

DND Wood Waste Remediation Pilot Project

Issued for Tender

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October 28, 2019

APPENDIX A – DATA REPORTS

Anchor QEA, 2019. Data Memorandum – Wood Waste Remediation Project. Prepared for Public Works and Government Services Canada. February 2019.

Hemmera Envirochem Inc., 2018. Wood Waste Assessment, Characterization, and Management Plan - Esquimalt Harbour. Department of National Defence. Prepared for Public Services and Procurement Canada. March 2018.

APPENDIX B – ENVIRONMENTAL REQUIREMENTS

Hemmera Envirochem Inc., 2019. *Due Diligence Environmental Effects Determination Report*. Physical Activity: Esquimalt Harbour Wood Waste Remediation Pilot Study Project. Prepared for Department of National Defence. 21 June 2019.

Anchor QEA, 2019. *Environmental Management Plan*. DND Wood Waste Remediation Pilot Project. Prepared for Public Works and Government Services Canada. 19 July 2019.

Fisheries and Oceans Canada, 2019. Wood Waste Remediation, Esquimalt Harbour (Esquimalt) – Implementation of Measures to Avoid and Mitigate the Potential for Prohibited Effects to Fish and Fish Habitat. Letter to Mike Waters, Department of National Defence, CFB Esquimalt. 19-HPAC-00546. September 30, 2019.

APPENDIX C – DND REFERENCE DOCUMENTS AND GUIDELINES

DND, 2012. DND CAD/BIM Standard. CETO (Construction Engineering Technical Order) C-98-002-CAD/FP-003. August 2012.

Esquimalt Harbour – Practices and Procedures – February 2019 (<http://www.navy-marine.forces.gc.ca/en/about/structure-marpac-poesb-practices-procedures.page>).

Formation Safety and Environment, 2015. CFB Esquimalt Safety and Environment Guide for Contractors. February 2015.

Preliminary Job Hazard Analysis Check List (Sample – For Reference Only), August 2011.

APPENDIX D – FSE DIRECTIVES

MARPAC, 2013b. Formation SEMS Manual Directive SE5 – Spill Response. October 2013.

DRAWINGS (bound separately)

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T-1	Cover Sheet
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END OF SECTION

1. PART 1 – GENERAL

1.1 Description

- .1 The Department of National Defence (DND) and Contracting Authority Public Works and Government Services Canada (PWGSC) requires a pilot project for placing clean sand and amended sand cover in wood waste areas to assess effectiveness of these actions to reduce sulfide concentrations in porewater. The Project Site is located in the northern portion of Esquimalt Harbour on Vancouver Island, British Columbia (BC).
- .2 The work involves carefully placing different Cover Types (clean sand and amended sand) in defined Test Areas, as shown on the Drawings, using different specified placement methods. The work also includes conducting Practice Placement of cover material in the Practice Area, as shown on the Drawings, to demonstrate the Contractor's means and methods for three different placement methods (as described in Section 35 37 10 Material Placement) can meet Specification requirements prior to starting work in Test Areas and placement of Material Type 3 in discrete locations within the Practice Area, as described in the Specifications.
- .3 The Project Site comprises one Practice Area, two Work Areas, and nine Test Areas, as shown on the Drawings. Out of the nine Test Areas, two are designated as control Test Areas and require no action by the Contractor.
- .4 All work within Esquimalt Harbour, including temporary construction facilities (i.e., trailer, restrooms) and materials and equipment staging, must be conducted on the water using barges or other floating platforms or vessels. No upland area within Esquimalt Harbour will be provided by DND for staging or loading/offloading equipment and material as part of this work.
- .5 CFB Esquimalt is an operational base, located south of the Project Site. The Contractor's work must be conducted in a manner that does not interfere with CFB Esquimalt operations or operations of neighbouring properties, except as otherwise described in these Contract documents.
- .6 PWGSC will designate a representative (the Departmental Representative) to advise, coordinate, and monitor the work on behalf of DND.
- .7 Work under this Contract covers required work elements (Base Work) and an optional work element (Optional Work) and the associated Tender Items for each type of work are listed in the Unit Price Table. The Departmental Representative may elect to include Optional Work as part of the Contract.
- .8 Sediments within the Work Areas have a high percentage of wood waste or wood waste by-products. The Contractor must conduct its work in a manner to minimize, to the extent practicable, resuspension and redistribution of sediments, and to comply with environmental protection requirements in these

Specifications, the Environmental Management Plan (EMP), and any applicable permit conditions.

- .9 The Contractor must carefully plan its means, methods, work schedule and shifts, and number of and types of equipment and crews necessary to complete the work by the specified Substantial Performance date (see Clause 1.8). The Contractor must identify in its Construction Work Plan and Construction Progress Schedule how it intends to complete all work by the Substantial Performance date by identifying construction sequencing, and number of work shifts per day. Contractor must work at one Test Area at a time and must not complete more than two Test Areas in a single day, per Section 35 37 10 (Material Placement).
- .10 Work under this Contract covers, but is not limited to, procurement of Material Type 1 (clean sand), Material Type 2 (granular siderite amendment), and Material Type 3 (rock material), blending of Material Types 1 and 2 to the specified mix concentration (i.e., amended sand cover, which is referred to as Cover Type 3), and quality control testing of Cover Type 3, Practice Placement of Cover Type 1 and placement of Cover Types 1, 2, and 3 and Material Type 3.
- .11 The Contractor must provide all supervision, labour, materials, supplies, tools, equipment, hoisting, transportation, receiving, handling, storage, quality control, environmental protection, surveying, inspection, monitoring, and all other services necessary for the proper execution of the work. The principal items of the work are summarized as follows, but do not represent the full list of work required:
 - .1 Providing Contractor and public health and safety responsibilities.
 - .2 Providing environmental and cultural heritage protection responsibilities
 - .1 Responsibilities include protection of structures, sites, or things that may be valued for their historical, archaeological, architectural, and paleontological significance as determined on a chance find management basis by the PWGSC Archaeological Monitor and accepted by the Departmental Representative.
 - .3 Complying with all submissions and documentation requirements.
 - .4 Coordinating with the Departmental Representative (and designated alternates) in performing all work.
 - .5 Conducting Pre-Construction, Progress, and Post-Construction Surveys.
 - .6 Staging of materials and equipment. Staging of Contractor materials brought in from off site to complete the work may be conducted on barges within the Work Areas identified on the drawings or at an off-site location reviewed and accepted by the Departmental Representative.
 - .7 Importing Material Type 1 and completing Practice Placement in the Practice Area, as shown on the Drawings, to demonstrate the Contractor's means and methods can meet Specification requirements and permitting

- conditions for Cover Type 1 placement, as described in Section 35 37 10 (Material Placement).
- .8 Importing and placing Material Type 3 in the Practice Area, as described in Section 35 37 10 (Material Placement).
- .9 Importing Material Types and placing Cover Types within Test Areas as shown on the Drawings and described in Section 35 37 10 (Material Placement). For Tender purposes, the Contractor must assume that they will place fill materials to the full extent of the areas provided on the Drawings (fill material placement conducted in Test Areas 1, 2, 3, 4, 6, 7, 8, and 9 [as part of the Base Work] and in optional Test Area 5 [as part of the Optional Work]).
- .10 Demobilizing Work Area(s), as applicable.
- .12 The Coasting Trade Act applies to all vessels utilized by the Contractor during completion of the work as part of this Contract.
- .13 The Contractor must perform the work with care and pay attention to proximity of DND infrastructure and vessels to avoid abrasion, impacts, allisions, and collisions. The Contractor must maintain a minimum 120-metre offset from all DND assets (i.e., jetties and moored vessels) when transiting vessels/barges outside of the Work Areas, as required in Section 01 35 00.50 (Special Procedures for Harbour Control).
- .14 The Contractor must be aware of any operations occurring in the northern portion of Esquimalt Harbour adjacent to the Project Site. The Contractor is responsible to pay particular attention to activities within and adjacent to the Jones Marine Lease area, as shown on the Drawings. The Contractor will not be allowed to spud project vessels in the Jones Marine Lease area.
- .15 The work to be performed by the Contractor must include all of the requirements specified throughout each of the sections that comprise the Specifications unless otherwise expressly stated to be performed by the Departmental Representative. To fully comprehend the work, the Specifications must be read in conjunction with the Drawings, the Unit Price Table included in the Tender documents, the EMP, site information (including reference drawings, documents, surveys, and other data), and other Contract documents.
- .16 The Contractor must provide, prior to mobilization, certifications of marine vessels and barges in accordance with Section 01 35 00.50 (Special Procedures for Harbour Control), including, but not limited to, certified barge displacement charts for all barges to be used for temporary construction facilities, staging, and transport of Materials Types.
- .17 All work must comply with environmental guidelines of the EMP and the associated Water Quality Monitoring Plan, applicable Laws and Regulations, and any permit requirements.

- .18 For this Contract, any reference to “days” will be considered working days, unless noted otherwise. “Working days” is referenced against BC’s provincial statutory holidays.

1.2 Contract Documents

- .1 The Contract documents, Drawings, and Specifications are intended to complement each other, and to provide for and include all elements necessary for the completion of the work.
- .2 Drawings are, in general, diagrammatic and are intended to indicate the scope and general arrangement of the work.
- .3 In the event of any discrepancy or conflict in the content of the following documents, such documents must take precedence and govern in the following order:
- .1 General Conditions
 - .2 Specifications
 - .3 Drawings
 - .4 Appendices to Specifications

1.3 Definitions

- .1 Archaeological Chance Find Management Procedures. All site workers will be required to attend a one (1)-hour orientation meeting coordinated by the Departmental Representative on Archaeological Chance Find Management Procedures prior to commencement of work activities. During construction activities, the Contractor may encounter structures, sites, or things that may be valued for their historical, archaeological, architectural, and palaeontological significance. If intact or disturbed historical, archaeological, architectural, or palaeontological deposits are encountered (excluding unidentifiable metal, ceramic, brick, and glass fragments), the Contractor must engage the PWGSC Archaeological Monitor and the Departmental Representative immediately for direction. Photographs of observed pre-contact and historical materials, including faunal materials, must be emailed to the Departmental Representative to assist in determining their significance. Based on a telephone description of the incident, it may be decided that there are no further concerns, allowing construction to continue as planned. If warranted, a field visit by the Departmental Representative will be completed to determine the significance of the item(s).
- .2 Construction Progress Schedule. The Construction Progress Schedule is a detailed schedule providing planned dates for performing activities and planned dates for meeting project milestones. The Construction Progress Schedule must be presented as a Gantt chart and include a critical path of anticipated stages of work. As part of the Contractor’s Construction Work Plan, the Construction Progress

- Schedule must be submitted within 10 working days of Contract Award date showing activity sequencing, interdependencies, and duration estimates.
- .3 Construction Work Plan. The Construction Work Plan is a pre-construction submittal that describes the Contractor's means and methods to conduct its work as part of this Contract. The Contractor must prepare the Construction Work Plan and submit to the Departmental Representative for review. The Construction Work Plan will be reviewed and accepted by the Departmental Representative prior to the start of work. The Construction Work Plan must include the detailed Construction Progress Schedule. Submittal requirements for the Construction Work Plan are specified in Section 01 33 00 (Submittal Procedures).
 - .4 Contractor's Environmental Specialist. The Contractor must retain their own environmental specialist to prepare the Environmental Protection Plan (EPP) and conduct environmental monitoring on the Contractor's behalf to verify and document that the objectives of environmental legislation, terms and conditions of regulatory permits and approvals, and environmental Contract requirements, including the EMP, are being met. The Contractor's Environmental Specialist must be a Qualified Professional (QP) as required in Section 01 35 43 (Environmental Procedures). The Contractor's Environmental Specialist will report directly to the Contractor. Environmental monitoring on behalf of the Contractor will be conducted by the Contractor's Environmental Specialist and under the direct supervision of a QP. The Contractor's Environmental Specialist or its designee must be on site full-time during construction activities.
 - .5 Cover Type. Cover Type is defined as the combination of any fill materials (referred in these Specifications as Material Types) that will be placed in specified Practice Area and Test Areas, as shown on the Drawings. A total of three Cover Types are required for this project, as described in Section 35 37 10 (Material Placement).
 - .6 Daily Construction Report. The Daily Construction Report will be submitted by the Contractor to the Departmental Representative on a daily basis and will document all activities associated with the work that are completed each day. Specific submittal requirements for the Daily Construction Report are described in the individual sections.
 - .7 Departmental Representative. The Departmental Representative is the person designated by Canada to advise, coordinate, and monitor the work on behalf of PWGSC and DND, in accordance with the General Conditions of the Contract.
 - .8 Dive Exclusion Area. The Dive Exclusion Area includes the Test Area where the Contractor has finished fill material placement activities and extends 100 metres from the boundaries of that specific Test Area. The Contractor must not work, enter, transit, or navigate floating vessels or other equipment within the Dive Exclusion Area when dive inspection surveys are being performed by the Departmental Representative's designee within that Test Area.

- .9 Environmental Management Plan. The EMP identifies components of the work that could present a hazard to the environment and, therefore, require environmental management and monitoring. The overall objective of the EMP is to provide a framework through which potential environmental risks will be managed during implementation of the work. The EMP provides guidance and generally accepted best management practices (BMPs) and mitigation measures, to assist the Contractor in preparation of the EPP. The Contractor must adhere to the EMP and Departmental Representative-accepted EPP. In the event of a discrepancy between the EMP and provisions of federal, provincial, state, or municipal legislation, regulations or by-laws, the more stringent provisions resulting in the higher protection of the environment and lower discharge of contaminants will prevail. Although provincial laws and municipal by-laws generally do not apply on federal lands, the Contractor will respect provincial laws and municipal by-laws and rules at the Work Areas. The EMP is included in Appendix B.
- .10 Environmental Protection Plan. The Contractor must submit an EPP, as part of the overall Construction Work Plan, prepared by the Contractor's Environmental Specialist, that presents the procedures by which the Contractor must establish and maintain quality control for environmental protection of all items of the work including, but not limited to, control of environmental pollution and damage including consideration of land, water, air, and biological and cultural resources. It also includes management of visual aesthetics; noise; solid, chemical, gaseous, and liquid waste; and radiant energy, as well as other pollutants. The EPP must describe the Contractor's means and methods for complying with the environmental protection requirements of the Specifications, the performance standards and other requirements of the EMP, and any other environmental requirements under Laws and Regulations. This plan must address all construction activities. The EPP, as part of the Construction Work Plan, must be submitted to and accepted by the Departmental Representative prior to the start of work described in Section 01 33 00 (Submittal Procedures).
- .11 Excessive Overplacement. Fill material placed either outside of the Test Area limits or above the established Vertical Placement Tolerance is considered Excessive Overplacement. The Contractor must take extra care to avoid Excessive Overplacement since too thick a cover layer placed within a Test Area will not allow DND to monitor the cover material to assess its effectiveness. The Departmental Representative reserves the right to require the Contractor to remove Excessive Overplacement material, or if not feasible to remove Excessive Overplacement material without damaging the Test Area, to construct a new Test Area, at no additional cost to Canada. Dragging of beam or raking to level Excessive Overplacement material is prohibited.
- .12 Health and Safety Plan. The Contractor must submit one project-specific Health and Safety Plan that covers all health and safety considerations for DND/PWGSC, Contractor staff (including their subcontractors), consultants, other subcontractors to PWGSC, and visitors and defines an emergency response plan (i.e., procedures

- to be followed and contacts in the event of an emergency). The Health and Safety Plan will be reviewed by the Departmental Representative prior to the start of work. Departmental Representative review does not constitute acceptance nor relieve the Contractor of its legal obligations for the provision of health and safety on the project.
- .13 Horizontal Datum. Universal Transverse Mercator (UTM) North American Datum (NAD) 83, in metres.
- .14 Horizontal Placement Tolerance. The Horizontal Placement Tolerance is the maximum allowable placement of Material Type 3 (for Rock Mounds), beyond the required Targeted Placement Diameter, that qualify for payment under this Contract for the work. The Contractor must account for the Horizontal Placement Tolerance in its Tender Item of PRACTICE PLACEMENT for the Rock Mound volumes (in the Practice Area) based on the required means and methods, as described in Section 35 37 10 (Material Placement). Fill material placed by the Contractor beyond the Horizontal Placement Allowance will be considered Excessive Overplacement.
- .15 Inherent Delay. Potential downtime that is considered to be inherent to conducting the work. The Contractor must carefully consider and account for downtime costs associated with potential Inherent Delays in the appropriate Tender Items. The following representative scenarios are considered Inherent Delays, and other scenarios may apply:
- .1 Inclement weather.
 - .2 Relocating equipment in the performance of work.
 - .3 Awaiting Departmental Representative review and acceptance of Practice and Test Areas, including the time for the Departmental Representative's designee to conduct dive inspection surveys.
 - .4 Encountering structures, sites, or things that may be valued for their historical, archaeological, architectural, and paleontological significance, as determined by the Archaeological Monitor, but that do not result in work stoppage directed by the Departmental Representative.
 - .5 All time spent between the encountering an item of potential historical, archaeological, architectural, and paleontological significance and the determination of its safety risk or significance.
 - .6 Non-Contractor vessel operations taking precedence over Contractor activities outside of the Project Site.
 - .7 Mechanical breakdowns, repairs, or maintenance of Contractor or subcontractor equipment.
- .16 Laws and Regulations. All laws, regulations, by-laws, orders, codes, rules, standards, guidelines, or other lawful requirements of any federal, provincial, municipal, state, local, or other government authority.

- .17 Licensed Hydrographic Surveyor. The Contractor must employ a third-party (i.e., not the Contractor's own survey crew) Licensed Hydrographic Surveyor to conduct Pre- and Post-Construction Surveys used to inform acceptance of the work and lump sum payments for fill material placement in the Practice Area (i.e., Practice Placement) and each of the Test Areas. The Contractor's third-party Licensed Hydrographic Surveyor must be a licensed professional surveyor, member of the Association of British Columbia Land Surveyors (ABCLS), member of the Applied Science Technologists & Technicians of British Columbia (ASTTBC) with certification/designation as a Registered Site Improvement Specialist (RSIS), or Professional Engineer that is licensed to perform bathymetric and topographic surveys in British Columbia to conduct Pre-Construction and Post-Construction Surveys. The Licensed Hydrographic Surveyor must be accepted by the Departmental Representative prior to commencement of work.
- .18 Material Type. Material Type is the specified fill material to be used in any of the Cover Types, as shown on the Drawings, and as identified in Section 35 37 10 (Material Placement).
- .19 Navigation Control Plan. The Contractor must submit a Navigation Control Plan describing means and methods by which vessel movements and harbour control procedures and practices will be completed and monitored in accordance with Section 01 35 00.50 (Special Procedures for Harbour Control). The Navigation Control Plan must be reviewed and accepted by the Departmental Representative prior to the start of work.
- .20 Practice Area. The Practice Area for the pilot project is defined as the boundaries within which all Practice Placement work must be completed, as shown on the Drawings and as identified in Section 35 37 10 (Material Placement). The Practice Area is located within Work Area 2. The Practice Area also includes placement of Material Type 3 (for Rock Mounds), as described in Section 35 37 10 (Material Placement).
- .21 Practice Placement. Practice Placement is defined as placement of Cover Type 1 in the Practice Area (within Work Area 2) using placement methods 1, 2, and 3 to demonstrate that the Contractor's means and methods can meet Specification requirements identified in Section 35 37 10 (Material Placement) and permitting conditions for each of the placement methods.
- .22 Post-Construction Survey. The Post-Construction Surveys must be completed by the Contractor's third-party Licensed Hydrographic Surveyor to document bathymetry conditions following completion of each Cover Type placement within each Test Area. The Post-Construction Surveys must be submitted to the Departmental Representative for review and acceptance. Once accepted, they will be used for acceptance of work and payment of Contractor work completed within the Work Areas.

- .23 Pre-Construction Meeting. The Pre-Construction Meeting is the coordination meeting with the Departmental Representative and the Contractor, prior to the start of work. The Contractor must schedule the Pre-Construction Meeting following award of Contract.
- .24 Pre-Construction Survey. The Pre-Construction Survey will be completed by the Contractor's third-party Licensed Hydrographic Surveyor (per Section 02 21 13 [Surveying and Positioning Control]) to document bathymetry conditions within the Work Areas, in advance of conducting work. The Pre-Construction Survey will be used as the basis for measurement of Contractor work completed within the Work Areas.
- .25 Progress Meeting. Progress Meeting is defined as a meeting between the Departmental Representative and the Contractor that will occur weekly throughout the duration of the work as identified in Section 01 31 19 (Project Meetings). The Contractor is responsible for scheduling Progress Meetings with the Departmental Representative. The Departmental Representative may schedule additional project meetings as necessary.
- .26 Progress Surveys. The Progress Surveys will be completed by the Contractor's third-party Licensed Hydrographic Surveyor (per Section 02 21 13 [Surveying and Positioning Control]) to document spatial extent, volume, and thickness of placed Cover Types in each Test Area for documenting and accessing progress.
- .27 Project Site. The Project Site includes areas within Esquimalt Harbour where work will be conducted, including Work Areas 1 and 2 (as shown on the Drawings), areas where vessels will be transiting through the harbour, and areas where vessels will be working within the harbour to complete work described in these Specifications.
- .28 PWGSC Archaeological Monitor. Canada will retain the PWGSC Archaeological Monitor to supervise monitoring for structures, sites, or things that may be valued for their historical, archaeological, architectural, and paleontological significance as determined on a chance find management basis by the PWGSC Archaeological Monitor and with acceptance by the Departmental Representative. The PWGSC Archaeological Monitor must be a Registered Professional Archaeologist in BC and must employ First Nations representatives to assist in the archaeological monitoring. The PWGSC Archaeological Monitor will only be on call for Archaeological Chance Find Management Procedures in the event that structures, sites, or things of historical, archaeological, architectural, and paleontological significance are identified during in-water activities at the Work Areas.
- .29 PWGSC Environmental Monitor. Canada will retain the PWGSC Environmental Monitor to confirm that environmental management measures and controls implemented by the Contractor are in accordance with regulatory approvals; authorizations and permits; environmental components of the Contract requirements, including the EMP; and the Contractor's EPP. The PWGSC Environmental Monitor will report to the Departmental Representative and inform

them if the Contractor's actions are causing or have the potential to cause harm to the environment. The PWGSC Environmental Monitor will not provide their findings directly to the Contractor or coordinate directly with the Contractor on environmental management measures and controls. For all environmental management considerations, the Contractor's Environmental Specialist must coordinate directly with the Contractor, and the Contractor must coordinate with the Departmental Representative.

- .30 Qualified Marine Surveyor. The Qualified Marine Surveyor is a marine surveyor with 10 or more years of experience in surveying vessel conditions for marine operations (including tugs and barges) and for deep-sea operations, with previously held positions in ship repair, maintenance, or construction. The Qualified Marine Surveyor must be accepted by the Departmental Representative prior to commencement of work.
- .31 Qualified Professional. The QP is defined as a person working for the Contractor who is registered and/or licensed in the relevant jurisdiction with his or her appropriate professional association and/or licensing authority, acts under that professional association's and/or licensing authority's code of ethics, and is subject to disciplinary action by that professional association and/or licensing authority, and through suitable education, experience, accreditation, and knowledge can be reasonably relied on to provide advice within his or her area of expertise.
 - .1 Examples of appropriate professional associations and/or licensing authorities include, but are not limited to:
 - .1 The Association of Professional Engineers and Geoscientists of the Province of British Columbia.
 - .2 British Columbia Association of Agrologists.
 - .3 The Association of Professional Engineers and Geoscientists of Alberta.
 - .4 The British Columbia College of Applied Biology.
 - .5 Washington State Department of Licensing: Professional Engineer/Professional Geologist (note other United States state professional associations/licensing authorities may also be acceptable).
 - .2 Only full membership will be considered to be a QP (i.e., no "in training" designations).
- .32 Quality Control Plan. The Contractor must submit a Quality Control Plan describing means and methods by which completion of construction activities will be monitored for compliance with the Contract. The Quality Control Plan must be reviewed and accepted by the Departmental Representative prior to the start of work.

