



Public Works and Government Services Canada

Requisition No: EZ113-190891/A


DRAWINGS & SPECIFICATIONS
for

**Esquimalt Harbour Remediation Project (EHRP) Phase 2C &
2D-Y Jetty and Lang Cove**

APPROVED BY:



Regional Manager, Env. Services

2018-08-13
Date


Construction Safety Coordinator

20180813
Date

TENDER:


Project Manager

Aug 8, 2018
Date

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APPENDIX A – DND REFERENCE DOCUMENTS AND GUIDELINES

CFB Esquimalt, 2017a. Base Standing Order (BSO) 5020-0, Base Smoking Policy. May 21, 2017.

CFB Esquimalt, 2017b. Designated Smoking Areas – CFB Esquimalt – HMC Dockyard, Signal Hill & Yarrows. Map. August 2017.

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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.

Security Requirements Checklist (SRCL) (Sample – For Reference Only), May 18, 2016.

APPENDIX B – ENVIRONMENTAL REQUIREMENTS

APPENDIX C – DATA TABLE

Anchor QEA, 2018. Y Jetty and Lang Cove Combined Data Table. EHRP Phase 2C and 2D – Y Jetty and Lang Cove. August 2018.

APPENDIX D – DATA REPORTS

Golder, 2006. Phase I Environmental Site Assessment and Supplemental Sediment and Crab Sampling Investigation, Esquimalt Harbour. Volume I of III. Submitted to Public Works and Government Services Canada. November 7, 2006.

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- SLR, 2016a. FY2015/2016 Detailed Quantitative Ecological Risk Assessment (DQERA) Sediment Supplemental Site Investigation (SSI). Defense Construction Canada. SLR Project No. 205.03744.00000. March 2016.
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- SNC Lavalin, 2013a. Supplemental Sediment Investigation. Lang Cove, CFB Esquimalt. Prepared for Defence Construction Canada. March 28, 2013.
- SNC Lavalin, 2013b. Supplemental Sediment Investigation. Small Boat Float Project (SBFe), CFB Esquimalt. Prepared for Defence Construction Canada. March 28, 2013.
- SNC Lavalin, 2016a. Draft Baseline Sediment Investigation Lang Cove, CFB Esquimalt, British Columbia. Prepared for Defence Construction Canada. March 21, 2016.
- SNC Lavalin, 2016b. Baseline Sediment Investigation Y-Jetty, CFB Esquimalt, British Columbia. Prepared for Defence Construction Canada. March 21, 2016.
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- SNC Lavalin, 2016d. Shoreline Investigation Lang Cove and Y-Jetty Areas (EHRP Task K-11). Esquimalt Harbour, CFB Esquimalt, BC. Project No. 640047. Prepared for Defence Construction Canada. December 16, 2016.
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APPENDIX E – OTHER REPORTS

Geotechnical Investigations

- KCB, 2013. Esquimalt Harbour Environmental Remediation Phase 1 Geotechnical Investigation Geotechnical Data Report. March 27, 2013.
- KCB, 2016. Esquimalt Harbour Remediation Project, Geotechnical Investigation – Test Pit Data Report. March 31, 2016.

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Anchor QEA, 2016b. Esquimalt Harbour Remediation Project – Lang Cove Debris Survey Summary Memorandum. Prepared for Public Works and Government Services Canada, Department of National Defence, and Defence Construction Canada. March 29, 2016.

South Coast Diving Ltd., 2016a. Lang Cove Perimeter Hazard Debris Sweep In-Water Field Survey Report. March 22, 2016.

South Coast Diving Ltd., 2016b. Y-Jetty Hazard Debris Sweep In-Water Field Survey Report. March 28, 2016.

Miscellaneous Site Assessment Reports

Anchor QEA, 2016. Esquimalt Harbour (Constance Cove) – Jet Probe Data Summary Memorandum. Prepared for Public Works and Government Services Canada, Department of National Defence, and Defence Construction Canada. March 25, 2016.

Anchor QEA, 2018. Y Jetty Test Dredging Program Summary Memorandum. Prepared for Defence Construction Canada, Department of National Defence, and Public Services and Procurement Canada. March 12, 2018.

Golder Associates, 2015. Lang Cove Esquimalt Harbour, Marine Biophysical Assessment. March 31, 2015.

South Coast Diving Ltd., 2016. Y-Jetty Perimeter Reconnaissance. February 9, 2016.

APPENDIX F – REFERENCE DRAWINGS

Y-Jetty Structural IFC Drawings L-E95-9500-101 to 102 and 210 to 213 (Sandwell, September 1997).

Y-Jetty Electrical IFC Drawings L-E95-9500-501 to 510 (Sandwell, September 1997).

Y-Jetty Civil IFC Drawings L-E95-9500-601 to 602 (Sandwell, July 1997).

Y-Jetty Structural Drawing L-E95-9500-204 (Note: this is annotated as IFC in the drawing revision box and does not show correct record details) (Sandwell, September 1997).

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Y-Jetty Structural Record Drawing L-E78-3-9501-4-201 (Sandwell, January 2007).

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Demolished Structure Drawing, Proposed Water Main for Additional Fire Fighting. Fresh & Salt Water Mains. Yarrows Ltd. Plan of Yard #1. Esquimalt B.C. Drawing No. 473. September 1957.

Demolished Structure Drawing, Plan to Accompany Application Under Navigable Waters Protection Act to Construction an Addition to Wharf B. Yarrows Ltd. Esquimalt District. November 27, 1953.

Demolished Structure Drawing, Plan of #1 Yard. Yarrows Ltd. Esquimalt B.C. Drawing No. PREM 764. Revised December 1971.

Demolished Structure Drawing, Yarrows Yard No. 1. Plan of Wharf A. Centres of Pilings Timber Caps and Joist. Pipe and Plumbers Building. Drawing No. 413. July 5, 1955.

APPENDIX G – FSE DIRECTIVES

MARPAC, 2013a. Formation SEMS Manual Directive E2 – Environmental and Archaeological Management of Land Alteration Activities. November 2013.

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

APPENDIX H – EXAMPLE CONTRACTOR REPORTS

Munitions and Explosives of Concern (MEC) Log (example). February 12, 2018.

DRAWINGS (bound separately)

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END OF SECTION

1. PART 1 – GENERAL

1.1 Description of Work

- .1 The Department of National Defence (DND) and the Contracting Authority (Public Works and Government Services Canada [PWGSC]) require contaminated sediment to be remediated within the Y Jetty and Lang Cove Work Site (Work Site) as part of the Esquimalt Harbor Remediation Project (EHRP). Collectively, these projects are referred to as the Y Jetty and Lang Cove Remediation Project. The work is located in Esquimalt Harbour on Vancouver Island, British Columbia (BC), within DND’s Canadian Forces Base Esquimalt (CFB Esquimalt) – Esquimalt.
- .2 CFB Esquimalt is an operational base. The Contractor’s work must be conducted in a manner that does not interfere with CFB Esquimalt operations, except as otherwise described in these Contract documents.
- .3 PWGSC will designate a representative (the Departmental Representative) to advise, coordinate, and monitor the work on behalf of DND.
- .4 The project is not a standard dredging and disposal project; it is a remedial (i.e., contaminated materials) dredging project. Dredge material within the Work Site is located in difficult access areas and is contaminated with various chemicals of concern, may contain Debris, Suspected Unexploded Explosive Ordnance (UXO), and historically, archaeologically, architecturally, or paleontologically significant structures, sites, or things. The Contractor must use extra care to conduct its work in a manner that is suitable for environmental cleanup and not in a production dredging manner. The Contractor must conduct its work in a manner to minimize, to the extent practicable, resuspension and redistribution of contaminated sediment, and to comply with environmental protection requirements in these Specifications, the Environmental Management Plan (EMP), and any applicable permit conditions.
- .5 Work under this Contract covers required work elements (Base Work) and optional work elements (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.
- .6 Marine sediments will be removed as part of this work for permanent disposal at a Disposal Facility.
 - .1 The Contractor must assume that all waste materials (i.e., dredge material, Dredge Debris, Identified Debris, and Demolition Debris), including stabilized material dredged from the footprint designated as the Leachable Metals Area as shown on the Drawings, will be transported and properly disposed of at an off-site Disposal Facility as IL+ material (i.e., material with concentrations exceeding “Industrial Land” [IL] use standards) as defined by the British Columbia Contaminated Sites Regulation (BC

- CSR), or an equivalent waste categorization level, minimum of Subtitle D, accepted by the Disposal Facility if disposed of in the United States, and in accordance with Laws and Regulations and as required in Section 35 20 23.01 (Offloading, Material Processing, Transportation, and Disposal). Recycling or beneficial re-use of the waste materials is prohibited.
- .2 Marine sediments to be removed from the Leachable Metals Area, as shown on the Drawings, have the potential for lead leachate concentrations to exceed the leachate hazardous waste Leachate Quality Standard as indicated by previous sediment Toxicity Characteristic Leaching Procedure (TCLP) analysis (data available in Appendix C to these Specifications). Material removed from the Leachable Metals Area must be stabilized within Esquimalt Harbour and subsequently disposed of as IL+ waste material after the results of post-stabilization TCLP analysis (that must be collected and analyzed by the Contractor and accepted by the Departmental Representative) indicate that the material no longer exceeds the hazardous waste Leachate Quality Standard criteria levels for lead per the BC HWR regulations, Schedule 4 (Table 1 – Leachate Quality Standards).
- .1 Stabilization of contaminated sediment from the Leachable Metals Area must occur under this Contract in accordance with BC CSR to reduce the leachability of the metal lead as determined by Contractor-collected samples and Contractor-conducted TCLP testing analysis for metals prior to disposal at a Disposal Facility as IL+ waste material. Stabilization must occur at a location accepted by the Departmental Representative and must be located within Esquimalt Harbour. The Contractor must provide to the Departmental Representative (as part of the Construction Work Plan) a proposal describing the means and methods by which stabilization activities will be completed. The Contractor's proposal must be reviewed and accepted by the Departmental Representative prior to conducting treatment activities as part of this Contract. Notwithstanding stabilization, all dredged material must be disposed of at a permitted Disposal Facility for the handling and disposal of IL+ material in accordance with Laws and Regulations and as required in Section 35 20 23.01 (Offloading, Material Processing, Transportation, and Disposal).
- .3 No material designated for the removal from the Work Site has been identified as Hazardous Waste Quality Materials under the British Columbia Hazardous Waste Regulation (BC HWR), with the potential exception for the Leachable Metals Area material as described above. If Hazardous Waste Quality Materials are encountered, the Contractor should immediately notify the Departmental Representative. The encountered Hazardous Waste Quality Materials must be disposed of in

accordance with applicable provincial and federal environmental regulations at an approved Disposal Facility in accordance with Laws and Regulations and as required in Section 35 20 23.01 (Offloading, Material Processing, Transportation, and Disposal).

- .7 Marine sediments with polychlorinated biphenyls (PCBs) at concentrations greater than 2 parts per million (ppm), and less than 50 ppm, will be removed as part of this work for permanent disposal at a Disposal Facility. Sediment PCB data are located in Appendix C to these Specifications.
- .8 The Contractor must carefully plan its means, methods, work schedule and shifts, and number and types of equipment and crews necessary to complete the work by the specified Substantial Performance date. 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 (including planned dates for performing activities and for meeting project milestones [as described in Clause 1.4 of this section]), number of work shifts per day, and whether multiple equipment rigs and crews will be utilized. Achieving project milestones and the Substantial Performance date defined in this section is critical to CFB Esquimalt operations and the Contractor's best efforts must be used to comply with this Specification completion schedule requirement.
- .9 The Work Site comprises nine (9) Work Zones as shown on the Drawings. Work Zones 1A, 1B, 1C, and 1D constitute the "South Work Zones." Work Zones 2A, 2B, 2C, 2D, and 2E constitute the "North Work Zones." Construction sequencing for these Work Zones is described in detail in Clause 1.4.
- .10 Work under this Contract covers, but is not limited to, structure demolition, temporary dismantling, relocation, and reinstatement of marine structures; protection of jetty utility services; protection of jetty structure; dredging and excavation of contaminated sediments and encountered Dredge Debris; removal of Identified Debris targets as shown on the Drawings; stabilization of contaminated sediment from the Leachable Metals Area; barge dewatering of dredge material; treatment of dredge effluent water (as necessary); in-water transportation to the Contractor Off-Site Offload Facility; dredge material, Identified Debris, Dredge Debris, and Demolition Debris offloading; temporary off-site stockpiling (if proposed); material processing of all dredge material at a Processing Facility to segregate Suspected UXOs out of the dredge material; provision for safe temporary storage of Suspected UXO within a magazine; treatment of contaminated sediment at a Treatment Facility (if proposed); upland transportation and disposal of dredge material, Identified Debris, Dredge Debris, and Demolition Debris at a Disposal Facility; importing and placing Engineered Cap and Backfill Material; set up and maintenance of temporary facilities to support the above work; and site restoration.
- .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, including protection of structures, sites, or things that may be valued for their historical, archaeological, architectural, and paleontological significance as determined by the 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 either on barges within the Work Site, or at an off-site location reviewed and accepted by the Departmental Representative.
- .7 Demolition, dismantling, temporary relocation, and storage of designated portions of the fender system associated with Y Jetty, as shown on the Drawings, and reinstatement of those portions of the fender system.
- .8 De-energizing and isolation of utility services (electrical and communications only) at Y Jetty.
- .9 Temporary protection of utility services (electrical, communications, water, and sewer) at Y Jetty using shrouding (and temporary disconnection of services if required), as shown on the Drawings.
- .10 Protection of the Y Jetty structure and existing steel pilings during construction activities.
- .11 Procurement, installation, operations, and maintenance of silt curtain systems to comply with any applicable permit conditions and water quality requirements, as described in the EMP during completion of dredging activities.
- .12 Removing contaminated sediment from within the Work Site using mechanical dredging and excavation techniques (as required in these Specifications and Drawings), including Identified Debris targets as shown on the Drawings; miscellaneous Dredge Debris such as timber piles and pile stubs, concrete, and metal debris within the Dredge Prism; demolition and removal of the Former Marine Railway within the Dredge Prism; Demolition Debris; dredge dewatering (as necessary); on-site segregation of Identified Debris and Dredge Debris (as necessary); dredge effluent water treatment (as necessary); and in-water transportation of

- dredge material, Identified Debris, Demolition Debris, and Dredge Debris to the Contractor Off-Site Offload Facility or Processing Facility as required in Section 35 20 23 (Remedial Dredging and Barge Dewatering) and the Drawings.
- .13 Maintaining all floating equipment and vessels outside of the Exclusion Zone in Lang Cove, as shown on the Drawings, to protect sensitive historically, archaeologically, architecturally, or paleontologically significant structures, sites, or things located within the Exclusion Zone. The Contractor will be required to complete dredging and material placement activities in the adjacent Dredge Units (DU) while maintaining equipment outside of the Exclusion Zone. Similarly, there must be no dredging, material placement, spudding, or anchoring in the Exclusion Zone.
 - .14 Setup, operations, and maintenance of the Contractor Off-Site Offload Facility.
 - .15 Setup, operations, and maintenance of the Processing Facility.
 - .16 Offloading and stockpiling (as necessary), and dewatering of dredge material including Identified Debris, Dredge Debris, and Demolition Debris at the Contractor Off-Site Offload Facility; material processing of all dredge material at the Processing Facility to segregate Suspected UXO out of the dredge material; treatment (if proposed) of contaminated sediment at Treatment Facility; dredge effluent water treatment (as necessary); and upland transportation and disposal of dredge material, Identified Debris, Dredge Debris, and Demolition Debris at an approved Disposal Facility as required in Section 35 20 23.01 (Offloading, Material Processing, Transportation, and Disposal).
 - .17 Requirements for segregating all Suspected UXO from the dredge material are contained in this section, and in Section 35 20 23.01 (Offloading, Material Processing, Transportation, and Disposal).
 - .18 Importing and placing Backfill Materials within Material Placement Areas B1 through B6 and Engineered Cap Materials within Material Placement Areas C1 through C4, as shown on the Drawings and described in Section 35 37 10 (Capping and Material Placement). The Contractor must assume that they will place Engineered Cap and Backfill Materials to the full extent of the areas provided on the Drawings.
 - .19 Removal of temporary protection of jetty utility services, including re-energizing, reconnection, testing and commissioning of utility services at Y Jetty, in same condition, and at same location as shown on the Drawings.
 - .20 Removal of temporary protection of Y Jetty structure and existing steel pilings.

- .21 Reconstruction and reinstatement of designated portions of the Y Jetty fender system, in same condition, and at same location as shown on the Drawings and as encountered on the Work Site.
- .22 Cleanup of Y Jetty Access Area, Off-Site Stockpile Area, and Contractor Off-Site Offload Facility.
- .23 Work Site restoration, decommissioning of temporary facilities, and demobilization, as applicable.
- .24 Contractor Off-Site Offload Facility restoration, decommissioning of temporary facilities, and demobilization.
- .12 No dredge material, Dredge Debris, Identified Debris, Demolition Debris, or any other item removed or relocated from the Work Site may be placed, stockpiled, or stored on the jetties or in any upland area at the Work Site, Y Jetty Access Area, unless reviewed and accepted by the Departmental Representative.
- .13 All transport of dredge material, Dredge Debris, Identified Debris, and Demolition Debris from the Work Site to the Contractor Processing Facility and Off-Site Offload Facility, as applicable, must be performed by barge.
- .14 Historically, archaeologically, architecturally, or paleontologically significant structures, sites, or things may be encountered during completion of the work as part of this Contract. If encountered, the Contractor is responsible for collecting these potential items and setting them aside in a secured location for the Archaeological Monitor to review.
- .15 The Contractor becomes the owner of, and is responsible for, any soil, sediment, Dredge Debris, Identified Debris, Demolition Debris, dredge effluent water, or other material once it is removed, dredged, or excavated and loaded on a vehicle, barge, or other vessel for transport, with the exception of historically, archaeologically, architecturally, or paleontologically significant structures, sites, or things, or Suspected UXO. Historical, archaeological, architectural, or paleontological significant structures, sites, or things; ionizing radiation items; and Suspected UXO remain the property of Canada.
- .16 The Coasting Trade Act applies to all vessels utilized by the Contractor during completion of the work as part of this Contract.
- .17 The work will require a planned, careful, and flexible approach by an experienced Contractor to ensure that the Y Jetty fender system structures are carefully disconnected, relocated, and reinstated; all dredge material, Identified Debris, Demolition Debris, and encountered Dredge Debris is dredged, transported, processed, and disposed of according to the methods described in these Specifications; that in-water placement of Engineered Cap and Backfill Material is performed according to the methods described in these Specifications in order to maintain environmental quality; and all dredging, Engineered Cap and Backfill Material placement, and structural reinstatement work is completed by the Substantial Performance date.

