 01 41 00 - Regulatory Requirements.

## **1.9 PROJECT/SITE CONDITIONS**

- .19 Work at site will involve contact with:
  - .1 Harbour Manager.
  - .2 Departmental Representative.

## **1.10 GENERAL REQUIREMENTS**

- .20 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.
- .21 Departmental Representative may respond in writing, where deficiencies or concerns are noted and may request re-submission with correction of deficiencies **or concerns**.

## **1.11 RESPONSIBILITY**

- .22 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.
- .23 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.

## **1.12 COMPLIANCE REQUIREMENTS**

- .24 Comply with Workers Compensation Act, B.C.
- .25 Comply with Occupational Health and Safety Regulations.
- .26 Comply with Canada Labour Code, Canada Occupational Safety and Health Regulations.

## **1.13 UNFORSEEN HAZARDS**

- .27 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.



**1.14 HEALTH AND SAFETY CO-ORDINATOR**

- .28 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 dredging and material transportation.
  - .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.

**1.15 POSTING OF DOCUMENTS**

- .29 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.

**1.16 CORRECTION OF NON-COMPLIANCE**

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

**1.17 BLASTING**

- .33 Blasting or other use of explosives is not permitted without prior receipt of written instruction by Departmental Representative.

**1.18 WORK STOPPAGE**

- .34 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**