- .33 Record Documents. Record Documents are defined as completion records that document conditions by which construction activities are completed at the Work Areas. Record Documents will serve as the final record of conditions at completion of the work. The Contractor must develop and submit the Record Documents to the Departmental Representative for review and acceptance prior to receipt of final payment for the work. The Record Documents include markups and changes to both the Drawings and the Specifications, using DND CAD standards. The drawing portion of the Record Documents must include all as-built information and final bathymetry in the Work Areas as per the placement Post-Construction Survey requirements.
- .34 Rock Mounds. Rock Mounds are defined as Material Type 3 placed within the Practice Area (Work Zone 2) on top of placed Cover Type 1 (completed as part of Project Placement). The Contractor must create two (2) cone-shaped Rock Mounds with a Targeted Placement Height of 1.5 meters (m) in the center and Targeted Placement Diameter of 5 m, as described in Section 35 37 10 (Material Placement). The purpose of the Rock Mound placement is to help kelp recolonization.
- .35 Survey and Positioning Control Plan. Work plan that describes the means and methods for completion of surveys and establishment of positional control at the Work Areas, as described elsewhere in this section. The Survey and Positioning Control Plan will be included as part of the Contractor Quality Control Plan, and needs to be reviewed and accepted by the Departmental Representative.
- .36 Tailgate Meeting. Tailgate Meeting is defined as a meeting for the Contractor to discuss the plan of work for the day and to discuss the appropriate safety measures applicable to the work. This meeting may be attended by the Departmental Representative or project consultants, at their discretion. Tailgate Meetings will occur on a daily basis throughout the duration of the work, and will focus on daily health and safety considerations associated with planned construction activities. The Contractor is responsible for scheduling daily Tailgate Meetings.
- .37 Targeted Placement Diameter. The Targeted Placement Diameter is defined as the nominal diameter that the Contractor is required to place Material Type 3 for Rock Mounds within the Practice Area. The Targeted Placement Diameter will be 5 m. Refer to Section 35 37 10 (Material Placement).
- .38 Targeted Placement Height. The Targeted Placement Height is defined as the height that the Contractor is required to place Material Type 3 for Rock Mounds within the Practice Area. The Targeted Placement Height will be 1.5 m. Refer to Section 35 37 10 (Material Placement).
- .39 Targeted Placement Thickness. Targeted Placement Thickness is the nominal thickness of placed Cover Types, as shown on the Drawings and as described in Section 35 37 10 (Material Placement).

- .40 Tender Item. Tender Item is defined as a measure of work presented in the Unit Price Table by which the Contractor must provide cost to complete the work as part of the Tender process. Base Work and Optional Work Tender Items are listed in the Unit Price Table.
- .41 Test Area. A Test Area is a defined area, as shown on the Drawings, that is assigned a specific Cover Type, Material Type, and placement method. Fill material placement conducted in Test Areas 1, 2, 3, 4, 7, and 8, is included in the Base Work; fill material placement conducted in optional Test Area 5 is included in the Optional Work. Requirements for Test Areas are described in Section 35 37 10 (Material Placement).
- .42 Vertical Datum. Permanently established plane from which soundings or tide heights are referenced. The vertical datum for this work is Chart Datum, as shown on the Drawings.
- .43 Vertical Placement Tolerance. The Vertical Placement Tolerance is the maximum allowable thickness above or below the required Targeted Placement Thickness (for Cover Types) and Targeted Placement Height (for Material Type 3), that qualify for payment under this Contract for the work. The Vertical Placement Tolerance for each Cover Type is shown on the Drawings. The Vertical Placement Tolerance for Material Type 3 is 0.5 m. The Contractor must account for the Vertical Placement Tolerances in its Tender Items for the Cover Type volumes (in the Test Areas and Practice Area) and Rock Mound volumes (in the Practice Area) based on the required means and methods, as described in Section 35 37 10 (Material Placement). Fill material placed by the Contractor beyond the Vertical Placement Allowance will be considered Excessive Overplacement.
- .44 Work Area. The Work Areas for the pilot project are defined as the boundaries within which all fill material placement work (Base Work and Optional Work) must be completed, as shown on the Drawings. Work Areas consists of Test Areas.

1.4 Construction Sequencing

- .1 The Contractor must prepare a construction sequencing approach section in the Construction Work Plan submittal that describes the Contractor's implementation approach for all construction activities and how this approach will meet the sequencing requirements of these Specifications, including the Substantial Performance date (as described in Clause 1.8).
- .2 The Contractor must tender and perform the work as described in this Contract under the following general sequencing requirements. The general sequencing listed below does not identify all necessary work elements and is only intended to provide an overview of the required sequence of construction for several key work elements. The Contractor must include all work for the Tender Items listed under Optional Work in the Unit Price Table when developing their construction sequencing of work to ensure that all work will be completed by the Substantial

Performance date. The Contractor may propose an alternate sequencing approach in its Construction Work Plan for Departmental Representative review and acceptance prior to a deviation from the specified sequencing:

- .1 Following review and acceptance by the Departmental Representative of the required pre-construction submittals (including samples of Material Types 1, 2, 3, and Cover Type 3), the Contractor must commence work at the Work Areas within 10 working days.
- .2 The Contractor must notify the Departmental Representative 10 working days in advance of anticipated work at the Work Areas.
- .3 Conduct mobilization.
- .4 The Departmental Representative reserves the right to inspect all Contractor quality control and environmental protection measures to ensure they are in place and working properly prior to initiating in-water construction activities. In-water construction activities may not begin until all Contractor quality control and environmental protection measures and components are in place and working properly, as accepted by the Departmental Representative.
- .5 Conduct Practice Placement of Cover Type 1 using 3 different placement methods in the Practice Area (within Work Area 2) and await acceptance of the work by the Departmental Representative. Refer to Section 35 37 10 (Material Placement) for sequencing requirements.
- .6 Conduct placement of Material Type 3 (for Rock Mounds) in the Practice Area (within Work Area 2) and await acceptance of the work by the Departmental Representative. Refer to Section 35 37 10 (Material Placement) for sequencing requirements.
- .7 Within each Test Area (Work Areas 1 and 2), complete all Cover Type placement and associated survey activities and await acceptance of the work by the Departmental Representative. Refer to Section 35 37 10 (Material Placement) for sequencing requirements.
- .8 The Contractor must demobilize following completion of the work and following acceptance of the work by the Departmental Representative.

1.5 Other Contracts – Not Used

1.6 DND Operations and Other Project Works

- .1 The Contractor is responsible for being informed of the scope and schedule of any other in-water work activities taking place in Esquimalt Harbour that may impact or restrict the Contractor's work or schedule (e.g., Small Boat Floats Project, B Jetty Project). In addition, the Contractor is responsible to pay particular attention to activities within and adjacent to the Jones Marine Lease area.

- .2 The Departmental Representative will be responsible for communicating and coordinating with contractors performing such work and adjacent facilities as necessary to complete the work. The Contractor must promptly communicate any concerns or considerations regarding neighbouring work activities to the Departmental Representative.

1.7 Division of Specifications

- .1 The Specifications are subdivided in accordance with the current six-digit National Master Specifications System.
- .2 A division may consist of the work of more than one subcontractor. Responsibility for determining which subcontractor provides the labour, material, equipment, and services required to complete the work rests solely with the Contractor.

1.8 Time of Completion and Construction Windows

- .1 Complete all fill material placement (Base Work and Optional Work) by the Substantial Performance date on February 15, 2020. Allow 5 calendar days for Departmental Representative inspections with a Final Completion date of February 20, 2020.
- .2 The following schedule conditions are fundamental to the Contract:
 - .1 In-water work including fill material placement can take place year-round with the application of appropriate mitigation measures and constraints identified in these Specifications, the EPP, and the EMP.
 - .1 The Contractor must also include all work for the Tender Item listed under Optional Work in the Unit Price Table in scheduling and construction completion to complete the work by the Substantial Performance date.
 - .2 Requirements regarding observations of herring spawn are contained in Section 01 35 43 (Environmental Procedures).
 - .3 Bidders must not contact Fisheries and Oceans Canada during the Tender period.

1.9 Hours of Work

- .1 Restricted as follows:
 - .1 Normal work hours are between 7:00 a.m. to 7:00 p.m. Monday through Saturday, not including statutory holidays.
 - .2 The Contractor may work outside these normal work hours; however, the Contractor must notify the Departmental Representative a minimum of 5 days in advance of all after-hours work, including Sundays and holidays,

and obtain Departmental Representative acceptance prior to initiating the work. It is the sole discretion of the Departmental Representative to accept after-hours work.

- .2 The Contractor must comply with local ordinances regarding noise control while conducting activities at the Work Areas, as described in Section 01 35 43 (Environmental Procedures).

1.10 Construction Progress Schedule and Progress Documentation

- .1 Prepare and update a Construction Progress Schedule as follows:
 - .1 As part of the Construction Work Plan, provide a detailed “phasing bar chart” and a Construction Progress Schedule showing specific tasks, dates, and critical path of anticipated stages of work, and Final Completion of the work within the time period required by the Contract documents. These must be submitted in Adobe PDF and in an industry standard project management software file formats (e.g., Microsoft Project). The preliminary schedule will be reviewed and accepted by the Departmental Representative as part of the Construction Work Plan.
 - .2 The Contractor must review and update the Construction Progress Schedule for each weekly construction meeting. All changes to the Construction Progress Schedule of more than 3 working days must be documented on the updated schedule and must be submitted in electronic format (e-mailed) and submitted to the Departmental Representative. The Construction Progress Schedule will be an integral part of the Contract and will establish interim completion dates for the various activities under the Contract. Indicate the following:
 - .1 Submission of product data and samples.
 - .2 Commencement and completion of work of each section of the Specifications or trade for each phase as outlined.
 - .3 Final Completion date within the time period required by the Contract documents.
 - .3 The Construction Progress Schedule must be presented as a Gantt chart and its format must be a network analysis of the critical path method. The Construction Progress Schedule must identify the work clearly, showing the detailed items of work. The breakdown of work must, at a minimum, show all of the items identified in the Unit Price Table and significant design, manufacturing, construction, and installation activities. Submittals and long lead items must be included and the relationship between a submittal and the work item must be identified. The relationship between the work items must clearly show the starting and completion dates and include all details of the work within the timeframe shown.

- .4 The Construction Progress Schedule must include five (5) working days for Departmental Representative review and acceptance of each Practice Placement activity or Test Area, Contractor corrective work if determined necessary by the Departmental Representative, and cleaning/equipment decontamination, prior to the designated completion date.
- .5 The Construction Progress Schedule must be used to justify time extension days requested by the Contractor. For additional days or after-hours work requested, the Construction Progress Schedule must be detailed to identify the work item(s) affected and the relationship to the changed or added work.
- .6 Interim reviews of work progress based on the Construction Progress Schedule will be conducted as decided by the Departmental Representative, and the schedule must be updated by the Contractor in conjunction with, and to the acceptance of, the Departmental Representative.
- .7 Should any activity not be completed by the stated scheduled date, the Departmental Representative has the right to require the Contractor to expedite completion of the activity by whatever means appropriate and necessary, without additional compensation to the Contractor.
- .8 The Contractor must inform the Departmental Representative immediately if schedule slippage will prohibit achievement of the Substantial Performance date.

1.11 Cash Flow Estimates

- .1 As part of the Construction Work Plan, prepare and submit an initial “month-by-month” cash flow estimate for all construction work. The breakdown of work must, at a minimum, show all of the items identified in the Unit Price Table and significant design, manufacturing, construction, and installation activities. The estimate must be submitted in an electronic spreadsheet format (e.g., Microsoft Excel).
- .2 The initial “month-by-month” cash flow estimate will be reviewed and accepted by the Departmental Representative as part of the Construction Work Plan.
- .3 Prepare and submit with each monthly progress claim an updated “month-by-month” cash flow estimate for all construction works. The month-by-month cash flow estimates must:
 - .1 Be based on the Contract Unit Price Table, and the current accepted Contractor’s Construction Progress Schedule.
 - .2 Be consistent with progress payment claims submitted to date.
 - .3 Include most up-to-date confirmed, actual quantities, as well as most up-to-date and accurate estimate of remaining quantities.

- .4 Include Change Orders for additional cost items that have been incorporated into the Contract.
- .5 Provide an updated total estimated final Contract value, excluding and including applicable taxes.

1.12 Measurement and Payment

- .1 Before submitting the first progress claim, the Contractor must submit a breakdown of the Contract unit rates and lump sum prices in detail as requested by the Departmental Representative, aggregating to the Contract price.
- .2 Measurement and payment for work completed to the Departmental Representative's satisfaction will be made as stipulated in the relevant technical section of the Specification for that work item and the Unit Price Table.

1.13 Codes, By-Laws, Standards

- .1 Perform work in accordance with Laws and Regulations, Construction Standards, and/or any other code or by-law of local application.
- .2 Comply with local and regional by-laws, rules, and regulations enforced at the location concerned. Although provincial laws and municipal by-laws generally do not apply on federal lands, the Contractor will respect provincial laws and municipal by-laws and rules at the Work Areas.
- .3 Meet or exceed requirements of Contract documents, specified standards, codes, and referenced documents.
- .4 In any case of conflict or discrepancy, the most stringent requirements must apply.

1.14 Documents Required

- .1 Maintain one copy of each of the following documents and any other applicable documents at the Work Areas:
 - .1 Contract Drawings.
 - .2 Specifications.
 - .3 Addenda to Contract documents (as applicable).
 - .4 Copy of accepted Construction Progress Schedule and most recent revision of Construction Progress Schedule.
 - .5 Health and Safety Plan and other safety-related documents.
 - .6 Notice of Project.
 - .7 Required pre-construction submittals that have been reviewed and accepted by the Departmental Representative (e.g., Contractor's

Construction Work Plan, EPP, Quality Control Plan, Navigation Control Plan, and Health and Safety Plan).

- .8 EMP.
- .9 Permits and acceptances.
- .10 Required construction submittals (e.g., Contractor's Daily Construction Reports).
- .11 Change orders.
- .12 Other modifications to the Contract.
- .13 Manufacturers' installation and application instructions (as applicable).
- .14 One set of "as-built" drawings and specifications for Record Document purposes.
- .15 Current construction standards of workmanship listed in the sections.
- .16 All required submittals.

1.15 Regulatory Requirements

- .1 Obtain and pay for any additional permits, certificates, licenses, and other approvals that have not been provided by the Departmental Representative and that are required by regulatory municipal, provincial, state, or federal authorities, and commercial facilities to be used to complete the work. Pay for any fees, charges, levies, or tolls that are incurred in completing the work.
- .2 Generally, provincial and municipal Laws and Regulations do not apply on federal lands or to federal undertakings. Soils and other materials that are removed from federal lands become subject to provincial, municipal, or state Laws and Regulations. Provincial or municipal standards may be used in relation to federal lands only as guidelines for the purpose of establishing remediation goals and objectives. The term "standards" is used in this part in order to maintain consistency in terminology throughout this document and does not imply that standards contained in provincial or municipal Laws and Regulations apply on federal lands. Although provincial laws and municipal by-laws generally do not apply on federal lands, the Contractor will respect provincial laws and municipal by-laws and rules at the Work Areas.
- .3 If any portion of the off-site work is conducted on federal lands not administered by DND, the Contractor is required, as part of its operations, to contact the federal provincial, territorial, state, and/or municipal custodian, and receive written confirmation of all regulatory or other requirements that may apply to the Contractor's operations on those lands. The Contractor must provide the written confirmation to the Departmental Representative.

1.16 Contractor Use of Work Areas

- .1 The Contractor's Work Areas are as indicated on the Drawings.
- .2 The Contractor is designated as Prime Contractor in the Work Areas and assumes all responsibilities of Prime Contractor as per relevant acts and regulations. The Contractor must be responsible for all work conducted by the Contractor and its subcontractors in the Work Areas.
- .3 Use of Work Areas:
 - .1 Use of site for execution of work.
 - .2 Assume responsibility for assigned premises for performance of the work.
 - .3 Coordinate all work activities with the Departmental Representative associated with this Contract at the Work Areas.
 - .4 Provide security of Contractor's and all subcontractors' equipment and material.
- .4 Perform work in accordance with Contract documents. Ensure that work is carried out in accordance with indicated sequencing.
- .5 Do not unreasonably encumber the Work Areas with material and equipment.

1.17 Character of Materials and Site Conditions

- .1 Character of materials and site conditions are described in detail in Section 35 37 10 (Material Placement). Physical and geotechnical information of sediments in the Work Areas is provided in Appendix A.

1.18 Waiver and Indemnification

- .1 The Contractor may only berth their vessel(s) at CFB Esquimalt jetties with the permission of the Queen's Harbour Master and must waive and indemnify the government under the following conditions:
 - .1 In consideration for the benefit of berthing said vessel, the Contractor must remise, release, and forever discharge Her Majesty the Queen and the Queen in Right of Canada, Her Officers, Servants, and Members of Her Armed Forces, Her and their heirs, executors, administrators, successors and assigns, and each of them (hereinafter called "Her Majesty") of and from all claims, demands, actions, or causes of actions whatsoever nature or kind against Her Majesty.
 - .2 This waiver and indemnity is for whatever the Contractor may have ever had, now have, or can, will, or may have by reason of the granting of the said request, or attributable to, arising out of, or in any way connected with the use of self of the said boat camber, the facilities, structures, or the accommodation or upon any defence establishment.

- .3 For the purpose relating to such use, the Contractor must hereby undertake to indemnify and save harmless Her Majesty in respect of each and every such claim, demand, action or cause of action as aforesaid.

1.19 Setting Out of Work

- .1 Assume full responsibility for, and execute complete layout of, work to locations, lines, and elevations indicated.
- .2 Provide all equipment, devices, materials, labor, and supplies needed to layout and construct the work.
- .3 Facilitate the Departmental Representative's inspection of the work.

1.20 Quality of Work

- .1 Ensure that quality workmanship is performed through use of skilled tradesmen, under supervision of qualified journeyman.
- .2 In cases of dispute, decisions as to standard or quality of work rest solely with the Departmental Representative, whose decision is final.

1.21 Works Coordination

- .1 The Contractor is responsible for being informed of the scope and schedule of any other in-water work activities taking place in Esquimalt Harbour that may impact the Contractor's work or schedule (see Clause 1.6).
- .2 The Contractor must coordinate work of sub-trades.
 - .1 Designate one person to be responsible for review of Contract documents and shop drawings and managing coordination of work.
- .3 The Contractor must convene meetings between subcontractors whose work interfaces and ensure awareness of areas and extent of interface required.
 - .1 Provide each subcontractor with a complete set of Drawings and Specifications for the Contract to assist them in planning and carrying out their respective work.
 - .2 Develop coordination drawings when required, illustrating potential interference between works of various trades, and distribute to affected parties.
 - .1 Facilitate meeting and review coordination drawings. Ensure that subcontractors agree and sign off on drawings.
 - .2 Publish minutes of each meeting.
 - .3 Plan and coordinate work in such a way to construct as-built conditions as shown on the Drawings.

- .4 Submit copy of coordination drawings and meeting minutes to the Departmental Representative for information purposes.
- .3 Work coordination:
 - .1 Ensure cooperation between trades in order to facilitate general progress of work and avoid situations of spatial interference.
 - .2 Ensure that each trade provides all other trades reasonable opportunity for completion of work and in such a way as to prevent unnecessary delays, and removal or replacement of completed work.
 - .3 Ensure disputes between subcontractors are resolved.
- .4 The Departmental Representative is not responsible or accountable for extra costs incurred as a result of the Contractor's failure to coordinate work among trades and subcontractors.

1.22 Submittals

- .1 In accordance with Section 01 33 00 (Submittal Procedures), submit the requested document plans, data, and products indicated in each of the sections.

1.23 Archaeological Structures, Sites, or Things of Significance

- .1 Archaeological structures, sites, or things of historical, archaeological, architectural, and palaeontological significance may be encountered on a chance find management basis during completion of the work as part of this Contract. These structures, sites, or things can include, but are not limited to, pre-contact shell midden deposits; historical materials such as jewelry, coins, or naval artifacts; previously recorded heritage ship wrecks; pre-contact stone tools such as arrow heads and fire broken rock; faunal materials; human remains; or any other historical or pre-contact object deemed significant by the PWGSC Archaeological Monitor within the Work Areas.
- .2 All pre- and post-contact structures, sites, or things of historical, archaeological, architectural, and palaeontological significance, as determined by the PWGSC Archaeological Monitor, must be collected and catalogued by the PWGSC Archaeological Monitor. Catalogues must be generated daily on a chance find by the Archaeological Monitor documenting all items found, where and how the item was found, where the item originated from in the Work Areas, what steps were taken to recover and preserve the item, and will be submitted to the Departmental Representative at the end of construction activities. The Contractor must make provisions for collecting, sorting, and procuring a secure, covered storage area for temporary storage of historical materials. Pre-contact materials are to be reported to the PWGSC Archaeological Monitor and stored on-site or off-site in a secure, temperature-controlled storage location as described in this Specification section. The Departmental Representative reserves the right to send any item that is of

- historical, archaeological, architectural, and palaeontological significance for further analysis. At the conclusion of the project, the Departmental Representative will have the first right of refusal to collect the stored items.
- .3 At the Work Areas, the Contractor must await the Departmental Representative's written instructions before proceeding with work in any area where such items have been identified.
 - .4 The Contractor must be familiar with the guidelines for Archaeological Chance Find Management Procedures as detailed in its definition in these Specifications and must follow these guidelines in the event structures, sites, or things of historical, archaeological, architectural, and palaeontological significance are observed during construction.
 - .5 All site workers will be required to attend a one (1)-hour orientation meeting coordinated by the Departmental Representative on Archaeological Chance Find Management Procedures, be able to identify pre-contract and historical artifacts, and be familiar with basic preservation techniques for fragile archaeological materials, prior to commencement of work activities.
 - .6 The Departmental Representative may request that the Contractor slow down construction operations at no cost to Canada to facilitate the archaeological monitoring and inspection.
 - .7 The Contractor must submit, as a section of its Construction Work Plan, details on all Archaeological Chance Find Management Procedures that will be implemented by the Contractor's staff and subcontractors in the event that items of suspected archaeological significance are encountered. The section must be prepared by a licensed archaeological monitor and include basic archaeological site identification criteria and procedures for protecting such items during their evaluation. The Contractor must also include methods in the Construction Work Plan to ensure protection of archaeological structures, sites, or things of historical, archaeological, architectural, and palaeontological significance and identify lines of communication between Contractor personnel and the Departmental Representative.
 - .8 Such articles will remain the property of Canada.

1.24 Products Supplied by Departmental Representative

- .1 No products will be supplied by the Departmental Representative.

1.25 Quality Control Testing and Inspection

- .1 Particular requirements for testing and inspection to be carried out by the Contractor's quality control testing service or laboratory accepted by the Departmental Representative are specified in Sections 01 45 00 (Quality Control) and 35 37 10 (Material Placement).

- .2 The Contractor must appoint and pay for the services of a quality control testing agency or testing laboratory as specified, and where required for the following:
 - .1 Inspection and testing required by laws, ordinances, rules, regulations, or orders of public authorities.
 - .2 Inspection and testing performed exclusively for the Contractor's convenience.
- .3 Where tests or inspections by designated testing laboratories reveal work is not in accordance with the Contract requirements, the Contractor must pay costs for additional tests or inspections as the Departmental Representative may require to verify acceptability of corrected work.
- .4 Notify the Departmental Representative in advance of planned testing.
- .5 Where materials are specified to be tested, deliver representative samples in required quantity to testing laboratory.
- .6 Pay costs for uncovering and make good work that is covered before required inspection or testing is completed and accepted by the Departmental Representative.
- .7 Provide the Departmental Representative with one electronic copy of testing laboratory reports as soon as they are available.
- .8 The Departmental Representative may require, and pay for, additional inspection and testing services beyond those specified or otherwise required.

1.26 Record Documents (for “as-built” purposes)

- .1 The Departmental Representative will provide a copy of the original AutoCAD files (2013 or newer format) for the Contractor's use in compiling the “as-built” information. The Contractor must provide the “as-built” information using the DND AutoCAD format, as provided in Appendix A.
- .2 As work progresses, maintain accurate records to show all deviations from the Contract documents. Mark all deviations on the Specifications, Contract Drawings, and shop drawings as changes occur.
- .3 Refer to Section 01 78 30 (Closeout Submittals).