- .18 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 120-metre (m) offset from all DND assets (i.e., jetties and moored vessels) when transiting vessels/barges outside of the Work Site, as shown on the Drawings and as required in Section 01 35 00.50 (Special Procedures for Harbour Control).
- .19 The Contractor must perform the work with care and pay attention to proximity of PWGSC infrastructure. The Contractor must not access the Esquimalt Graving Dock (EGD) Waterlot area, as shown on the Drawings.
- .20 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.
- .21 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 tracking of dredge material, Identified Debris, Dredge Debris, and Demolition Debris tonnage.
- .22 All work must comply with environmental guidelines of the EMP and the associated Water Quality Monitoring Plan (WQMP), applicable Laws and Regulations, and any permit requirements.
- .23 For this Contract, any reference to “days” must 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 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 or Departmental Representative's designee will be completed to determine the significance of the item(s).
- .2 Archaeological Monitor. The Contractor must employ an Archaeological Monitor to supervise monitoring for structures, sites, or things that may be valued for their historical, archaeological, architectural, and paleontological significance as determined by the Archaeological Monitor with acceptance by the Departmental Representative. The Archaeological Monitor must be a Registered Professional Archaeologist in BC and must employ First Nations representatives to assist in the archaeological monitoring. The Archaeological Monitor must be present full time during dredge material segregation activities at the Processing Facility to examine the processed sediments and collect any observed archaeological materials, including things that may be valued for their historical, archaeological, architectural, and paleontological significance. The Archaeological Monitor will also 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 dredging and other in-water activities at the Work Site.
- .3 Backfill Material. Backfill Material is defined as material that will be placed in Material Placement Areas B1 through B6 as shown on the Drawings. A total of five (5) different Backfill Material Types must be used for the project, as described in Section 35 37 10 (Capping and Material Placement).
- .4 Certificate of Disposal. The Certificate of Disposal must be a document issued by the Disposal Facility, which includes, on company letterhead, the name and location where the material is being placed for final permanent disposal, a description of the date and quantity for each shipment of material received, total

- quantity of material received, and signature by the identified authorized company representative. This documentation must be provided by the Contractor to the Departmental Representative upon receipt from the Disposal Facility. The Contractor is required to include with the Certificate of Disposal all scale tickets from the Disposal Facility.
- .5 Certificate of Treatment (if proposed). The Certificate of Treatment must be a document issued by the Treatment Facility, which includes, on company letterhead, the name and location where the material is being treated and treatment type, a description of the date and quantity for each shipment of material received, total quantity of material received, date and quantity of material for each treatment event, laboratory certificates from a certified laboratory demonstrating treatment objectives were met, total quantity of material treated, and signature by the identified authorized company representative. The laboratory must be accredited according to Standards Council of Canada, Canadian Association of Laboratory Accreditation Inc. (ISO/IEC 17025), and British Columbia Ministry of Environment and Climate Change Strategy (BC ENV). This documentation must be provided by the Contractor to the Departmental Representative upon receipt from the Treatment Facility. The Contractor is required to include with the Certificate of Treatment all scale tickets from the Treatment Facility.
- .6 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 Construction Work Plan, the Construction Progress Schedule must be submitted within ten (10) working days of Contract Award date showing activity sequencing, interdependencies, and duration estimates.
- .7 Construction Work Plan. The Construction Work Plan is a pre-construction submittal that includes the Contractor means and methods during completion of the 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).
- .8 Contingency Re-Dredge Decision Duration. Contingency Re-Dredge Decision Duration is defined as the period of time between the Departmental Representative's acceptance of the Required Dredging Post-Construction Survey and the Departmental Representative's direction to the Contractor as to whether Contingency Re-Dredging activities will be required. During this period of time, the Contractor must not perform work within the associated Work Zone. The Contractor must assume a Contingency Re-Dredge Decision Duration of

ten (10) days, and will not be paid for this decision duration and must account for this time in the Tender Item for CONTINGENCY RE-DREDGING, under Optional Work in the Unit Price Table (if the Departmental Representative elects to include Contingency Re-Dredging as part of the Contract).

- .9 Contingency Re-Dredge Volume. Contingency Re-Dredge Volume is the volume of all contaminated sediments that may require removal as part of Residuals Contingency Re-dredging and Missed Inventory Contingency Re-dredging, as directed by the Departmental Representative, and that will be paid for within the specified tolerance and Payable Overdredge Allowance identified in these Specifications and shown on the Drawings. Contingency Re-Dredging is an optional Tender Item (referred to as CONTINGENCY RE-DREDGING under Optional Work in the Unit Price Table) and the Departmental Representative may elect to include Contingency Re-Dredging as part of the Contract.
- .10 Contingency Re-Dredging. Contingency Re-Dredging will be optional and additional dredging as directed by the Departmental Representative after Required Dredging activities have been completed, and based on Departmental Representative-conducted confirmation sampling and testing results. Any need for Contingency Re-Dredging, as well as the horizontal and vertical limits for Contingency Re-Dredging, will be determined by the Departmental Representative. Contingency Re-Dredging is an optional Tender Item (referred to as CONTINGENCY RE-DREDGING under Optional Work in the Unit Price Table) and the Departmental Representative may elect to include Contingency Re-Dredging as part of the Contract.
 - .1 Missed Inventory Contingency Re-Dredging Minimum Cut Thickness: The Minimum Cut Thickness for Missed Inventory Contingency Re-Dredging activities must be 0.5 m below the post-Required Dredging surface, and will be directed by the Departmental Representative.
 - .1 Missed Inventory Contingency Re-Dredging Payable Overdredge Allowance: The Missed Inventory Contingency Re-Dredging Payable Overdredge Allowance will be 0.15 m below the Missed Inventory Contingency Re-Dredging Minimum Cut Thickness for Missed Inventory Contingency Re-Dredging.
 - .2 If optional Contingency Re-Dredging is required by the Departmental Representative, only one round of Contingency Re-Dredging will be conducted, and DUs 27, 29, 30, 32, 34, 38, and 41 are not included.
 - .2 Residuals Contingency Re-Dredging Minimum Cut Thickness: The Minimum Cut Thickness for Residuals Contingency Re-Dredging must be 0.3 m below the post-Required Dredging surface, as directed by the Departmental Representative.
 - .1 Residuals Contingency Re-Dredging Payable Overdredge Allowance: The Residuals Contingency Re-Dredging Payable

- Overdredge Allowance will be 0.15 m below the Minimum Cut Thickness for Residuals Contingency Re-Dredging.
- .2 If optional Contingency Re-Dredging is required by the Departmental Representative, only one round of Contingency Re-Dredging will be conducted, and DUs 27, 29, 30, 32, 34, 38, and 41 are not included.
- .11 Contractor Off-Site Offload Facility. The Contractor Off-Site Offload Facility is defined as the Contractor-provided off-site upland site where excavation and dredge material including Identified Debris, Dredge Debris, and Demolition Debris that have been generated from the Work Site are offloaded, stockpiled (if applicable), dewatered (if applicable), segregated (if not segregated on a floating platform), treated (as applicable), rehandled, and transferred onto trucks or railcars (if rail access is available) for disposal at a Disposal Facility. The facility must be operated in compliance with Laws and Regulations or equivalent United States regulations if the facility is located in the United States. The Contractor may also use this area for off-site staging of equipment or materials.
- .12 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.
- .13 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 Specification sections.
- .14 Debris. Debris consists of the following types of materials at the Work Site for removal and disposal:
- .1 Demolition Debris: Demolition Debris is defined as material arising as a result of selective site demolition or structure demolition activities, and Debris from the demolition and removal of the Former Marine Railway, as described in Section 02 41 13 (Selective Site Demolition) and Section 02 41 16.01 (Structure Demolition). Demolition Debris may include timber (whole pieces or fragments), timber piles, concrete, metal, hardware, conduits, wire, plastic, urethane foam, rubber, or other items

that will not be reinstated or reused. Demolition Debris must be disposed of at a Disposal Facility accepted by the Departmental Representative.

- .2 **Dredge Debris:** Any solid waste materials other than sediment excavated as part of the dredging operations, such as timber piles and pile stubs, logs, wire, cable, rails that may be encountered (exclusive of the identified Former Marine Railway structure), steel bands, anchors, lumber, trash, concrete, etc. The cost to remove, handle, and dispose of all Dredge Debris is incidental to the work, with the exception of timber piles, as described subsequently. The removal of Dredge Debris will be paid under the Tender Item for DREDGING. Dredge Debris excludes Demolition Debris and Identified Debris.
 - .1 Dredge Debris includes the removal of timber piles or pile stubs encountered during dredging that are not part of identified structures to be demolished or relocated and reinstated. There is an estimated 1,500 to 2,500 timber piles that may be encountered during dredging. The Contractor must attempt to remove the entire length of piles and pile stubs within the Dredge Prism. In the event that pile breakage occurs during extraction, the Contractor must make reasonable efforts to extract the broken portion of the pile(s). Pile remnants must not remain above final grade of the seabed.
 - .2 The cost to remove and handle timber piles is incidental to the work and will be paid for under the Tender Item for DREDGING. The disposal of Dredge Debris timber piles will be paid separately under the Tender Item for DISPOSAL OF TIMBER PILES DURING DREDGING.
 - .3 Dredge Debris must be disposed of at a Disposal Facility accepted by the Departmental Representative.
- .3 **Identified Debris:** Identified Debris is defined as solid waste material resulting from removal of Debris targets shown on the Drawings and described in Appendix E to these Specifications (see Y Jetty and Lang Cove Debris memoranda, including an inventory of Debris items in tabular format and associated diver Debris survey reports). Identified Debris must be disposed of at a Disposal Facility. The cost for effort to remove, segregate, offload, transport, and dispose of Identified Debris must be included in the Tender Item for REMOVAL OF IDENTIFIED DEBRIS, TRANSPORTATION, AND DISPOSAL.
- .4 Table 01 11 55-1 summarizes the types of Debris and payment structure:

Table 01 11 55-1
Summary of Debris and Related Unit Price Table Tender Item(s)

Debris Item	Payment for Removal of Debris	Payment for Disposal of Debris	Related Unit Price Table Tender Item(s)
Demolition Debris	Unit Price Table – Applicable Tender Item	Unit Price Table – Applicable Tender Item (disposal is incidental to demolition work)	<ul style="list-style-type: none"> • SELECTIVE SITE DEMOLITION: GENERAL • STRUCTURE DEMOLITION: FORMER MARINE RAILWAY – TIMBER STRUCTURE • STRUCTURE DEMOLITION: FORMER MARINE RAILWAY – STEEL RAILS AND STEEL COMPONENTS • STRUCTURE DEMOLITION: TIMBER FENDER PILES AND TIMBER FENDER COMPONENTS
Dredge Debris	Incidental to the Dredging Work	Incidental to the Dredging Work	<ul style="list-style-type: none"> • DREDGING • OFFLOADING AND TRANSPORTATION • DISPOSAL
Timber Piles (Dredge Debris)	Incidental to the Dredging Work	Unit Price Table – Tender Item	<ul style="list-style-type: none"> • DREDGING • OFFLOADING AND TRANSPORTATION • DISPOSAL OF TIMBER PILES DURING DREDGING
Identified Debris	Unit Price Table – Tender Item	Unit Price Table – Tender Item	<ul style="list-style-type: none"> • REMOVAL OF IDENTIFIED DEBRIS, TRANSPORTATION, AND DISPOSAL

- .15 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.
- .16 Disposal Facility.
- .1 A Disposal Facility consists of a permanent, existing (i.e., in operation prior to Contract Award) upland facility located in Canada or the United States, where waste materials (i.e., dredge material, Dredge Debris, Identified Debris, and Demolition Debris) are permanently placed in or on land. Waste materials disposed of at the Disposal Facility are not allowed to be moved out of the Disposal Facility. The Disposal Facility is designed, constructed, and operated to prevent any pollution from being caused by the facility outside the area of the facility. The Contractor may propose to use more than one Disposal Facility to accept the various waste categories, as needed. The Contractor must complete and submit the

“YJLC Mandatory Disposal Facility Form” for all proposed Disposal Facilities at the time of Tender submission.

- .2 The Disposal Facility(ies) must hold a valid and subsisting permit, license, certificate, approval, or any other form of authorization issued by a Facility Regulator (i.e., federal, provincial, or state government) for the handling and disposal of IL+ material, material with PCBs greater than 2 ppm and less than 50 ppm (if required), or Hazardous Waste Quality Materials (if required), as defined previously in this section. If disposal is to occur in the United States, the minimum level of disposal must be at a Resource Conservation and Recovery Act-permitted Subtitle D Landfill or more restrictive Subtitle C Landfill for Hazardous Waste Quality Materials.
- .3 The Disposal Facility(ies) must operate in accordance with federal, provincial, territorial, state, and/or municipal regulations and guidelines for the disposal of sediment or other material that is not suitable for industrial, commercial, urban park, residential, agricultural, wildlands, or any other land use specified in local regulations. Within ten (10) working days after notification of Contract Award, the successful tenderer must submit a permit or other form of authorization indicating the Disposal Facility can accept the material and a copy of the permit or other form of authorization for review by the Departmental Representative. The Disposal Facility(ies) must be accepted by the Departmental Representative prior to use. In carrying out the work under the Contract, the Disposal Facility must comply with Laws and Regulations, including complying with any enforcement order or direction of any nature or kind under the Laws and Regulations related to the work under the Contract. Disposal of dredge material and Dredge Debris, Identified Debris, and Demolition Debris must be performed at a Disposal Facility (as per Section 35 20 23.01 [Offloading, Material Processing, Transportation, and Disposal]).
- .4 In the event the Disposal Facility is a permanent, existing facility and operates outside the jurisdiction of a federal, provincial, or state government that can issue a permit or any other form of authorization for its operation, or the Disposal Facility is located on reserve land in Canada that is subject to a land code in force under the *First Nation Land Management Act*, the First Nations, or an entity designated by the land code or other First Nations law, the Contractor must provide the information specified as part of the Facility Regulator definition (see Clause 1.3.27).
 - .1 In addition, the Disposal Facility must comply with BC ENV solid waste facility regulations. The Contractor must provide information to demonstrate compliance, and that information must

be the same as requested on the “Information Requirements Table for Solid Waste (Form IRT-SW-01.1).”

- .1 Within ten (10) working days of notification of Contract Award, submit plans approved by a QP for the Disposal Facility, to the same as the plans referenced in Form IRT-SW-01.1.
- .5 Should the proposed Disposal Facility(ies) not meet the requirements, the Contractor must provide alternate Disposal Facility(ies) at no additional cost to Canada. The Contractor must submit a separate “YJLC Mandatory Disposal Facility Form” for the alternate Disposal Facility and be accepted by the Departmental Representative prior to use.
- .17 Dredge Pay Volume. Dredge Pay Volume is the calculated quantity of in situ dredge material removed by the Contractor that will be paid for. The Dredge Pay Volume will be determined by calculating the total amount of in situ cubic metres of material dredged (based on comparison of Pre-Construction and Post-Construction Surveys), minus Excessive Dredging, and does not include Slough Material.
- .18 Dredge Prism. The Dredge Prism is the area defined by the horizontal limits of dredging and excavation shown on the Drawings that the Contractor is required to dredge. The Dredge Prism includes the area within the defined toe of cuts and the Side Slopes. The Contractor must not directly remove material from outside of the Dredge Prism. The Contractor must remove Slough Material that falls into the Dredge Prism and must account for this volume in the applicable Tender Item.
- .19 Dredge Residuals. Dredge Residuals are defined as contaminated sediment that are generated and suspended during dredging activities and that settle to the surface of the seabed.
- .20 Dredge Unit. A Dredge Unit (DU) is a specified area, as shown on the Drawings, that is assigned a Required Dredge Elevation or Required Cut Thickness for Required Dredging.
- .21 Engineered Cap. Engineered Cap (also referred to as Capping or Engineered Capping) is the controlled, accurate placement of clean isolating materials to cover or isolate contaminated material from the aquatic environment that will be placed in Material Placement Areas C1 through C4 as shown on the Drawings. Engineered Cap composition and thicknesses consist of three (3) discrete layers of different material types, as described in Section 35 37 10 (Capping and Material Placement). A total of six (6) different Engineered Cap Material Types must be used for the project, as follows and as described in Section 35 37 10 (Capping and Material Placement).
- .22 Environmental Management Plan (EMP). 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 remediation construction activities. The EMP provides guidance and generally accepted best management practices (BMPs) and mitigation measures, to assist the Contractor in preparation of the EPP. Because water quality management is a significant environmental protection component of the project, a Water Quality Monitoring Plan has been prepared and is included as part of the EMP. 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, 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 Site. The EMP is included in Appendix B of these Specifications.

- .23 Environmental Protection Plan (EPP). The Contractor must submit an EPP, 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. Although provincial and municipal Laws and Regulations generally do not apply on federal lands, the Contractor, as a "good neighbour", must respect regulations, local by-laws, and rules at the Work Site. This plan must address all construction activities. The EPP must be submitted to and accepted by the Departmental Representative prior to the start of work described in Section 01 33 00 (Submittal Procedures).
- .24 Excessive Dredging. Excessive Dredging is defined as material removed outside the Dredge Prism or below the Payable Overdredge Allowance, as described in these Specifications, and as shown on the Drawings. Excessive Dredging will not be paid for. The Contractor must take extra care to prevent Excessive Dredging to avoid potentially adversely impacting slope and/or structural stability. The Contractor must repair any damage caused by Excessive Dredging at no extra cost to Canada. If additional Engineered Cap or Backfill Material is required to be placed in areas of Excessive Dredging, the Contractor must purchase and place the additional material at no extra cost to Canada.
- .25 Excessive Overplacement. Backfill Material and Engineered Cap placed either outside of the Material Placement Area limits or above the established Maximum Overplacement Allowance or the Vertical Placement Tolerance is Excessive

Overplacement and will not be paid. The Departmental Representative reserves the right to require the Contractor to remove Excessive Overplacement material, at no additional cost to Canada. Dragging of a beam or raking to level Excessive Overplacement material is prohibited. Excessive Overplacement may be considered less critical in Backfill Material and Engineered Cap areas that are not affected by navigation, and the Departmental Representative may not require removal of Excessive Overplacement as a corrective action in these areas.

- .26 Exclusion Zone. An area in Lang Cove, as shown on the Drawings, where the Contractor must not transit or navigate floating vessels or other equipment to avoid the risk of damaging a sensitive archaeological item (i.e., documented heritage ship wreck site DcRu-1259) on the seabed floor in an area of shallow water. The Contractor must not enter this area or anchor, spud, place material, or dredge in this area. The Contractor must proceed with caution when dredging or placing material in DU 33, adjacent to the Exclusion Zone, and incorporate archeological monitoring because some structures from the Exclusion Zone (i.e., slipway steel rails as shown on the Drawings) may extend into this area.
- .27 Facility Regulator. The Disposal Facility and Treatment Facility (if applicable) must hold a valid and subsisting permit, certificate, approval, or any other form of authorization issued by a Facility Regulator for the handling, treatment, or disposal of contaminated material. The appropriate Facility Regulator for a Disposal Facility, Treatment Facility (if applicable), Contractor Off-Site Offload Facility, and Wastewater Treatment and Disposal Facility is based on the following types of facilities:
- .1 For facilities within provincial jurisdiction, the relevant provincial government.
 - .2 For facilities on reserve land in Canada not subject to the First Nation Land Management regime, Indigenous, and Northern Affairs Canada.
 - .3 For facilities on reserve land in Canada that is subject to a land code in force under the *First Nation Land Management Act*, the First Nations, or an entity designated by the land code or other First Nations law.
 - .4 For facilities in the United States of America (prohibited for the Processing Facilities), either or both the U.S. Environmental Protection Agency and the relevant state agency, as appropriate.
- .28 Former Marine Railway. The Former Marine Railway is an existing timber structure that will be demolished and disposed of as part of the project. Portions of the Former Marine Railway were demolished and removed by others in previous works. The remaining in-water portion is assumed to extend approximately from the existing low water mark on the shoreline out to the vessel berthing area on the south side of Y Jetty as shown on the Drawings. The scope of demolition and removal includes structure dismantling, pile extraction, and off-site disposal of Demolition Debris arising from steel rail tracks (4 rails in total), rail track support system, timber piled foundations, timber framing, bolting

- materials, and miscellaneous timber and steel components. Dredging may be required first, in order to locate the buried structural components and timber piles associated with the marine rails and to facilitate demolition and removal. Demolition work within the Former Marine Railway extent must be performed within a silt curtain as described in Section 01 35 13.43 (Special Project Procedures for Contaminated Sites).
- .29 Hazardous Waste Quality Materials. All sediment and Debris demonstrated to meet the definition of hazardous waste in the BC HWR.
- .30 Health and Safety Plan. The Contractor must submit one (1) 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.
- .31 Health and Safety Program. 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. Requirements of the Health and Safety Program are described in 01 35 29.14 (Health and Safety for Contaminated Sites).
- .32 Horizontal Datum. Universal Transverse Mercator (U.T.M.) North American Datum (NAD) 83, in metres (m).
- .33 Inherent Delay. Potential downtime that is considered to be inherent to conducting the work and that will not qualify as Stand-by Time. The Contractor must carefully consider and account for downtime associated with potential Inherent Delays in the appropriate Tender Item. The following representative scenarios are considered Inherent Delays, and other scenarios may apply:
- .1 Encountering Suspected UXO during dredging at the Work Site or segregation at the Processing Facility that is deemed safe to move by the UXO Qualified Personnel.
 - .2 Encountering structures, sites, or things that may be valued for their historical, archaeological, architectural, and paleontological significance during segregation at the Processing Facility, as determined by the Archaeological Monitor, but that do not result in work stoppage directed by the Departmental Representative.
 - .3 All time spent between the encountering of Suspected UXO or item of potential historical, archaeological, architectural, and paleontological significance and the determination of its safety risk or significance.
 - .4 Inclement weather.

- .5 CFB Esquimalt operations taking precedence over Contractor activities outside of the Work Site.
- .6 Relocating equipment in the performance of work.
- .7 Mechanical breakdowns, repairs, or maintenance of Contractor or subcontractor equipment.
- .8 Review of new equipment added to the Work Site (i.e., new barges or vessels).
- .34 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.
- .35 Leachable Metals Area. The Leachable Metals Area is located within DU 9 and Work Zone 2A, as shown on the Drawings, and contains the presence of contaminated sediment with leachable levels of lead that classify the sediment as leachable toxic waste under the BC HWR (if removed from Esquimalt Harbour without stabilization) and is to be removed and stabilized under this Contract.
 - .1 Contaminated sediment removed from the Leachable Metals Area must be stabilized within Esquimalt Harbour and the Contractor must propose a testing program (accepted by the Departmental Representative) to verify the quality of the material after stabilization, to confirm leachable lead is below the hazardous waste Leachate Quality Standard of 5 milligrams per litre per the BC HWR regulations, Schedule 4 (Table 1 – Leachate Quality Standards; and applicable analytical methods) prior to permanent disposal at a Disposal Facility as IL+ waste material, in accordance with Laws and Regulations and as required in Section 35 20 23.01 (Offloading, Material Processing, Transportation, and Disposal).
- .36 Leachate Quality Standard. The Leachate Quality Standard threshold concentrations are defined in the BC HWR regulations, Schedule 4 (Table 1 – Leachate Quality Standards).
- .37 Material Placement Area. The Material Placement Area is the area defined by the horizontal limits of material placement shown on the Drawings that the Contractor is required to place Backfill Material and Engineered Cap materials, as described in Section 35 37 10 (Capping and Material Placement).
 - .1 Material Placement Area – Backfill Material:
 - .1 Material Placement Area B1: Material Type 1 must be placed in Material Placement Area B1. Requirements for Material Type 1 are identified in Section 35 37 10 (Capping and Material Placement). This material will be placed at the variable Targeted Placement Elevations and includes a Vertical Placement Tolerance as shown on the Drawings. Its purpose is to return elevations to within 0.15 m of pre-construction seabed elevations in order to

- provide structural support in the area of the fender system (Y Jetty) prior to their reinstatement of the fender system.
- .2 Material Placement Area B2: Material Type 1 must be placed in Material Placement Area B2. Requirements for Material Type 1 are identified in Section 35 37 10 (Capping and Material Placement). The material will be placed at the Targeted Placement Thickness and includes a Vertical Placement Tolerance as shown on the Drawings. Its purpose is to provide backfill cover material over existing site sediments in shoreline areas and underneath the Y Jetty structure.
 - .3 Material Placement Area B3: Material Type 2 must be placed in Material Placement Area B3. Requirements for Material Type 2 are identified in Section 35 37 10 (Capping and Material Placement). The material will be placed at the Targeted Placement Elevations and includes a Vertical Placement Tolerance as shown on the Drawings. Its purpose is to return elevations to within 0.15 m of pre-construction seabed elevations to support natural recovery in these areas.
 - .4 Material Placement Area B4: Material Type 3 must be placed in Material Placement Area B4. Requirements for Material Type 3 are identified in Section 35 37 10 (Capping and Material Placement). The material will be placed at the Required Minimum Placement Thickness as shown on the Drawings following dredging, as directed by the Departmental Representative. The Contractor must assume that Material Type 3 will be placed over the entirety of Material Placement Area B4. This material includes a Maximum Overplacement Allowance as shown on the Drawings. The purpose of this material is to provide backfill cover material over the post-dredge surface to manage post-dredge residual sediment concentrations.
 - .5 Material Placement Area B5: Material Type 3 must be placed in Material Placement Area B5. Requirements for Material Type 3 are identified in Section 35 37 10 (Capping and Material Placement). The material will be placed at the Required Minimum Placement Thickness and includes a Maximum Overplacement Allowance as shown on the Drawings. The purpose of this material is to provide backfill cover material to support natural recovery in the Lang Cove open water area as shown on the Drawings.
 - .6 Material Placement Area B6: Material Types 9 and 5 must be placed in Material Placement Area B6. Requirements for Material Types 9 and 5 are identified in Section 35 37 10 (Capping and Material Placement). The materials will be placed at the Targeted

Placement Elevations and include a Vertical Placement Tolerance as shown on the Drawings. The purpose of Material Type 9 is to return elevations to within 0.3 m of pre-construction seabed elevations to support natural recovery and provide cobble substrate to encourage kelp recolonization in these areas. Material Type 5 must be placed in a continuous layer within Material Placement Area B6 as shown on the Drawings.

.2 Material Placement Area – Engineered Cap

- .1 Material Placement Area C1: Material Types 4, 5, and 2 must be placed in Material Placement Area C1 as shown on the Drawings. Requirements for Material Types 4, 5, and 2 are identified in Section 35 37 10 (Capping and Material Placement) and include the addition of a specific blend percentage of pre-soaked Granular Activated Carbon (GAC) mixed in the bottom layer of the cap (i.e., Material Type 4). The Engineered Cap materials will be placed at the Required Minimum Placement Thickness and includes a Maximum Overplacement Allowance for Material Types 4 and 5, and a Vertical Placement Tolerance for Material Type 2 as shown on the Drawings.
- .2 Material Placement Area C2: Material Types 6, 5, and 2 must be placed in Material Placement Area C2 as shown on the Drawings. Requirements for Material Types 6, 5, and 2 are identified in Section 35 37 10 (Capping and Material Placement) and include the addition of a specific blend percentage of pre-soaked GAC mixed in the bottom layer of the cap (i.e., Material Type 6). The Engineered Cap materials will be placed at the Required Minimum Placement Thickness and includes a Maximum Overplacement Allowance for Material Types 6 and 5, and a Vertical Placement Tolerance for Material Type 2 as shown on the Drawings.
- .3 Material Placement Area C3: Material Types 6, 5, and 7 must be placed in Material Placement Area C3 as shown on the Drawings. Requirements for Material Types 6, 5, and 7 are identified in Section 35 37 10 (Capping and Material Placement) and include the addition of a specific blend percentage of pre-soaked GAC mixed in the bottom layer of the cap (i.e., Material Type 6). The Engineered Cap materials will be placed at the Required Minimum Placement Thickness and include a Maximum Overplacement Allowance for each Material Type as shown on the Drawings. Material Type 7 includes the removal, stockpile, and re-use of existing larger armour rock including procurement and installation, as needed, of additional armour rock to meet the Required Minimum Placement Thickness.

- .4 Material Placement Area C4: Material Types 8, 5, and 2 must be placed in Material Placement Area C4 as shown on the Drawings. Requirements for Material Types 8, 5, and 2 are identified in Section 35 37 10 (Capping and Material Placement). The Engineered Cap materials will be placed at the Required Minimum Placement Thickness and include a Maximum Overplacement Allowance for Material Types 8 and 5, and a Vertical Placement Tolerance for Material Type 2 as shown on the Drawings.
- .38 Material Type. The Material Type is the specified material to be used as Backfill Material and Engineered Cap materials as shown on the Drawings and as identified in Section 35 37 10 (Capping and Material Placement).
- .39 Maximum Overplacement Allowance. The Maximum Overplacement Allowance is the maximum allowable thickness above the Required Minimum Placement Thickness that will be paid for. Maximum Overplacement Allowance varies by Material Type and areas as shown on the Drawings, and the maximum volume of the Maximum Overplacement Allowance is included in the Unit Price Table.
- .40 Missed Inventory. Missed Inventory is defined as contaminated sediments below the required dredge elevations and grades that are not removed as part of Required Dredging, as identified by the Departmental Representative's confirmation sampling and testing results.
- .41 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.
- .42 Obstruction(s). Rock pieces, wood, concrete, metal items, chains, wire ropes, drill rods, and other non-soil materials that are encountered fully embedded within the sediments below seabed and that are demonstrated to the Departmental Representative's satisfaction to materially affect the pile driving, pile re-driving, or pile extraction work. Bedrock or dense granular or till-like soils encountered during installation of piles are not to be considered as Obstructions.
- .43 Off-Site Stockpile Area. The Off-Site Stockpile Area is defined as the upland area within the Contractor's Off-Site Offload Facility, where the Contractor must handle dredge material, Identified Debris, Dredge Debris, and Demolition Debris following completion of offloading activities and prior to upland transportation and disposal of the material at the Disposal Facility, as described in Section 35 20 23.01 (Offloading, Material Processing, Transportation, and Disposal). The Off-Site Stockpile Area is also the area that the Contractor may use for off-site staging of equipment or materials.
- .44 Payable Overdredge Allowance. The Payable Overdredge Allowance for Required Dredging will be 0.3 m below the Required Dredge Elevation or

Required Cut Thickness, as shown on the Drawings. The Payable Overdredge Allowance on Contingency Re-Dredging will be 0.15 m below the Contingency Re-Dredging Minimum Cut Thickness (if the Departmental Representative elects to include Contingency Re-Dredging as part of the Contract). Material removed within the Payable Overdredge Allowance will qualify for payment under this Contract for the work. The Contractor must select its means and methods to conduct its dredging work to stay within the Payable Overdredge Allowance limits to the extent practicable. Material dredged below the Payable Overdredge Allowance (i.e., Excessive Dredging) will not qualify for separate payment. The Contractor must account for potential Excessive Dredging volume due to its means and methods in its Tender Item.

- .45 Post-Construction Survey. The Post-Construction Surveys must be completed by the Contractor's third-party licensed surveyor to document bathymetry conditions following completion of each component of the work within each Work Zone. The Post-Construction Surveys must be submitted to the Departmental Representative for review and acceptance. Once accepted, they will be used for measurement and payment of Contractor work completed within the Work Site.
- .1 Required Dredging Post-Construction Surveys. The Contractor must conduct a Post-Construction Survey after Required Dredging is completed and accepted by the Departmental Representative, after review of Progress Surveys.
 - .2 Contingency Re-Dredging Post-Construction Surveys. The Contractor must conduct a Post-Construction Survey in all areas designated by the Departmental Representative following completion of directed Contingency Re-Dredging activities (if the Departmental Representative elects to include Contingency Re-Dredging as part of the Contract).
 - .3 Backfill Post-Construction Surveys. The Contractor must conduct Post-Construction Surveys after placement of each of the Material Types that comprise Backfill Material.
 - .4 Engineered Cap Post-Construction Surveys. The Contractor must conduct Post-Construction Surveys after placement of each Engineered Cap Material Type layer within each area worked. The survey must be accepted by the Departmental Representative prior to placing the subsequent layer in that area.
- .46 Pre-Construction Meeting. The Pre-Construction Meeting is defined as 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.
- .47 Pre-Construction Survey. The Pre-Construction Survey must be completed by the Contractor's third-party licensed surveyor, as described in Section 02 21 13 (Surveying and Positioning Control) to document bathymetry conditions within the Work Zones in advance of conducting work. This includes the underpier

areas, to the extent practicable. The Pre-Construction Survey will be used as the basis for measurement of Contractor work completed within the Work Site.

- .1 Dredging Pre-Construction Survey. The Contractor's third-party licensed surveyor must conduct a Dredging Pre-Construction Survey in advance of conducting work.
 - .2 Backfill Pre-Construction Survey. The Required Dredging Post-Construction Survey or Contingency Re-Dredging Post-Construction Survey (if Contingency Re-Dredging is required and if the Departmental Representative elects to include Contingency Re-Dredging as part of the Contract) will serve as the Backfill Pre-Construction Survey for placement of the Backfill Material.
 - .3 Engineered Cap Pre-Construction Survey. The Required Dredging Post-Construction Survey or Contingency Re-Dredging Post-Construction Survey (if Contingency Re-Dredging is required and if the Departmental Representative elects to include Contingency Re-Dredging as part of the Contract) will serve as the Engineered Cap Pre-Construction Survey for placement of Engineered Cap material.
- .48 Processing Facility.
- .1 A facility designed, constructed, and operated for the segregation of Suspected UXO from the dredged sediment and that completes one or more of the following activities for all dredge material (excludes Dredge Debris, Identified Debris, and Demolition Debris): sorting, dewatering, screening, washing, material separation based on particle size (greater than a screen size of 6 millimetres [mm; 1/4 inch] from all dredge material as required in Section 35 20 23.01 (Offloading, Material Processing, Transportation, and Disposal). All waste materials following processing at the Processing Facility are prohibited from recycling or beneficial reuse and must be disposed at a Disposal Facility.
 - .2 Prior to initiation of in-water work, as required, the Processing Facility must hold a valid and subsisting permit, license, certificate, approval, or any other form of authorization issued by a Facility Regulator for the processing of contaminated material and subsisting permit, license, certificate, approval, or other form of authorization issued by a federal or provincial government, or other authority having jurisdiction, and operate in accordance with federal, provincial, and/or municipal regulations and guidelines for the processing of sediment or other material that is not suitable for industrial, commercial, urban park, residential, agricultural, wildlands, or any other land use specified in the BC CSR. The Processing Facility must be accepted by the Departmental Representative prior to use.
 - .3 The Processing Facility must be located within the extents of the area of responsibility for the DND's explosive ordinance disposal (EOD) Team based at the Fleet Diving Unit Pacific (FDU Pacific), as shown on the

Drawings. In carrying out the work under the Contract, the Processing Facility must comply with Laws and Regulations.

- .1 If the Contractor elects to locate the Processing Facility on a floating platform, then the Departmental Representative will inform the Contractor where the Processing Facility must be located within Esquimalt Harbour (within or outside of the Work Site boundary). The Contractor must assume that it will be located within the Colwood area of Esquimalt Harbour and the Contractor must be responsible for anchoring.
- .2 The Contractor is allowed to propose an alternative floating platform location for Departmental Representative review and acceptance, but it must be located within the extents of the area of responsibility of DND's EOD Team.
- .3 Once material is processed, the Contractor may choose to reload the processed material onto haul barges and transport processed material to a Contractor Off-Site Offload Facility that may or may not be within the extents of the area of responsibility of the DND's EOD Team.
- .4 The Processing Facility is expected to incidentally segregate structures, sites, or things of historical, archaeological, architectural, or paleontological significance. The Contractor must make provisions for collecting, sorting, and procuring a secure, covered storage area for temporary storage of all structures, sites, or things of historical, archaeological, architectural, or paleontological significance, including an on-site (e.g., processing barge) or off-site, secured, temperature-controlled location for temporary storage of pre-contact structures, sites, or things as described in this Specification section.
- .49 Progress Meeting. Progress Meeting is defined as a meeting between the Departmental Representative and the Contractor that will occur on a regular basis 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.
- .50 Progress Surveys. Progress Surveys must be completed by the Contractor on a daily basis to document progress of construction activities completed as part of the Contract. Progress Surveys will be used for progress payment to the Contractor and distributed to the Departmental Representative with the Contractor's Daily Construction Reports.
 - .1 Required Dredging Progress Survey: The Contractor must conduct these surveys on a daily basis to document dredging progress for Required Dredging.

- .2 Contingency Re-Dredging Progress Survey: The Contractor must conduct these surveys on a daily basis to document dredging progress for Contingency Re-Dredging, as needed, and if the Departmental Representative elects to include Contingency Re-Dredging as part of the Contract.
- .3 Backfill Placement Progress Survey: The Contractor must conduct these surveys on a daily basis to document placement of Backfill Material. In addition, a Progress Survey must be performed and accepted by the Departmental Representative between lifts of Material Type 3 in Material Placement Area B5 prior to placing the next lift.
- .4 Engineered Capping Progress Survey: The Contractor must conduct these surveys on a daily basis to document placement of Engineered Capping layers.
- .51 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. The Contractor's Environmental Specialist must coordinate directly with the Contractor, and the Contractor with the Departmental Representative for all environmental management considerations.
- .52 Qualified Marine Surveyor (QMS). The QMS is a marine surveyor with ten (10) or more years of experience in marine operations including tug, barge, and deep-sea operations with previously held positions in ship repair, maintenance, or construction. The QMS must be accepted by the Departmental Representative prior to commencement of work.
- .53 Qualified Professional (QP). 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).
- .54 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.
- .55 Record Documents. Record Documents are defined as completion records that document conditions by which construction activities are completed at the Work Site. 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 open-water and underpier bathymetry in each Work Zone as per the Backfill and Engineered Capping Post-Construction Survey requirements.
- .56 Required Cut Thickness. Required Cut Thickness (also referred to as Required Cut Thickness Dredging), as shown on the Drawings, must be performed by removing the specified thickness of material. The Contractor is not required to remove encountered riprap, bedrock, or till (as determined by field observations and accepted by the Departmental Representative) to achieve the specified thickness, but must remove sediment to the extent practicable, to the specified thickness throughout the entire Dredge Prism. Dredging and excavation work will be accepted if completed within the thickness identified on the Drawings.
- .57 Required Dredge Elevation. The Required Dredge Elevation represents the minimum elevation that must be achieved by dredging or excavation within the DUs. Required Dredge Elevations are shown on the Drawings and must be

- achieved by the Contractor in order to qualify for acceptance of the work by the Departmental Representative.
- .58 Required Dredging. Required Dredging is defined as the initial dredging or excavation within the horizontal extents and to the vertical Required Dredge Elevations or Required Cut Thicknesses shown on the Drawings where the Contractor is required to remove all materials, including Side Slopes but excluding Slough Material. The Unit Price Table includes the Payable Overdredge Allowance volume as part of the Tender Item for DREDGING.
- .59 Required Minimum Placement Thickness. The Required Minimum Placement Thickness is defined as the minimum thickness that the Contractor is required to place Engineered Capping and Backfill Materials within the required Material Placement Areas as shown on the Drawings
- .60 Side Slope. The slope to be excavated between the outer edge of the dredge cut at the required elevation (toe) and the intersect point at original ground level (top of cut or daylight). The design Side Slopes for this project are shown on the Drawings.
- .61 Slope Dredging. Slope Dredging is defined as dredging work performed within the slope areas of the Work Site, as shown on the Drawings. Slope Dredging identifies a toe of cut Required Dredge Elevation and a required grade to cut the slope, as shown on the Drawings.
- .62 Slough Material. Sediment on a side slope that loses toe support and sloughs into the Dredge Prism. Potential Slough Material volume, including Slough Material potentially generated from internal vertical side slopes between DUs, is not included in the quantities listed in the Unit Price Table. The Contractor must remove Slough Material from the Dredge Prism at no extra cost to Canada.
- .63 Stand-by Time.
- .1 PWGSC has included two Tender Items in the Unit Price Table, identified as STAND-BY TIME – IN-WATER and STAND-BY TIME – MATERIAL PROCESSING, to compensate the Contractor for potential Departmental Representative-directed work stoppage associated with the following conditions:
- .1 Work stoppage due to DND operational needs within the Work Site that occur with less than eight (8) hours' notice to the Contractor (STAND-BY TIME – IN-WATER applies).
- .2 Work stoppage due to encountering Suspected UXO that is unsafe to move during dredging activities at the Work Site (STAND-BY TIME – IN-WATER applies) and/or dredge material segregation at the Processing Facility (STAND-BY TIME – MATERIAL PROCESSING applies), as determined by the UXO Qualified Personnel, and accepted by the Departmental Representative. In

- this case the Departmental Representative would be responsible for the relocation of the Suspected UXO.
- .3 Work stoppage due to encountering structures, sites, or things that may be valued for their historical, archaeological, architectural, and paleontological significance during dredging at the Work Site (STAND-BY TIME – IN-WATER applies), as determined by the Archaeological Monitor, and accepted by the Departmental Representative.
 - .4 Work stoppage due to observations of herring spawn as described in Section 01 35 43 (Environmental Procedures) (STAND-BY TIME – IN-WATER applies).
- .2 Stand-by Time is defined as time that the Contractor is directed by the Departmental Representative to stop all work in a specified Work Zone or relocate equipment to another Work Zone due to the conditions identified in this Stand-by Time definition. Stand-by Time must be directed and accepted by the Departmental Representative. Contractor downtime, for any reason other than Departmental Representative direction to not work, will not qualify as Stand-by Time and the Contractor must carefully consider all other potential downtime, including Inherent Delays, and account for downtime in Tender Item prices.
 - .3 Stand-by Time also will not be paid for under the following conditions:
 - .1 If the Contractor's accepted Construction Progress Schedule does not show work to be performed during the period affected by the unanticipated operational need and/or observations of herring spawning.
 - .2 If the Contractor does not have the claimed crews and equipment at the Work Site ready to work, unless the Contractor has received prior acceptance from the Departmental Representative to send the crews home early or bring them in late due to the schedule impact.
 - .3 If the Contractor is given a minimum of eight (8) hours advanced notice of the unanticipated DND operational need that may affect the Contractor's work schedule, to allow the Contractor time to adjust its work schedule.
 - .4 If the Contractor delays in delivering to the Departmental Representative its written notification that describes the work prevented as a result of the unanticipated DND operational event; the encounter of Suspected UXO unsafe to move; the encounter of item of historical, archaeological, architectural, and paleontological significance; or the observation of herring spawning.