1.27 Cleaning

- .1 Ensure cleanup of the work areas each day after completion of work.
- .2 Use cleaning materials and methods in accordance with instructions of the manufacturer of the surface to be cleaned.
- .3 The Contractor must ensure all floating equipment is free of marine growth before equipment is brought into Esquimalt Harbour to prevent potential invasive species that may be present on equipment from sources outside of Esquimalt Harbour.

The Contractor must ensure that all bilge and ballast water have been removed and pumped out from vessels and barges, before brought into the Work Areas.

1.28 Site Control and Access

- .1 All individuals requiring access to the Work Areas (including Contractor and subcontractor staff) must refer to requirements of the Security Requirements Checklist (SRCL) and sub-SRCLs for subcontractors administered by DND. All Contractor and subcontractor staff must be registered with the Canadian Industrial Security Directorate and be granted a Designated Organizational Screening at the level of Reliability. In addition, all individuals will be required to be in possession of, at a minimum, a Reliability Security Status Screening and a DND Contractor Visitor Clearance Request.
- .2 Make provisions for granting permission to access onto Work Areas to all persons who require access. Procedures for granting permission to access are to be in accordance with the British Columbia Occupational Health and Safety Act, and the Regulations made pursuant to the Act and the Contractor's health and safety program.
- .3 Ensure persons granted access to the Work Areas are in possession of and wear the minimum personal protective equipment (PPE) designated by the Contractor's health and safety program. Ensure persons granted access to the Work Areas are provided with, trained in the use of, and wear, appropriate PPE that are required above and beyond the designated minimums previously noted and as specifically related to the Work Areas activity that they are involved in. The Contractor is responsible for the efficacy of the PPE that is provided above and beyond the designated minimums.
- .4 Ensure that non-authorized persons and vessels are not allowed to circulate in designated Work Areas.
- .5 Contractors are required under the British Columbia Occupational Health and Safety Act, and the Regulations made pursuant to the Act, to have in place a health and safety program. Compliance requirements for the content, detail, and implementation of the program resides with the provincial authority.
- .6 The site-specific project Health and Safety Plan must be prepared and signed by a certified Industrial Hygienist, Certified Safety Professional, or similarly credentialed safety professional and submitted to the Departmental Representative.
- .7 Provide one copy of the health and safety program to the Departmental Representative prior to commencement of work on the Project Site. The copy provided to the Departmental Representative is for the purpose of review against the contract requirements related to the known hazardous substances and/or hazardous conditions. The review is not to be construed to imply acceptance by the Departmental Representative that the program is complete, accurate and

legislatively compliant with the British Columbia Occupational Health and Safety Act, and the Regulations made pursuant to the Act, and must not relieve the Contractor of their legal obligations under such legislation.

1.29 General Health and Safety

- .1 Health and safety requirements are described in Section 01 35 29.14 (Health and Safety for Contaminated Sites).
- .2 Measurement and payment: No separate payment will be made for work associated with health and safety. Activities associated with health and safety are incidental to the work.
- .3 The Contractor must employ and assign to work a competent and authorized representative as Health and Safety Coordinator, as described in Section 01 35 29.14 (Health and Safety for Contaminated Sites), who will:
 - .1 Have site-related working experience specific to activities associated with marine construction.
 - .2 Have working knowledge of occupational safety and health regulations.
 - .3 Be on site during execution of work and report directly to and be under direction of site supervisor.
- .4 The Contractor must be responsible to ensure that all workers are qualified, competent, and certified to perform the work as required by Workers' Compensation Act or the Occupational Health and Safety Regulations.
- .5 Although provincial laws and municipal by-laws generally do not apply on federal lands, the Contractor must respect provincial laws and municipal by-laws at the Work Areas.
- .6 Should an unforeseen or peculiar safety-related hazard or condition become evident during performance of work, the Contractor must immediately take measures to rectify the situation and prevent damage or harm. The Contractor must advise the Departmental Representative verbally and in writing of the hazard or condition.
- .7 The Contractor must obtain permits, licenses, and compliance certificates at appropriate times and frequencies as required by the authorities having jurisdiction.
- .8 The Contractor must post all permits, licenses, and compliance certificates at Work Areas and provide copies to the Departmental Representative.
- .9 The Contractor must conduct a site-specific hazard assessment based on review of the Contract, required work, and project Work Areas and any upland facility used for the Contract during performance of the work. Identify any known and potential health risks and safety hazards. The Preliminary Job Hazard Analysis Check List is provided for reference in Appendix C.

1.30 Health and Safety Compliance Requirements

- .1 Comply with the latest edition of the British Columbia Occupational Health and Safety Act, and the Regulations made pursuant to the Act.
- .2 Comply with Workers Compensation Act, British Columbia.
- .3 Comply with Canada Labour Code, Canada Safety and Health Regulations.
- .4 Observe and enforce construction safety measures required by:
 - .1 National Building Code of Canada (latest edition).
 - .2 WorkSafe BC.
 - .3 Municipal statutes and ordinances.
- .5 In the event of conflict between any provisions of above authorities, the most stringent provision must apply.
- .6 Provide and maintain Worker's Compensation Board coverage for all employees for the duration of the Contract. Prior to commencement of the work, at the Substantial Performance date and prior to final payment, provide to the Departmental Representative a letter (Certificate) of Clearance from the Workers' Compensation Board indicating that the Contractor's account is in good standing.
 - .1 Should the Contractor be a sole proprietor, provide documented proof in a form acceptable to the Departmental Representative, of an alternative means of personal coverage that meets or exceeds the requirements set out above for Worker's Compensation Board coverage.

1.31 Accident Reporting

- .1 Investigate and report incidents and accidents as required by British Columbia Occupational Safety and Health Act, and the Regulations made pursuant to the Act.
- .2 For the purpose of this Contract, the Contractor must immediately investigate and within 24 hours provide a report to the Departmental Representative on all incidents and accidents that involve:
 - .1 A resulting injury that may or may not require medical aid but involves lost time at work by the injured person(s).
 - .2 Exposure to toxic chemicals or substances.
 - .3 Property damage.
 - .4 Interruption to adjacent and/or integral infrastructure operations with potential loss implications.
- .3 In the investigation and reporting of incidents and accidents, the Contractor is required to respond in a timely fashion to correct the action that was deemed to have caused the incident and/or accident and advise in writing on the action taken

to prevent a reoccurrence of the incident and/or accident, procedures must be followed by the Contractor as described in Section 01 35 29.14 (Health and Safety for Contaminated Sites).

1.32 Health and Safety Records on Site

- .1 Maintain on site a copy of the safety documentation as specified in this section (as applicable) and any other safety-related reports and documents issued to or received from the authorities having jurisdiction.
 - .1 Site-specific project Health and Safety Plan.
 - .2 Notice of Project, per WorkSafeBC requirements.
 - .3 Emergency procedures, as described in Section 01 35 29.14 (Health and Safety for Contaminated Sites).
 - .4 Site drawing showing project layout, locations of first aid stations, evacuation route, marshalling station, and emergency transportation provisions.
 - .5 Hazard assessments.
 - .6 Joint Occupational Safety and Health Committee Meeting minutes.
 - .7 Incident reports.
 - .8 Accident reports.
 - .9 Training records.
 - .10 Site inspection records.
 - .11 Equipment certifications.
 - .12 Crane certifications.
 - .13 Crane operator certifications.
 - .14 Utility locates.
 - .15 Workplace Hazardous Materials Information System and Data Sheets documents.
 - .16 Disciplinary records.
 - .17 Workers' Compensation Board Letter of Clearance for all contractors on site.
 - .18 Inspections by authorities having jurisdiction.
 - .19 Lead Awareness Training Certificates (and other applicable Hazardous Material Training Certificates).
 - .20 Respirator Fit Test Certificates.

- .2 Post all Safety Data Sheets at Work Areas, in a common area, visible to all workers and in locations accessible to tenants when work of this Contract includes construction activities adjacent to occupied areas.
- .3 Upon request, make copies available to the Departmental Representative.

1.33 System of Measurement

- .1 The metric system of measurement (SI) will be employed on this Contract.
- .2 Refer to Section 02 21 13 (Surveying and Positioning Control).

1.34 Familiarization with Work Areas

- .1 Before submitting Tender, visit the Work Areas as indicated in the Tender documents and become familiar with all conditions likely to affect the cost of the work.
- .2 No claims or change orders will be entertained by the Departmental Representative regarding existing conditions due to lack of familiarity with the Work Areas.

1.35 Submission of Tender

- .1 Submission of a Tender is deemed to be confirmation of the fact that the Tenderer has analyzed the Contract documents and inspected the Work Areas and is fully conversant with all conditions.

2. PART 2 – PRODUCTS – NOT USED

3. PART 3 – EXECUTION – NOT USED

END OF SECTION

1. PART 1 – GENERAL

1.1 Description

- .1 Meetings are required throughout the duration of the work as described in these Specifications.
- .2 The Contractor must attend all required meetings and provide required preparation and follow-up materials.

1.2 Measurement and Payment

- .1 No separate payment will be made for effort associated with project meetings. The Contractor must refer to the Unit Price Table for details regarding measurement and payment for the Contract work.

1.3 Related Sections

- .1 Section 01 11 55 (General Instructions)
- .2 Section 01 33 00 (Submittal Procedures)

1.4 Definitions

- .1 Refer to Section 01 11 55 (General Instructions) for all definitions related to this Contract.

1.5 Submittals

- .1 The Contractor must provide pre-construction, progress, and post-construction submittals in accordance with the requirements of this section and Section 01 33 00 (Submittal Procedures).

1.6 References – Not Used

1.7 Administrative

- .1 The Contractor must complete the following activities regarding administration of meetings throughout the progress of the work:
 - .1 Schedule and administer Progress Meetings and Tailgate Meetings as required, or at the request of the Departmental Representative.
 - .2 Prepare agendas for Progress Meetings.
 - .3 Provide physical space and make arrangements for Progress Meetings and Tailgate Meetings.

- .4 Preside at Progress Meetings and Tailgate Meetings.
- .2 The Contractor must record the Progress Meeting minutes, including significant proceedings and decisions, and identify actions by parties.
 - .1 The Contractor must reproduce and distribute copies of Progress Meeting minutes within 3 working days after meetings and transmit to the meeting participants.
- .3 Representatives of the Contractor, subcontractors, and suppliers attending Progress Meetings will be qualified and authorized to act on behalf of the party each represents.

1.8 Contract Award Meeting

- .1 Within 10 working days following Contract Award, the Departmental Representative will request a Contract Award Meeting of parties in Contract to discuss and resolve administrative procedures and responsibilities.

1.9 Pre-Construction Meeting

- .1 The Departmental Representative, Contractor, major subcontractors, field inspectors, and supervisors must attend a Pre-Construction Meeting following the Contract Award Meeting.
- .2 The Contractor must establish time and location of the meeting and notify parties concerned a minimum of 5 working days before meeting.
- .3 The agenda may include:
 - .1 Appointment of official representative of participants in the work.
 - .2 Contractor health and safety.
 - .3 Work Areas security.
 - .4 Construction Progress Schedule.
 - .5 Environmental management.
 - .6 Schedule of submissions, including but not limited to, Construction Work Plan, Health and Safety Plan, Quality Control Plan, and Environmental Protection Plan.
 - .7 WorkSafeBC Notice of Project.
 - .8 Daily Tailgate Meeting.
 - .9 Progress Meetings.
 - .10 Project administration, including:

- .1 Proposed changes, change orders, procedures, approvals required, mark-up percentages permitted, time extensions, overtime, and administrative requirements.
- .2 Monthly progress claims, administrative procedures, and hold backs.
- .3 Appointment of inspection and testing agencies or firms.
- .4 Insurances, transcript of policies.

1.10 Progress Meetings

- .1 During the course of the work, the Contractor must schedule Progress Meetings at least once per week.
- .2 The Contractor, major subcontractors involved in the work, and the Departmental Representative must be in attendance.
- .3 The Contractor must notify parties a minimum 5 working days prior to meetings.
- .4 The Contractor must reproduce and distribute copies of the Progress Meeting minutes within 3 working days after meetings and send to the Departmental Representative for review.
- .5 The agenda must include, at a minimum, the following:
 - .1 Review and approval of minutes of previous meeting.
 - .2 Review of work progress since previous meeting.
 - .3 Health and safety.
 - .4 Environmental management.
 - .5 Review of Construction Progress Schedule.
 - .6 Field observations, problems, and conflicts.
 - .7 Review of active Requests for Information and Advisories.
 - .8 Review of contemplated change notices and change orders.
 - .9 Problems that impede Construction Progress Schedule.
 - .10 Review of project vessel traffic that will be leaving and entering the Work Areas.
 - .11 Corrective measures and procedures to regain projected Construction Progress Schedule.
 - .12 Revision to Construction Progress Schedule.
 - .13 Construction Progress Schedule for succeeding work period.
 - .14 Review submittal schedules and expedite as required.
 - .15 Maintenance of quality standards.

- .16 Review proposed changes for affect on Construction Progress Schedule and on completion date.
- .17 Other business.

1.11 Tailgate Meetings

- .1 The Contractor must schedule daily Tailgate Meetings to occur at the start of each work shift. Multiple Tailgate Meetings must be required if the Contractor intends to work multiple shifts within a 24-hour period. The Departmental Representative and/or PWGSC's consultant team may attend tailgate meetings.
- .2 Tailgate Meeting agendas must include, at a minimum, the following:
 - .1 Sign-in of all attendees.
 - .2 Planned work activities and environmental considerations for that shift.
 - .3 Hazards associated with these work activities, including environmental hazards (e.g., potential for hypothermia, heat exhaustion, or heat stroke).
 - .4 Appropriate job-specific safe work procedures.
 - .5 Required personal protective equipment.
 - .6 Appropriate emergency procedures.
 - .7 Review of recent accidents on project site, including near misses.

1.12 Miscellaneous Meetings

- .1 The Departmental Representative may schedule additional meetings as necessary that, at a minimum, must be attended by the Contractor Superintendent and Project Manager.

2. PART 2 – PRODUCTS – NOT USED

3. PART 3 – EXECUTION – NOT USED

END OF SECTION

1. PART 1 – GENERAL

1.1 Description

- .1 The Contractor must provide submittals to the Departmental Representative in advance of, and throughout the duration of the work.
- .2 This section specifies general requirements and procedures for the Contractor's submissions of all required submittals following award of the Contract (including plans, product samples, and product testing data) to the Departmental Representative for review. Additional requirements for submissions are specified in the individual sections.

1.2 Measurement and Payment

- .1 No separate payment will be made for Submittal Procedures. The Contractor must refer to the Unit Price Table for details regarding measurement and payment for the Contract work.

1.3 Related Section

- .1 All sections of the Specifications must apply to requirements for submittals associated with the work. The Contractor must review and be familiar with the structure of submittals required for this Contract.

1.4 Definitions

- .1 Refer to Section 01 11 55 (General Instructions) for all definitions related to this Contract.

1.5 Submittals

- .1 This summary list is presented for the Contractor's convenience only, but no warranty is given to its accuracy or completeness. In the event of any discrepancies with the requirements of the individual sections, those individual sections apply.

SUMMARY LIST OF SUBMITTALS

Pre-Construction Submittals

Section	Submittal	Submittal Schedule
01 11 55	Notice of Project	Prior to commencement of work
01 11 55 35 37 10	Construction Work Plan (CWP) (includes Initial Construction Progress Schedule)	<p>Within 10 working days after date of Contract Award</p> <p>The Departmental Representative will review and provide comments within 5 working days after receipt of the complete CWP</p> <p>A revised CWP must be submitted within 5 working days after receipt of comments from the Departmental Representative</p> <p>Re-reviewing and subsequent Contractor resubmittal will also be the same durations</p> <p>Work must not commence until the CWP is complete and accepted by the Departmental Representative</p>
01 11 55	Initial “month-by-month” Cash Flow Estimate	Same submittal schedule as CWP
01 11 55 01 35 43	Environmental Protection Plan, submitted as part of the CWP (includes Work Area Layouts and Water Quality Protection Plan)	Same submittal schedule as CWP
01 11 55 01 35 29.14	Health and Safety Plan (including Emergency Procedures, Personal Protective Equipment Program, and Fire Safety Plan)	<p>Within 20 working days after date of Contract Award and prior to commencement of work</p> <p>Same review schedule as CWP</p>
01 11 55 01 45 00 02 21 13 35 37 10	Quality Control Plan (including Survey and Positioning Control Plan)	Same submittal schedule as CWP
01 11 55	Security Clearance Documentation	<p>Initiate prior to Contract Award</p> <p>Security clearances must be attained prior to Contractor accessing the Work Areas</p>

Section	Submittal	Submittal Schedule
01 35 00.50	Navigation Control Plan (NCP) (including, but not limited to, Certificate of Transport; Certificate of Inspection for all barges; Load Line Certificate or Exemption, if applicable; moorage/anchoring plan for vessel moorage during off-hours and inclement weather; bollard pull certificate for all towing vessels; general conditions survey)	Within 15 working days after date of Contract Award DND will review and provide comments within 3 weeks after receipt of the complete NCP A revised NCP must be submitted within 5 working days after receipt of comments from DND Re-reviewing and subsequent Contractor resubmittal will also be the same durations Work must not commence until the NCP is complete and accepted by DND
01 35 00.50	Floating Equipment Certificate of Qualification	At time of Tender submission
01 35 00.50	Safety Management System for all registered vessels	Same submittal schedule as NCP
02 21 13	Pre-Construction Survey	At least 2 weeks prior to start of in-water construction activities

Progress Submittals

Section	Submittal	Submittal Schedule
01 11 55 01 31 19	Minutes of Progress Meeting(s)	Within 3 working days after meetings
01 11 55	Coordination Drawings	When required
01 11 55 01 35 00.50 35 37 10	Daily Construction Report (including, but not limited to, fill material placement areas and quantities)	By noon the following day
01 11 55	Progress Claims	Monthly
01 11 55	“Month-by-month” Cash Flow Estimates	Monthly
01 11 55	Breakdown of the Contract Unit Rates and Lump Sum Prices	Prior to submitting the first progress claim
01 11 55	Record Documents	As construction activities are completed

Section	Submittal	Submittal Schedule
01 11 55 02 21 13	Post-Construction Bathymetric Survey(s) and Quantity Calculations	Within 24 hours after completing the Post-Construction Bathymetric Survey, and as part of the Contractor's Daily Construction Report
01 11 55 01 35 00.50 01 35 29.04	Health and Safety Program requirements, including, but not limited to: reports issued by federal and provincial health and safety inspectors, Incident and Accident Reports, and complete set of safety data sheets and other Workplace Hazardous Materials Information System requirements	As necessary
01 35 00.50	Vessel Information, including vessel name; registration number; type of vessel; and last port of call	Prior to entering Esquimalt Harbour and Work Areas
01 35 00.50	For any new equipment brought on Work Areas, new Floating Equipment Certificate of Qualification	Within 10 working days prior to bringing the equipment into Work Areas
02 21 13	Progress Survey(s) and Quantity Calculations	Daily
35 37 10	Empty and Full Barge Displacement Measurements	Empty and full displacements of barges used for transport of fill material
35 37 10	Marine Surveyor Report (for documentation of the seaworthiness of each transport barge)	For all barges used under the Contract prior to transporting any fill material to the Work Areas.
35 37 10	Material Type 1 and 2 Samples and Cover Type 3 Samples	At least 2 weeks in advance of use in the Work Areas
35 37 10	Material Type 1 Laboratory Test Results	At least 2 weeks in advance of use in the Work Areas

Post-Construction Submittals

Section	Submittal	Submittal Schedule
01 78 30 02 21 13	Record Documents	No later than 10 working days after completion of the work

Section	Submittal	Submittal Schedule
01 78 30	Certificate of Completion	No later than 10 days after completion of the work
01 78 30	Notification of Contractor Inspection Completion	Upon satisfactory completion of Contractor Inspection

1.6 References – Not Used

1.7 Administrative

- .1 Submit to the Departmental Representative all submittals required for review as described in these Specifications. Submit promptly and in orderly sequence to not cause delay in work. Failure to submit in ample time is not considered sufficient reason for extension of Contract duration, and no claim for extension by reason of such default will be allowed.
- .2 Allow sufficient time for the following:
 - .1 Review of product/sample data.
 - .2 Review of re-submissions as necessary.
 - .3 Ordering of accepted materials and/or products.
- .3 The Contractor must allow a minimum of 5 working days for the Departmental Representative review of all submittals and an additional 5 working days for re-submittals. The Contractor must provide re-submittals within 5 working days upon receipt of the Departmental Representative comments. For pre-construction submittals, working days refer to Monday through Friday, excluding statutory holidays.
- .4 Do not proceed with work affected by submittal until the Departmental Representative review, and acceptance if appropriate, is complete.
- .5 Present submittal information in SI Metric units as applicable.
- .6 Where items or information are not produced in SI Metric units, converted values are acceptable.
- .7 Review submittals prior to submission to the Departmental Representative. This review represents that necessary requirements have been determined and verified, or will be, and that each submittal has been checked and coordinated with requirements of the work and Contract documents. Submittals with content that does not meet the requirements of the Specifications, or that are not stamped, signed, dated, and identified as to specific project will be returned without being examined and will be considered rejected. The Departmental Representative review time starts only when a complete submittal is received.

- .8 Notify the Departmental Representative, in writing at time of submission, identifying deviations from requirements of the Contract documents and stating reasons for deviations.
- .9 Verify that field measurements and affected adjacent work are coordinated.
- .10 The Contractor's responsibility for errors and omissions in its submissions is not relieved or diminished by the Departmental Representative's review and acceptance of the Contractor's submissions. The Contractor's responsibility for deviations in submission from requirements of Contract documents is not relieved by the Departmental Representative review and acceptance of submittals.
- .11 The Contractor must revise all submittals that are determined to be inadequate or non-compliant with the Contract documents or permit conditions by the Departmental Representative.
- .12 Re-submittals are the responsibility of the Contractor and will be compensated at no extra cost to Canada. Submittals must be completed to the satisfaction of the Departmental Representative.
- .13 Keep one reviewed, and accepted if appropriate, copy of each submission at the Work Areas.

2. PART 2 – PRODUCTS – NOT USED

3. PART 3 – EXECUTION – NOT USED

END OF SECTION

1. PART 1 – GENERAL

1.1 Related Sections

- .1 Section 01 11 55 (General Instructions)
- .2 Section 01 33 00 (Submittal Procedures)
- .3 Section 35 37 10 (Material Placement)

1.2 Definitions

- .1 Refer to Section 01 11 55 (General Instructions) for all other definitions related to this Contract.

1.3 Intent

- .1 The intent of this section is to stipulate harbour control procedures and practices that will be enforced during the construction of work.

1.4 References

- .1 *Canada Shipping Act 2001* and its regulations.
- .2 Canadian Environmental Protection Act (CEPA), 1995, c. 33.
- .3 Canada Marine Act, S.C. 1998, c. 10.
- .4 *Canadian Coast Guard Notices to Mariners* “Notice 43 – Caution with Regard to Ships Approaching Controlled Access Zones Surrounding Her Majesty’s Canadian Naval Facilities, Warships and Allied Warships while Underway, at Anchor or Stationary.”
- .5 Controlled Access Zone Order (Halifax, Esquimalt and Nanoose Harbours) SI/2003-2 (PC2002-2190).
- .6 Esquimalt Harbour – Practices and Procedures – February 2019 (<http://www.navy-marine.forces.gc.ca/en/about/structure-marpac-poesb-practices-procedures.page>).
- .7 International Convention for the Safety of Life at Sea (SOLAS): Chapter XI-2 – Special measures to enhance maritime security (includes the International Ship and Port Facility Security Code [ISPS Code]).
- .8 Marine Transportation Security Regulations (MTSR).
- .9 Natural and Man-made Harbour Navigation and Use Regulations SOR 2005-73.
- .10 Order in Council PC2005-812.