- .5 If the Contractor could continue working at another Work Zone that is not affected by the unanticipated operational need; encountering Suspected UXO unsafe to move; encountering items of historical, archaeological, architectural, and paleontological significance; and/or observations of herring spawning.
 - .6 If the Contractor cannot adjust its work activities with a minimum of eight (8) hours' notice to accommodate the unanticipated DND operational need and/or observations of herring spawning, the Contractor must substantiate this in writing to the satisfaction of the Departmental Representative. The Departmental Representative must accept the Contractor's justification to be considered for Stand-by Time.
 - .7 The request for compensation under this provision has not received the pre-acceptance of the Departmental Representative.
 - .8 Potential downtime associated with Inherent Delays.
- .4 Notification:
- .1 Notify the Departmental Representative in writing immediately in advance of all conditions for which the Contractor may request payment under this provision. Immediately following the impact event, the Contractor must provide the Departmental Representative with the number of hours of delay. If the time is accepted by the Departmental Representative, the Departmental Representative will notify the Contractor of acceptance for payment. The Departmental Representative will have sole discretion as to whether a Stand-by Time event is accepted.
- .64 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 Site, 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.
- .65 Suspected Unexploded Explosive Ordnance (UXO). Material that presents a potential explosive hazard. UXO is defined as explosive ordnance that has been primed, fused, armed, or otherwise prepared for action and which has been fired, dropped, launched, projected, or placed in such a manner as to constitute a hazard to operations, installations, personnel, or material and remains unexploded either by malfunction or design or for any other causes (NATO AAP-6). For the purposes of this Specification, Suspected UXO includes UXO, discarded military munitions, exploded ordnance, munitions scrap, and explosive residue. Others may refer to these items as duds, blinds, munitions, explosives of concern, or hazardous explosive ordnance. The Contractor is required to remove Suspected UXO, under the supervision of UXO Qualified Personnel, that is greater than a screen size 6 mm (1/4 inch) from all dredge material (does not include Identified

- Debris, Dredge Debris or Demolition Debris) through material processing of all dredge material at a Processing Facility prior to upland transportation to Treatment Facility (if applicable) and Disposal Facility.
- .66 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.
- .67 Targeted Placement Elevation. The Targeted Placement Elevation is defined as the target elevation or elevations that the Contractor must place materials within the required Material Placement Areas as shown on the Drawings. The Contractor will be paid for material placed within the Vertical Placement Tolerance.
- .68 Targeted Placement Thickness. The Targeted Placement Thickness is defined as the target thickness that the Contractor must place materials within the required Material Placement Areas as shown on the Drawings. The Contractor will be paid for materials placed within the Vertical Placement Tolerance.
- .69 Tender Item. Tender Item is defined as a measure of work presented on 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.
- .70 Treatment Facility. An existing facility designed, constructed, and operated for the handling or processing of waste in such a manner as to change the physical, chemical, or biological character or composition of the waste as described in Section 35 20 23.01 (Offloading, Material Processing, Transportation, and Disposal). The facility must hold a valid and subsisting permit, certificate, approval, or any other form of authorization issued by a Facility Regulator for the treatment of contaminated material and operate in accordance with federal, provincial, territorial, state, and/or municipal regulations and guidelines for the treatment of sediment or other material that is not suitable for industrial, commercial, urban park, residential (high and low density), agricultural, natural and reverted wildlands, or any other land use specified in the BC CSR or equivalent United States regulations if the Treatment Facility is located in the United States, as described in this Specification section. The Treatment Facility (if proposed) must be accepted by the Departmental Representative prior to use. In carrying out the work under the Contract, the facility must comply with Laws and Regulations, including complying with any enforcement order or direction of any nature or kind under the Laws and Regulations related to the work under the Contract. Treatment of dredge material (e.g., contaminated sediments, Dredge Debris, Identified Debris, and Demolition Debris), if proposed, must be

completed at a Treatment Facility. Material processing of all dredge materials to remove Suspected UXO must occur at the Processing Facility prior to any treatment at a Treatment Facility, if proposed. If the Treatment Facility is set up on a floating platform, the Contractor must meet requirements as in Section 01 35 00.50 (Special Procedures for Harbour Control). Notwithstanding treatment or additional processing, all dredge material, Identified Debris, Dredge Debris, and Demolition Debris must be disposed of at a Disposal Facility.

- .71 Unexploded Explosive Ordnance (UXO) Qualified Personnel. The Contractor must employ UXO Qualified Personnel to monitor, identify, assess, screen, handle/segregate/store (when and where safe to do so), and photograph and document all potential UXO found during this work. The qualifications for UXO Qualified Personnel must be submitted at time of bid submittal and are listed in Annex A to Chapter 3 of DND's *Draft Range Clearance and Unexploded Explosive Ordnance (UXO) Activities Manual B-GL-381-003/TS-000* dated 12 April 2011 (Appendix A to these Specifications). Only UXO Qualified Personnel or qualified military personnel may physically touch or handle UXO after determining a potential UXO is safe to move using accepted industry practices and procedures. UXO Qualified Personnel must be present full time during all processing activities at the Processing Facility and be on call for chance find call-outs in the event Suspected UXO are identified during dredging activities at the Work Site. UXO Qualified Personnel must follow at all times the requirements in Appendix A to these Specifications.
- .72 Vertical Datum. Permanently established plane from which soundings or tide heights are referenced. The vertical datum for this work is Chart Datum (CD), as shown on the Drawings.
- .73 Vertical Placement Tolerance. The Vertical Placement Tolerance is the depth and elevation ranges above and below the Targeted Placement Thickness and Targeted Placement Elevation that qualify for payment under this Contract for the work. The Contractor must account for these tolerances in its Tender Items for the Backfill Material volumes based on its proposed means and methods. The Vertical Placement Tolerance for each applicable Material Type is shown on the Drawings.
- .74 Waste Quality. Waste Quality is defined as contaminated sediment and Debris or other material that is not suitable for industrial, commercial, urban park, residential (high and low density), agricultural, natural and reverted wildlands, or other land use specified in the BC CSR.
- .75 Wastewater Treatment and Disposal Facility. A facility designed, constructed, and operated for the primary purpose of treating and disposing of wastewater including dredge effluent water (i.e., water generated from dredging that is collected, stored, and treated on watertight barges), process water, and other water generated during the implementation of the project. Requirements of the Wastewater Treatment and Disposal Facility are described in Section 01 35 13.43 (Special Project Procedures for Contaminated Sites).

- .76 Work Site. The Y Jetty and Lang Cove Work Site (Work Site) is defined as the boundaries within which all work must be completed, as shown on the Drawings.
- .77 Work Zone. An area as shown on the Drawings in which all required in-water work activities (structural demolition and temporary relocation, Required Dredging, Contingency Re-Dredging [if the Departmental Representative elects to include Optional Work as part of the Contract], placement of Engineered Capping and Backfill Material, and structural re-instatement) must be conducted continuously. However, the Contractor is allowed to perform intermittent in-water work activities within other Work Zones as described in Clause 1.4 of this Specification section.
- .1 South Work Zones: South Work Zones consist of Work Zones 1A, 1B, 1C, and 1D as shown on the Drawings.
- .2 North Work Zones: North Work Zones consist of Work Zones 2A, 2B, 2C, 2D, and 2E as shown on the Drawings.
- .78 Y Jetty Access Area. An upland area adjacent to Y Jetty will be made available for the Contractor's use as a Y Jetty Access Area as shown on the Drawings. The Departmental Representative will use the Y Jetty Access Area for on-site trailer office and other temporary facilities (trailers or temporary facilities to be provided by the Contractor). The Contractor may access the Y Jetty shoreline to conduct riprap removal and Engineered Capping work and may stockpile riprap that is removed from DUs 29 and 30 prior to reinstallation. The Y Jetty Access Area may not be used for stockpiling of dredge material, Identified Debris, Dredge Debris, Demolition Debris, or any other item removed or relocated from the Work Site, such as fender piles or any other structural elements, unless accepted by the Departmental Representative. In addition, it cannot be used to store supplies that are hazardous materials, such as fuel, oil, or timber treatment. No truck transport of removed materials (i.e., dredge material, Identified Debris, Dredge Debris, and Demolition Debris) is allowed to or from the Y Jetty Access Area. Security requirements must be met for all personnel that may use the Y Jetty Access Area.

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) and project milestones for the commencement of work and the completion of the South Work Zones.
- .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 in construction sequencing of work to complete the work 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, the Contractor must commence work at the Work Site within ten (10) working days.
- .2 The Contractor must notify the Departmental Representative ten (10) working days in advance of anticipated work at the Work Site or the Contractor Off-Site Offload Facility.
- .3 Conduct mobilization and set up temporary facilities at the Y Jetty Access Area, if utilized.
- .4 Complete set up activities of the Y Jetty Access Area, and Off-Site Stockpile Area (optional use by Contractor) and set up activities at the Contractor Off-Site Offload Facility prior to start of in-water work.
- .5 Complete a pre-construction condition inspection of Y Jetty, Y Jetty Access Area, existing boat ramp (adjacent to Work Site), the Former Marine Railway, electrical unit substation, groundwater monitoring well, and any other vessel moorage areas that the Contractor may use on DND property in advance of the start of work. Refer to Section 02 41 16.01 (Structure Demolition).
- .6 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.
- .7 If proposed by the Contractor, drive any temporary piling to safely support temporary moorage of Contractor's in-water equipment during performance of the work. The piling location(s) must be coordinated in conjunction with, reviewed, and accepted by the Departmental Representative. The installation of the temporary piling must be designed and supervised by a qualified professional engineer registered or licensed in the Province of British Columbia, to ensure the temporary piling performs as intended.
- .8 The Contractor must perform the in-water work in each Work Zone according to the following sequencing:
 - .1 The Contractor must not conduct work in the North Work Zones (i.e., Work Zones 2A, 2B, 2C, 2D, and 2E) when work is being

- conducted in the South Work Zones (i.e., Work Zones 1A, 1B, 1C, and 1D).
- .2 The Contractor must not conduct work in the South Work Zones (i.e., Work Zones 1A, 1B, 1C, and 1D) when work is being conducted in the North Work Zones (i.e., Work Zones 2A, 2B, 2C, 2D, and 2E).
 - .3 The Contractor must complete all required work in a continuous manner (i.e., do not leave gaps in time between work activities unless directed by Departmental Representative or during the Contingency Re-Dredge Decision Duration, if the Departmental Representative elects to include Contingency Re-Dredging as part of the Contract). The Contractor is allowed to temporarily relocate its equipment to perform work activities in other Work Zones (except as specifically stated in these Specifications) during the Contingency Re-Dredge Decision Duration to minimize equipment downtime and/or help achieve the Substantial Performance date. To maintain ongoing CFB Esquimalt operations, the Contractor must comply with the following:
 - .1 Work must be sequenced to start in the South Work Zones.
 - .2 All Dredging, Contingency Re-Dredging, Backfill Material placement, and Engineered Capping activities must be complete and accepted by the Departmental Representative in the South Work Zones (i.e., Work Zones 1A, 1B, 1C, and 1D) prior to initiating work in the North Work Zones (Work Zones 2A, 2B, 2C, and 2D, and Work Zone 2E) in order to maintain active berth space along one face of the Y Jetty wharf at all times.
 - .3 Table 01 11 55-2 summarizes sequencing for completion of the South Work Zones.
 - .4 Table 01 11 55-3 summarizes sequencing for completion of the North Work Zones.

Table 01 11 55-2

South Work Zone Sequencing for Completion of Required Dredging, Demolition, Engineered Cap Material and Backfill Material Placement Activities

Work Zones	Required Dredging/Demolition	Engineered Cap Material Placement	Backfill Material Placement	Milestone Completion Date for all Activities
1A	Must be completed prior to starting Required Dredging and Former Marine Railway demolition work in other South Work Zones	-	Must complete all Required Dredging and Contingency Re-Dredging (if required) activities prior to start of Backfill Material placement.	June 10, 2019
1B		-		
1C	All Required Dredging work must be completed in Work Zones 1A and 1B prior to start of Required Dredging and Former Marine Railway demolition work in Work Zone 1C	Begin immediately following completion of Required Dredging in Work Zones 1C and 1D (and Contingency Re-Dredging in Work Zones 1A and 1B if required)		
1D	All Required Dredging and demolition work in Work Zone 1C must be completed prior to start of Required Dredging work in Work Zone 1D.		-	

Notes:

(1) Completion of Required Dredging and optional Contingency Re-Dredging work includes acceptance by the Departmental Representative that the work is completed in accordance with the Drawings and these Specifications.

Table 01 11 55-3

North Work Zone Sequencing for Completion of Required Dredging, Demolition, Engineered Cap Material and Backfill Material Placement Activities

Work Zones	Required Dredging	Engineered Cap Material Placement	Backfill Material Placement	Milestone Completion Date for all Activities
2A	Required Dredging and confirmation sampling must be completed prior to starting Required Dredging in other North Work Zones	-	Must complete all Required Dredging and Contingency Re-Dredging (if required) activities prior to start of Backfill Material placement.	Substantial Performance Date: February 28, 2020
2B	May complete Required Dredging while waiting for sampling data from Work Zone 2A	-		
2C		-		
2D	Cannot begin until Required Dredging work is completed in Work Zones 2A, 2B, and 2C	Begin immediately following completion of Required Dredging in Work Zone 2D (and completion of optional Contingency Re-Dredging in Work Zone 2B if required)	-	
2E	-	-	Backfill Material placement may be completed concurrent with backfilling in other North Work Zones	

Notes:

(1) Completion of Required Dredging and optional Contingency Re-Dredging work includes acceptance by the Departmental Representative that the work is completed in accordance with the Drawings and these Specifications.

(2) Dredging of the Leachable Metals Area in Work Zone 2A must be sequenced before all other work in the North Work Zones and completed such that material from within the Leachable Metals Area does not recontaminate adjacent DUs. After completing the Required Dredging work in the Leachable Metals Area within Work Zone 2A, the Contractor must allow the Departmental Representative to conduct sediment sampling to confirm sediment concentrations prior to finishing the remainder of DU 9 within Work Zone 2A. The Contractor may continue Required Dredging work in Work Zone 2B or Work Zone 2C during the sampling period but not in a DU immediately adjacent to Work Zone 2A.

- .1 Within each Work Zone, complete the work activities according to the following sequencing:
 - .1 Complete any structure demolition, temporary structures relocation, and protection applicable to that Work Zone. This includes the Y Jetty fender system, protection of the Y Jetty structure, and protection of the Y Jetty utilities, as shown on the Drawings.
 - .2 Complete all Identified Debris removal, dredging and excavation, and associated survey activities including any Departmental Representative-directed Contingency Re-Dredging within that Work Zone, as shown on the Drawings, and await acceptance of the work by the Departmental Representative. Refer to Specification Section 35 20 23 (Remedial Dredging and Barge Dewatering), for more sequencing information for dredging.
 - .3 Complete Engineered Cap placement activities, as shown on the Drawings and described previously in the definition for Engineered Cap. Refer to Specification Section 35 37 10 (Capping and Material Placement), for more sequencing information for Engineered Cap material placement.
 - .4 Complete Backfill Material placement activities, as shown on the Drawings and described above in the definition for Backfill Material. Refer to Specification Section 35 37 10 (Capping and Material Placement), for more sequencing information for Backfill Material placement.
 - .5 Complete structure reinstatement activities and remove structure protection within that Work Zone, if applicable. This includes reinstatement of the fender system at Y Jetty, as outlined on the Drawings, and replacement of any structural components damaged during removal/reinstatement, as applicable. The structures and fender system must be reinstated at their original locations, as shown on the Drawings.
- .2 Complete post-construction condition inspection of Y Jetty, existing boat ramp, any other vessel moorage areas that the Contractor may use on DND property, electrical unit substation, and groundwater monitoring wells in Y Jetty Access Area at completion of construction. Refer to Section 02 41 16.01 (Structure Demolition).
- .3 Upon completion of all work, and after acceptance by the Departmental Representative, the Contractor must promptly remove the dredging plant and associated equipment, including floating Processing Facility, ranges, buoys, piles, and other markers placed by the Contractor in the water.

- .4 The Contractor must clean up all Work Site, Y Jetty Access Area, and Contractor Off-Site Offload Facility area(s) (including decontamination of Contractor equipment) and remove all temporary facilities. The Departmental Representative will inspect the Work Site, Y Jetty Access Area, and Contractor Off-Site Offload Facility.
- .5 The Contractor must demobilize following completion of the work, and following acceptance of the work by the Departmental Representative.
- .6 The Contractor must complete final disposal of all dredge material, Identified Debris, Dredge Debris and Demolition Debris, and must submit its Certificate of Disposal to the Departmental Representative prior to the Substantial Performance date. The Contractor must not move waste from one Disposal Facility to another Disposal Facility once the Contractor submits the Certificate of Disposal.