1.5 Certification and Compliance with Rules and Regulations

- .1 The Contractor must ensure that all vessels are operated in compliance with applicable safety and navigation requirements per Transport Canada (TC) and the *Canada Shipping Act 2001* and its regulations, International Maritime Organization, U.S. Coast Guard, or Classification Society rules and standards.
- .2 Marine derricks and other floating equipment to be employed on this work must be of Canadian registry, make, or manufacture, or must receive a Certificate of Qualification from Industry Canada, Marine Directorate. The Certificate of Qualification for any known vessels working on the project must be submitted in conjunction with the Floating Plant Form at the time of Tender. If new equipment is brought on site during the work that was not included on the Floating Plant Form at time of Tender, both a new Floating Plant Form and Certificate of Qualification must be submitted to the Departmental Representative 10 working days prior to bringing the equipment on site.
- .3 The Contractor must enroll all vessels that operate under their own power over 24 metres (m) in length in TC's Delegated Statutory Inspection Program (DSIP). TC has entered into agreements with certain classification societies (Recognized Organizations) to delegate statutory inspection and certification functions. Under the DSIP, inspection and certification of large commercial vessels must be undertaken by a Recognized Organization, as stated in TC's policy. Certificates issued by TC or by a Recognized Organization must be submitted to the Departmental Representative within 15 working days following Contract Award.
- .4 The Contractor must enroll all vessels constructed to Class under 24 m in the DSIP or non-class constructed vessels in TC's Alternative Service Delivery (ASD) program, or submit a third-party general condition survey report from a Qualified Marine Surveyor or must provide a "Certificate of Inspection" by a Classification Society recognized by TC. Documents from the ASD or third-party general survey report or Certificate of Inspection must be submitted by the Contractor to the Departmental Representative within 15 working days following Contract Award.
- .5 The Contractor must submit a third-party general condition survey report from a Qualified Marine Surveyor, or must provide a "Certificate of Inspection" by a TC-recognized Classification Society for all tugs and barges. Third-party general condition survey or Certificate of Inspection for all tugs and barges must be submitted to the Departmental Representative within 15 working days following Contract Award. The general condition survey or Certificate of Inspection must articulate what is required, if anything, for the barge to be fit for purpose. If additional vessel resources are identified as needed during the course of work, the Contractor must submit a general condition survey or Certificate of Inspection to the Departmental Representative 10 working days prior to the vessel entering Esquimalt Harbour.

- .6 All haul barges (i.e., barges that transit material in and out of Esquimalt Harbour) are required to be issued with a Load Line Certificate. Load Line exemptions will be considered with approval by the Departmental Representative where impractical with the submission of a trim and stability booklet prepared and stamped by a Naval Architect or a Professional Engineer licensed in British Columbia. If the barge has been converted from what it was originally built, a new Load Line Certificate or trim stability booklet prepared and stamped by a Naval Architect or a Professional Engineer licensed in British Columbia, must be provided. Load Line Certificate or Load Line exemptions (if applicable) must be submitted to the Departmental Representative within 15 working days following Contract Award.
- .7 The Contractor must establish and maintain procedures to verify that vessels are always provided with valid TC or Classification Society Issued Certificates, and/or other certificates that are necessary for the vessel's type and area of operation or intended voyages.
- .8 The Contractor must enroll all commercial vessels that measure between 0 and 15 Gross Tonnage, that carry between 0 and 12 passengers, and are not barges in TC's Small Vessel Compliance Program (SVCP), and must display on each vessel the SVCP decal issued by TC. This requirement applies to vessels that have engine power that exceeds 40 horsepower.
- .9 The Contractor must establish and maintain procedures to obtain information about local or international rules, legislations, or regulations and changes thereto and ensures compliance with those regulations.
- .10 All vessel operators must adhere to and understand the requirements of the Navigation Control Plan (NCP; as described in Clause 1.7 of this section) and the Specifications, and have copies of relevant vessel documentation onboard vessels. The NCP must have a signature page that all vessel operators will sign to acknowledge they have read the document and understand the requirements. The Contractor must maintain this signature page and provide it to the Departmental Representative upon request.
- .11 The Contractor must establish and maintain procedures for vessel operators to report any deficiencies in connection with TC or Classification Society certifications or other requirements and initiate corrective actions.
- .12 Material transported by barge within, out of, or into Esquimalt Harbour requires that the Contractor coordinate directly with Queen's Harbour Master (QHM) pursuant to the Canada Marine Act. The Departmental Representative requires 72-hour notification of all material transported by barge within Esquimalt Harbour. Material barge transport movements within Esquimalt Harbour require a 24-hour notification to the QHM.
- .13 Material transported by barge outside of Esquimalt Harbour requires that the Contractor meet any applicable Laws and Regulations governing those waters.

- .14 The Contractor must follow all rules established as part of the Esquimalt Harbour Practices and Procedures (2019), as described at the following link:
<http://www.navy-marine.forces.gc.ca/en/about/structure-marpac-poesb-practices-procedures.page>.

1.6 Esquimalt Harbour Authority

- .1 The schedule attached to Order in Council PC2005-812 defines Esquimalt Harbour as “all the navigable waters northward from a line running from the southerly extremity of Albert Head intersecting at a 90° angle line running north and south astronomically from the western tip of Saxe Point to the high-water mark of the northerly shore of Esquimalt Harbour.”
- .2 Esquimalt Harbour is administered by the Department of National Defence (DND) as designated by Order in Council PC2005-812, and is governed by the Canada Marine Act, and the Natural and Man-made Harbour Navigation and Use Regulations SOR 2005-73.
- .3 The Harbour Authority is the QHM, Canadian Forces Base (CFB) Esquimalt. The terms “QHM,” “QHM Ops,” “Esquimalt Harbour Authority,” and “Harbour Authority” may be used interchangeably throughout the Contract documents.
- .1 QHM Ops can be contacted by:
- .1 Marine VHF channel 10.
- .2 Telephone at 250-363-2160.

1.7 Submittals

- .1 Submittals must be in accordance with Section 01 33 00 (Submittal Procedures).
- .2 The Contractor must submit an NCP for review and acceptance by the Departmental Representative. The NCP must present the procedures for vessel movements, for all portions of the project. At a minimum, the NCP must contain specific methods or procedures associated with how the Contractor will implement or address the following:
- .1 Certifications of all marine vessels and barges by a certified Naval Architect or Professional Engineer licensed in British Columbia, including, but not limited to, certified barge displacement charts for all barges to be used for tracking of fill material.
- .2 A stamped statement from a certified Naval Architect or Professional Engineer licensed in British Columbia stating the freeboard measurements for each barge that would be considered safe for specific voyages and environmental conditions.
- .3 Routes within, into, and out of Esquimalt Harbour, as well as vessel routes to all proposed facilities (i.e., Contractor Off-Site Offload Facility).

- .4 Towing arrangements, both within and out of Esquimalt Harbour under anticipated travel scenarios, including number and power requirements for tugs used and the length of towline.
- .5 Whether a trailing tug is required to be tethered to the tow under certain conditions or whether it is left to the discretion of the master of the tug. Note that all barges towed in and out of Constance Cove are required to have a leading tug and trailing tug as outlined in Clause 1.12.
- .6 Limitations on vessel movement under certain visibility limitations (e.g., 500-m visibility required).
- .7 Speed limits when repositioning vessels (2 to 3 knots maximum).
- .8 Clear passage for any naval vessels transiting Esquimalt Harbour.
- .9 Specific requirements for bollard pull capacity as defined by TC.
- .10 The Contractor must include a bollard pull certificate for all towing vessels.
- .11 Mooring/anchoring plan to include safe and secured mooring/anchoring of construction vessels and floating equipment during periods when vessels are not actively working, including mooring procedures for inclement weather. All temporary structures for mooring or other purposes are to be accepted by the Departmental Representative in advance.
- .12 Emergency management procedures for extreme weather (e.g., wind warnings, gale warnings).
- .13 Marine emergency response resources.
- .14 Identify procedures for monitoring Contractor vessels after hours and on the weekend.
- .15 The NCP must have a signature page as described in this section.
- .3 Prior to bringing any vessel within Esquimalt Harbour, the Contractor must submit the vessel name, registration number, type of vessel, and last port of call to the Departmental Representative for coordination with the QHM.
- .4 The Contractor must submit a general condition survey, meeting the requirements described in Clause 1.15 for each barge used during the work.
- .5 The Contractor must have a Safety Management System (SMS) in place that covers all marine work. An electronic copy of the SMS must be submitted to the Departmental Representative within 15 working days following Contract Award. The SMS must, at a minimum, include the following:
 - .1 Operating procedures for the vessel and the use of checklists.
 - .2 Maintenance procedures for the vessel and its associated equipment.
 - .3 Documentation and recordkeeping procedures.

- .4 Procedures for identifying hazards and managing risks.
- .5 Procedures to prepare for and respond to emergency situations and drills, training, and familiarization for the vessel's crew.

1.8 Safety Management

- .1 As part of the Contractor's health and safety program, the Contractor must have a clear written statement of policy concerning safety.
- .2 Designate Contractor personnel in both Shore-based Management and Onboard Management, who must be given the authority to implement the Contractor's safety policy.
- .3 Provide documentation that the designated personnel have site-related working experience specific to activities associated with marine construction. The designated personnel may be one person for both onshore and marine given the designated personnel is competent in both areas.
- .4 Comply with Maritime Occupational Health and Safety Regulations.
- .5 The Contractor must ensure procedures and documentation are in place for ensuring marine equipment in Esquimalt Harbour is secure and seaworthy after hours and during weekend periods when the Contractor has no work physically occurring in the Work Area.

1.9 Controlled Access Zone Order and Designated Controlled Access Zones (Marine)

- .1 The Contractor must familiarize and comply with the Controlled Access Zone Order (Halifax, Esquimalt and Nanoose Harbours) SI/2003-2 (PC2002-2190) that provides for security zones around warships berthed or moving within Esquimalt Harbour.
- .2 The Designated Controlled Access Zones (Marine), which are designated by the Minister of National Defence with the authority set out in the Controlled Access Zone Order, are published annually in the *Canadian Coast Guard Notices to Mariners* "Notice 43 – Caution with Regard to Ships Approaching Controlled Access Zones Surrounding Her Majesty's Canadian Naval Facilities, Warships and Allied Warships while Underway, at Anchor or Stationary."

1.10 Practices and Procedures

- .1 Comply with *Esquimalt Harbour – Practices and Procedures*. The latest Esquimalt Harbour – Practices and Procedures (February 2019) are at the following link: <http://www.navy-marine.forces.gc.ca/en/about/structure-marpac-poesb-practices-procedures.page>.
- .2 Comply with supplementary requirements specified in this section.

1.11 Contractor Vessel Inspections

- .1 Right of Canada to Conduct Vessel Inspections:
 - .1 Under the Controlled Access Zone Order, Canada reserves the right to inspect any vessels, and persons aboard the vessels, within the limitations set out in the Order. This includes hull inspections (performed by diving teams) of vessels.
 - .2 Above-Water Inspections:
 - .1 At the discretion of the Harbour Authority, Contractor vessels may be subject to an above-water inspection when entering a Designated Controlled Access Zone within Esquimalt Harbour. An above-water inspection can take up to 0.5 hour to complete.
 - .3 Hull Inspections:
 - .1 At the discretion of the Harbour Authority, a Contractor vessel may be subject to a hull inspection for the following reasons:
 - .1 The Contractor vessel enters a Designated Controlled Access Zone (Marine) within Esquimalt Harbour for the first time under this Contract.
 - .2 When entering a Designated Controlled Access Zone (Marine) within Esquimalt Harbour, the Contractor vessel was berthed at a facility that is not in compliance with the ISPS Code.
 - .1 A Contractor vessel arriving from an ISPS Code-compliant facility may be required to have the Vessel Security Officer produce a Declaration of Security, in accordance with the MTSR, in order to avoid a hull search.
 - .3 A change in DND's security posture at CFB Esquimalt.
 - .2 A hull inspection can take up to 4 hours to complete.
- .4 Notice of Inspections
 - .1 Unless otherwise directed by QHM Ops, QHM Ops will require the following from the Contractor:
 - .1 Seventy-two hours' notice prior to the arrival of any vessel that may be subject to a hull inspection, or 2 hours' notice prior to the arrival of any vessel that may be subject to an above-water inspection only.
 - .2 Notice to the QHM must occur between the hours of 7:00 a.m. and 3:00 p.m. for all vessel movements.

Coordination for vessel movements outside of this timeframe will be coordinated in advance.

- .3 A weekly schedule of proposed vessel traffic.
- .5 Time and Location of Inspections
 - .1 When notice is provided to QHM Ops by the Contractor, QHM Ops will provide a date, time, and location within Esquimalt Harbour for the inspection to occur, if required.
 - .2 Inspections will take place during regular business hours, Monday to Friday.

1.12 Navigational Safety

- .1 The Contractor must establish and maintain navigational and watch keeping procedures to secure the safety of vessel and third-party property, which must include:
 - .1 Allocation of personnel for navigational and machinery procedures.
 - .2 Procedures for voyage planning and execution.
 - .3 Procedure to ensure navigation charts are up to date.
 - .4 Procedure to ensure that all essential navigational equipment and main and auxiliary machinery is available.
 - .5 Procedures in compliance with Esquimalt Harbour Practices and Procedures, and to ensure operational availability and compliance with rules and regulations.
- .2 The Contractor must ensure compliance with Laws and Regulations as applicable, but not limited to the following:
 - .1 Canada Shipping Act – Collision Regulations (C.R.C., c.1416).
 - .2 CEPA, 1995, c. 33.
 - .3 Canada Marine Act. S.C. 1998, c.10.
 - .4 Canadian Coast Guard Notice to Mariners 43.
 - .5 Controlled Access Zone Order SI/2003-2 (PC2002-2190).
 - .6 Esquimalt Harbour Practices and Procedures.
 - .7 United States applicable Laws and Regulations, if vessels and barges transit waters of the United States.
- .3 All Contractor floating equipment must be marked with lights, lighted buoys, or Departmental Representative-accepted or QHM-accepted equivalent, whenever operations and/or floating equipment laydown will occur during non-daylight hours.

- .4 The Contractor must ensure that all anchor lines are clearly marked and set in such a manner so as to not interfere with active navigation operations in the Work Area or in Esquimalt Harbour to the satisfaction of the Departmental Representative and the QHM.
- .5 The Master in charge of any towing operation entering, departing, or within Esquimalt Harbour must be qualified as a Master limited for a vessel of 60 Gross Tonnage or more, Domestic or higher (as outlined in the Marine Personnel Regulations under the Canada Shipping Act).

1.13 DND Operations

- .1 The Contractor is required to maintain the maximum offset possible with a minimum 10-m offset from all DND vessels in transit to Work Areas. DND does not anticipate vessel operations in the Work Areas during construction unless for emergency purposes.
- .2 The Contractor must coordinate with the Departmental Representative during the construction activities (i.e., transit to the Work Areas) to avoid impacting potential DND operations, which must take precedence over the Contractor's work. DND does not anticipate vessel mooring in the Work Areas in which the Contractor is working during construction, unless for emergency purposes. If DND requires vessel mooring in or near the Work Area in which the Contractor is working, the Departmental Representative may allow the Contractor to continue work in an adjacent Work Area.
- .3 The Contractor is responsible for health and safety considerations associated with planned construction activities in the Work Areas, including, but not limited to, subcontractors, PWGSC oversight personnel, and DND representatives involved with project-related work. The Contractor is not responsible for health and safety for DND personnel that may be required to enter the Contractor's active Work Areas during emergency procedures.

1.14 Integrity of Vessels

- .1 The Contractor must establish and maintain onboard procedures to verify the following:
 - .1 The watertight integrity of the vessel.
 - .2 That the vessel is not overloaded or overstressed.
 - .3 That the vessel has adequate stability.
- .2 The Contractor must have a marine survey conducted by a Qualified Marine Surveyor on each tug and barge used during the work, including both long-haul tugs and barges (i.e., out of Esquimalt Harbour) and short-haul tugs and barges used within Esquimalt Harbour.

- .1 A grading system using the letters A to E must be used for the general condition survey, or an equivalent rating system that must be accepted by the Departmental Representative. An “A” notation indicates that the item or area inspected is considered to be in Excellent Condition, with no apparent defects. In all probability, this grade will only apply to new builds. A “B” notation indicates that the item or area inspected is considered to be in Very Good Condition, but may have one or more easily rectifiable minor faults. A “C” notation indicates that the item or area inspected is considered to be in Overall Good Condition, but with one or more minor faults which are unlikely to affect the operation, classification, or integrity of the vessel. A “D” notation indicates that the item or area inspected is considered to be in Overall Fair Condition, with faults or defects of a more serious nature that require future maintenance, but the item is currently “fit for purpose.” (A “D” notation will require routine monitoring and subsequent inspections for further degradation.) An “E” notation indicates that the item or area inspected is considered to be in Overall Poor Condition with serious faults and unlikely to be considered fit for purpose, and will, in all probability, require immediate intervention to rectify. The general condition survey must include the following at a minimum as applicable:
 - .1 Structural Integrity.
 - .2 Hull Exterior.
 - .3 Internal Hull.
 - .4 Vessel Maintenance.
 - .5 Equipment Function Checks.
 - .6 Main Deck and Exterior.
 - .7 Accommodation.
 - .8 Machinery and Equipment.
 - .9 Safety Equipment.
 - .10 Navigation.
 - .11 Towing Gear.
 - .12 Regulatory Compliance, Certification, and Documentation.
 - .13 Survey Summary.
 - .14 List of Attachments.
- .3 For any vessel requiring repair during the project, the Contractor must submit a new general condition survey report completed by a Qualified Marine Surveyor after the completion of the repairs. Vessels will not be allowed to re-enter the

Work Area or complete work under this Contract until the general condition survey is accepted by the Departmental Representative.

- .4 If Canada is concerned about the integrity of a vessel, the Departmental Representative can demand a new general condition survey be conducted at no additional cost to Canada.

1.15 Maintenance Standard

- .1 The maintenance standard must be such to ensure compliance with applicable Laws and Regulations as applicable as per TC, SOLAS, and classification society regulations for all Contractor vessels.
- .2 The Contractor must establish and maintain procedures to verify that:
 - .1 Maintenance, repairs, and relevant surveys are carried out in a timely manner in respect of the vessel's application, onboard equipment, equipment operators, and crew.
 - .2 Maintenance records and reports are available both onboard and in the shore-based management office.
 - .3 There is a timely supply and availability of spares, materials, and other resources to implement the maintenance procedures.
- .3 Upon request, make copies of maintenance records available to the Departmental Representative.

2. PART 2 – PRODUCTS – NOT USED

3. PART 3 – EXECUTION – NOT USED

END OF SECTION

1. PART 1 – GENERAL

1.1 Description of Work – Not Used

1.2 Measurement and Payment

- .1 See Section 01 11 55 (General Instructions).

1.1 Related Sections

- .1 Section 01 11 55 (General Instructions)
- .2 Section 01 33 00 (Submittal Procedures)

1.3 Definitions

- .1 See Section 01 11 55 (General Instruction) for all definitions related to the Contract documents.

1.4 Submittals

- .1 Submittals must be in accordance with Section 01 33 00 (Submittal Procedures).
- .2 Submit to Departmental Representative submittals listed for review.
- .3 Work affected by submittal must not proceed until review is complete.
- .4 Submit the following:
 - .1 Health and Safety Plan.
 - .2 Copies of reports or directions issued by federal and provincial health and safety inspectors.
 - .3 Copies of incident and accident reports.
 - .4 Complete set of Safety Data Sheets (SDS), and all other documentation required by Workplace Hazardous Materials Information System (WHMIS) requirements.
 - .5 Emergency Procedures.
 - .6 Notice of Project.
- .5 The Health and Safety Plan must be submitted within twenty (20) working days after date of Contract Award and prior to commencement of work. All other submittals must be provided as necessary.
- .6 The Departmental Representative will review the Contractor's site-specific project Health and Safety Plan and emergency procedures and provide comments to the Contractor within five (5) working days after receipt of the plan.

- .7 If changes are required, revise the plan as appropriate and resubmit to Departmental Representative within five (5) working days.
- .8 Submittal of the Health and Safety Plan, and any revised version, to the Departmental Representative is for information and reference purposes only. It will not:
 - .1 Be construed to imply approval by the Departmental Representative.
 - .2 Be interpreted as a warranty of being complete, accurate, and legislatively compliant.
 - .3 Relieve the Contractor of its legal obligations for the provision of health and safety on the project.

1.5 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 Canadian Standards Association (CSA) as amended:
 - .1 CSA Z797-2009 Code of Practice for Access Scaffold.
 - .2 CSA S269.1-1975 (R2003) Falsework for Construction Purposes.
 - .3 CSA S350-M1980 (R2003) Code of Practice for Safety in Demolition of Structures.
- .4 National Fire Code of Canada 2010 (as amended):
 - .1 Part 5 – Hazardous Processes and Operations and Division B as applicable and required.
 - .2 FCC No. 302, Standard for Welding and Cutting.
- .5 American National Standards Institute (ANSI):
 - .1 ANSI A10.3, Operations – Safety Requirements for Powder-Actuated Fastening Systems.
- .6 Province of British Columbia (as appropriate):
 - .1 Workers Compensation Act Part 3-Occupational Health and Safety.
 - .2 Occupational Health and Safety Act RSBC 1996 – Updated 2012.
- .7 Yukon Territory (as appropriate):
 - .1 Occupational Health and Safety Act.

- .2 Workers' Compensation Act.
- .3 Occupational Health and Safety Regulation.

1.6 Regulatory Requirements

- .1 Comply with codes, acts, by-laws, standards, and regulations applicable to the performance of the work in accordance with the Contract to ensure safe operations at the Project 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 direct on the course of action to be followed.

1.7 Worker's Coverage

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

1.8 Compliance with Regulations

- .1 Canada may terminate the Contract without liability to Canada where the Contractor, in the opinion of Canada, refuses to comply with a requirement of the Workers' Compensation Act or the Occupational Health and Safety Regulations.
- .2 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.

1.9 Responsibility

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

1.10 Health and Safety Coordinator

- .1 The Health and Safety Coordinator must:
 - .1 Be responsible for completing all health and safety training, and ensuring that personnel that do not successfully complete the required training are not permitted to enter the Project Site to perform work.
 - .2 Be responsible for implementing, daily enforcing, and monitoring the site-specific Health and Safety Plan.
 - .3 Be on the Project Site during execution of the work.

1.11 General Conditions

- .1 Provide safety barricades and lights around the Project Site as required to provide a safe working environment for workers and protection for pedestrian and vehicular traffic.
- .2 Ensure that non-authorized persons are not allowed to circulate in designated construction areas of the Project Site:
 - .1 Provide appropriate means by use of barricades, fences, warning signs, traffic control personnel, and temporary lighting as required.

1.12 Permits

- .1 Obtain specialty permits related to project before the start of work.

1.13 Filing of Notice

- .1 The Prime Contractor must complete and submit a Notice of Project and any other required notices with provincial or territorial authorities before work commences.
- .2 Provide copies of all notices to the Departmental Representative.

1.14 Health and Safety Plan

- .1 Conduct a site-specific hazard assessment based on review of the Contract, required work, and the Project Site. Identify any known and potential health risks and safety hazards.
- .2 Prepare and comply with a site-specific Health and Safety Plan based on a hazard assessment, including, but not limited to, the following:
 - .1 Primary requirements:
 - .1 Contractor's safety policy.
 - .2 Identification of applicable compliance obligations.

- .3 Definition of responsibilities for project safety/organization chart for project.
- .4 General safety rules for project.
- .5 Job-specific safe work procedures.
- .6 Inspection policy and procedures.
- .7 Incident reporting and investigation policy and procedures.
- .8 Occupational Health and Safety Committee/Representative procedures.
- .9 Occupational Health and Safety meetings.
- .10 Occupational Health and Safety communications and record keeping procedures.
- .2 Summary of health risks and safety hazards resulting from analysis of hazard assessment, with respect to site tasks and operations that must be performed as part of the work.
- .3 List hazardous materials to be brought on site as required by the work.
- .4 Indicate engineering and administrative control measures to be implemented at the Project Site for managing identified risks and hazards.
- .5 Identify personal protective equipment (PPE) to be used by workers.
- .6 Identify personnel and alternates responsible for site safety and health.
- .7 Identify personnel training requirements and training plan, including site orientation for new workers.
- .3 Develop the Health and Safety Plan in collaboration with all subcontractors. Ensure that work and activities of subcontractors are included in the hazard assessment and are reflected in the plan.
- .4 Revise and update the Health and Safety Plan as required and re-submit to the Departmental Representative.
- .5 Departmental Representative's review: the review of Health and Safety Plan by the Departmental Representative will not relieve the Contractor of responsibility for errors or omissions in the final Health and Safety Plan or of responsibility for meeting all requirements of construction and the Contract.