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 the Contractor's work or schedule (i.e., Small Boat Floats Project, EGD South Jetty reconstruction, C Jetty/ML Floats Remediation Project, or B Jetty Recapitalization Project).
- .2 The Contractor must be aware of the Small Boat Floats Project located immediately south and adjacent of the South Work Zones as shown on the Drawings. The Small Boat Floats Project includes blasting work that will occur during the completion of the work within the South Work Zones. The Contractor is responsible for coordinating with the Departmental Representative to determine potential impacts to Contractor's in-water work activities schedules.
- .3 The Contractor must be in direct communication with the Departmental Representative and contractors performing such 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 6-digit National Master Specifications System.
- .2 A division may consist of the work of more than one (1) 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 structure demolition, Debris removal, dredging, optional Contingency Re-Dredging, Engineered Capping, and Backfill Material placement by the Substantial Performance on February 28, 2020. Allow four (4) weeks for Departmental Representative inspections and completion of corrective actions as necessary (unless otherwise accepted by the Departmental Representative), with a Final Completion date of March 27, 2020.
 - .1 The South Work Zones project milestone date is as described in Clause 1.4 of this Specification section.
- .2 The following schedule conditions are fundamental to the Contract:
 - .1 In-water work including dredging, Debris removal, structure demolition and reinstatement, capping, backfill placement, and vibratory pile driving 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 Tender Items listed under Optional Work in the Unit Price Table in scheduling and construction completion to complete the work by the project milestones and 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 Restrictive as follows:
 - .1 Normal work hours are between 07:00 am to 7:00 pm 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 five (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 Site, 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, project milestones, 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 (i.e., 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 three (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 all work, 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 project milestones and 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 works. 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.
- .3 Measurement for Departmental Representative-directed STAND-BY TIME – IN WATER and STAND-BY TIME – MATERIAL PROCESSING must be through formal documented communications (i.e., advisories) with the Contractor. The unit price for both instances of Stand-by Time will not be adjusted regardless of the actual quantity used.

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 Site.
- .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 (1) copy of each of the following documents and any other applicable documents at the Work Site:
 - .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 (NOP).
 - .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 Specification 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 (e.g., trucking fees that Municipalities may charge). Required permits may include, but not be limited to, permit to discharge water from the Contractor Off-Site Offload Facility, Processing Facility, and Treatment Facility (if applicable).
- .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 Site.
- .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 Site

- .1 The Contractor's Work Site is indicated on the Drawings.
- .2 The Work Site limits for the Y Jetty deck (along full length of approach trestle and wharf head) are shown on the Drawings.
- .3 The Contractor and its subcontractors will be required to provide the Departmental Representative the Reliability Status before commencement of work and a duly completed proof of Security Clearance in order to gain access to the Work Site, CFB Esquimalt for project meetings, the Y Jetty Access Area, or for any identified work that must be completed from the adjacent upland areas or the Y Jetty structure as described in Section 01 51 00 (Temporary Facilities).
- .4 The Contractor and its subcontractors must provide construction fire safety for all operations conducted on the Work Site, as applicable. See Section 01 35 35 (DND Fire Safety Requirements) for details regarding fire safety.
- .5 The Contractor is designated as Prime Contractor on the Work Site 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 on the Work Site.
- .6 Use of Work Site:
 - .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 Site.
 - .4 Provide security of Contractor's and all subcontractors' equipment and material.
- .7 Perform work in accordance with Contract documents. Ensure that work is carried out in accordance with indicated sequencing.
- .8 Do not unreasonably encumber the Work Site with material and equipment.
- .9 Do not obstruct access to DND property outside of the Work Site. Maintain overhead clearances, keep roadways and walkways clear, maintain vessel navigation standards as described in these Specifications, and maintain routes for emergency response vehicles.
- .10 For requirements related to maintaining access along Y Jetty deck during the Work, refer to Section 02 41 16.01 (Structure Demolition) and the Drawings.

1.17 Character of Materials and Site Conditions

- .1 Character of materials and site conditions are described in Section 35 20 23 (Remedial Dredging and Barge Dewatering).
- .2 The Contractor must assume that all waste materials (i.e., dredge material, Dredge Debris, Identified Debris, and Demolition Debris), including stabilized dredge material from the footprint designated as the Leachable Metals Area as shown on the Drawings, will be transported and properly disposed of at an off-site Disposal Facility as IL+ material or an equivalent waste categorization level, minimum of Subtitle D, accepted by the Disposal Facility if disposed of in the United States, and in accordance with Laws and Regulations and as required in Section 35 20 23.01 (Offloading, Material Processing, Transportation, and Disposal). Recycling or beneficial re-use of the waste materials is prohibited.
- .3 No material designated for the removal from the Work Site has been identified as Hazardous Waste Quality Materials under the BC HWR, with the potential exception for the Leachable Metals Area material as described above in this Specification section. If Hazardous Waste Quality Materials are encountered, the Contractor should immediately notify the Departmental Representative. The encountered Hazardous Waste Quality Materials must be disposed of in accordance with applicable provincial and federal environmental regulations at an approved Disposal Facility in accordance with Laws and Regulations and as required in Section 35 20 23.01 (Offloading, Material Processing, Transportation, and Disposal).
- .4 Marine sediments with PCBs at concentrations greater than 2 ppm, and less than 50 ppm, will be removed as part of this work for permanent disposal at a Disposal Facility. Sediment PCB data are located in Appendix C to these Specifications.

1.18 Waiver and Indemnification

- .1 The Contractor may only berth their vessel(s) at CFB Esquimalt jetties with the permission of the QHM 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 Examination

- .1 Examine the Work Site and be familiar and conversant with existing conditions likely to affect the work.
- .2 Prior to initiating work at the Work Site, qualified Contractor's personnel must submit to the Departmental Representative's satisfaction, photographs of surrounding properties, objects, and structures liable to be damaged or be the subject of subsequent claims.

1.20 Existing Services

- .1 Where work involves breaking into or connecting into existing services, carry out work at time as advised by the Departmental Representative. The Contractor must notify the Departmental Representative seven (7) working days in advance of conducting any work related to existing services.
- .2 If any damage to DND utilities occurs and is attributable to the Contractor's actions, the Contractor must immediately notify the Departmental Representative and provide incident reports, and must immediately repair any such damage to satisfaction of the Departmental Representative at no extra cost to Canada.

1.21 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.

1.22 Acceptance of Substrates

- .1 The Contractor must examine existing surfaces, surfaces prepared by other contractors, and job conditions that may affect its work, and must report defects to the Departmental Representative. Commencement of work must imply acceptance of prepared work or substrate surfaces.

1.23 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.

1.24 Works Coordination

- .1 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.
- .2 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 Pay particular close attention to overhead work and work within or near to structural elements.
 - .2 Identify building elements, service lines, and rough-in points on coordination drawings and indicate location service entrances to Work Site.
 - .3 Facilitate meeting and review coordination drawings. Ensure that subcontractors agree and sign off on drawings.
 - .4 Publish minutes of each meeting.
 - .5 Plan and coordinate work in such a way to construct as-built conditions as shown on the Drawings.
 - .6 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.

1.25 Submittals

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

1.26 Archaeological Structures, Sites, or Things of Significance

- .1 Archaeological structures, sites, or things of historical, archaeological, architectural, and palaeontological significance may be encountered 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 Archaeological Monitor within the Work Site or within the processed dredge materials.
- .2 At the Work Site, except for during material processing activities (when a full time Archaeological Monitor is required), during bulk handling of dredge material (e.g., dredging, offloading), the Contractor's staff and subcontractors are required to follow Archaeological Chance Find Management Procedures and observe for the presence of such items. The Contractor's staff, the Archaeological Monitor, and subcontractors must immediately notify the Departmental Representative, who will notify PWGSC's own Archaeologist, if such items are encountered. If warranted, a field visit by the Departmental Representative or PWGSC's own Archaeologist will be completed to determine the significance of the item(s).
- .3 If human remains are encountered during dredging and/or processing, the Contractor must immediately stop construction in the vicinity of the remains and contact the Departmental Representative who will contact the local policing authority for further guidance. The local policing authority or the Departmental Representative will advise on further action, including notification of the Office of the Coroner. If it is determined that the remains are archaeological in nature, First Nations representatives will be invited to attend, and an appropriate procedure for handling the remains will be negotiated. Human remains must not be photographed at any time. The Contractor should be aware that removal of human remains and subsequent reburial may involve certain ceremonies or procedures that could lead to a Departmental Representative-directed stoppage of work.
- .4 All pre- and post-contact structures, sites, or things of historical, archaeological, architectural, and palaeontological significance, as determined by the

Archaeological Monitor, must be collected, sorted, and catalogued by the Archaeological Monitor. Catalogues must be generated daily by the Archaeological Monitor documenting all items found, where and how the item was found, where the item originated from in the Work Site, and what steps were taken to recover and preserve the item. The catalogues of historical materials must be submitted to the Departmental Representative once a week, as part of the Contractor's Daily Construction Report. Collected historical artifacts will be reviewed weekly with PWGSC's own Archaeologist to confirm that only historically significant materials are being collected. 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 PWGSC's own Archaeologist and stored on site (e.g., processing barge) 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 either collect the stored items or direct the Contractor to dispose of them as Dredge Debris at a Disposal Facility as described in Section 35 20 23.01 Offloading, Material Processing, Transportation, and Disposal.

- .5 At the Processing Facility, the Archaeological Monitor must be present during all processing activities, and any other activities deemed necessary by the Contractor, to observe for and identify any such items.
- .6 At the Work Site, the Contractor must await the Departmental Representative's written instructions before proceeding with work in any area where such items have been identified.
- .7 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.
- .8 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.
- .9 The Departmental Representative may request that the Contractor slow down construction operations at no cost to Canada to facilitate the archaeological monitoring and inspection.
- .10 The Contractor must submit, as a section of its Construction Work Plan, details on all 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 the 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.

- .11 Such articles will remain the property of Canada, until released by the Departmental Representative for disposal by the Contractor.
- .12 It is expected that structures or things of historical, archaeological, architectural, and palaeontological significance will be collected during segregation of Suspected UXO from the dredge material at the Processing Facility. The Archaeological Monitor must catalogue all observed historical materials, including categorizing by material type (e.g., bottle glass, ceramic), counting, and photographing all items. The ongoing catalogue of historical materials must be submitted to the Departmental Representative weekly as part of the Contractor's Daily Construction Report. The Departmental Representative will have the first right of refusal to either collect the retained materials (e.g., all pre-contact and paleontological structures or things of significance) or direct the Contractor to dispose of non-significant historical structures or things at a Disposal Facility.

1.27 Products Supplied by Departmental Representative

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

1.28 Security Checks

- .1 Personnel employed on this project will be subject to security check through the CFB-Esquimalt Visitor Clearance Request (VCR) process. Obtain requisite clearances, as instructed, for each individual required to enter the premises.
- .2 The Contractor must secure the Contractor's equipment and staging areas and its contents throughout the construction period.

1.29 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 the Contract documents.
- .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 (1) 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.

1.30 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 to these Specifications.
- .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).

1.31 Cleaning

- .1 Conduct cleaning and disposal operations daily. Comply with local ordinances and anti-pollution laws.
- .2 Ensure cleanup of the work areas each day after completion of work.
- .3 Use cleaning materials and methods in accordance with instructions of the manufacturer of the surface to be cleaned.
- .4 The Contractor must ensure all floating equipment is free of marine growth before equipment is brought into Esquimalt Harbour, in particular invasive species that may be present on equipment from sources outside of Esquimalt Harbour.

1.32 Site Control and Access

- .1 All individuals requiring access to the Work Site and Y Jetty Access Area (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 VCR. The SRCL is provided as a Reference in Appendix A to these Specifications.
- .2 Make provisions for granting permission to access onto Work Site 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 Site 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 Site are provided with, trained in the use of, and wear, appropriate PPE that is required above and beyond the designated minimums previously noted and as specifically related to the Work Site 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. The PPE program is described in Section 01 35 29.14 (Health and Safety for Contaminated Sites).
- .4 Control all Work Site access points and Work Site activities. Delineate and isolate the Contractor Off-Site Offload Facility from adjacent and surrounding areas by use of appropriate means to maintain control of all Work Site access points.
- .5 Provide safety barricades and lights around the Work Site (as necessary), Y Jetty Access Area, and the Contractor Off-Site Offload Facility as required to provide a safe working environment for workers and protection for pedestrian and vehicular traffic.
- .6 Ensure that non-authorized persons are not allowed to circulate in designated construction areas of the Work Site, Y Jetty Access Area, and the Contractor Off-Site Offload Facility.
 - .1 Provide appropriate means by use of barricades, fences, warning signs, traffic control personnel, and temporary lighting as required.
 - .2 Secure site(s) at night time as deemed necessary to protect site against entry.

- .3 Provide and maintain competent signal flag operators, traffic signals, barricades and flares, lights, or lanterns as required to perform work and protect other dock users.
- .4 Control all Work Site access points and Work Site activities. Delineate and isolate the Work Site, including the Y Jetty Access Area, and the Contractor Off-Site Offload Facility, from adjacent and surrounding areas by use of appropriate means to maintain control of all Work Site access points.
- .5 Make provisions for granting permission to access Work Site to all persons who require access. The Departmental Representative may also require access to the construction site on a periodical basis. Procedures for granting permission to access are to be in accordance with the Contractor's Health and Safety Program.
- .6 Erect signage at access points and at other strategic locations around the Work Site clearly identifying the Work Site area(s) as being "off-limits" to non-authorized persons. Signage must be professionally made with well-understood graphic symbols and is not to be used as advertising, but for the specific use as related to Work Site safety and key contact information.
 - .1 Information to be provided on the signage is as follows:
Instructions to Visitors:
Project Name/Description:
Contractor Company Name:
Project Superintendent's Name/Phone No.:
The Departmental Representative's Point of Contact Name/Phone No.:

1.33 Contractor Health and Safety Program

- .1 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. For the purpose of this Contract, the Health and Safety Program must include a site-specific Health and Safety Plan that acknowledges, assesses, and addresses the hazardous substances and/or hazardous conditions and on-going hazard assessments performed during the progress of work identifying and documenting new or potential health risks and safety hazards not previously known and identified. Requirements of the Health and Safety Plan are described in Section 01 35 29.14 (Health and Safety for Contaminated Sites).

- .2 The site-specific project Health and Safety Plan must be prepared and signed by a certified Industrial Hygienist, Certified Safety Professional (CSP), or similarly credentialed safety professional and submitted to the Departmental Representative.
- .3 Provide one copy of the Health and Safety Program to the Departmental Representative prior to commencement of work on the Work 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

1.34 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 will be incidental to the work.
- .3 The Contractor should be aware that there is a potential for non-ionizing radiation hazard for marine equipment in proximity to radars on DND vessels. Upon Contract Award, DND will discuss safety protocols with the Contractor.
- .4 The Contractor must employ and assign to work, competent and authorized personnel as the UXO Qualified Personnel per Section 35 20 23.01 (Offloading, Material Processing, Transportation, and Disposal).
- .5 The site-specific project Health and Safety Plan must include, as an attachment, the Fire Safety Plan. See Specification Section 01 35 35 (DND Fire Safety Requirements) for required content of the Fire Safety Plan.
- .6 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):
 - .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 Work Site during execution of work and report directly to and be under direction of site supervisor.
- .7 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.

- .8 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 Site.
- .9 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.
- .10 The Contractor must obtain permits, licenses, and compliance certificates at appropriate times and frequencies as required by the authorities having jurisdiction.
- .11 The Contractor must post all permits, licenses, and compliance certificates at Work Site and provide copies to the Departmental Representative.
- .12 The Contractor must conduct a site-specific hazard assessment based on review of the Contract, required work, and project Work Site 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 A to these Specifications.

1.35 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 time of 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.

- .7 Comply with specified codes, acts, by-laws, standards, and regulations to ensure safe operations at the Work Site and the Contractor Off-Site Offload Facility.
- .8 The Contractor and its subcontractors must follow all applicable traffic rules and laws and must strictly adhere to all posted speed limits.
- .9 Correction procedures for health and safety non-compliance issues are described in Section 01 35 29.14 (Health and Safety for Contaminated Sites).

1.36 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. In the event of a fatal or serious accident, procedures must be followed by the Contractor as described in Section 01 35 29.14 (Health and Safety for Contaminated Sites).

1.37 Health and Safety Records on Site

- .1 Maintain on Work Site a copy of the safety documentation as specified in this section 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 JOSH 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 (WHMIS) Material Safety Data Sheets (MSDS) 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 MSDS at Work 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 Upon request, make copies available to the Departmental Representative.

1.38 Building Smoking Environment

- .1 Smoking within any building is not permitted.
- .2 Comply with CFB Esquimalt Smoking Policy and Designated Smoking Areas (provided in Appendix A to these Specifications).

1.39 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).

1.40 Familiarization with Work Site

- .1 Before submitting Tender, visit the Work Site 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 in regard to existing conditions due to lack of familiarity with the Work Site.

1.41 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 Site, 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 of Work

- .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)
- .3 Section 01 51 00 (Temporary Facilities)

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 three (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 ten (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 five (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 Site 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 Requirements for temporary facilities, site sign, offices, utilities in accordance with Section 01 51 00 (Temporary Facilities).
 - .9 Daily Tailgate Meeting.

- .10 Progress Meetings.
- .11 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 (including the Archaeological Monitor and a representative from the Contractor's Unexploded Explosive Ordnance [UXO] Qualified Personnel), and the Departmental Representative must be in attendance.
- .3 The Contractor must notify parties a minimum five (5) working days prior to meetings.
- .4 The Contractor must reproduce and distribute copies of the Progress Meeting minutes within three (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 (RFIs) and Advisories.
 - .8 Review of contemplated change notices and change orders.
 - .9 Problems that impede Construction Progress Schedule.
 - .10 Review of off-site fabrication delivery schedules.
 - .11 Review of project vessel traffic that will be leaving and entering the Work Site.

- .12 Corrective measures and procedures to regain projected Construction Progress Schedule.
- .13 Revision to Construction Progress Schedule.
- .14 Construction Progress Schedule for succeeding work period.
- .15 Review submittal schedules and expedite as required.
- .16 Maintenance of quality standards.
- .17 Review proposed changes for affect on Construction Progress Schedule and on completion date.
- .18 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 Work Site and Contractor Off-Site Offload Facility[ies]), 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 Specification 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 Specification sections, those individual Specification sections apply.