1.15 Emergency Procedures

- .1 List standard operating procedures and measures to be taken in emergency situations. Include an evacuation plan and emergency contacts (i.e., names/telephone numbers) of:
 - .1 Designated personnel from own company.

- .2 Regulatory agencies applicable to work and as per legislated regulations.
- .3 Local emergency resources.
- .4 Departmental Representative and site staff.
- .2 Include the following provisions in the emergency procedures:
 - .1 Notify workers and the first-aid attendant, of the nature and location of the emergency.
 - .2 Evacuate all workers safely.
 - .3 Check and confirm the safe evacuation of all workers.
 - .4 Notify the fire department or other emergency responders.
 - .5 Notify adjacent workplaces or residences which may be affected if the risk extends beyond the workplace.
 - .6 Notify Departmental Representative and Project Site staff.
- .3 Provide written rescue/evacuation procedures as required for, but not limited to:
 - .1 Work at high angles.
 - .2 Work in confined spaces or where there is a risk of entrapment.
 - .3 Work with hazardous substances.
 - .4 Underground work.
 - .5 Work on, over, under, and adjacent to water.
 - .6 Workplaces where there are persons who require physical assistance to be moved.
- .4 Design and mark emergency exit routes to provide quick and unimpeded exit.
- .5 Revise and update emergency procedures as required and re-submit to the Departmental Representative.

1.16 Hazardous Products

- .1 Comply with requirements of WHMIS regarding use, handling, storage, and disposal of hazardous materials, and regarding labelling and provision of SDS acceptable to the Departmental Representative and in accordance with the Canada Labour Code.
- .2 Where use of hazardous and toxic products cannot be avoided:
 - .1 Notify the Departmental Representative beforehand of the product(s) intended for use. Submit applicable SDS and WHMIS documents as required.

- .2 As required, in conjunction with the Departmental Representative, schedule to carry out work during “off hours” when tenants have left the building.
- .3 Provide adequate means of ventilation as required.

1.17 Unforeseen Hazards

- .1 Should any unforeseen or peculiar safety-related factor, hazard, or condition become evident during performance of the work, immediately stop work and notify the Departmental Representative verbally and in writing.

1.18 Posted Documents

- .1 Post legible versions of the following documents on site:
 - .1 Health and Safety Plan.
 - .2 Sequence of Work.
 - .3 Emergency procedures.
 - .4 Project Site drawing showing project layout, locations of the first-aid station, evacuation route and marshalling station, and the emergency transportation provisions.
 - .5 Notice of Project.
 - .6 Floor plans or Project Site plans.
 - .7 Notice as to where a copy of the Workers’ Compensation Act and Regulations are available at the Project Site for review by employees and workers.
 - .8 WHMIS documents.
 - .9 SDS.
 - .10 List of names of Joint Health and Safety Committee members, or Health and Safety Representative, as applicable.
- .2 Post all SDS on site, in a common area, visible to all workers and in locations accessible to tenants when work of this Contract includes construction activities adjacent to occupied areas.
- .3 Postings should be protected from the weather, and visible from the street or the exterior of the principal construction site shelter provided for workers and equipment, or as accepted by the Departmental Representative.

1.19 Meetings

- .1 Attend health and safety Pre-Construction Meeting and all subsequent meetings called by the Departmental Representative.

- .2 Ensure all Project Site personnel attend a health and safety toolbox meeting at the beginning of each shift, which must include:
 - .1 Sign-in of all attendees.
 - .2 Planned work activities and environmental considerations for that shift.
 - .3 Hazards associated with these work activities, including environmental hazards (e.g., potential for hypothermia, heat exhaustion, heat stroke).
 - .4 Appropriate job-specific safe work procedures.
 - .5 Required PPE.
 - .6 Appropriate emergency procedures.
 - .7 Review recent accidents on the Project Site, including near misses.
- .3 Retain records of all health and safety meetings on site during work and retain as corporate records for a minimum of seven (7) years after work is completed.

1.20 Correction of Non-Compliance

- .1 Immediately address health and safety non-compliance issues identified by the Departmental Representative.
- .2 Provide the Departmental Representative with written report of action taken to correct non-compliance with health and safety issues identified.
- .3 The Departmental Representative may issue a “stop work order” if non-compliance of health and safety regulations is not corrected immediately or within posted time.
- .4 Correct non-compliance.

1.21 Hazardous Occurrence Investigation and Reporting

- .1 Hazard includes:
 - .1 Any source of potential damage, harm, or adverse effects on life, health, property, or environment at work. It refers to any biological, chemical, ergonomic, physical, psychosocial, and safety factor that is reasonably likely to cause harm or damage to humans, other organisms, or the environment in the absence of its control. Sometimes a hazard is referred to as being the actual harm or the health effect it caused rather than the hazard. For example, the disease tuberculosis might be called a hazard by some but in general the tuberculosis-causing bacteria would be considered the “hazard” or “hazardous biological agent.” Exposure to tuberculosis would be the hazardous incident. For types of hazards, refer to Annex 3 of the Standard on Hazard Prevention Program.
- .2 Hazardous Occurrence includes:

- .1 An event occurring at a Departmental Representative managed building or worksite, or through the course of an employee's work that results in, or has the potential to result in, a fatality, injury, illness, exposure to a hazardous substance or property damage or an escapement of a hazardous material. For the purpose of investigating, recording, and reporting hazardous occurrences, the following are included under this term: disabling injuries, minor injuries, and near-misses.
- .3 Hazardous Occurrence Investigation and Reporting Procedures:
 - .1 Includes information regarding the person involved and the basic circumstances surrounding the hazardous occurrence.
 - .2 Provides a detailed and thorough description of the hazardous occurrence and the sequence of events.
 - .3 Indicates corrective measures that have been taken since the occurrence.
 - .4 Requires the appointment of a qualified investigator.
 - .5 Provides recommendations for additional corrective measures, if required.
- .4 Fatal or Serious Accidents Procedures:
 - .1 Call emergency number to advise the police organization having jurisdiction to secure the scene and investigate the matter.
 - .2 Advise the Departmental Representative of the fatality or serious accident within one (1) hour.
 - .3 No investigation will be conducted at the scene until the police service having jurisdiction has released the scene.
 - .4 Unless authorized to do so, do not allow anyone to remove or in any way interfere with or disturb any wreckage, article, or thing related to the incident except to the extent necessary to save a life, prevent injury, or relieve human suffering in the vicinity; maintain an essential public service; or prevent unnecessary damage to or loss of property.

1.22 Utility Clearance

- .1 The Contractor is solely responsible for utility clearance.
- .2 The Contractor will not rely upon Drawings or other information provided with utility locations.

1.23 Personal Protective Equipment Program

- .1 As part of the Health and Safety Plan, submit PPE program to the Departmental Representative within twenty (20) working days after date of Contract Award and prior to commencement of work, addressing as appropriate:
 - .1 Donning and doffing procedures.

- .2 PPE selection based upon Project Site hazards.
- .3 PPE use and limitations of equipment.
- .4 Work mission duration, PPE maintenance, and storage.
- .5 PPE decontamination and disposal.
- .6 PPE inspection procedures prior to, during, and after use.
- .7 Evaluation of effectiveness of PPE program, and limitations during temperature extremes, and other appropriate medical considerations.
- .8 Medical surveillance requirements for personnel assigned to work at the Project Site.
- .9 Frequency and types of air monitoring, personnel monitoring, and environmental sampling techniques and instrumentation to be used, including methods of maintenance and calibration of monitoring and sampling equipment.
- .10 Site control measures employed at the Project Site including site map, site work zones, use of buddy system, site communications including site security, alerting means for emergencies, standard operating procedures or safe work practices, and identification of nearest medical assistance.
- .11 Decontamination procedures for both personnel and equipment.
- .12 Emergency response requirements addressing pre-emergency planning, personnel roles, lines of authority and communication, emergency recognition and prevention, safe distances and places of refuge, site security and control, evacuation routes and procedures, decontamination procedures not covered under decontamination section, emergency medical treatment and first aid, emergency alerting and response procedures, critique of response and follow-up, PPE and emergency equipment, site topography, layout, prevailing weather conditions, and procedures for reporting incidents to local, provincial, or federal agencies.
- .13 Written respiratory protection program for project activities.
- .14 Procedures dealing with heat and/or cold stress.
- .15 Spill containment program if waste material is generated, excavated, stored, or managed on site.

1.24 Off-site Contingency and Emergency Response Plan

- .1 Prior to commencing work involving handling of hazardous materials, develop an off-site Contingency and Emergency Response Plan.
- .2 The Contingency and Emergency Response Plan must provide immediate response to serious site occurrence such as explosion, fire, or migration of significant quantities of toxic or hazardous material from the Project Site.

1.25 Personnel Health, Safety, and Hygiene

- .1 Training: ensure personnel entering the Project Site are trained in accordance with specified personnel training requirements. Training session must be completed by the Health and Safety Officer.
- .2 Levels of Protection: establish levels of protection for each work area based on planned activity and location of activity.
- .3 PPE:
 - .1 Ensure all site personnel are furnished with appropriate PPE.
 - .2 Unless identified otherwise in site-specific Health and Safety Plan, minimum PPE will include industrial protective headwear, high-visibility safety apparel, and protective footwear.
 - .3 Ensure that safety equipment and protective clothing is kept clean and maintained.
- .4 Develop protective equipment usage procedures and ensure that procedures are strictly followed by site personnel; include the following procedures as a minimum:
 - .1 Ensure industrial protective headwear is of appropriate CSA Standard and meets other appropriate standards.
 - .2 Ensure high-visibility safety apparel is of appropriate CSA Standard and meets other appropriate standards.
 - .3 Ensure protective footwear is of appropriate CSA Standard and meets other appropriate standards.
 - .4 Dispose of or decontaminate PPE worn on site at end of each work day.
 - .5 Decontaminate reusable PPE before reissuing.
 - .6 Ensure site personnel have passed respirator fit test prior to entering potentially volatile contaminated work areas, as appropriate.
 - .7 Ensure facial hair does not interfere with proper respirator fit.
- .5 Respiratory Protection:
 - .1 Provide site personnel with extensive training in usage and limitations of, and qualitative fit testing for, air purifying and supplied-air respirators in accordance with specified regulations.
 - .2 Develop, implement, and maintain respirator program.
 - .3 Monitor, evaluate, and provide respiratory protection for site personnel.
 - .4 Ensure levels of protection as listed have been chosen consistent with site-specific potential airborne hazards associated with major contaminants identified on site.

- .5 In absence of additional air monitoring information or substance identification, retain an industrial hygiene specialist to determine minimum levels of respiratory protection required.
- .6 Immediately notify the Departmental Representative when the level of respiratory protection required increases.
- .7 Ensure appropriate respiratory protection during work activities. At a minimum requirement, ensure that persons entering potentially contaminated work areas are supplied with and use of appropriate respiratory protection.
- .6 Heat Stress/Cold Stress: implement heat stress or cold stress monitoring program as applicable and include in the site-specific Health and Safety Plan.
- .7 Personnel Hygiene and Personnel Decontamination Procedures: provide the following, at a minimum:
 - .1 Suitable containers for storage and disposal of used disposable PPE.
 - .2 Potable water and suitable sanitation facility.
- .8 Emergency and First-Aid Equipment:
 - .1 Locate and maintain emergency and first-aid equipment in appropriate location on site, including first-aid kit to accommodate number of site personnel; portable emergency eye wash; two (2) 9-kg ABC-type dry chemical fire extinguishers.
- .9 Site Communications:
 - .1 Identify, supply, and implement appropriate dedicated communication devices for the Project Site and post emergency numbers near dedicated devices.
 - .2 Ensure personnel use of “buddy” system and develop hand signal system appropriate for site activities.
 - .3 Provide employee alarm system to notify employees of site emergency situations or to stop work activities if necessary.
 - .4 Furnish selected personnel with two-way radios.
 - .5 Safety Meetings: conduct mandatory daily safety meetings for personnel, and additionally as required by special or work-related conditions; include refresher training for existing equipment and protocols, review ongoing safety issues and protocols, and examine new site conditions as encountered. Hold additional safety meetings on as-needed basis.

- 2. PART 2 – PRODUCTS – NOT USED**
- 3. PART 3 – EXECUTION – NOT USED**

END OF SECTION

1. PART 1 – GENERAL

1.1 Description

- .1 This section describes environmental procedures that are required for the Contract. The Contractor must be responsible for adhering to these special procedures while completing all work under this Contract.
- .2 The Contractor must review and understand the Environmental Management Plan (EMP) prior to submission of Tender. The EMP is included in Appendix B. Prior to the commencement of work, the Contractor's Environmental Specialist, who is required to be a Qualified Professional (QP), must prepare an Environmental Protection Plan (EPP) that demonstrates how the Contractor will satisfy the requirements set out in the EMP.
- .3 Environmental degradation arising from construction activities must be prevented, abated, controlled, and minimized by complying with all applicable federal, provincial, and local Laws and Regulations concerning environmental pollution control and abatement, as well as any specific requirements in the project permits, and the EMP. The Contractor must comply with all permit conditions. Although provincial laws and municipal by-laws generally do not apply on federal lands, the Contractor will respect provincial laws and municipal by-laws and rules at the Work Areas.
- .4 The Contractor is responsible for environmental protection during all construction activities at all locations it performs work. Work locations include, but are not limited to, the Work Areas, on-barge temporary construction facilities (i.e., trailer), during barge transport over water of fill materials to the Work Areas and mixing and testing of fill materials prior to placement. This section primarily addresses work conducted at the Work Areas, but the Contractor is responsible for complying with environmental protection regulations at all locations that are used.

1.2 Related Sections

- .1 Section 01 11 55 (General Instructions)
- .2 Section 01 33 00 (Submittal Procedures)

1.3 Measurement and Payment Procedures

- .1 No separate payment will be made for work associated with environmental procedures. Activities associated with environmental procedures are incidental to the work.

1.4 Definitions

- .1 Refer to Section 01 11 55 (General Instructions) for all definitions related to this Contract.

1.5 Submittals

- .1 Submittals must be in accordance with Section 01 33 00 (Submittal Procedures).
- .2 The Contractor must submit an EPP (as part of the Construction Work Plan) prepared by the Contractor's Environmental Specialist (who is required to be a QP) for review and acceptance by the Departmental Representative within 10 working days following Contract Award. The EPP must present the procedures by which the Contractor must establish and maintain quality control for environmental protection during all construction activities, and the means and methods by which the QP will monitor the Contractor's work to comply with the EMP, Contract documents, and required permit conditions. The EPP must present a comprehensive overview of known or potential environmental issues.
- .3 Address topics at a level of detail commensurate with environmental issues and required construction tasks.
- .4 At a minimum, the EPP must contain the following information (for additional information, refer to the EMP):
 - .1 Organization chart and names of persons responsible for EPP compliance and their credentials.
 - .2 Names and qualifications of persons responsible for manifesting waste to be removed from the Work Areas.
 - .3 Means and methods for monitoring and reporting water quality protection measures.
 - .4 In-Water Work:
 - .1 Describe methods, procedures, and Best Management Practices (BMPs) to comply with water quality requirements and control requirements per the EMP, these Specifications and all permit conditions, and contingency measures the Contractor will take to meet requirements if exceedances occur.
 - .2 Describe methods, procedures, and BMPs to control amendments to be used for in the fill materials and provide Safety Data Sheet documentation for the amendments.
 - .3 The Contractor must provide detail on the methods that it will use to monitor haul barges for loss of material during transport of fill materials to the Work Areas.

- .5 As a section of the EPP, include at a minimum the following information pertaining to spills, dust, and pollution control (see Section 02 55 10 [Dust Control]):
 - .1 Procedures, response actions, and reports to be used in the event of an unforeseen spill of regulated substance.
 - .2 Procedures for in-water refueling of marine equipment within the Work Areas and within Esquimalt Harbour.
 - .3 The name of the individual who will be responsible for implementing and supervising the spill containment and cleanup, and the environmental response organizations that will be used if additional resources are required.
 - .4 Identification of potentially hazardous substances to be used at the Work Areas; identifies intended actions to prevent introduction of such materials into air, water, or ground; and details provisions for compliance with federal, provincial, state, and municipal Laws and Regulations for storage and handling of these materials. Although provincial laws and municipal by-laws generally do not apply on federal lands, the Contractor will respect provincial laws and municipal by-laws and rules at the Work Areas.

1.6 Environmental Responsibility

- .1 The Contractor must demonstrate in the performance of the work that it is environmentally responsible by complying with environmental legislation, regulations, and authorizations; following all of the Departmental Representative's instructions and policies, practices, and procedures established by the Departmental Representative with respect to the environment that are communicated by the Departmental Representative to the Contractor from time to time; being observant for, and immediately notifying the Departmental Representative of, any environmental problems that develop at the Work Areas or any upland facility; and taking all reasonable and necessary measures in the performance of the work to avoid causing negative impacts to the environment. Where negative impacts occur, the Contractor must immediately advise the Departmental Representative and must be solely liable to undertake all reasonable and necessary measures to minimize the effect of such negative impacts.
- .2 Maintain key pollution control systems in working condition throughout the project and undertake all works such that there are no unauthorized discharges of liquids or solids to the marine environment, or of gas to the atmosphere.
- .3 Maintain a neat work area free of unnecessary debris, tools, equipment, or materials; dispose of sewage, refuse, and chemical wastes in compliance with Laws and Regulations; and remove all tools, equipment, supplies, and wastes from the Work Areas upon completion of the work.

- .4 Maintain all equipment and machinery in good working order and free of leaks or excess oil, grease, and debris. Ensure that appropriately equipped spill kits are available on all equipment at the Work Areas and that workers and supervisory staff are knowledgeable with the provisions of the EPP and EMP and are adequately trained to implement the measures contained therein.

1.7 Fires

- .1 Fires and burning of rubbish on site are not permitted.

1.8 Asbestos-Containing Materials Prohibition

- .1 Any material containing any degree of asbestos is banned from use in any and all sites, designs, and projects.

1.9 Fuel Management

- .1 Contractor must follow all relevant provincial and federal Regulations. Abide by the *Storage Tank Systems for Petroleum Products and Allied Petroleum Products Regulations* for stored petroleum products and allied petroleum products tank system located on federal or Aboriginal land, or within federal jurisdiction as described in the Regulations.
- .2 Temporary storage tanks subject to the Regulations must be registered with Environment Canada.
- .3 Mobile tanks (i.e., containers less than 450 litres), subject to the *Small Container for Transport of Dangerous Goods Regulations*, must be certified to be mobile.
- .4 Storage tanks must have corrosion protection, secondary containment, containment sumps (if applicable), and overfill protection.
- .5 All components of tank system must bear certification marks indicating that they conform to the standards set out in the Regulations.
- .6 Product transfer area must be designed to contain spills.
- .7 Prior to first filling, storage tanks must be registered, certified, and marked.

1.10 Disposal of Non-Sediment Wastes

- .1 Do not bury rubbish and waste materials within the Work Areas.
- .2 Do not dispose of waste or volatile materials, such as mineral spirits, oil, or paint thinner into waterways, storm sewers, or sanitary sewers.
- .3 Do not discharge wastes into streams or waterways.
- .4 The Contractor is responsible for storing, separating, handling, transporting, and disposing of all waste materials in accordance with federal, provincial, state,

municipal, and local regulations and requirements, and at an appropriate Disposal Facility or transfer station.

- .5 Disposal/recycling of other waste generated during the project must be done in compliance with British Columbia waste regulations and the facilities used will need to be reviewed and accepted by the Departmental Representative.

1.11 Vehicular Access and Parking

- .1 No upland area is available for contractor use during execution of the work, including Project Site access or parking.

1.12 Surface Water Quality

- .1 Materials and equipment must be regularly inspected, maintained, operated, and stored in a manner that prevents deleterious substances (e.g., petroleum products, silt, etc., as defined in the Fisheries Act [R.S.C., 1985, c. F-14]) from entering the harbour.

1.13 Spills or Release of Deleterious Substances

- .1 The Contractor must immediately contain and assess the spill, provide appropriate notifications, and take the necessary steps to prevent further discharge. The Contractor is responsible for immediate cleanup of the spill and restoration of the area to the satisfaction of the Departmental Representative and other regulatory agencies, where involved.
- .2 All workers must be fully aware of the spill prevention and response procedures including notification of the Departmental Representative.
- .3 Report all spills in accordance with the British Columbia Spill Reporting Regulation, the EMP, and the Canadian Coast Guard Spill Reporting Requirements at <http://www.ccg-gcc.gc.ca/e0003876>.
- .4 The Departmental Representative must be immediately informed of all spills that occur at the Work Areas, during transportation of materials, or at any location where activities are performed under the Contract. In addition, the Contractor must follow spill regulations as provided in FSE Directive SE5 – Spill Response (see Appendix D).
- .5 Further information on dangerous goods emergency cleanup and precautions including a list of companies performing this work can be obtained from the Transport Canada 24-hour number (613) 996-6666 collect.
- .6 Spill kits will be kept within the Work Areas and any upland facility used for the Contract during performance of the work during all project phases.
- .7 The Contractor must take due care to ensure no deleterious materials leave the Work Areas.

- .8 During the purging of tanks and associated lines, procedures must prevent the release of any fuels to the surface, surface water, catch basins, or soils within or surrounding the Work Areas or any upland facility used for the Contract during performance of the work.

1.14 Noise and Lighting Control

- .1 The Contractor must comply with local ordinances regarding noise control while conducting activities at the Work Areas.
- .2 The Contractor is to meet the intent of Township of Esquimalt, Colwood, and View Royal noise by-laws at the Work Areas boundary or modify work activities. Noise restrictions apply within the hours of 7:00 p.m. to 7:00 a.m. between Monday and Saturday and at all times on Sundays and statutory holidays. The Contractor must undertake noisier work activities during daytime hours and modify activities based on noise monitoring and resident feedback.
- .3 All construction equipment must be operated with exhaust systems in good repair to minimize noise.
- .4 Ensure that noise control devices (i.e., mufflers and silencers) on construction equipment are properly maintained.
- .5 The Contractor must implement use of lighting shrouds for work to be completed during night-time hours to minimize lighting disruptions to local residents.

1.15 Notification

- .1 The Departmental Representative will notify the Contractor, in writing, of observed noncompliance with federal, provincial, state, or municipal environmental laws or regulations, permits, and other elements of the Contractor's EPP or the EMP. Notwithstanding this notification process, the Contractor must be responsible for conducting all construction activities in a manner compliant with these regulations. Although provincial laws and municipal by-laws generally do not apply on federal lands, the Contractor will respect provincial laws and municipal by-laws and rules at the Work Areas.
- .2 The Contractor must inform the Departmental Representative of proposed corrective action after receipt of such notice and take such action for acceptance by the Departmental Representative.
- .3 The Departmental Representative will issue a stop work order until satisfactory corrective action has been taken.
- .4 No time extensions must be granted or equitable adjustments allowed to the Contractor for such suspensions.

1.16 Species at Risk

- .1 Refer to the Environmental Effects Determination Report (Appendix B) for information on Species at Risk (SAR) that have a potential to occur within or adjacent to the Work Areas.
- .2 Marine mammal monitoring will be implemented by the PWGSC Environmental Monitor during construction activities, with a process in place to temporarily stop works if marine mammals are observed, as per the EMP (Appendix B).
- .3 Should a SAR be encountered, measures are to be implemented to avoid destruction, injury, or interference with the species, its residence, and/or its habitat (e.g., through siting, timing, or design changes). If the foregoing cannot be avoided, the Contractor must cease work and contact the Departmental Representative for advice regarding mitigation measures.
- .4 In order to provide protection of fisheries resources during critical time periods in Esquimalt Harbour (April 1 to May 31), all in-water work with the potential to impact herring egg masses and/or emergent larvae will be stopped for 10 to 14 working days if herring spawn are observed within the project area. In-water work activities must not recommence until egg hatching is complete as confirmed by Departmental Representative.
- .5 The Contractor must stop work if herring spawn is observed on equipment and will not recommence until the eggs have hatched and detached from the equipment.
- .6 In the event that it is determined by the Departmental Representative, the PWGSC Environmental Monitor, or the Contractor's Environmental Specialist, that the project likely may have unexpected adverse effects on a SAR, the Contractor will cease work and contact the Departmental Representative for advice regarding mitigation measures.
- .7 Ensure that all works are in compliance with the Wildlife Act and that mitigation measures are implemented to avoid disrupting SAR.