SUMMARY LIST OF SUBMITTALS

Pre-Construction Submittals

Section	Submittal	Submittal Schedule
01 11 55 01 35 29.14	Notice of Project	Prior to commencement of work
01 11 55 02 41 13 02 41 16.01 02 41 16.02 31 62 19 35 20 23 35 20 23.01 35 37 10	Construction Work Plan (CWP) (includes Initial Construction Progress Schedule)	Within ten (10) working days after date of Contract Award The Departmental Representative will review and provide comments within five (5) working days after receipt of the complete CWP A revised CWP must be submitted within five (5) working days after receipt of comments from the Departmental Representative Re-reviewing and subsequent Contractor resubmittal will also be the same durations Work must not commence until the CWP is complete and accepted by the Departmental Representative
01 11 55	Initial “month-by-month” Cash Flow Estimate	Same submittal schedule as CWP
01 11 55 01 35 13.43 01 35 43 01 51 00 02 41 13 02 41 16.01 02 41 16.02 35 20 23	Environmental Protection Plan (EPP) (includes Work Site Layouts, Sediment and Erosion Control Plan, Water Quality Protection Plan, and Silt Curtain Control Plan)	Same submittal schedule as CWP
01 11 55 01 35 29.14 01 35 35	Health and Safety Plan (including Emergency Procedures, Personal Protective Equipment Program, and Fire Safety Plan)	Within twenty (20) working days after date of Contract Award and prior to commencement of work Same review schedule as CWP
01 11 55 01 45 00 02 21 13 35 20 23	Quality Control Plan (including Survey and Positioning Control Plan)	Same submittal schedule as CWP

Section	Submittal	Submittal Schedule
01 11 55 02 41 16.01	Pre-construction condition inspection reports and dive videos	At least ten (10) working days prior to commencement of the work The Departmental Representative will review and provide comments within five (5) working days after receipt of the complete pre-construction condition inspection reports and dive videos The revised reports must be submitted within five (5) working days after receipt of comments from the Departmental Representative Re-reviewing and subsequent Contractor resubmittal will also be the same durations Work must not commence until the pre-construction condition inspection reports and dive videos are complete and accepted by the Departmental Representative
01 11 55	Security Clearance Documentation	Initiate prior to Contract Award. Security clearances must be attained prior to Contractor accessing the Work Site
01 11 55 35 20 23.01	Disposal Facility (and Treatment and/or Processing Facility, if applicable) Permit(s)	Same submittal schedule as CWP
01 11 55	YJLC Mandatory Disposal Facility Form (for any proposed Disposal Facility)	At time of Tender submission
01 11 55	Disposal Facility requirements of Clause 1.3.16.4 in Section 01 11 55 (General Instructions), including: <ul style="list-style-type: none"> • “Information Requirements Table for Solid Waste (Form IRT-SW-01.1).” • Plans approved by a Qualified Professional for the Disposal Facility 	Same submittal schedule as CWP

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; anchoring plan of a Processing Facility setup on a floating platform; moorage/anchoring plan for vessel moorage during off-hours and inclement weather; bollard pull certificate for all towing vessels; general conditions survey)	Within fifteen (15) working days after date of Contract Award The Queen’s Harbour Master (QHM) will review and provide comments within three (3) weeks after receipt of the complete NCP A revised NCP must be submitted within five (5) working days after receipt of comments from the QHM Re-reviewing and subsequent Contractor resubmittal will also be the same durations Work must not commence until the NCP is complete and accepted by the QHM
01 35 00.50	Floating Equipment Certificate of Qualification, including Floating Plant Form	At time of Tender submission
01 35 00.50	Safety Management System (SMS) for all registered vessels	Same submittal schedule as NCP
01 35 13.43	Performance of Wastewater Treatment and Disposal Facility Initial Testing Results	TBD
01 35 13.43	Wastewater Disposal Facility Operational Instructions and Procedures	TBD
01 51 00	Condition Inspection Report	Prior to initiating work
01 91 13	Commissioning (Cx) Procedures	At least ten (10) working days prior to start of commissioning (Cx)
02 21 13	Dredging Pre-Construction Survey	At least two (2) weeks prior to start of in-water construction activities
02 41 16.01	Weigh Scale Facilities Submittals (proof of calibration and certification)	At least ten (10) working days prior to use of weigh scale facilities for Demolition Debris
02 41 16.01 31 62 19	Structure Demolition (alternate method for timber pile extraction and timber pile-driving, if Contractor proposes not to use vibratory piling hammer)	At least ten (10) working days prior to use of alternate methods in the work

Section	Submittal	Submittal Schedule
02 41 16.02	Structure Relocation (survey and dimensioned scale drawing for the floating camels, tire fender logs and containment boom at Y Jetty)	At least ten (10) working days prior to disconnecting structures for relocation
05 50 00	Metal Fabrication Submittals (fabricated products, if required for the work)	At least ten (10) working days prior to commencing fabrication
05 50 00	Metal Fabrication Submittals (certified mill reports, analyses and test results, if required for the work)	At time of delivery of metal fabrications to the Work Site
06 05 73	Wood Treatment Submittal (name, credentials and certification of testing firm, if required for the work)	At least ten (10) working days prior to commencing Quality Control testing
06 05 73	Wood Treatment Submittal (treatment certificates and Best Management Practice certification, if required for the work)	At time of delivery of treated wood products to the Work Site
06 10 10	Timber Submittals (product data)	At least ten (10) working days prior to procuring timber components
06 10 10	Shop Drawings for Glue-laminated Timber Components (only needed if replacement glue-laminated timber components are required for the work)	At least ten (10) working days prior to fabricating glue-laminated timber components
06 10 10	Timber Submittal (Best Management Practice certification)	At time of delivery of treated wood products to Work Site
26 05 00	Electrical Submittals (product data and quality control, only needed if new electrical items are required)	At least ten (10) working days prior to delivery of products to the Work Site
26 05 20	Low Voltage Wire and Box Connectors (product data, only needed if new electrical items are required)	At least ten (10) working days prior to delivery of products to the Work Site
26 05 21	Low Voltage Wires and Cables (product data, only needed if new electrical items are required)	At least ten (10) working days prior to delivery of products to the Work Site
27 05 13	Communication Services Submittals (product data, only needed if new electrical items are required)	At least ten (10) working days prior to delivery of products to the Work Site
31 62 19	Timber Piling Submittal (product data)	At least ten (10) working days prior to delivery of products to the Work Site

Section	Submittal	Submittal Schedule
31 62 19	Timber Piling Submittal (test reports and certificates)	At time of delivery of timber piles to the Work Site

Progress Submittals

Section	Submittal	Submittal Schedule
01 11 55 01 31 19	Minutes of Progress Meeting(s)	Within three (3) working days after meetings
01 11 55	Coordination Drawings	When required
01 11 55 01 35 00.50 02 21 13 31 62 19 35 20 23 35 20 23.01 35 37 10	Daily Construction Report (including, but not limited to, dredging and material placement areas and quantities, daily pile extraction and pile-driving records, and catalogues of collected archaeological and unexploded explosive ordnance [UXO] materials [once a week only])	By noon the following day
01 11 55 35 20 23	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
01 11 55 02 21 13	Post-Construction Bathymetric Survey(s) and Quantity Calculations	Within twenty-four (24) hours after completing the Post-Construction Bathymetric Survey, and as part of the Contractor’s Daily Construction Report
01 11 55 35 20 23.01	Certificates of Disposal	Upon receipt from the Disposal Facility and prior to Substantial Performance
01 11 55 35 20 23.01	Certificates of Treatment (if applicable)	As necessary

Section	Submittal	Submittal Schedule
01 11 55 01 35 00.50 01 35 29.14	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 MSDS and other WHMIS 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 Site
01 35 00.50	For any new equipment brought on site, new Floating Equipment Certificate of Qualification, including Floating Plant Form	Within ten (10) working days prior to bringing the equipment on site
01 45 00	Inspection and Laboratory Test Reports	Within two (2) working days following completion of inspection or receipt of analytical data from a testing laboratory
02 21 13	Progress Survey(s) and Quantity Calculations	Daily
02 41 16.01	Weigh Scale Facilities Submittals (manifests, weight tickets and other tracking documentation for Demolition Debris)	Within twenty-four (24) hours of each use of each weigh scale facility for Demolition Debris
26 05 00 27 05 13	Electrical and Communication Services (field test results)	Within twenty-four (24) hours of completion of each test.
31 62 19	Timber Piling (selected piles for re-use in the work)	Within twenty-four (24) hours of extraction of piles from the seabed
02 41 16.01	Water Utility Distribution Piping (test results for leakage testing)	Within twenty-four (24) hours of completion of each test
02 41 16.01	Sanitary Sewer Force Mains (test results for leakage testing)	Within twenty-four (24) hours of completion of each test
35 20 23 35 20 23.01 35 37 10	Empty and Full Barge Displacement Measurements	Prior to each sediment and debris barge leaving the Work Site, and following offload of each sediment and debris barge Empty and full displacements of barges used for transport of Backfill Material
35 20 23.01	Processing Facility Waste Stream Test Results (if Contractor elects to conduct testing of waste streams)	Prior to transporting material from the Processing Facility

Section	Submittal	Submittal Schedule
35 20 23.01	Materials Tracking Documents, including copies of all manifests, weight tickets, and other documentation to demonstrate and track the final disposition of the dredge sediment, Identified Debris, Dredge Debris, and Demolition Debris	As materials leaves the Work Site through final disposal at the Disposal Facility
35 20 23.01	Stamped Engineering Drawings for New or Significantly Rehabilitated or Upgraded Structures	As necessary
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 Engineered Cap and Backfill Materials to the Work Site from the Contractor's Off-Site Offload Facility or the point of origin of the barge
35 37 10	Backfill Materials and Engineered Capping Samples	At least two (2) weeks in advance of use at the Work Site
35 37 10	Backfill Materials and Engineered Capping materials Laboratory Test Results	At least two (2) weeks in advance of use at the Work Site

Post-Construction Submittals

Section	Submittal	Submittal Schedule
01 11 55 02 41 16.01	Post-construction condition inspection reports and dive videos	<p>Within ten (10) working days of completion of the work</p> <p>The Departmental Representative will review and provide comments within five (5) working days after receipt of the complete post-construction condition inspection reports and dive videos</p> <p>The revised reports must be submitted within five (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 be considered as complete until the post-construction condition inspection reports and dive videos are complete and accepted by the Departmental Representative</p>
01 11 55 35 20 23.01	Certificates of Disposal	Upon receipt from the Disposal Facility and prior to Substantial Completion
01 11 55 35 20 23.01	Certificates of Treatment (if applicable)	Prior to final disposal of dredge material
01 78 30 02 21 13 26 05 00 27 05 13 31 62 19	Record Documents (including all pile extraction and pile-driving records)	No later than ten (10) working days after completion of the work
01 78 30	Certificate of Completion	No later than ten (10) days after of completion of the work
01 78 30	Notification of Contractor Inspection Completion	Upon satisfactory completion of Contractor Inspection
26 05 00	Operation and Maintenance Manuals, as required	Two (2) weeks prior to substantial performance of the work

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 five (5) working days for the Departmental Representative review of all submittals and an additional five (5) working days for re-submittals. The Contractor must provide re-submittals within five (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 Site.

1.8 Shop Drawings and Product Data

- .1 The term “shop drawings” means drawings, diagrams, illustrations, schedules, performance charts, brochures, and other data that are to be provided by the Contractor to illustrate details of a portion of the work.
- .2 Submit shop drawings bearing the stamp and signature of a Qualified Professional Engineer registered or licensed in the Province of British Columbia, Canada.
- .3 Indicate materials, methods of construction and attachment or anchorage, erection diagrams, connections, explanatory notes, and other information necessary for completion of the work. Where articles or equipment attach or connect to other articles or equipment, indicate that such items have been coordinated, regardless of section under which adjacent items will be supplied and installed. Indicate cross references to design Drawings and Specifications.
- .4 Allow five (5) working days for the Departmental Representative review of each submission.
- .5 Adjustments made on shop drawings by the Departmental Representative are not intended to change the Tender amount for the Contract. If adjustments affect the value of the work, state such in writing to the Departmental Representative prior to proceeding with the work.
- .6 Make changes in shop drawings as the Departmental Representative may require, consistent with Contract documents. When resubmitting, notify the Departmental Representative in writing of revisions other than those requested.
- .7 Submissions include:
 - .1 Date and revision dates.
 - .2 Project title and number.
 - .3 Name and address of the Contractor.

- .4 Contractor's stamp, signed by the Contractor's authorized representative certifying acceptance of submissions, verification of field measurements, and compliance with Contract documents
- .5 Details of appropriate portions of work.
- .8 After the Departmental Representative's review, distribute copies.
- .9 If, upon review by the Departmental Representative, no errors or omissions are discovered or if only minor corrections are made, copies will be returned and fabrication and installation of work may proceed. If shop drawings are rejected, a noted copy will be returned and resubmission of corrected shop drawings, through the same procedure indicated above, must be performed before fabrication and installation of work may proceed.
- .10 The review of shop drawings by the Departmental Representative is for sole purpose of ascertaining conformance with general concept.
 - .1 This review must not mean that the Departmental Representative or others approve detail design inherent in shop drawings, responsibility for which must remain with the Contractor submitting same, and such review must not relieve the Contractor of responsibility for errors or omissions in shop drawings or of responsibility for meeting requirements of construction and Contract documents.
 - .2 Without restricting generality of foregoing, the Contractor is responsible for dimensions to be confirmed and correlated at the job site, for information that pertains solely to fabrication processes or to techniques of construction and installation, and for coordination of work of sub-trades.

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 (Capping and Material Placement)

1.2 Definitions

- .1 Refer to Section 01 11 55 (General Instructions) for all 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 – March 2017 (<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 all 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 Dredges 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 ten (10) working days prior to bringing the equipment on site.
- .3 The Contractor must enroll all vessels that operate under their own power over twenty-four (24) metres 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 fifteen (15) working days following Contract Award.
- .4 The Contractor must enroll all vessels constructed to Class under twenty-four (24) metres 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 condition survey report or Certificate of Inspection must be submitted by the Contractor to the Departmental Representative within fifteen (15) working days following Contract Award.
- .5 The Contractor must submit a third-party general condition survey 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 fifteen (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 ten (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 fifteen (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 (HP).
- .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 must initiate corrective actions.
- .12 If the Processing Facility is set up on a floating platform, then the vessel must be inspected, certified, and stamped by a Naval Architect or a Professional Engineer licensed in British Columbia as being stable and seaworthy in its final configuration (i.e., including the barge and any processing equipment mounted or fed to the barge) and must have an accompanying anchoring plan also stamped by a Naval Architect or a Professional Engineer licensed in British Columbia. The anchoring plan of the Processing Facility set up on a floating platform must be submitted to the Departmental Representative as part of the NCP within fifteen (15) working days following Contract Award.

- .13 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 out of or into Esquimalt Harbour. Material barge transport movements within Esquimalt Harbour require a twenty-four (24)-hour notification to the QHM.
- .14 Material transported by barge outside of Esquimalt Harbour requires that the Contractor meet any applicable Laws and Regulations governing those waters.
- .15 The Contractor must follow all rules established as part of the Esquimalt Harbour Practices and Procedures, 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 harbor.”
- .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 Queen’s Harbour Master, Canadian Forces Base (CFB) Esquimalt (QHM). 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 marine 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 dredge material, Identified Debris, timber pile Dredge Debris, and Demolition Debris tonnage.
- .2 A stamped statement from a certified marine 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-metre (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 inclement 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 Specification 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 fifteen (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 at the Work Site.

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 are available on the internet at: <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 half an hour (0.5 hours) 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 International Ship and Port Security (ISPS) Code.
 - .1 A Contractor vessel arriving from an ISPS Code-compliant facility may be required to have the VSO 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 four (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 (72) hours' notice prior to the arrival of any vessel that may be subject to a hull inspection, or two (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 Trailing Tug Requirements

- .1 A trailing tug must be used for any towed vessel proceeding east of a line drawn between Ashe Head and Grant Knoll, as shown on the Drawings, or working in or exiting from Constance Cove, due to the risk of damage to other ships or port infrastructure. Any deviation from this procedure must be approved, in advance, by the Harbour Authority. Towing vessels are responsible for their tow, in all conditions, and must ensure that sufficient assets are employed to account for all contingencies that may arise.
 - .1 Barges or other non-powered construction equipment vessels are permitted to utilize spuds or piles, in conjunction with cable and winch systems, in order to reposition themselves. Dredging barges are not permitted to utilize dredge buckets to reposition themselves.
 - .2 The Contractor is allowed to spud in intertidal zones that are part of the Work Site during dredging and material placement, with the exception of the Exclusion Zone or as noted in other Specification sections (e.g., Section 35 37 10 [Capping and Material Placement]).

1.13 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 applicable 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 Site 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).

1.14 DND Operations

- .1 The Contractor must perform construction in the Work Zones according to the construction sequencing in these Specifications and as shown on the Drawings, except if directed by the Departmental Representative. The Contractor is required to maintain the maximum offset possible with a minimum 10-m offset from all DND vessels within the Work Zones.
- .2 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 120-m offset from all DND assets (i.e., jetties and moored vessels) when transiting vessels/barges through Esquimalt Harbour and into and out of the Work Site, as shown on the Drawings. The Contractor does not have access to transit in the Esquimalt Graving Dock Waterlot.
- .3 The Contractor must coordinate with the Departmental Representative during the construction activities to avoid impacting potential Y Jetty and Lang Cove operations, which must take precedence over the Contractor's work. DND does not anticipate vessel mooring in the Work Zone in which the Contractor is working based on the provided project milestones, unless for emergency purposes. If DND requires vessel mooring in or near the Work Zone in which the Contractor is working, the Departmental Representative may allow the Contractor to continue work in the Work Zone.
- .4 The Contractor is responsible for health and safety considerations associated with planned construction activities in the Work Site, 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 Zone(s) during emergency procedures.
- .5 The Departmental Representative can direct the Contractor to modify the configuration of equipment in the Work Site if the Departmental Representative determines the Contractor's vessels are configured in a manner that may be unsafe or has the potential to cause damage to DND assets. The intent is to reduce the potential for allision or unsafe work conditions as determined by the Departmental Representative
- .6 When working adjacent to a DND structure or moored vessel the Contractor must spud, anchor, or fix the dredge derrick barge and any associated dredge material barges or ancillary equipment associated with the work prior to conducting any dredging, demolition, or material placement activities. The dredge derrick barge and plant must be similarly fixed during the movement of other barges or larger vessels within the Work Zone. If this cannot be accomplished, the Contractor must provide an alternative solution for review and acceptance by the Departmental Representative.

1.15 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 general condition 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
 - .15 Survey Summary
- .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 Site 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.
- .5 The Contractor must have a Qualified Marine Surveyor, or an individual that the Qualified Marine Surveyor has designated as qualified, to inspect each barge load of dredge material, Dredge Debris, and Demolition Debris prior to transport from the Work Site to the Contractor's Processing Facility or Off-Site Offload Facility to assess whether the barge is properly loaded, is seaworthy, and has no observable stability issues such as evidenced by barge listing.
- .1 Documentation of such certification must be provided to the Departmental Representative prior to that barge leaving the Work Site.
 - .2 Documentation of such certification must be included in the Contractor's Daily Construction Report.
 - .3 The Qualified Marine Surveyor, or his/her designee, must obtain barge displacement measurements upon arrival to the Work Site when the barge is empty and prior to in-water transportation, and establish an estimated tonnage of material associated with that barge load. Estimated tonnages for each barge load of material removed from the Work Site must be recorded in the Contractor's Daily Construction Report.

1.16 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

- .1 This section provides a summary of special project procedures that are applicable for work performed at contaminated sites, such as the remedial dredging of the Work Site. In addition, it includes requirements for procurement, maintenance, and repair of silt curtains required during completion of the work. The Contractor is responsible for adhering to these special procedures while completing all work under this Contract.
- .2 Other Specification sections, the Environmental Management Plan (EMP), and project permits may also contain specific requirements for environmental protection. Those specific requirements are in addition to the requirements in this section; the more stringent requirements must control. Refer to the EMP for a comprehensive list of environmental requirements. The control of environmental pollution requires consideration of noise levels, air, water, and land.
- .3 Environmental degradation arising from construction activities must be prevented, abated, controlled, and minimized by the Contractor. Although provincial laws and municipal by-laws generally do not apply on federal lands, the Contractor must respect provincial laws and municipal by-laws and rules at the Work Site.
- .4 The Contractor must comply with any permit conditions supplied to the Contractor.
- .5 The Contractor is responsible for environmental protection during all construction activities at all locations where it performs work. Work locations include, but are not limited to, the Work Site, Y Jetty Access Area, Contractor Off-Site Offload Facility, Processing Facility, Treatment Facility (if applicable), and during barge transport over water and land-based transportation of dredge material to the Disposal Facility. This section primarily addresses work conducted at the Work Site, but the Contractor is responsible for complying with environmental protection regulations at all locations that are used.
- .6 The Y Jetty Access Area will be made available for the Contractor as described in Section 01 11 55 (General Instructions). The Contractor may request a modification to this requirement from the Departmental Representative.

1.2 Measurement and Payment Procedures

- .1 Except for REQUIRED SILT CURTAINS, no separate payment will be made for Special Project Procedures for Contaminated Sites. The Contractor must refer to the Unit Price Table for details regarding Measurement and Payment for the Contract work.

- .2 Measurement and Payment for silt curtains required during cleaning of demolished piling over water and dredging is by lump sum and will be paid for under the Tender Item price for REQUIRED SILT CURTAINS.

1.3 Submittals

- .1 Submittals must be in accordance with Section 01 33 00 (Submittal Procedures).
- .2 Submit, within ten (10) working days following the date of Contract Award, an Environmental Protection Plan (EPP); see Section 01 35 43 (Environmental Procedures).
- .3 Work Site Layouts: Prior to mobilization to Work Site, and as part of the EPP, submit Work Site layout drawings as described as follows.
 - .1 Work Site, Y Jetty Access Area, temporary moorage, and Contractor Off-Site Offload Facility, Processing Facility, and Treatment Facility (if used) showing existing conditions and facilities, construction facilities, and temporary controls provided by the Contractor including the following:
 - .1 Equipment and personnel decontamination areas.
 - .2 Means of ingress, egress, and temporary traffic control facilities.
 - .3 Equipment staging areas.
 - .4 Barge landing and offload areas.
 - .5 Location of dredged material stabilization areas or floating platforms (if applicable).
 - .6 Sediment and Debris stockpile areas at the Contractor Off-Site Offload Facility.
 - .7 Exclusion zones, contaminant reduction zones, and other zones specified in the Contractor's site-specific Health and Safety Plan.
 - .8 Y Jetty Access Area and Off-Site Stockpile Area locations.
 - .9 Grading, including contours, required to construct temporary facilities (if applicable).
 - .10 Surface water management features including ditches, catch basins, spill aprons, any necessary water treatment measures, or other spill prevention and water management measures.
 - .11 Wastewater collection areas or facilities as necessary.
 - .12 Equipment decontamination areas
 - .13 Wastewater Treatment and Disposal Facility as necessary.
 - .14 Wastewater storage areas as necessary.
 - .15 Environmental protection zones.

- .16 Other environmental protection areas specified in the Contractor's site-specific Health and Safety Plan, and as described in this section, Section 01 35 29.14 (Health and Safety for Contaminated Sites), and Section 01 35 43 (Environmental Procedures).
- .2 Additional requirements for the Y Jetty Access Area layout include:
 - .1 Existing conditions and facilities.
 - .2 Temporary construction facilities including proposed stockpile areas and associated environmental controls.
 - .3 Temporary controls provided by the Contractor.
 - .4 Office trailer locations. See Section 01 51 00 (Temporary Facilities).
 - .5 Parking.
 - .6 Means of ingress, egress, and temporary traffic control facilities.
- .3 Additional requirements for the Processing Facility layout include:
 - .1 Location of Processing Facility.
 - .2 Suspected Unexploded Explosive Ordnance (UXO) magazine location and dimensions.
 - .3 Location and details (e.g., dimensions, type of storage) of secure, covered storage area for temporary storage of all pre-contact and non-pre-contact structures, sites, or things of historical, archaeological, architectural, and palaeontological significance.
 - .4 Location of stockpile areas.
 - .5 Facility process equipment and flow of dredge material through the process.
 - .6 Associated Wastewater Treatment and Disposal Facility, including permitted discharge location.
 - .7 Stormwater facilities and drainage pathways.
 - .8 Other applicable features that provide environmental controls or protection.

1.4 Definitions

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

1.5 Related Sections

- .1 Section 01 11 55 (General Instructions)

- .2 Section 01 33 00 (Submittal Procedures)
- .3 Section 01 35 29.14 (Health and Safety for Contaminated Sites)
- .4 Section 01 35 43 (Environmental Procedures)
- .5 Section 01 51 00 (Temporary Facilities)
- .6 Section 02 41 16.01 (Structure Demolition)
- .7 Section 02 55 10 (Dust Control)
- .8 Section 35 20 23 (Remedial Dredging and Barge Dewatering)

1.6 Sequencing and Scheduling

- .1 Do not commence work involving contact with potentially contaminated or hazardous materials until all environmental controls (including, but not limited to, silt curtains, decontamination facilities, and stockpile areas) are operational and accepted by the Departmental Representative. Work will not be allowed to commence without the Departmental Representative's review and acceptance of the EPP.

1.7 Equipment Decontamination

- .1 The Contractor must provide, operate, and maintain necessary equipment, pumps, and piping required to collect and contain equipment decontamination wastewater, if unable to discharge directly to the receiving waters per the requirements of the EMP.
- .2 Prior to commencing work involving equipment contact with potentially contaminated materials, the equipment decontamination area operated by the Contractor must be designed and constructed to accommodate the largest piece of potentially contaminated equipment.

1.8 Wastewater Management and Disposal

- .1 Wastewater management and disposal requirements provided in this section apply to management of wastewater including dredge effluent water (i.e., water generated from dredging that is collected, stored, and treated on watertight barges), process water, and other water generated during the implementation of the project at the Work Site, at the Wastewater Treatment and Disposal Facility, and all off-site facilities. The Contractor must be responsible for compliance with permit conditions for wastewater management and disposal activities performed at any upland facility used for the Contract during performance of the work.
- .2 Provide, operate, and maintain wastewater storage tanks to store wastewaters.
- .3 Wastewater, for the purposes of these Specifications, includes all of the following: water that comes into contact with contaminated sediments (e.g., barge or upland sediment dewatering effluent, water from any treatment or Processing

- Facility, as applicable), stormwater that comes into contact with contaminated sediment, and water collected from Equipment Decontamination Facility.
- .4 Store wastewaters from the Equipment Decontamination Facility in separate tank from wastewater from personnel hygiene/decontamination facility.
 - .5 If toilet facilities are provided in personnel hygiene/decontamination facility, store wastewater from these toilets with wastewater from hand basins and showers for ultimate disposal off site.
 - .6 Discharges: Comply with applicable discharge limitations and requirements; do not discharge wastewaters to site sewer systems that do not conform to, or are in violation of, such limitations or requirements; and obtain the Departmental Representative's acceptance prior to discharge of wastewater.
 - .7 The Contractor must test equipment decontamination wastewater or other wastewater (including barge dewatering effluent) for chemical parameters potentially present in the wash water. Where the EMP does not address specific parameters of concern in wastewater, the Contractor's Environmental Specialist is responsible for developing appropriate discharge limits to be included in the EPP and reviewed and accepted by the Departmental Representative. Wastewater generated at the Work Site may be discharged to receiving waters at the Work Site, provided it meets requirements for on-site discharge per the EMP. The Departmental Representative needs to be notified of all discharges of equipment decontamination wastewater or other wastewater at the Work Site. Decontamination wastewater or other wastewater, including barge dewatering effluent from off site, may not be transported to and disposed of at the Work Site. 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 Site.
 - .1 Wastewater generated as part of these activities that cannot meet these requirements must be disposed of at a Departmental Representative accepted Wastewater Treatment and Disposal Facility in accordance with all applicable permits (see Clause 1.22).
 - .8 Provide pumps and piping to convey collected wastewaters to designated wastewater storage tanks; provide wastewater storage tanks with minimum total live capacity such that effluent quality can be analyzed and accepted by the Departmental Representative prior to discharge.
 - .9 Install wastewater storage tanks in locations determined by the Contractor and accepted by the Departmental Representative.
 - .10 Support tank[s] on temporary aboveground foundation[s].
 - .11 Connect pumps, piping, valves, miscellaneous items, and necessary utilities as required for operation of facilities; and protect tanks, valves, pumps, piping, and miscellaneous items from freezing.

- .12 The Contractor's wastewater storage tanks will be part of an engineered wastewater system that requires the stamp and signature of a qualified professional engineer registered or licensed in the Province of British Columbia.
- .13 Transport and dispose of wastewaters to a Wastewater Treatment and Disposal Facility, as identified by the Contractor for review and acceptance by the Departmental Representative.
- .14 Wastewater sample and analysis: The Contractor must perform sampling and analysis of stored wastewater for disposal purposes prior to removal from the Work Site and transport to a Wastewater Treatment and Disposal Facility. The Contractor must determine appropriate methods of disposal based on results of the analyses. Upon receipt of analytical results, transfer tank contents, without spills or release, to off-site Disposal Facility. Following completion of final tank emptying, decontaminate tank interior with steam or high-pressure water wash supplemented by detergent. Dispose of tank decontamination water with tank contents.
 - .1 Sanitary wastewater streams must be disposed of off site at a Wastewater Treatment and Disposal Facility by the subcontractor to the Contractor that will be managing sanitary waste.
 - .2 Wastewater designated for disposal at a Wastewater Treatment and Disposal Facility, may be transported from the Contractor Off-Site Offload Facility using upland-based equipment (i.e., trucks).
 - .3 The Contractor must identify a Wastewater Treatment and Disposal Facility in the EPP for other wastewater streams, per results of wastewater testing, and in accordance with the requirements defined in these Specifications.

1.9 Vehicular Access

- .1 Maintenance and use at any upland facility used for the Contract during performance of the work:
 - .1 Prevent contamination of access roads. Immediately scrape up debris or material on access roads that is suspected to be contaminated as determined by the Departmental Representative; transport and place into designated area accepted by the Departmental Representative. At a minimum, clean access roads at least once per shift.

1.10 Dust and Particulate Control

- .1 Execute work by methods to minimize raising dust from construction operations.
- .2 Implement and maintain dust and particulate control measures at the Work Site and at the Contractor Off-Site Offload Facility, stabilization of Leachable Metals

- Area materials work area, Processing Facility, and Treatment Facility (if applicable), as determined necessary by the Departmental Representative.
- .3 Prevent dust from spreading to adjacent property sites.
 - .4 If the Contractor's dust and particulate control is not sufficient for controlling dusts and particulates into atmosphere, stop work. The Contractor must discuss procedures to resolve the problem with the Departmental Representative. Make agreed upon necessary changes to operations prior to resuming excavation, handling, processing, or other work that may cause release of dusts or particulates.
 - .5 Ensure spill kits are adequate to manage the largest volume of hazardous material present, and only have available what is needed. Ensure the quantity of jerry cans is kept to a minimum, and that they are adequately secured in a designated area.
 - .6 Refer to Section 02 55 10 (Dust Control) for additional requirements associated with dust and particulate control related to this Contract.

1.11 Pollution Control

- .1 Provide methods, means, and facilities to prevent contamination of soil, water, and atmosphere from discharge of noxious toxic substances and pollutants produced by construction operations, per the EMP.
- .2 Be prepared to intercept, clean up, and dispose of spills or releases that may occur whether on land or water, per the EMP. Maintain materials and equipment required for cleanup of spills or releases readily accessible at the Work Site.
- .3 Promptly report spills and releases potentially causing damage to environment, per the EMP. All spills and releases must be reported to the Departmental Representative immediately.
- .4 The Contractor must make available the Safety Data Sheets (SDS) at the Work Site for the list of known pollutants that are being used at the Work Site as part of the work. Contact manufacturer of pollutant if known and ascertain hazards involved, precautions required, and measures used in cleanup or mitigating action.
- .5 Take immediate action using available resources to contain and mitigate effects on environment and persons from spill or release, per the EMP. In addition, comply with a Spill Contingency Plan to be prepared by the Contractor for work at the Work Site.
- .6 Provide spill response materials including containers, adsorbent, shovels, and personal protective equipment (PPE), per the EMP. Make spill response materials available at all times in which hazardous materials or wastes are being handled or transported. Ensure spill kits are adequate to manage the largest volume of hazardous material present, and only have available what is needed. Ensure the quantity of jerry cans is kept to a minimum, and that they are adequately secured

in a designated area. Adequately train crew on spill response. Provide additional materials and pollution controls as required by Formation Safety and Environment Directive SE5 – Spill Response, provided in Appendix G.

1.12 Upland Equipment Decontamination

- .1 Upland equipment decontamination primarily applies to activities that will be completed at any upland facility used for the Contract during performance of the work.
- .2 Manage equipment decontamination wastewater generated outside of the Work Site in accordance with the discharge permit for the Contractor's Off-Site Offload Facility and Wastewater Treatment Facility (if applicable). Equipment decontamination wastewater must not be returned to and disposed of at the Work Site. The Contractor is responsible for meeting performance monitoring criteria and objectives identified in these documents.
- .3 Commence work involving equipment contact with potentially contaminated material only after Equipment Decontamination Facility is operational.
- .4 Decontaminate equipment after working in potentially contaminated work areas and prior to subsequent work or travel on clean areas.
- .5 Perform equipment decontamination on Contractor-constructed equipment decontamination pad or in watertight barges to prevent cross-contaminating un-impacted areas.
- .6 At a minimum, perform the following steps during equipment decontamination:
 - .1 Mechanically remove packed dirt, grit, and debris by scraping and brushing without using steam or high-pressure water to reduce amount of water needed and to reduce amount of contaminated rinsate generated.
 - .2 Pay particular attention to tire treads, equipment tracks, springs, joints, sprockets, and undercarriages.
 - .3 Scrub surfaces with long-handle scrub brushes and cleaning agent.
 - .4 Rinse off with fresh water and collect cleaning agent.
 - .5 Air dry equipment in clean zone before removing from site or travelling on clean areas.
- .7 Each piece of equipment may be inspected by the Departmental Representative after decontamination and prior to removal from the Work Site and/or travel on clean areas. The Departmental Representative will have the right to require that additional decontamination be completed if deemed necessary at no extra cost to Canada.
- .8 Take appropriate measures necessary to minimize drift of mist and spray during decontamination including provision of wind screens.

- .9 Collect decontamination wastewaters and sediments which accumulate on equipment decontamination pad. Transfer wastewaters to Contractor-supplied drums or wastewater storage tanks for subsequent disposal at the Wastewater Treatment and Disposal Facility.
- .10 Dispose of decontamination sediments at the Disposal Facility used for the work.
- .11 Furnish and equip personnel engaged in equipment decontamination with PPE including suitable disposable clothing, respiratory protection, and face shields.

1.13 Floating Equipment Decontamination

- .1 Decontaminate floating equipment that is used to dredge and/or haul contaminated sediment, and to process dredge material for Suspected UXO if performed on floating platform(s) in the water, prior to subsequent work in clean areas or travel outside of the Work Site. Water-tight haul barges transporting contaminated sediment to the Contractor Off-Site Offload Facility do not need to be decontaminated during construction work, but do need to be decontaminated once all contaminated dredging activities are completed and accepted by the Departmental Representative and prior to being used for Engineered Capping and Backfill Material placement.
- .2 The Contractor must remove sediment, grit, and debris from floating equipment that is used to dredge, process, and/or haul contaminated sediment following completion of dredging work within the Leachable Metals Area. Equipment may be inspected by the Departmental Representative prior to commencement of dredging work in remaining areas of the Work Site.
- .3 Sample wastewater arising from waterborne equipment decontamination activities in accordance with the EMP prior to discharge to the marine environment. The Contractor is responsible for meeting performance monitoring criteria and objectives identified in these documents.
- .4 Tug boats, work boats, survey boats, or other floating equipment that do not accumulate Work Site sediment on their surfaces do not need to be decontaminated.
- .5 Silt curtains must be decontaminated to remove all sediment from its surface, anchors, lines, and other appurtenances. If the Contractor elects to dispose silt curtains at an approved Disposal Facility with the dredged material, this additional decontamination is not required.
- .6 The exteriors of haul barges used to transport contaminated dredge material, Identified Debris, Dredge Debris, or Demolition Debris off site must be inspected and cleaned to remove excess dredge materials that may accumulate on the exterior of the haul barge, prior to transport out of the Work Site.
- .7 Mechanically remove packed sediment, grit, and debris by scraping and brushing without using steam or high-pressure water to reduce the amount of water needed, and to reduce the amount of contaminated rinsate generated.

- .8 Each piece of equipment may be inspected by the Departmental Representative after decontamination and prior to removal from the Work Site and/or travel on clean areas. The Departmental Representative will have the right to require that additional decontamination be completed if deemed necessary at no extra cost to Canada.
- .9 Take appropriate measures necessary to minimize drift of mist and spray during decontamination including provision of wind screens.
- .10 If watertight barges or other floating equipment are used for decontamination, decontamination wastewaters and sediments that accumulate must be collected and transferred to Contractor-supplied drums or wastewater storage tanks for subsequent disposal at the Wastewater Treatment and Disposal Facility.
- .11 Dispose of decontamination sediments at the Disposal Facility used for the work.
- .12 Furnish and equip personnel engaged in equipment decontamination with appropriate PPE.

1.14 Upland Dewatering at the Contractor Upland Facility(ies)

- .1 Dewater various parts of work including, without limitation, dredge material, Identified Debris, Dredge Debris, and Demolition Debris, and temporary stockpile areas at any upland facility used for the Contract during performance of the work.
- .2 Manage wastewater generated from sediment dewatering activities at any upland facility used for the Contract in accordance with the discharge permit. The Contractor is responsible for meeting performance monitoring criteria and objectives identified in these documents.
- .3 Employ construction methods, plant procedures, and precautions that ensure work is stable, free from disturbance, and dry.
- .4 Upland dewatering methods: includes surface or free water control systems employing ditches, diversions, drains, pipes, and/or pumps; and other measures necessary to enable work to be carried out in dry conditions.
- .5 Provide sufficient and appropriate labour, plant, and equipment necessary to keep work free of water including stand-by equipment necessary to ensure continuous operation of upland dewatering system.
- .6 Test and analyze water generated from upland dewatering activities and treat to meet required discharge or disposal requirements in accordance with the discharge permit. The Departmental Representative may also choose to test and analyze water from upland dewatering activities to confirm Contractor quality control. Test results must be provided to and accepted by the Departmental Representative in writing prior to discharge.

1.15 Barge Dewatering

- .1 Refer to Section 35 20 23 (Remedial Dredging and Barge Dewatering).

1.16 Progress Cleaning

- .1 Maintain cleanliness of work and surrounding the Work Site and Contractor Off-Site Offload Facility to comply with federal, provincial, and local fire and safety laws, ordinances, codes, and 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 Site.
- .2 Coordinate cleaning operations with disposal operations to prevent accumulation of dust, dirt, debris, rubbish, and waste materials.

1.17 Final Decontamination

- .1 Perform final decontamination of construction facilities, equipment, and materials which may have come in contact with potentially contaminated materials prior to removal from the Work Site, Y Jetty Access Area, and Contractor Off-Site Offload Facility.
- .2 Perform decontamination as specified to satisfaction of the Departmental Representative. The Departmental Representative may direct the Contractor to perform additional decontamination if required at no extra cost to Canada.

1.18 Removal and Disposal

- .1 Remove surplus materials and temporary facilities from the Work Site.
- .2 Dispose of non-contaminated waste materials, litter, debris, and rubbish off site.
- .3 Do not burn or bury rubbish and waste materials at the Work Site.
- .4 Do not dispose of volatile or hazardous wastes such as mineral spirits, oil, or paint thinner in storm or sanitary drains.
- .5 Do not discharge wastes into streams or waterways.
- .6 Dispose of the following materials at appropriate Disposal Facility or Wastewater Treatment identified by the Contractor and in accordance with the content of these Specifications:
 - .1 Debris including excess construction material.
 - .2 Non-contaminated litter and rubbish.
 - .3 Disposable PPE worn during final cleaning.
 - .4 Wastewater removed from wastewater storage tank.

- .5 Wastewater generated from final decontamination operations including wastewater storage tank cleaning.
- .7 Minimize generation of hazardous waste to maximum extent practicable. Take necessary precautions to avoid mixing clean and contaminated wastes.

1.19 Record Keeping

- .1 Maintain bills of lading and waste manifests for minimum of 365 days from date of shipment or longer period required by applicable law or regulation.

1.20 Environmental Management Plan

- .1 An EMP has been prepared for this Contract and is provided in Appendix B to these Contract documents. The Contractor is responsible for reviewing and understanding the EMP, and conducting all construction activities in accordance with the requirements of the EMP and these Specifications. The Contractor must use the EMP as a reference during development of the EPP.