1.17 Migratory Birds/Wildlife Habitat

- .1 Ensure that all works are in compliance with the Migratory Birds Convention Act and that mitigation measures are implemented to avoid depositing substances that may harm migratory birds.
- .2 Ensure that all works are in compliance with the Wildlife Act and that mitigation measures are implemented to avoid disrupting wildlife.
 - .1 If the Contractor, in the course of its work, identifies nesting birds within the Work Areas, the Departmental Representative must be notified immediately.

- .2 If the Contractor needs to move a nest in the course of the work,
applicable permits may be required.
- .3 Restrict vehicle movements to construction areas and access roads and avoid
harassment of animals.

2. PART 2 – PRODUCTS – NOT USED

3. PART 3 – EXECUTION – NOT USED

END OF SECTION

1. PART 1 – GENERAL

1.1 Description

- .1 This section presents Contractor requirements for quality control, including coordination with material suppliers, testing agencies, and other entities that may be employed by the Departmental Representative during completion of the work. The intent of this section is to require the Contractor to establish a necessary level of control that will:
 - .1 Provide sufficient information to assure both the Contractor and the Departmental Representative that the Specification requirements are being and have been met.
- .2 The Contractor must establish, provide, and maintain a Quality Control (QC) Plan as specified herein, detailing the methods and procedures that will be taken to ensure that all materials and completed construction elements conform to the Drawings, Specifications, and other requirements. Although guidelines are established and certain minimum requirements are specified herein and elsewhere in the Specifications, it is the responsibility of the Contractor to ensure that construction and construction quality control are accomplished in accordance with the stated purpose and Specifications as described herein.
- .3 The Contractor must be prepared to discuss and present, at the Pre-Construction Meeting, its understanding of the quality control requirements. The Contractor may not begin any construction until the QC Plan has been reviewed and accepted by the Departmental Representative.

1.2 Measurement and Payment

- .1 No separate payment will be made for quality control. The Contractor must refer to the Unit Price Table for details regarding measurement and payment for the Contract work.

1.3 Related Sections

- .1 Section 01 11 55 (General Instructions)
- .2 Section 01 33 00 (Submittal Procedures)
- .3 Section 02 21 13 (Surveying and Positioning Control)

1.4 Definitions

- .1 Refer to Section 01 11 55 (General Instructions) for all definitions related to this Contract.

1.5 Submittals

- .1 Submittals must be in accordance with Section 01 33 00 (Submittal Procedures).
- .2 Within 10 working days following date of Contract Award, submit the QC Plan for review and acceptance by the Departmental Representative. The Contractor QC Plan must include:
 - .1 Description of procedures for communicating progress testing and other data with the Departmental Representative.
 - .2 Procedures for survey and positioning control. See Section 02 21 13 (Surveying and Positioning Control) for additional details regarding required information.
 - .3 Personnel, procedures, methods, instructions, records, and forms to be used to control the work and verify that the work conforms to the Contract documents.
 - .4 Description of the quality control organization, including an organization chart showing the various quality control team members, along with their designated responsibilities and lines of authority. At a minimum, identify the Project Manager, Site Supervisor(s), Quality Control Supervisor, Surveyor or Engineer, and Health and Safety Coordinator.
 - .5 Acknowledgement that the quality control staff will conduct inspections for all aspects of the work specified, and must report to the Quality Control Supervisor, or someone of higher authority in the Contractor's organization.
 - .6 The name, qualifications, duties, responsibilities, and authorities of each person assigned a primary quality control function.
 - .7 Testing methods, schedules, and procedures used to report quality control information to the Departmental Representative, including samples of the various reporting forms.
- .3 Submit an electronic copy of all Inspection and Laboratory Test Reports to the Departmental Representative within 2 working days following completion of inspection or receipt of analytical data from a testing laboratory.
- .4 Provide copies to subcontractor of work being inspected or tested.

1.6 References – Not Used

1.7 Quality Control Organization

- .1 Quality Control Supervisor: As part of the QC Plan, the Contractor must identify an individual within its organization, located at the Work Areas, who is responsible for overall management of quality control as part of the Contract, and who has the authority to act in all quality control matters for the Contractor.

- .2 Personnel: A staff must be maintained under the direction of the Quality Control Supervisor to perform all quality control activities. The actual number of staff during any specific work period may vary to cover shift needs and rates of performance. The personnel of this staff must be fully qualified by experience and technical training to perform their assigned responsibilities and must be directly hired for the work by the Contractor.

1.8 Quality Assurance Inspection

- .1 The Contractor must allow the Departmental Representative and designees access to the work (including access to Contractor's construction equipment) at all times.
 - .1 If part of the work is in preparation at locations other than the Work Areas, the Contractor must allow access to such work whenever and wherever it is in progress.
- .2 Dive inspection surveys:
 - .1 The Contractor must allow access to the Departmental Representative's designees (e.g., divers, inspectors) for dive inspection surveys of the Practice Area and Test Areas.
 - .2 Dive inspection surveys take precedence over any Contractor's work or activities.
 - .3 The Dive Exclusion Area includes the Test Area where the Contractor has finished fill material placement activities and extends 100 metres from the boundaries of that specific Test Area. The Contractor must not work, enter, transit, or navigate floating vessels or other equipment within the Dive Exclusion Area when dive inspection surveys are being performed by the Departmental Representative's designee within that Test Area.
- .3 The Contractor must give timely notice requesting inspection if work is designated for special tests, inspections, or reviews by the Departmental Representative's instructions.
- .4 If the Contractor covers, or allows to be covered, work that has been designated for special tests, inspections, or reviews before such is made, uncover such work, have inspections or tests satisfactorily completed, and make good such work.

1.9 Independent Inspection Agencies

- .1 Independent inspection/testing agencies will be engaged by the Departmental Representative for the purpose of inspecting or testing portions of the work, as applicable. Cost of such services will be borne by the Departmental Representative.
- .2 Employment of inspection/testing agencies does not relax responsibility to perform work in accordance with Contract documents.

- .3 If defects are revealed during inspection or testing, additional inspection or testing will be required to ascertain the full degree of defect. The Contractor must correct defects and irregularities as advised by the Departmental Representative at no extra cost to Canada. The Contractor must pay costs for re-testing and re-inspection as necessary.

1.10 Access to Work

- .1 The Contractor must allow inspection/testing agencies access to Work Areas as applicable.
- .2 The Contractor must allow the Departmental Representative and its designees (PWGSC Environmental Monitor, inspectors, QA surveyors [e.g., dive inspection] and other representatives) to have access to the work (including access to Contractor's construction equipment) at all times.
- .3 The Contractor must cooperate to provide reasonable facilities for such access.

1.11 Procedures

- .1 Notify the appropriate entity and the Departmental Representative in advance of requirements for tests so attendance arrangements can be made.
- .2 Submit samples of Materials Types 1 and 2, and Cover Type 3 required for testing, as requested in Section 35 37 10 (Material Placement). Submit with reasonable promptness and in orderly sequence to not cause delays in work.
- .3 Provide labor and facilities to obtain and handle samples of Materials Types 1 and 2 at the Work Areas. Provide sufficient space to store samples as necessary.
- .4 Complete required Material Type 1 testing as described in Section 35 37 10 (Material Placement) for which the work applies. Results of laboratory testing must be reviewed by the Departmental Representative to determine compliance with the requirements of the work.

1.12 Rejected Work

- .1 Remove defective work, whether result of poor workmanship, use of defective products, or damage, and whether incorporated in work or not, which has been rejected by the Departmental Representative as failing to conform to the Contract documents. Replace or re-execute in accordance with the Contract documents at no cost to Canada.
- .2 Make good other Contractor's work damaged by such removals or replacements promptly.
- .3 If, in the opinion of the Departmental Representative, it is not expedient to correct defective work or work not performed in accordance with the Contract documents, the Departmental Representative will deduct from the Tender Item

price the difference in value between work performed and that called for by Contract documents, the amount of which will be determined by the Departmental Representative.

- 2. PART 2 – PRODUCTS – NOT USED**
- 3. PART 3 – EXECUTION – NOT USED**

END OF SECTION

1. PART 1 – GENERAL

1.1 Description

- .1 This section covers mobilization and demobilization for the work.
- .2 Mobilization must include: all pre-construction submittals; site preparation and maintenance; the set-up of site survey control monuments; development and implementation of all environmental protection measures; and cost of maintaining bonds and insurance as required.
- .3 Mobilization must include: all work required to prepare and mobilize fill material placement equipment, and all other required equipment, labor, supplies, and incidentals for transit, equipment, labor, supplies, and incidentals to the Work Areas.
- .4 Demobilization must include: project closeout; all things necessary to remove all construction equipment and excess materials from the Work Areas, and the cleanup of the Work Areas to a condition satisfactory to the Departmental Representative at completion of the work.
- .5 Items which are not to be included in mobilization/demobilization are:
 - .1 Any portion of the work covered by a specific Tender Item or other incidental work which is to be included in a Tender Item.

1.2 Related Section

- .1 Section 01 11 55 (General Instructions)

1.3 Measurement and Payment Procedures

- .1 Mobilization and Demobilization will not be measured for payment.
- .2 Mobilization will be paid for at the lump sum price tendered for MOBILIZATION. Payment must include all costs applicable to mobilization as described in this section. The lump sum price tendered for MOBILIZATION will be paid on completion of all applicable items to the satisfaction of the Departmental Representative.
- .3 Supply and set up of plant and equipment not specifically noted in this section must be deemed to be incidental to the work and will not be covered by the lump sum price tendered for MOBILIZATION.
- .4 Demobilization will be paid for at the lump sum price tendered for DEMOBILIZATION. Payment must include all costs applicable to demobilization as described in this section. The lump sum price tendered for DEMOBILIZATION will be paid upon completion of all applicable items to the satisfaction of the Departmental Representative at completion of the work.

1.4 Definitions

- .1 Refer to Section 1 11 55 (General Instructions) for all definitions related to this Contract.

1.5 Submittals – Not Used

1.6 References – Not Used

2. PART 2 – PRODUCTS – NOT USED

3. PART 3 – EXECUTION – NOT USED

END OF SECTION

1. PART 1 – GENERAL

1.1 Description

- .1 This section provides project closeout requirements for post-construction submittals that the Contractor must be required to submit to the Departmental Representative following completion of the work.
- .2 This section also presents process and requirements for inspection and declaration that the work has been completed as required by the Contract documents. Upon formal review and acceptance of the work by the Departmental Representative, the work will be determined to be complete and the Contractor must then demobilize from the Work Areas.

1.2 Measurement and Payment Procedures

- .1 The preparation and submittal of closeout submittals is incidental to the work and will not be measured separately.
- .2 No separate payment will be made for closeout submittals.

1.3 Related Sections

- .1 Section 01 11 55 (General Instructions)
- .2 Section 02 21 13 (Surveying and Positioning Control)

1.4 Definitions

- .1 Refer to Section 01 11 55 (General Instructions) for all definitions related to this Contract.

1.5 References – Not Used

1.6 Inspection and Declaration

- .1 Contractor Inspection: The Contractor and subcontractors must conduct inspection of the work, identify deficiencies and defects, and repair as required to conform to requirements of the Contract documents.
 - .1 Notify the Departmental Representative, in writing, of satisfactory completion of Contractor inspection and that corrections have been made.
 - .2 Request Departmental Representative inspection.
- .2 Departmental Representative Inspection: The Departmental Representative and Contractor will perform inspection of the work to identify defects or deficiencies.

- The Contractor must compile a deficiency list describing all noted defects and deficiencies, for review and acceptance by the Departmental Representative.
- .3 The Contractor must correct deficient work, as advised by the Departmental Representative, at no extra cost to Canada.
 - .4 Completion Tasks: Submit written certificates in English that tasks have been performed as follows:
 - .1 Work: Completed and inspected for compliance with Contract documents.
 - .2 Defects: Corrected and deficiencies completed.
 - .3 Certificates required by local authorities having jurisdiction and utilities: Submitted.
 - .4 Work: Complete and ready for Final Inspection.
 - .5 Final Inspection: When Completion Task items are completed, request Final Inspection of the work by the Departmental Representative, and the Contractor. If work is deemed incomplete by the Departmental Representative, complete outstanding items and request re-inspection.

1.7 Submittals

- .1 No later than 10 working days after Final Completion of the work of the Project, submit to the Departmental Representative Record Documents in electronic format and other required post-construction documents in English.
 - .1 The Record Documents must be submitted according to requirements in these Specifications and will include an electronic version of Contract Drawings and Specifications, with changes recorded in red. Each document must be marked and stamped “As-Built” by the Contractor.
 - .2 Other project closeout submissions must be submitted in accordance with the requirements of each section.
- .2 No later than 10 working days after Final Completion of the work of the Project, submit to the Departmental Representative one copy of the Certificate of Completion.

1.8 Format for Record Documents

- .1 Provide record information electronically in AutoCAD 2013 DWG file format and that meets the DND CAD standard.
- .2 Provide other project closeout submissions in format acceptable to Departmental Representative.

1.9 Recording Information on Project Record Documents

- .1 Record information on a set of blue-line/black-line drawings.

- .2 Maintain separate colours for each major item when recording information.
- .3 Record information concurrently with construction progress.
 - .1 Do not conceal work until required information is recorded. Meet with the Departmental Representative, if requested, to review the status of as-built drawings.
- .4 Contract Drawings: Mark each item to record actual construction, including:
 - .1 Measured horizontal and vertical locations of each Test Area.
 - .2 Measured elevations of the surface of placed fill materials in relation to Chart Datum.
 - .3 Measured locations of structures, internal utilities, and appurtenances, referenced to visible and accessible features of construction.
 - .4 Measured bathymetry, including metadata.
 - .5 Field changes of dimension and detail.
 - .6 Changes made by change orders.
 - .7 Details not on original Contract Drawings.
- .5 Contract Specifications: Mark each item to record actual construction, including:
 - .1 Manufacturer, trade name, and catalogue number of each product/material actually installed, particularly optional items and substitute items.
 - .2 Changes made by addenda and change orders.
- .6 Other documents: Maintain manufacturer's certifications, inspection certifications, and field test records, required by individual sections.
- .7 Provide digital photos for site records.
- .8 Any additional information provided as part of Daily Construction Report, in a digital format.
- .9 Submit the Record Documents (the complete record of "as-built" information) for review and acceptance by the Departmental Representative. If corrections are required, make such corrections to the Departmental Representative's satisfaction, and re-submit for review and acceptance by the Departmental Representative.

1.10 Certificate of Completion

- .1 Submit a written certificate that the following have been performed:
 - .1 Work has been completed and inspected for compliance with the Contract documents.
 - .2 Equipment and systems have been tested, adjusted, and balanced, and are fully operational.

- .3 Operation of systems has been demonstrated to the DND personnel indicated by the Departmental Representative.
- .4 Defects have been corrected and deficiencies have been completed.
- .5 Work is complete and ready for Final Inspection and handover.

2. PART 2 – PRODUCTS – NOT USED

3. PART 3 – EXECUTION – NOT USED

END OF SECTION

1. PART 1 – GENERAL

1.1 Description

- .1 The Contractor is responsible for establishing survey control for the Contract work.
- .2 The Drawings represent conditions existing on the date of the surveys shown on the Drawings and are for information purposes only. The Drawings serve as the basis for the estimated quantities of materials as described in the Tender documents.
- .3 The Contractor may complete Progress Surveys using in-house survey resources.
- .4 Methods and procedures for bathymetric surveys and topographic surveys must be in accordance with or exceed the accuracy requirements of “Navigation and Dredging Support Surveys” per the Hydrographic Surveying Engineering and Design Manual (EM 1110-2-1003) as prepared by the U.S. Army Corps of Engineers (USACE), dated November 30, 2013, and Engineering Design – Control and Topographic Surveying manual (EM 1110-1-1005), dated January 2007, as prepared by USACE, respectively. Should there be discrepancies between the Hydrographic Surveying Engineering and Design Manual or the USACE Engineering and Design – Control and Topographic Surveying manual and these Specifications, the stricter survey requirements must take precedence unless the Contractor obtains clarification from the Departmental Representative otherwise.
- .5 A copy of the Hydrographic Surveying Engineering and Design Manual (EM 1110-2-1003) can be viewed and downloaded from:
http://www.publications.usace.army.mil/Portals/76/Publications/EngineerManuals/EM_1110-2-1003.pdf
- .6 A copy of the Engineering and Design – Control and Topographic Surveying manual (EM 1110-1-1005) can be viewed and downloaded from:
http://www.publications.usace.army.mil/Portals/76/Publications/EngineerManuals/EM_1110-1-1005.pdf
- .7 The Contractor’s third-party Licensed Hydrographic Surveyor must perform the Pre-Construction Survey prior to conducting any fill material placement work.
- .8 The Contractor’s third-party Licensed Hydrographic Surveyor must perform the Post-Construction (final) Survey to verify spatial extent and thickness of placed fill materials within the Practice Area and each Test Area. Final acceptance of the work per Section 35 37 10 (Material Placement) by the Departmental Representative will be based on Post-Construction Survey results conducted by the Contractor’s third-party Licensed Hydrographic Surveyor, barge displacement information, fill material supplier tickets, sediment probes or cores, and other information. Final payment for the work will be done as a lump sum per the

Tender Items for PRACTICE PLACEMENT and TEST AREA 1, TEST AREA 2, TEST AREA 3, TEST AREA 4, OPTIONAL - TEST AREA 5, TEST AREA 7, and TEST AREA 9.

- .9 The Departmental Representative may review the Contractor's third-party survey work or conduct additional surveys (including dive inspection surveys) or monitoring activities throughout the construction work as a quality assurance check of the Contractor's Pre-Construction, Progress, and Post-Construction Survey work. The Contractor must accommodate the Departmental Representative's surveyor if there are discrepancies between the Contractor's and Departmental Representative's Progress and/or Post-Construction Surveys, the Contractor's third-party Licensed Hydrographic Surveyor must coordinate with the Departmental Representative's surveyor to determine which survey is inaccurate. If the Departmental Representative determines that the Contractor's survey means and methods are inaccurate, the Contractor or Contractor's third-party Licensed Hydrographic Surveyor must adjust and correct its surveying means and methods at no extra cost to Canada.
- .10 The Contractor must establish its survey and positioning control to provide an accurate method of horizontal and vertical control before any in-water work starts.
- .11 The Contractor must provide daily progress surveying and positioning control, as described further in this section, to provide quality control of the work and to calculate or verify volumes, areas, limits, placed material thicknesses, positions, and other aspects of the work.
- .12 Progress Survey data collected by the Contractor or Contractor's third-party Licensed Hydrographic Surveyor must be used for work progress tracking in the Practice Area and for each Test Area and for monthly progress payment for work completed.
- .13 The Contractor must calculate completed in situ quantities for fill material placement, based on Progress Survey data, for progress reporting and payment purposes.
- .14 The Contractor's third-party Licensed Hydrographic Surveyor must develop Record Documents, showing the final accurate "as-built" conditions of the in the Practice Area and Test Areas based on the fill material placement Post-Construction Survey and other information described in these specifications.
- .15 This work includes furnishing all labor, materials, tools, equipment, and incidentals required for surveying in support of the overall project as described in the Contract documents and in these Specifications.

1.2 Measurement and Payment Procedures

- .1 Surveying will be paid as a lump sum amount based on the Contractor's estimate of effort required to meet the needs of the work, tendered as SURVEYS. The lump sum price must include all costs in connection with collection, processing,

and reporting of all survey data (Pre-Construction, Progress, and Post-Construction) that must be used to calculate or verify progress and measurement and payment volumes, areas, limits, placed material thicknesses, positions, and other aspects of the work, and calculating quantities for progress reporting and measurement and payment purposes, as described in these Specifications.

1.3 Related Sections

- .1 Section 01 11 55 (General Instruction)
- .2 Section 01 33 00 (Submittal Procedures)
- .3 Section 01 45 00 (Quality Control)
- .4 Section 01 78 30 (Closeout Submittals)
- .5 Section 35 37 10 (Material Placement)

1.4 Definitions

- .1 Refer to Section 01 11 55 (General Instructions) for all definitions associated with these Contract documents.

1.5 Submittals

- .1 Submittals must be in accordance with Section 01 33 00 (Submittal Procedures).
- .2 As part of the Quality Control Plan, the Contractor must submit the name of the Licensed Hydrographic Surveyor, member of the ABCLS, member of the ASTTBC with certification/designation as an RSIS, or Professional Engineer employed by the Contractor who will be responsible for preparation and submittal of the Survey and Positioning Control Plan and Record Documents of the constructed works.
- .3 Record Documents, showing the final accurate “as-built” condition of the constructed works, prepared, sealed, and signed by the Licensed Hydrographic Surveyor, member of the ABCLS, or Professional Engineer employed by the Contractor, must be submitted to Departmental Representative as required by Section 01 78 30 (Closeout Submittals).
- .4 As part of the Quality Control Plan, in accordance with Section 01 33 00 (Submittal Procedures) and Section 01 45 00 (Quality Control), the Contractor must prepare a Survey and Positioning Control Plan that describes the means and methods that will be implemented for all surveying activities required for the work. In-water and shoreline construction activities must not begin until the Quality Control Plan has been reviewed and accepted by the Departmental Representative. At a minimum, the Survey and Positioning Control Plan must contain the following information:

- .1 Description of survey and horizontal and vertical position control procedures.
- .2 Description of survey equipment proposed for use in collection of all survey data for the work.
- .3 Process for completion of all Pre-Construction, Progress, and Post-Construction Surveys as required by and described within these Specifications.
- .4 Process for inclusion of daily Progress Survey data, including all electronic information and data from survey instruments, as part of Daily Construction Report submittal requirements as described in these Specifications.
- .5 Procedures for providing monthly summary Progress Survey data and volume calculations to the Departmental Representative for progress payments during work. Procedures and quantity calculation methods for calculating progress placed material thicknesses and final measurement of placed material thicknesses for final payment purposes.
- .5 Pre-Construction, Progress, and Post-Construction Surveys:
 - .1 Surveys must be completed using the Horizontal Universal Transverse Mercator (UTM) Zone 10N, North American Datum 1983 (NAD83 Datum) and Vertical Datum (Chart Datum [CD]) provided in Section 01 11 55 (General Instructions) and on the Drawings.
 - .2 The Contractor's third-party Licensed Hydrographic Surveyor must stamp all the Departmental Representative-accepted Pre-Construction and Post-Construction Surveys. The Contractor's third-party Licensed Hydrographic Surveyor does not need to stamp the Progress Surveys.
 - .3 Submit all surveys to the Departmental Representative in hard copy drawing format and electronic drawing format as described below.
 - .4 Submit Pre-Construction Survey to the Departmental Representative at least 2 weeks prior to start of in-water construction activities.
 - .5 Submit daily Progress Surveys and calculated fill material placement quantities to the Departmental Representative as part of the Contractor's Daily Construction Report.
 - .6 Submit Post-Construction Surveys and calculated quantities to the Departmental Representative within one (1) working day after completing the Post-Construction Survey, and as part of the Contractor's Daily Construction Report.
- .6 PDF Drawing Requirements:

- .1 Provide plan view contour drawing for Pre- Construction and Post- Construction Surveys (i.e. after fill material placement), using 0.2-metre (m) contour intervals (using even number intervals).
- .2 Provide plan view spot elevation drawing for daily Progress Surveys.
- .3 Provide isopach drawings for fill material placement surveys (Pre-Construction Survey vs. Post-Construction Survey).
- .4 Indicate on the Drawing, at a minimum, the date of survey, datums, extent of survey coverage, elevation markings (for spot elevations and contour lines), locations of cross sections, scale bar, any limits of required offsets, and licensed surveyor or Professional Engineer stamp (for Pre- Construction and Post-Construction Surveys).
- .7 Electronic Drawing Requirements:
 - .1 Submit all survey data in AutoCAD Civil3D 2013 format or older format if acceptable to the Departmental Representative and PDF format.
 - .2 Submit all survey data in a separate ASCII text file with XYZ spot elevation data.
 - .3 The Departmental Representative will provide the Contractor with the Work Areas basemap file in DWG format for Contractor use.
- .8 Practice Placement and Test Area Placement Thickness and Quantity Calculations
 - .1 The Contractor must submit information (e.g., isopach maps) and calculations to the Departmental Representative to demonstrate that Practice Placement of Cover Type 1 in the Practice Area has met its Targeted Placement Thickness. The Contractor must calculate the placement thickness of fill material and submit calculations to the Departmental Representative for review and acceptance for each Practice Placement activity. The Contractor must also submit supporting information to help the Departmental Representative verify that the Contractor's calculated quantities are accurate.
 - .2 The Contractor must submit information (e.g., isopach maps) and calculations to the Departmental Representative to demonstrate that a Test Area has met its required placement area and thickness. The Contractor must calculate the placement thickness and placed quantity of fill material (placed volume and fill material thickness) and submit calculations to the Departmental Representative for review and acceptance for each Test Area. The Contractor must also submit supporting information to help the Departmental Representative verify that the Contractor's calculated quantities are accurate. Supporting information may include, but is not limited to, material supplier tickets, barge tonnage estimates (based on barge displacement measurements), and other field inspection information that the Contractor may elect to use for quality control purposes.

- .3 Quantities must be computed to the nearest in situ cubic metre for volume and nearest tenth of a metre for placed fill material thickness based on comparison to the Contractor's third-party Pre-Construction Survey or relevant Progress Surveys.
 - .1 For Practice Placement: Targeted Placement Thickness must be broken down into areas that are within the Vertical Placement Tolerance and areas that are below or above the Vertical Placement Tolerance.
 - .2 For each Test Area: Quantities must be broken down by each Test Area identified in the Unit Price Table. Each quantity must also be broken down into quantities within the Vertical Placement Tolerance and Excessive Overplacement quantities.
- .4 Quantities must be computed using Triangulated Irregular Network (TIN) or similar three-dimensional calculation methods using generated surfaces from the survey data. The Contractor must describe its quantity calculation method(s) in the Survey and Positioning Control Plan. Double end area method will not be an acceptable quantity calculation method.
- .5 Quantities calculations must be submitted on a daily basis as part of the Daily Construction Report, and as part of progress payment requests for completion of the work.

2. PART 2 – PRODUCTS – NOT USED

3. PART 3 – EXECUTION

3.1 Survey Equipment

- .1 The Contractor's survey team and the Contractor's third-party Licensed Hydrographic Surveyor must use multi-beam bathymetric survey equipment, or alternative, for all Progress, Pre-Construction, and Post-Construction Surveys. The alternative survey equipment must be submitted to, and accepted by, the Departmental Representative prior to the start of work.
- .2 The Contractor must employ an accepted method to locate and control horizontal position by Real-Time Kinematic Global Positioning System (RTK-GPS) or Post-Processed Kinematic Global Positioning System (PPK GPS). The Contractor must utilize the BC Active Control System (BCACS) Municipal Data – Capital Regional District RTK base station correction stream; in particular, utilize the base station data from station BCES for all RTK surveys. Post-processed survey positioning data must utilize the BCACS BCES for corrections. If the Contractor proposes to use an alternative positioning method, that method must be submitted to the Departmental Representative and accepted prior to the start of the work.
- .3 Seabed elevations, converted to the project Vertical Datum, must be determined using spot elevation measurements and survey control points.

- .4 The horizontal accuracy for measured elevations must be ± 0.25 m; the vertical accuracy must be ± 0.1 m.

3.2 Conduct of Work

- .1 Layout of Work
 - .1 The Contractor must establish an accurate method of horizontal and vertical control before the work begins. Survey control points shown on the Drawings are provided for reference purposes only to assist the Contractor in establishing horizontal and vertical control.
 - .2 The proposed method and maintenance of the horizontal control system must be subject to the acceptance of the Departmental Representative and if, at any time, the method fails to provide accurate location of the work, the Contractor may be required to suspend its operations until such time that accurate control is established.
 - .3 The Contractor must lay out its work using control points established by the Contractor as part of the work and must be responsible for all measurements taken to establish these points.
 - .4 The Contractor must furnish, at its own expense, all stakes, templates, platforms, equipment, range markers, transponder stations, and labor as may be required to lay out the work shown on the Drawings.
 - .5 It must be the responsibility of the Contractor to maintain all points established for the work until authorized to remove them. If such points are destroyed by the Contractor or disturbed through its negligence prior to an authorized removal, they must be replaced by the Contractor at no additional expense to the Departmental Representative.
- .2 Positioning Methods
 - .1 Observation data will be recorded electronically.
 - .2 Observed ranges must be corrected for scale, calibration, and automatic variations when present.
 - .3 Accuracy of horizontal position must be within ± 0.25 m.
 - .4 Accuracy for vertical positioning must be ± 0.1 m.
 - .5 The Contractor must provide verification of positioning accuracy throughout completion of in-water construction activities, and submit documentation once a week, as part of the Daily Construction Report.

3.3 Pre-Construction, Progress, and Post-Construction Surveys

- .1 The Practice Area and each Test Area within the Work Areas will require a Pre- and Post-Construction Survey for acceptance of work and payment purposes. Pre-

and Post-Construction Surveys are required for all fill material placement activities.

.2 Pre-Construction Survey

- .1** The Contractor's third-party Licensed Hydrographic Surveyor must conduct a pre-construction multi-beam bathymetric survey and supplemental surveys as necessary to fully identify pre-construction elevations and grades in the Practice Area and for each Test Area. This Pre-Construction Survey must be completed and submitted to the Departmental Representative at least 2 weeks prior to the start of fill material placement activities, and will be used as the basis for acceptance of work and payment purposes.
- .2** The Pre-Construction Survey must cover all areas of work (Practice Area and Test Areas) as shown on the Drawings, and extend at least 10 m of surrounding harbour bottom around each Test Area.
- .3** Contractor must not begin fill material placement work at any area prior to Departmental Representative and Contractor mutual acceptance of Pre-Construction Survey.

.3 Fill Material Placement Progress Surveys

- .1** The Contractor or Contractor's third-party Licensed Hydrographic Surveyor must complete fill material Placement Progress Surveys on a daily basis to document daily progress for completion of material placement activities. Results of fill material Placement Progress Surveys should accurately depict the daily progress of the material placement work, including but not limited to volume and thickness of fill material, and must be submitted as part of the Contractor Daily Construction Reports.

.4 Fill Material Placement Post-Construction Surveys

- .1** Following completion of fill material placement in the Practice Area and each Test Area, the Contractor's third-party Licensed Hydrographic Surveyor must conduct a Post-Construction Survey of the fill material placement and must submit it within one (1) working day to the Departmental Representative. The Departmental Representative will review the Post-Construction Survey data, along with the dive inspection survey (conducted by the Departmental Representative's designee) and, if satisfactorily completed, will provide acceptance of work for final payment purposes.

END OF SECTION

1. PART 1 – GENERAL

1.1 Description

- .1 This section specifies requirements for the supply and application of water for dust control for the duration of the work.
- .2 This section also specifies requirements for the supply, installation, relocation as necessary, and final removal of dust screens for dust control for the duration of the work.

1.2 Related Sections

- .1 Section 01 11 55 (General Instructions)

1.3 Measurement and Payment Procedures

- .1 Supply and application of water for dust control is considered incidental to the work and will not be measured separately.
- .2 Supply, installation, relocation as necessary, and final removal of dust screens for dust control is considered incidental to the work and will not be measured separately.
- .3 No measurement or payment will be made under this section.

1.4 References – Not Used

1.5 Definitions

- .1 Refer to Section 01 11 55 (General Instructions) for all definitions related to this Contract.

1.6 Submittals – Not Used

2. PART 2 – PRODUCTS

2.1 Materials

- .1 Water: to the Departmental Representative's acceptance.
- .2 Dust Screens: to the Departmental Representative's acceptance.

3. PART 3 – EXECUTION

3.1 Application

- .1 Ensure that dust arising from all Contractor operations, such as barge transportation, material stockpiling, and blending of Material Types 1 and 2 to develop Cover Type 3, is controlled by water application and use of dust screens.
- .2 Prevent dust-laden waters from entering any drainage system, water course, or marine environment in line with Department of National Defence Formation Safety and Environment directives (included in Appendix C of the Specifications), the Environmental Monitoring Plan, and the Environmental Protection Plan.
- .3 Ensure that dust blown from the work does not affect adjacent facilities.
- .4 Apply water as required for dust control, and when directed by the Departmental Representative. Dust control methods must be chosen such that a minimal amount of water is required.
- .5 Apply water with distributors equipped with spray system to ensure uniform application and with means of shut off.
- .6 Runoff from water used for dust control must not enter storm drains or run directly or indirectly into the marine environment.
- .7 Provide temporary dust-tight screens or partitions to localize dust-generating activities, and for protection of workers, finished areas of work, and the public.
- .8 Maintain, relocate as necessary, and remove dust screens at completion of those portions of the work that may generate airborne dust.
- .9 Secure and cover material in open trucks hauling material, and re-use the covers.
- .10 If the Contractor's dust and particulate control is not sufficient for controlling dusts and particulates into the atmosphere, stop work. Discuss, with the Departmental Representative, procedures to resolve the problem. Make necessary changes to operations prior to resuming excavation, handling, processing, or other work that may cause release of dusts or particulates.
- .11 Take extra precautions, when necessary, to ensure that dust control measures are adequate during hot and dry weather, if there are strong winds, or if sediment is stockpiled overnight.

END OF SECTION

1. PART 1 – GENERAL

1.1 Description

- .1 Fill materials will be placed in the Practice Area and Test Areas to the thicknesses and limits as shown on the Drawings and described in the Specifications. A total of three different Material Types will be used in this work to place three different Cover Types and construct Rock Mounds, all of which are defined as follows:

- .1 Material Types:

- .1 Material Type 1 is clean sand, as described in Clause 2.1 of this section.
- .2 Material Type 2 is granular siderite, as described in Clause 2.1 of this section.
- .3 Material Type 3 is rock material, as described in Clause 2.1 of this section.

- .2 Cover Types:

- .1 Cover Type 1 consists of Material Type 1 with a Targeted Placement Thickness of 30 cm, placed within limits and Vertical Placement Tolerance, as shown on the Drawings. Cover Type 1 will be placed in Test Areas 4 and 8 and in the Practice Area.
- .2 Cover Type 2 consists of Material Type 1 with a Targeted Placement Thickness of 60 cm, placed within limits and Vertical Placement Tolerance, as shown on the Drawings. Cover Type 2 will be placed in optional Test Area 5, as part of Optional Work and if directed by the Departmental Representative.
- .3 Cover Type 3 is an amended sand cover, consisting of a blend of Material Type 1 and Material Type 2, where Material Type 2 (i.e., siderite) is 5% of the blend by dry weight, with Targeted Placement Thickness of 30 cm, placed within limits and Vertical Placement Tolerance, as shown on the Drawings. Cover Type 3 will be placed in Test Areas 1, 2, 3, and 7 with the three different placement methods specified in Clause 3.2 of this section.

- .3 Rock Mounds:

- .1 Material Type 3 will be placed in the Practice Area on top of placed Cover Type 1 to create two cone-shaped Rock Mounds, as described in Clause 3.2.4 of this section.
- .2 Locations of Rock Mounds within the Practice Area will be determined by the Departmental Representative, following completion of Practice Placement work.

- .2 Prior to Cover Type placement in Test Areas, the Contractor must conduct Practice Placement of Cover Type 1 in the designated Practice Area in Work Area 2, as shown on the Drawings, to demonstrate to the Departmental Representative that the Contractor's means and methods for the three different placement methods (Clause 3.2 in this Section) are adequate to meet the Targeted Placement Thickness and Vertical Placement Tolerances (as shown on the Drawings), as well as other requirements of these Specifications and permitting conditions.
 - .1 The surface area and Material Type 1 placement volume associated with Practice Placement in the Practice Area depends on Contractor's ability to demonstrate that the Contractor's means and methods are adequate to meet the Targeted Placement Thickness and Vertical Placement Tolerances.
 - .2 Contractor shall determine how much Material Type 1 volume will need to be placed in order to practice and gain Departmental Representative acceptance of the Contractor's placement methods.
- .3 Table 35 37 10-1 provides the estimated surface area and cover volume each Test Area and the Rock Mounds (in the Practice Area), as shown on the Drawings and described in this Section. The table is presented for Contractor convenience only.

Table 35 37 10-1
Cover Placement Summary by Work Area

Work Area	Area/Cover Material Type	Surface Area (m ²)	Targeted Placement Thickness (m)	Cover Volume (m ³)	Material Type 1 Volume (m ³)	Material Type 2 Volume (m ³)	Material Type 3 Volume (m ³)
Work Area 1	Test Area 1/ Cover Type 3	900	0.3	405	391	14	—
	Test Area 2/ Cover Type 3	900	0.3	405	391	14	—
	Test Area 3/ Cover Type 3	900	0.3	405	391	14	—
	Test Area 4/ Cover Type 1	900	0.3	405	405	—	—
	Optional Test Area 5/ Cover Type 2	900	0.6	675	675	—	—
	Test Area 6/ No Action	—	—	—	—	—	—
<i>Sub-Total Work Area 1</i>		<i>4,500</i>	<i>-</i>	<i>2,295</i>	<i>2,253</i>	<i>42</i>	<i>-</i>

Work Area	Area/Cover Material Type	Surface Area (m ²)	Targeted Placement Thickness (m)	Cover Volume (m ³)	Material Type 1 Volume (m ³)	Material Type 2 Volume (m ³)	Material Type 3 Volume (m ³)
Work Area 2 (not including Practice Area)	Test Area 7/ Cover Type 3	900	0.3	405	391	14	—
	Test Area 8/ Cover Type 1	900	0.3	405	405	—	—
	Test Area 9/ No Action	—	—	—	—	—	—
Work Area 2 (Practice Area only)	Rock Mounds/ Material Type 3	57	—	—	—	—	38
<i>Sub-Total Work Area 2</i>		<i>1,857</i>	<i>-</i>	<i>810</i>	<i>796</i>	<i>14</i>	<i>38</i>
TOTAL		6,357	-	3,105	3,049	56	38

Notes:

- (1) Areas and volumes presented in this table are estimated only and do not account for any side slopes. Areas and volumes presented in this table must not be used for basis of measurement and payment.
- (2) Cover thickness includes a Targeted Placement Thickness (varying from 0.3 m [Base Work] to 0.6 m [Optional Work] depending on the Test Area) and a Vertical Placement Tolerance (0.15 m).
- (3) Selected amendment is siderite. Amendment dosage is 5% by weight for Test Areas 1, 2, 3, and 7. Amendment density assumed to be 3.74 grams per cubic centimetre.
- (4) Optional Test Area 5 is part of the Optional Work for this Contract.
- (5) The surface area and Material Type 1 volume associated with Cover Type 1 material placed during Practice Placement in the Practice Area depends on Contractor's ability to demonstrate that the Contractor's means and methods are adequate to meet the Targeted Placement Thickness and Vertical Placement Tolerances, as shown on the Drawings.
- (6) Approximate Material Type 3 volume associated with two cone-shaped Rock Mounds, using an assumed Targeted Placement Height of 1.5 m in the center and a Targeted Placement Diameter of 5 m, and including a Vertical Placement Tolerance and Horizontal Placement Tolerance of 0.5 m.

m: metre

m²: square metre

m³: cubic metre

- .4 This work includes furnishing all labour, materials, tools, equipment, and incidentals required for fill materials blending and placement in support of the overall project as described in the Drawings and in these Specifications.
- .5 Grounding of barges or equipment is prohibited. The Contractor must use reduced power in shallow areas to minimize disturbance of bottom sediments or must wait for a higher tide to move that equipment.
- .6 All fill materials must be delivered to the site by barge and placed using water-based equipment.

1.2 Measurement and Payment Procedures

- .1 The volume of fill materials that the Contractor may need to place in the Practice Area is dependent upon the Contractor's ability to demonstrate to the Departmental Representative's satisfaction that the Contractor can meet the Targeted Placement Thickness and the Vertical Placement Tolerance for the three different placement methods describe in Clause 3.2 of this section.
- .2 The Contractor must account for any costs associated with additional placement volume (e.g., loss of fill material during placement activities) that the Contractor may use in order to meet the Targeted Placement Thickness in the lump sum Tender Items for PRACTICE PLACEMENT, TEST AREA 1, TEST AREA 2, TEST AREA 3, TEST AREA 4, TEST AREA 7, AND TEST AREA 8 under Base Work and for OPTIONAL TEST AREA 5 under Optional Work.
 - .1 The Contractor must place fill materials in the Practice Area and Test Areas as shown on the Drawings and described in these Specifications, as included in the Unit Price Table.
 - .2 Cover Type 1 must be placed in the Practice Area as part of Practice Placement to the Targeted Placement Thickness described in these specifications. Placement above the Vertical Placement Tolerance will be considered Excessive Overplacement. Dragging of beam or raking to level Excessive Overplacement material is prohibited. The Departmental Representative reserves the right to require the Contractor to remove Excessive Overplacement material, at no extra cost to Canada.
 - .3 Material Type 3 must be placed to construct two Rock Mounds in the Practice Area, to the Targeted Placement Height and Targeted Placement Diameter, and within the Horizontal Placement Tolerance and Vertical Placement Tolerance described in Clause 3.4.2 of this section. Placement of Material Type 3 outside the Horizontal Placement Tolerance and/or above the Vertical Placement Tolerance will be considered Excessive Overplacement. The Departmental Representative reserves the right to require the Contractor to remove Excessive Overplacement material, at no extra cost to Canada.
 - .4 Cover Types 1, 2, and 3 must be placed only within the lateral extents of the Test Areas shown on the Drawings and below the Vertical Placement Tolerances shown on the Drawings. Placement outside the lateral extents of the Test Areas and/or above the Vertical Placement Tolerance will be considered Excessive Overplacement. Dragging of beam or raking to level Excessive Overplacement material is prohibited. The Departmental Representative reserves the right to require the Contractor to remove Excessive Overplacement material, or if not feasible to remove Excessive Overplacement material without damaging the Test Area, to construct a new Test Area, at no extra cost to Canada.

- .5 The Contractor must take into account the amount of extra volume that will result from the Contractor's placement means and methods including fill material that sloughs into areas outside of the Test Areas in order to meet the Targeted Placement Thickness, and account for that volume and associated costs in its Tender Item for each Test Area.
- .6 Payment for fill materials placed within each Test Area will be as a lump sum following acceptance of material placement by the Departmental Representative. Acceptance of placed fill materials in each Test Area will be based on comparison of Pre-Construction and Post-Construction Surveys, barge displacement information, material supplier tickets, sediment cores/probing, dive inspection, and other information as needed to demonstrate that the targeted placement thicknesses and limits shown on the Drawings have been met as determined by the Departmental Representative.
- .7 Fill material placement for each Test Area will be considered acceptable once both of the following criteria are met:
 - .1 A minimum of 50% of the surface area of each Test Area has a placed Cover Type thickness equal to or greater than the Targeted Placement Thickness defined for that Test Area.
 - .2 Cover Type thickness in at least 90% of the surface area within each Test Area falls within the Vertical Placement Tolerance.
- .8 If the Contractor is unable to achieve the specification requirements for fill material placement in a Test Area, the Departmental Representative will accept the work in that Test Area as complete if the following criteria are met:
 - .1 The Contractor has placed the total volume for the Test Area using accepted material placement means and methods (adequately demonstrated during Practice Placement).
 - .2 The Departmental Representative has determined the in situ bed sediments to be soft in nature.
- .9 Fill material placement in the Practice Area will be considered complete if the following criteria are met:
 - .1 The Departmental Representative reviews and accepts Practice Placement areas for each of the three placement methods described in these Specifications.
 - .2 Placement of Material Type 3 is complete and meets the Targeted Placement Height and Targeted Placement Diameter, within the Vertical Placement Tolerance and Horizontal Placement Tolerance, as described in this section.

- .10 Final Payment for fill material placement will be made after acceptance of the work as complete by the Departmental Representative under the Tender Items for PRACTICE PLACEMENT, TEST AREA 1, TEST AREA 2, TEST AREA 3, TEST AREA 4, OPTIONAL TEST AREA 5, TEST AREA 7, and TEST AREA 8.
- .3 Monthly progress payments during completion of the work will be measured based on Contractor-reported areas calculated using Contractor Progress Surveys. Progress payments will be made for work certified by the Contractor as completed. The Contractor must break down its progress payment requests to identify areas associated with completed work under each respective Tender Item and include a statement certifying that the work has been completed.

1.3 Related Sections

- .1 Section 01 11 55 (General Instructions)
- .2 Section 01 33 00 (Submittal Procedures)
- .3 Section 01 35 43 (Environmental Procedures)
- .4 Section 01 45 00 (Quality Control)
- .5 Section 02 21 13 (Surveying and Positioning Control)

1.4 Definitions

- .1 Refer to Section 01 11 55 (General Instructions) for all definitions related to this Contract.

1.5 Submittals

- .1 The Contractor must submit a detailed Construction Work Plan (CWP) in accordance with Section 01 33 00 (Submittal Procedures) within 10 working days following Contract Award for review and acceptance by the Departmental Representative.
- .2 As part of the detailed CWP, in accordance with Section 01 33 00 (Submittal Procedures), the Contractor must prepare a section that describes the approach that will be implemented for fill material placement activities. Fill material placement activities in a Work Area must not begin until the CWP has been reviewed and accepted by the Departmental Representative. At a minimum, the description of the approach for placing materials must contain the following information:
 - .1 Order and sequence in which the work is to be performed, including a description of equipment to be used and methods of operation.

- .2 Reference to the Construction Progress Schedule that identifies timing and sequencing for completion of fill material placement activities in each Test Area and Practice Area, as they relate to other major elements of the work.
 - .3 Methods and procedures for placing materials within required tolerances as laid out in these Specifications and shown on the Drawings.
 - .4 Documentation of the origin of the imported Material Types and blended fill materials (Cover Type 3), physical samples, and testing certificates, as described in this Specification, provided by the supplier for the Departmental Representative review and acceptance prior to the start of work.
 - .5 Identification and certification documents for the independent, certified analytical laboratory that will conduct required testing for Material Type 1 that will be used as part of this Contract, as described in this Section.
 - .6 Methods and procedures for completing fill material placement activities must include means and methods for providing environmental protection, as described in Section 01 35 43 (Environmental Procedures).
- .3 A sample of Material Type 1, Material Type 2, and Cover Type 3, and documentation for Material Type 3 must be provided to the Departmental Representative a minimum of 2 weeks in advance of use in the Work Areas.
- .1 Sample for Material Type 1:
 - .1 Material Type 1 must be procured from a single source, unless otherwise approved by the Departmental Representative.
 - .2 The Contractor must provide a 10-kilogram (kg) sample of Material Type 1 to the Departmental Representative for each 500 m² of Material Type 1 to be used in the work. Each sample should be composited from no less than five subsamples taken throughout any one source. The Contractor must ensure that the sample is representative of the fill material to be imported.
 - .2 Sample for Material Type 2:
 - .1 Material Type 2 must be procured from a single source, unless otherwise approved by the Departmental Representative.
 - .2 The Contractor must provide a 3-kg sample of Material Type 2 to the Department Representative for each 20 m³ of Material Type 2 to be used in the work. Each sample should be composited from no less than five subsamples taken throughout any one source. The Contractor must ensure that the sample is representative of the fill material to be imported.
 - .3 Documentation for Material Type 3:

- .1 Material Type 3 must be procured from a single source, unless otherwise approved by the Departmental Representative.
- .2 The Contractor must provide documentation of quality from the source for Material Type 3 to the Departmental Representative.
- .4 Sample for Cover Type 3:
 - .1 The Contractor must blend Material Type 1 and Material Type 2 to produce Cover Type 3 (amended sand cover) as described in Part 3 of this section. The Contractor must provide a 10-kg sample to the Department Representative of Cover Type 3 for every 100 m³ of Cover Type 3 to be used in the work. Each sample should be composited from no less than five subsamples taken throughout any one batch source. The Contractor must ensure that the sample is representative of the batched fill material.
 - .2 For each batch of Cover Type 3 that is produced by the Contractor, a minimum of one sample must be provided to the Departmental Representative even if the batch size is less than 100 m³.
 - .3 The Department's Representative will conduct testing to verify the siderite content (Material Type 2) of the Cover Type 3 as described in Part 3 of this section.
 - .4 The Contractor cannot begin placement of Cover Type 3 until the content of the blended material is verified and accepted by the Departmental Representative.
- .5 The Contractor must ensure that the source of Material Types 1 and 2 and Cover Type 3 will not change once the samples have been submitted, verified, and approved, or must submit a new separate sample for review and acceptance by the Departmental Representative if a new source of fill materials is used.
- .4 The Contractor must obtain laboratory test reports, as described in these Specifications. All laboratory test results must be submitted to the Departmental Representative for review and acceptance no less than 2 weeks prior to the start of fill material placement activities.
- .5 Daily Reporting: As part of the Contractor's Daily Construction Report, as described in Section 01 33 00 (Submittal Procedures), the Contractor must keep a daily record of the area(s) where fill materials have been placed, the estimated quantity of material placed (including barge displacement measurements), daily Progress Surveys, certified weight tickets from the supplier, and a summary of other details of the work. This daily record must be submitted to the Departmental Representative the morning following completion of the work for that day. The Daily Construction Report must be signed by the Contractor's site superintendent and quality control manager.

1.6 References

- .1 British Columbia Ministry of Transportation and Infrastructure, Construction Engineering Section, Construction and Maintenance Branch. 2016 Standard Specifications for Highway Construction. July 1, 2016.
- .2 British Columbia Ministry of Energy and Mines. Guidelines for Metal Leaching and Acid Rock Drainage at Minesites in British Columbia. August 1998.
- .3 British Columbia Ministry of the Environment and Climate Change Strategy, Environmental Protection Division. Water Quality Guidelines. Date varies by chemical parameter.
- .4 Platinum Edition (Volume II) of the Master Municipal Construction Documents (MMCD). 2009.
- .5 British Columbia Ministry of the Environment and Climate Change Strategy, Water Protection & Sustainability Branch. British Columbia Approved Water Guidelines: Aquatic Life, Wildlife & Agriculture. Summary Report. March 2016.
- .6 Canadian Council of Ministers of the Environment (CCME). Canadian Environmental Quality Guidelines. 1999, updated 2001, 2002, 2003, 2004, 2005, 2006, and 2007.
- .7 Price, W.A. Prediction Manual for Drainage Chemistry from Sulphidic Geologic Materials. MEND Report 1.20.1. December 2009.

1.7 Quality Control

- .1 The Contractor is responsible for providing all necessary quality controls to successfully complete the work, and to comply with its Quality Control Plan, as specified in Section 01 45 00 (Quality Control).
- .2 The Departmental Representative will inspect placement activities for the Departmental Representative's quality assurance purposes. The Departmental Representative inspection will in no way release the Contractor from complying with the Specifications and all permits and will in no way be construed as acceptance of work.

1.8 Environmental Protection

- .1 Fill material placement activities must be performed in accordance with environmental protection requirements, as stated in Section 01 35 43 (Environmental Procedures), the Environmental Management Plan (EMP), the Environmental Protection Plan (EPP), and with the permits.

1.9 Inspection of Materials

- .1 Material Types 1, 2, and 3 and Cover Type 3 must be visually inspected by the Contractor upon delivery. Materials must be inspected for the presence of foreign, recycled, or reprocessed material or debris, to ensure that imported materials are natural, native, virgin materials and free of contaminants (meet British Columbia Contaminated Sites Regulation (CSR) and Canadian Council of Ministers of the Environment (CCME) applicable standards as defined in this Specification. The presence of foreign, recycled, or reprocessed materials or debris is to be reported to the Departmental Representative, who will determine if the import materials are acceptable for performance of the work. In the event of rejections, it is the responsibility of the Contractor to remove all rejected material from the Work Areas at no extra cost to Canada. Acceptance or rejection of import fill materials brought to the Work Areas must be provided within 1 working day of the Contractor reporting to the Departmental Representative.
- .2 The Departmental Representative may, at any and all times, perform an independent inspection or conduct sampling of Material Types 1, 2, and 3 or Cover Type 3. These materials may be rejected if identified as substandard or if test results show it to be substandard, based on the sole discretion of the Departmental Representative. The Departmental Representative may request the Contractor to segregate material for testing purposes at no extra cost to Canada. Segregated materials may be tested according to designated procedures at the Departmental Representative's discretion. Inspection and testing by the Departmental Representative cannot be used by the Contractor as a delay claim.
- .3 Inspection of Source: The borrow source(s) must be inspected by the Contractor. During such inspection, the Contractor must ensure that the materials to be delivered to the Work Areas will meet the appropriate requirements of the Specifications. The Contractor must provide notice to the Departmental Representative within 5 working days of such inspections. At the Departmental Representative's discretion, the Departmental Representative or another Departmental Representative-designated representative may accompany the Contractor to witness such inspections or conduct a separate inspection at the Departmental Representative's discretion. This witnessing will in no way release the Contractor from complying with the Specifications, and the Contractor must not construe this witnessing as approval of any particular source of material.

1.10 Regulatory Requirements

- .1 See Section 01 11 55 (General Instructions) for regulatory requirements associated with this Contract.

1.11 Misplaced Material

- .1 Should the Contractor, during the execution of the work, lose, dump, throw overboard, sink, or misplace any material, dredge, barge, machinery, or appliance, the Contractor must promptly recover and remove the same. The Contractor must give immediate verbal notice, followed by written confirmation, of the description and location of such obstructions to the Departmental Representative and must record the geographic coordinates and buoy such obstructions until they are removed.
- .2 Should the Contractor refuse, neglect, or delay compliance with this requirement, such obstructions may be removed by the Departmental Representative or its agents, in which case the cost of such removal operations must be paid by the Contractor.
- .3 The Contractor is responsible for any fees, fines, penalties, or other costs resulting from misplaced materials.

2. PART 2 – PRODUCTS

2.1 Material Types

- .1 Material Type 1 – Clean sand
 - .1 Material Type 1 must be clean, fine-grained river sand material, free of organic material, as similar in nature to the native sediment within the Project Site (sand) as practicable, and must conform to the 2009 Platinum Edition (Volume II) of the MMCD as provided in the table below:

Clean Sand (Material Type 1)

Sieve Designation	Percent Passing
19 mm	100
4.76 mm	80 – 100
0.60 mm	20 – 100
0.42 mm	10 – 100
0.25 mm	0 – 80
0.15 mm	0 – 50
0.074 mm	0 – 4

mm: millimetre

- .2 Contractor is required to wash Material Type 1 to meet the gradation requirements or to remove excess highly suspendable fines prior to placement to help comply with the required gradations, as well as water quality monitoring requirements as described in the EMP. Material Type 1

may be inspected by the Departmental Representative and/or the PWGSC Environmental Monitor and may request additional testing samples.

- .2 Material Type 2 - Granular siderite
 - .1 Siderite must be naturally occurring material.
 - .2 Siderite must be washed and free of floatable material.
 - .3 Product specification sheets for the selected siderite must be submitted to the Departmental Representative for review and acceptance prior to ordering the material.
 - .4 Prior to shipment, the manufacturer must label each package with the following identifying product information:
 - .1 Manufacturer name
 - .2 Manufacturer address
 - .3 Product code and lot number
 - .5 Siderite must be suitably packaged to isolate the material from the environment so as to preserve its efficacy for the duration of storage.
 - .6 A visual inspection of the siderite must be made during unloading to identify if any packaging has been damaged. The Departmental Representative must be notified of Siderite in damaged packaging. The individual packaging must be marked and further inspected for product integrity.
- .3 Material Type 3 – Rock
 - .1 Material Type 3 must not contain any synthetic material or debris.
 - .2 Material Type 3 must consist of material with a median diameter (D50) of between 0.4 m and 0.6 m.
 - .3 Material Type 3 must conform to the British Columbia Ministry of Transportation and Infrastructure specifications (Standard Specification for Highway Construction, Table 205-B) for Class 100-kilogram riprap, as described in the table below.

Material Type 3

Class (Kg)	Approximate Average Dimension (mm)		
	15%	50%	85%
100 Kg	195	415	600

2.2 Cover Types

- .1 Cover Type 1:
 - .1 Cover Type 1 consists of Material Type 1 with Targeted Placement Thickness of 30 cm, placed within limits and Vertical Placement Tolerance, as shown on the Drawings.
 - .2 Cover Type 1 will be placed in Test Areas 4 and 8.
- .2 Cover Type 2:
 - .1 Cover Type 2 consists of Material Type 1 with Targeted Placement Thickness of 60 cm, placed within limits and Vertical Placement Tolerance, as shown on the Drawings.
 - .2 Cover Type 2 will be placed in optional Test Area 5, if needed as part of the Optional Work, at direction of the Departmental Representative.
- .3 Cover Type 3:
 - .1 Cover Type 3 is an amended sand cover, consisting of a blend of Material Type 1 and Material Type 2, where the Siderite is 5% of the blend by dry weight, with a Targeted Placement Thickness of 30 cm, placed within limits and Vertical Placement Tolerance, as shown on the Drawings.
 - .2 Cover Type 3 will be placed in Test Areas 1, 2, 3, and 7.
 - .3 Cover Type 3 must be developed by the Contractor by uniformly blending Material Types 1 and 2, following blending requirements described in Part 3 of this section.
 - .4 Cover Type 3 must be blended prior to placement and must be blended by proportioning the fined-grained sand and siderite in proper amounts. Blended fill material for Cover Type 3 must be approved by the Departmental Representative prior to placement. See additional blending requirements in Part 3 of this section.

2.3 Material Type 1 Testing

- .1 The Contractor must implement a quality assurance/quality control program for Material Type 1 testing, to be described in the Quality Control Plan, including, but not limited to, the analysis of duplicate or replicate samples, to demonstrate the reproducibility of the analytical results.

- .2 Material Type 1 must be analyzed for metals, polycyclic aromatic hydrocarbons, light extractable petroleum hydrocarbons (LEPH), and heavy extractable petroleum hydrocarbons (HEPH), but additional analyses may be necessary based on the current and historical land uses at the source site. The Sand Cover Material must have chemical concentrations lower than the CCME Sediment Quality Guidelines “Probable Effects Levels” (PEL) and CSR Generic Numerical Sediment Criteria for typical sites. For LEPH and HEPH, concentrations must be lower than the Contaminated Sites Regulation numerical soil standards for residential land use.
- .3 Based on material sources and results of the testing, the Departmental Representative may request that additional parameters be analyzed. The frequency of the testing may also be increased or decreased by the Departmental Representative if considered appropriate based on the results of the testing or visual assessment of the imported material.
- .4 One sample for every 500 m³ of Material Type 1 to be imported to the Work Areas from a single one source will be collected by the Contractor and analyzed per the above tests. If Material Type 1 is obtained from multiple sources (per approval by the Departmental Representative), each source must have at least one test performed even if the volume from a single source is less than 500 m³. The frequency of testing may be increased or decreased by the Departmental Representative if considered appropriate based on the results of testing or visual assessment of imported Material Type 1.
- .5 All laboratory test results must be submitted to the Departmental Representative no less than 2 weeks prior to the start of fill material placement activities. Laboratory test results must be less than 3 months old when submitted. The Departmental Representative will accept or reject the use of Material Type 1 in writing based on the material testing guidelines and requirement identified in this section within 2 working days of receipt. No material must be placed by the Contractor prior to receipt of acceptance in writing by the Departmental Representative. All Material Type 1 brought to the Work Areas that does not meet the above-noted guidelines will be removed from the Work Areas immediately at the Contractor’s cost.
- .6 Documented proof of meeting the above-referenced guidelines must be in the form of a signed cover letter and signed test analysis results from a Qualified Professional (QP) or an independent testing firm accredited according to the Standards Council of Canada, the Canadian Association of Laboratory Accreditation Inc. (ISO/IEC 17025), and BC ENV.
 - .1 The cover letter must:
 - .1 Clearly state that all imported Material Type 1 meets the stated guidelines.
 - .2 Include the name and location of all Material Type 1 sources.

- .3 Identify the nature of current and historical activities conducted at the source.
- .2 The test analysis reports must:
 - .1 Clearly show the test results for Material Type 1 compared against the above-reference guidelines in an easily read tabular format.
 - .2 Include the name and location of the samples with ARD/ML data and confirm the representativeness of the locations of all material sources that will supply Material Type 1.
- .7 The laboratory utilized by the Contractor must have the appropriate certification in accordance with ISO/IEC Standard 17025. The Contractor must submit documentation showing that the proposed laboratory is certified for the specific parameters of concern and proposed analytical methods.

3. PART 3 – EXECUTION

3.1 Sequencing

- .1 This section supplements the general sequence of work as described in Section 01 11 55 (General Instructions) and provides more specific requirements related to fill material placement.
- .2 The Contractor must complete the Pre-Construction Surveys completed prior to the start of work to determine the targeted placement elevations for each Cover Type in the Practice Area and each Test Area, if needed, in order to satisfy the Targeted Placement Thickness and Vertical Placement Tolerance requirements, as shown on the Drawings.
- .3 The Contractor must complete and obtain approval by the Departmental Representative for the Practice Placement, prior to starting Cover Type placement in Test Areas.
- .4 The Contractor should work within one Test Area (and one Work Area) at a time. Contractor must not complete more than two Test Areas in a single day.
- .5 The Contractor may begin work in another Test Area while waiting for acceptance of work in another Test Area by the Departmental Representative.
- .6 All work conducted by the Contractor in each Work Area must be completed and approved by the Departmental Representative before beginning work in another Work Area.
- .7 The Contractor must account for Inherent Delays while waiting for the completion of dive inspection surveys (which may be performed by the Departmental Representative designee after the Contractor notifies the Departmental Representative that a Practice or Test Area is complete) and to comply with the Dive Exclusion Area requirement. Contractor must also account for Inherent Delays for Departmental Representative review of bathymetric

survey and Test Area acceptance. Any downtime costs associated with Inherent Delays are incidental to the work and must be accounted for by the Contractor in the appropriate Tender Items.

- .8 Contractor must complete fill material placement activities in the order shown below.
 - .1 Practice Area:
 - .1 Practice Placement for placement method 1
 - .2 Practice Placement for placement method 2
 - .3 Practice Placement for placement method 3.
 - .4 Placement of Material Type 3 (for Rock Mounds)
 - .2 Work Area 2:
 - .1 Test Area 7
 - .2 Test Area 8
 - .3 Work Area 1:
 - .1 The Contractor must propose sequencing of work in Test Areas 1, 2, 3, and 4, to account for Inherent Delays and to comply with the Dive Exclusion Area requirement.
 - .1 The Dive Exclusion Area includes the Test Area where the Contractor has finished fill material placement activities and extends 100 metres from the boundaries of that specific Test Area. The Contractor must not work, enter, transit, or navigate floating vessels or other equipment within the Dive Exclusion Area when dive inspection surveys are being performed by the Departmental Representative's designee within that Test Area.
 - .2 Optional Test Area 5 (as part of the Optional Work), if directed by the Departmental Representative)
 - .4 The Contractor may propose a different sequence of work in the CWP subject to approval by the Departmental Representative.
- .9 Conduct Progress Surveys and Post-Construction Surveys (and other field verification, as the Contractor determines necessary to assess compliance with Targeted Placement Thickness and Vertical Placement Tolerance) in accordance with Section 02 21 13 (Surveying and Positioning Control). Post-Construction Surveys must be conducted after completion of fill material placement in each Test Area and be submitted within one (1) working day to the Departmental Representative.

- .9 The Contractor must assume that dive inspection surveys will be conducted by the Departmental Representative's designees in the morning of the following day after the Contractor notifies the Departmental Representative that a Test Area has been completed.
- .10 The Departmental Representative will review the Post-Construction Survey data and the dive inspection survey within one (1) full working day after receiving the Post-Construction Survey and, if satisfactorily completed, will provide acceptance of the fill material placement activities as complete. Any downtime costs associated with this Inherent Delay are incidental to the work and must be accounted for by the Contractor in the appropriate Tender Items.
- .11 If the Targeted Placement Thickness requirement is not achieved, within the Vertical Placement Tolerance, and in all Test Areas as described in these Specifications and shown on the Drawings, or Excessive Overplacement has occurred, the Contractor must conduct corrective actions at the direction and satisfaction of the Departmental Representative and at no extra cost to Canada. Corrective actions include:
 - .1 If the placement thickness is too thin in a Test Area, the Contractor must continue placing the specified fill materials in that Test Area and conduct additional Post-Construction Surveys at no extra cost to Canada, until the acceptance criteria in Clauses 1.2.2.7 and 1.2.2.8 of this Section are met.
 - .2 The Contractor must take extra care to avoid Excessive Overplacement since too thick a cover layer placed within a Test Area will not allow DND to monitor the cover material to assess its effectiveness. If Excessive Overplacement has occurred in a Test Area and removing the Excessive Overplacement material is not feasible without damaging the Test Area, the Contractor must construct a new Test Area (within the same Work Area) designated by the Departmental Representative at no extra cost to Canada, until the acceptance criteria in Clauses 1.2.2.7 and 1.2.2.8 of this Section are met.

3.2 Cover Material Placement

- .1 Blending and Testing Requirements - Cover Type 3
 - .1 As part of mobilization activities, and prior to placing Cover Type 3 in any of the Test Areas, Material Type 1 must be blended with Material Type 2 to produce Cover Type 3 (amended sand cover), which must contain Material Type 2 at a nominal content of 5% (by dry weight).
 - .2 The Contractor must use means and methods to ensure Material Types 1 and 2 are uniformly blended in Cover Type 3.
 - .3 Acceptable tolerance of quantity of Material Type 2 in Cover Type 3 is between 3% and 7% by dry weight for each discrete sample and 5% by dry weight for the average of all samples.

- .4 The Contractor must collect samples of Cover Type 3 as described in this section.
- .5 If Cover Type 3 does not meet acceptable tolerance for percentage of Material Type 2, the Contractor must conduct corrective action to meet these requirements described in this section, at no additional cost to Canada.
- .6 Cover Type 3 must be accepted by the Departmental Representative prior to placement activities.
- .2 General Requirements:
 - .1 The Contractor must provide barge displacement measurements as obtained by a Qualified Marine Surveyor, or their designee, for all loaded fill material barges as they arrive at the Work Areas. Barge displacement measurements, both empty and full, must also be collected, and provided in the Marine Surveyor Report, as part of the Contractor's Daily Construction Report, at the end of each work shift and following placement of all fill materials stockpiled on the Contractor material barges.
 - .1 The Marine Surveyor Report must also document seaworthiness of each barge used for transport of fill materials to the Work Areas from the point of origin of the barge. Documentation of the seaworthiness of each transport barge must be submitted to and accepted by the Departmental Representative prior to transporting fill material from off site.
 - .2 The Contractor must place the fill materials to meet the Targeted Placement Thickness, as shown on the Drawings. No compaction is required.
 - .3 If placement of fill material results in excessive turbidity, as determined by the Departmental Representative, the Contractor must implement appropriate best management practices to control turbidity. This may include the use of a silt curtain during material placement activities.
 - .4 The Contractor must employ placement means and methods that will minimize resuspension of sea bed sediment during placement activities and prevent excessive mixing of the fill materials with the sea bed sediment. The Contractor must place fill material by methods proposed in the CWP and accepted in writing by the Departmental Representative.
 - .5 The Contractor must not place fill material by rapid dumping of a barge load; rather, it must be placed in a controlled manner. Bottom-dumping or similar placement methods are not acceptable.
 - .6 The Contractor must not place barge and floating derrick anchors, spuds, or any other equipment into completed Test Areas and must minimize to

the extent practicable any anchoring or spudding during placement activities unless accepted by the Departmental Representative.

- .3 Practice Placement in Practice Area
 - .1 Prior to material placement in the Test Areas, the Contractor will conduct Practice Placement in the designated Practice Area within Work Area 2, as shown on the Drawings. The purpose of the Practice Placement is to demonstrate that the Contractor's means and methods are adequate to meet the Targeted Placement Thickness and Vertical Placement Tolerances and other Specification requirements and permitting conditions.
 - .2 The Contractor will conduct Practice Placement using Cover Type 1 and placement methods 1, 2 and 3, as described in Clause 3.2.3 of this section.
 - .3 Each plot designated for Practice Placement should be large enough to adequately demonstrate effectiveness of the Contractor's proposed means and methods; the minimum size of any plot for Practice Placement is 10 m by 10 m.
 - .4 If the Practice Placement does not meet the Targeted Placement Thickness and Vertical Placement Tolerances (as shown on the Drawings), and other Specification requirements and permitting conditions, the Contractor must modify its means and methods and conduct additional Practice Placement to demonstrate compliance with the Specification requirements, at no additional cost to Canada prior to conducting Cover Type placement in Test Areas.
- .4 Material Type 3 Placement in Practice Area – Rock Mounds
 - .1 Following completion of Practice Placement, the Contractor must place Material Type 3 using placement method 3 to construct two cone-shaped Rock Mounds, overlying placed Cover Type 1, at locations identified by the Departmental Representative.
 - .2 Each Rock Mound must be a cone-shaped mound, with a Targeted Placement Height of 1.5 m high at the centre with a Targeted Placement Diameter of 5 m.
 - .1 Vertical Placement Tolerance for the Targeted Placement Height of Material Type 3 in the Rock Mounds is 0.5 m
 - .2 Horizontal Placement Tolerance for placement of Material Type 3 in the Rock Mounds is 0.5 m.
- .5 The following placement methods in the Practice Area and in Test Areas 1, 2, and 3 are acceptable:
 - .1 Placement method 1 - Controlled placement above the water surface.

- .1 Place Cover Types 1 or 3 from a material barge using a clamshell or re-handling bucket to lay down material over the Test Area by cracking the bucket open slightly and swinging the bucket in an arc above the water surface.
 - .2 Drop distance above the water surface may vary and is not restricted as long as the method meets other requirements in the Specifications.
- .2 Placement method 2 - Controlled placement above the water surface.
 - .1 Place Cover Types 1 or 3 from a material barge using a high-speed conveyor, skip box, or similar to place cover material within the Test Area above the water surface.
 - .2 Drop distance may vary and is not restricted as long as method meets other requirements in this Specification.
- .3 Placement Method 3 - Controlled placement near bottom.
 - .1 Re-handling Cover Types 1 or 3 from a material barge and placing directly near the sea bed floor using a clamshell bucket (or similar).
 - .2 Limit drop distance from bucket to sea bed bottom (i.e., less than approximately 2.0-m drop).
- .6 Cover Type 3 placement methods in Test Areas 1, 2, and 3
 - .1 One of the purposes of the pilot project is to evaluate the effectiveness of using different placement methods to place fill materials in Work Area 1 (Test Areas 1, 2 and 3). Work Area 1 contains soft bed sediments (see Appendix A). The Contractor must use three different placement methods in Test Areas 1, 2 and 3, within Work Area 1 (i.e., one placement method per Test Area).
 - .2 The Contractor must provide specific information about placement methods proposed for Test Areas 1,2 and 3 as part of the CWP (see Section 01 33 00 [Submittal Procedures]). The Contractor may propose a different placement method for Test Area 1, 2, or 3 in the CWP, subject to Departmental Representative approval.
- .7 The Departmental Representative will decide which of the three placement types (described in Clause 3.2.5) will be used to place Cover Types in Test Areas 4, 5, 7, and 8. Selection of the placement method by the Departmental Representative will be based on their observations from the Practice Placement.

3.3 Water Quality Criteria Compliance

- .1 The water quality monitoring requirements are described in the EMP and are included in Appendix B.
- .2 In accordance with the EMP, the Contractor's Environmental Specialist must conduct water quality monitoring, for quality assurance, during completion of fill material placement activities. The Contractor is responsible for complying with all water quality requirements as defined in the EMP. Contractor water quality monitoring requirements are presented in the EMP and are also described in Section 01 35 43 (Environmental Procedures).
- .3 The Contractor must describe in its CWP what means, methods, and procedures will be used to prevent water quality requirement exceedances, and what contingency actions will be taken to restore compliance with water quality requirements should water quality exceedances occur during completion of fill material placement activities.
- .4 Delays caused by complying with water quality requirements are not cause for additional compensation to the Contractor.

END OF SECTION