1.21 Off-Site Stockpile Area

- .1 Provide, maintain, and operate storage/stockpiling activities within the Off-Site Stockpile Area as required.
- .2 Install impermeable liner below proposed stockpiles to prevent contact between stockpile material and ground. Stockpiled material must be secured and kept covered until material is ready for transport to the Disposal Facility.

1.22 Wastewater Treatment and Disposal Facility

- .1 The Wastewater Treatment and Disposal Facility can be located on land at the Contractor Off-Site Offload Facility or on a floating platform at the Work Site. The Wastewater Treatment and Disposal Facility, if located on land, must hold a valid and subsisting permit, certificate, approval, or any other form of authorization issued by a province, territory, or state for the operation of the facility, treatment, and disposal of the treated wastewater.
- .2 In carrying out the work under the Contract, the Wastewater Treatment and Disposal Facility must comply with Laws and Regulations. In the event the Wastewater Treatment and Disposal Facility is a permanent, existing facility and operates outside the jurisdiction of a governing body that can issue a permit for its operation, the Contractor must provide the following:
 - .1 Information as required in Section 01 11 55 (General Instructions).
 - .2 An operating plan, prepared and completed by a Qualified Professional identifying facility process, resulting output streams, and end point for all streams, including but not limited to, discharge options.

- .3 Design and Operating Criteria: Design water treatment plant capable of treating water generated from dewatering, and equipment decontamination activities to meet discharge requirements of authority having jurisdiction; capable of removing oil, suspended solids, particulates, metals, and filtering water through particulate filter prior to discharge.
 - .1 Ensure that discharges from the Contractor Off-Site Offload Facility are in compliance with applicable permit requirements and limitations and/or and any discharge limits appropriately developed by the Contractor's Environmental Specialist (included in the EPP and previously reviewed and accepted by the Departmental Representative).
 - .2 Provide piping to transfer liquid/solid mixtures generated by dewatering operations that require water filtering to water filtering plant.
 - .3 Design water filtering operations capable of receiving liquid/solid mixtures and not causing delay to dewatering operations.
- .4 Piping: Suitable material type, of sufficient diameter and structural thickness for purpose intended; satisfactorily tested for leaks with potable water in presence of the Departmental Representative before handling wastewater.
- .5 Installation:
 - .1 Provide labor, materials, and equipment and do work required for setup and construction of water treatment plant.
- .6 Initial Testing: Performance of Wastewater Treatment and Disposal Facility provided by the Contractor will be inspected by the Departmental Representative. The Contractor must submit test results to the Departmental Representative for review. Continued operations are conditional on acceptance of initial test results by the Departmental Representative. Additional information related to testing requirements can be found in the EMP.
- .7 Operation:
 - .1 On basis of analytical results reviewed by the Departmental Representative, make system modifications required for effluent to satisfy effluent criteria, or continue with normal dewatering operations.
 - .2 Operate Wastewater Treatment and Disposal Facility by experienced, qualified personnel in accordance with manufacturer's instructions and procedures submitted by the Contractor and reviewed by the Departmental Representative.
- .8 Decommissioning/dismantling:
 - .1 Decontaminate and remove salvageable components of water treatment plant including water treatment system, pumps, piping, and electrical equipment.

- .2 Dispose of non-salvageable equipment and materials at the Disposal Facility.

1.23 Upland Water Control

- .1 This section applies to over-land water control (i.e., stormwater and surface water control) for management of construction water at any upland facility used for the Contract during performance of the work.
- .2 Applicable requirements for upland water control are described in Clause 1.24 of this Specification section.

1.24 Erosion and Sediment Control

- .1 The Contractor must prepare a Sediment and Erosion Control Plan, as part of the EPP and consistent with the EMP, that addresses potential erosion and sediment control measures for implementation at any upland facility including, but not limited to, the Y Jetty Access Area and the Contractor Off-Site Offload Facility, used for the Contract during performance of the work, and discusses the following as applicable:
 - .1 Plan to execute construction by methods to control surface drainage from cuts and fills, borrow and waste disposal areas, stockpiles, staging areas, and other work areas. Prevent erosion and sedimentation.
 - .2 Minimize amount of bare soil exposed at one time. Stabilize disturbed soils as quickly as practical. Strip vegetation, regrade, or otherwise develop to minimize erosion. Remove accumulated sediment resulting from construction activity from adjoining surfaces, drainage systems, and water courses, and repair damage caused by soil erosion and sedimentation as informed by the Departmental Representative.
 - .3 Provide and maintain temporary measures which may include, concrete blocks, silt fences, hay or straw bales, geotextiles, drains, berms, terracing, riprap, temporary drainage piping, dikes, and other construction required to prevent erosion and migration of silt, mud, sediment, and other debris off site or to other areas of site where damage might result, or that might otherwise be required by Laws and Regulations. Make sediment control measures available during construction.
 - .4 Hay or Straw Bale: Wire-bound or string-tied; securely anchored by at least two (2) stakes or rebars driven through bale 300 millimetres (mm) to 450 mm into ground; chinked (filled by wedging) with hay or straw to prevent water from escaping between bales; and entrenched minimum of 100 mm into ground.
 - .5 Silt Fence: Assembled, ready to install unit consisting of geotextile attached to drivable posts.

- .6 Geotextile: Uniform in texture and appearance, having no defects, flaws, or tears that would affect its physical properties; and containing sufficient ultraviolet ray inhibitor and stabilizers to provide minimum 2-year service life from outdoor exposure.
- .7 Net Backing: Industrial polypropylene mesh joined to geotextile at both top and bottom with double stitching of heavy-duty cord, with minimum width of 750 mm.
- .8 Posts: Sharpened wood, approximately 50 mm square, protruding below bottom of geotextile to allow minimum 450 mm embedment; post spacing 2.4 metre (m) maximum. Securely fasten each post to geotextile and net backing using suitable staples.
- .9 Plan construction procedures to avoid damage to work or equipment encroachment onto water bodies or drainage ditch banks. In event of damage, promptly take action to mitigate effects. Restore affected bank or water body to existing condition.
- .10 Installation:
 - .1 Construct temporary erosion control items as indicated. Actual alignment and/or location of various items as advised by the Departmental Representative.
 - .2 Do not construct bale barriers and silt fence in flowing streams or in swales.
 - .3 Check erosion and sediment control measures weekly after each rainfall; during prolonged rainfall check daily.
 - .4 Bales and/or silt fence may be removed at beginning of work day; replace at end of work day.
 - .5 Whenever sedimentation is caused by stripping vegetation, regrading, or other development, remove it from adjoining surfaces, drainage systems, and watercourses, and repair damage as quickly as possible.
 - .6 Prior to or during construction, the Departmental Representative may require installation or construction of improvements to prevent or correct temporary conditions on site. Temporary improvements must remain in place and in operation as necessary or until otherwise advised by the Departmental Representative.
 - .7 Repair damaged bales, end runs, and undercutting beneath bales.
 - .8 Unless otherwise advised by the Departmental Representative, remove temporary erosion and sediment control devices upon completion of work. Spread accumulated sediments to form a suitable surface for seeding or dispose of, and shape area to permit

natural drainage to satisfaction of the Departmental Representative.
Materials once removed become property of the Contractor.

- .11 Construct fill and waste areas by selective placement to avoid erosive surface silts or clays.
- .12 Do not disturb existing embankments or embankment protection.
- .13 Periodically inspect earthwork to detect evidence of erosion and sedimentation; promptly apply corrective measures.
- .14 If soil and debris accumulate in low areas, storm sewers, roadways, gutters, ditches, or other areas where, in the Departmental Representative's determination, it is undesirable, remove accumulation and restore area to original condition.

1.25 Aquatic Water Quality Control

- .1 Prepare a Water Quality Protection Plan, as part of the EPP and consistent with the EMP, which describes how the Contractor will limit the dispersion of suspended solids away from dredging activities, Former Marine Railway demolition activities, and other aquatic construction activities, as needed through use of a silt curtain. The Water Quality Protection Plan will also describe how the Contractor will comply with all permit requirements related to maintenance of water quality requirements during construction, including completion of water quality monitoring activities, as required by the EMP, as well as contingency actions that the Contractor will implement if water quality exceedances occur.
- .2 Prepare, as part of the EPP and consistent with the EMP, a Silt Curtain Control Plan that contains the following information:
 - .1 The type and make of all materials and parts proposed for use as part of the silt curtain system.
 - .2 Detailed fabrication drawings, including manufacturer sketches or Contractor drawings, showing layout of silt curtain system, dimensions, and depictions of how system will interact with Contractor's equipment or Work Site structures.
 - .3 Silt curtain anchoring plan, if applicable.
 - .4 Detailed construction schedule (as part of the Construction Progress Schedule) that identifies timing and sequencing for completion of silt curtain design and fabrication activities, as they relate to other major elements of the work.
 - .5 Detailed drawings showing proposed locations for silt curtain installation and operation during structure demolition and dredging activities.
 - .6 Methods and procedures for Contractor inspection, maintenance, and repair of silt curtain system during construction.

- .7 Methods and procedures for relocating the silt curtain system as Contractor moves equipment throughout the Work Site.
- .3 Prepare, as part of the EPP, a description of how water quality standards will be met during the demolition of the Former Marine Railway, by use of a silt curtain, including applicable items (i.e., fabrication drawings, anchoring plan) listed as part of the silt curtain requirements above.

2. PART 2 – PRODUCTS

2.1 Required Silt Curtains – Cleaning of Demolished Piling and Dredging

- .1 The Contractor is responsible for design, procurement, installation, operation, inspection, maintenance, and repair of all silt curtains required for this work.
- .2 The silt curtain must be used to contain turbidity generated during completion of in-water dredging, and, if required, material placement activities. The Contractor must furnish the silt curtain that will surround the in-water activities specified in Part 3 – Execution of this Specification section. The curtain must be supported by floats at the top and weighted at the bottom. The curtain must not extend beyond the dredge area in order to minimize impacts to DND operations. The silt curtain must extend at least 5 m below water surface, or to just above the seabed surface, whichever is shallower. For dredging, demolition activities, and piling cleaning after demolition (if performed over water at the Work Site), the silt curtain must, at a minimum, surround the area where the dredge bucket is moving dredge material through the water column or extracting Demolition Debris as required, as shown on the Drawings. The silt curtain must completely surround the Former Marine Railway demolition activities and swing area. It must be installed, managed, and moved such that minimal dispersion of suspended sediment in the water column occurs, and to meet the water quality requirements of the EMP.
- .3 During demolition activities associated with the underwater portions of the Former Marine Railway, a silt curtain must be used to contain generated turbidity. This silt curtain can be either a floating silt curtain or a rigid frame silt curtain, at the Contractor's discretion, but will be required to meet water quality objectives, as described in the EMP. Whichever silt curtain is employed, it must be furnished by the Contractor, and will surround the in-water activities (but not the Contractor's floating equipment), as specified in Part 3 – Execution of this Specification section. The curtain must be supported by floats at the top and weighted at the bottom surrounding the area where demolition activities disturb the sediment and is intended to contain disturbed sediment within the area that has not yet been dredged. The curtain must not extend beyond the dredge area in order to minimize impacts to DND operations. The curtain must extend at least 5 m below water surface, or to just above the seabed surface, whichever is shallower. It must be installed, managed, and moved such that minimal dispersion of suspended sediment in the water column occurs, and to meet the water quality requirements of the EMP.

3. PART 3 – EXECUTION

3.1 Notification of Non-Compliance

- .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. Although provincial laws and municipal by-laws generally do not apply on federal lands, the Contractor must respect provincial laws and municipal by-laws and rules at the Work Site.
- .2 Notwithstanding this notification process, the Contractor is responsible for conducting all construction activities in a manner compliant with these regulations.
- .3 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.
- .4 The Departmental Representative may issue a stop work order until satisfactory corrective action has been taken.
- .5 No time extensions will be granted or equitable adjustments allowed to the Contractor for such suspensions. The Contractor is responsible for the time lost due to issued stop work orders for non-compliance, at no extra cost to Canada.

3.2 Subcontractors

- .1 Compliance with this section by subcontractors is the responsibility of the Contractor.

3.3 Implementation

- .1 Coordination
 - .1 At the Pre-Construction Meeting, the Departmental Representative and Contractor will discuss the Contractor's operations to develop mutual understandings relative to the administration of the environmental protection program.
- .2 Supervision
 - .1 During the work, the Contractor must supervise all activities, including those of subcontractors, to ensure compliance with the intent and details of the EPP.
 - .2 The Contractor must discuss environmental compliance at the Weekly Progress Meeting for itself and its subcontractors to ensure that all personnel working at the Work Site are familiar with the environmental protection provisions.

- .3 All equipment and materials for environmental protection must be inspected every week, at a minimum, to ensure that they are in proper order, being applied correctly, and have not deteriorated.
- .4 The Contractor must provide to the Departmental Representative a written inspection report as part of the Daily Construction Report documenting the condition of the equipment and materials.

3.4 Silt Curtain Implementation

- .1 The required silt curtain (for cleaning of pilings and dredging and Former Marine Railway demolition activities) must be installed as described below for the following work activities:
 - .1 Completely surround the cleaning of demolished pilings as described in Section 02 41 16.01 (Structure Demolition), if the cleaning is performed over water at the Work Site.
 - .2 For dredging and Former Marine Railway demolition activities, the silt curtain is not required to surround all of the Contractor's floating equipment (i.e., derrick, scow), but only the area where the dredge bucket is moving dredge material through the water column or extracting Demolition Debris from the Former Marine Railway as required, as shown on the Drawings.
 - .3 Completely surround the Former Marine Railway demolition activities and swing area.
 - .4 As required by any permit conditions.
 - .5 Should Contractor inspection or the Departmental Representative indicate that the silt curtain interferes with DND vessel navigation, the Contractor is required to modify the silt curtain system to a silt curtain arrangement that does not interfere with navigation activities (e.g., rigid frame silt curtain where only the dredge bucket enters and exits the water column within the silt curtain) at no extra cost to Canada.
- .2 The silt curtain may not be required during structure demolition (other than during the demolition of the Former Marine Railway) or reinstatement activities, or Backfill Material placement activities, unless water quality performance objectives, as described in the EMP, are not being met.
- .3 Provide daily inspection of the required silt curtain system to ensure it is properly installed and effectively containing suspended sediment.
- .4 The required silt curtain must not be opened to allow Contractor's equipment to exit the silt curtained area until observed suspended sediment (turbidity) within the silt curtained area is observed to have reduced to Work Site ambient conditions as determined by the PWGSC Environmental Monitor, unless accepted by the Departmental Representative.

- .5 During demolition activities, other than the Former Marine Railway, use of a debris boom or similar is required to contain all floating Demolition Debris. Floating Demolition Debris must be removed as necessary, but at least once per shift. The Contractor is still required to meet water quality objectives during above-water demolition and Demolition Debris removal activities and a silt curtain, while not initially required, may be needed to meet these objectives.
- .6 Should Contractor inspection, the PWGSC Environmental Monitor, or the Contractor's Environmental Specialist indicate that the silt curtain is not effectively containing suspended sediment, is damaged, or is improperly installed, the Contractor must take immediate action to repair the silt curtain, adjust use of the silt curtain, or any additional actions necessary to comply with water quality requirements and permit conditions at no extra cost to Canada.

3.5 Protection of Aquatic Water Resources

- .1 General
 - .1 Compliance with conditions of any applicable permit requirements and clearances obtained for the work is the Contractor's responsibility.
 - .2 Any water discharges from transport haul barges, where allowed within the Work Site as shown on the Drawings, must pass: 1) through filter fabric (or other filtering medium); 2) through the silt curtain/barrier boom; and 3) through additional treatment (if necessary) to remove suspended solids and meet the requirements of the EMP, before discharge to open waters.
 - .3 Discharge of effluent from the Contractor's construction activities must meet all water quality requirements per the EMP and permit conditions.
- .2 Disposal
 - .1 Except as provided in the Contract, disposal of any wastes, effluents, trash, grease, chemicals, or other contaminants in water bodies is not allowed.
 - .2 If any waste material is dumped in unauthorized areas, the material must be removed and the area restored to its pre-project condition at no extra cost to Canada.

3.6 Aquatic Water Quality Monitoring

- .1 The Contractor's Environmental Specialist must ensure that the Contractor performs all required water quality monitoring identified in the EMP and EPP.
- .2 The Contractor's Environmental Specialist must familiarize itself with and comply with all permits, approvals, and water quality requirements of the EMP.

- .3 Under no circumstances will activities conducted by the PWGSC Environmental Monitor alleviate the Contractor's responsibility to monitor its own operations to ensure that the Contractor is meeting the water quality requirements of the EMP.
- .4 The Contractor must provide safe access to the PWGSC Environmental Monitor to conduct water quality monitoring at the specified distances from the work activity.
- .5 Water quality must be controlled and monitored by the Contractor and the Contractor's Environmental Specialist in accordance with the following performance criteria:
 - .1 Suspended sediments must be controlled and monitored by the Contractor and the Contractor's Environmental Specialist during completion of work activities including, but not limited to, structure demolition, dredging, Engineered Capping and Backfill Material placement, and structure reinstatement in accordance with specific Total Suspended Solids (TSS) and Nephelometric Turbidity Units (NTU) criteria described in the EMP.
- .6 Any exceedance of the water quality requirements, as described in the EMP, may result in a requirement to stop work or modify work activities at the discretion of the Departmental Representative, at no extra cost to Canada.

3.7 Protection of Fish and Wildlife

- .1 All work must be performed and all steps taken to prevent interference or disturbance to fish and wildlife.
- .2 Water flows or habitat outside the Work Site that are critical to fish or wildlife must not be altered or disturbed.
- .3 The Contractor must immediately cease dredging or other in-water operations if fish kill or distressed fish are observed, or if a marine mammal is observed within the silt curtain, and immediately notify the Departmental Representative.

3.8 Dust Control

- .1 Dust control must be performed as the work proceeds, whenever a dust nuisance or hazard occurs and as required in Section 02 55 10 (Dust Control).

3.9 Maintenance of Pollution Control Facilities

- .1 The Contractor must maintain all constructed facilities and portable pollution control devices for the duration of the Contract or for that length of time construction activities create the particular pollutant.

3.10 Training of Contractor Personnel

- .1 Contractor personnel must be trained in environmental protection and pollution control as required by applicable federal, provincial, and local requirements. Although provincial laws and municipal by-laws generally do not apply on federal lands, the Contractor must respect provincial laws and municipal by-laws and rules at the Work Site.
- .2 The Contractor must conduct environmental protection/pollution control meetings for all Contractor personnel.
- .3 The training and meeting agenda must include methods of detecting and avoiding pollution, familiarization with pollution standards, both statutory and contractual, and installation and maintenance of facilities and instruments required for monitoring purposes to ensure adequate and continuous environmental protection/pollution control. Anticipated hazardous or toxic chemicals or wastes, and other regulated contaminants, must also be discussed.

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 Material Safety Data Sheets (MSDS), 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 Work 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 Work 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 Contract, applicable federal, provincial, territorial and local statutes, regulations, and ordinances, and with 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 Work Site to perform work.
 - .2 Be responsible for implementing, daily enforcing, and monitoring the site-specific Health and Safety Plan.
 - .3 Be on Work Site during execution of work.

1.11 General Conditions

- .1 Provide safety barricades and lights around Work 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 Work 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 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 Contract, required work, and project Work Site Identify any known and potential health risks and safety hazards.
- .2 Prepare and comply with a site-specific project Health and Safety Plan based on 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 work.
 - .4 Indicate engineering and administrative control measures to be implemented at the Work 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 plan in collaboration with all subcontractors. Ensure that work/activities of subcontractors are included in the hazard assessment and are reflected in the plan.
 - .4 Revise and update 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 final Health and Safety Plan or of responsibility for meeting all requirements of construction and 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 Work 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 MSDS 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 Departmental Representative beforehand of the product(s) intended for use. Submit applicable MSDS and WHMIS documents as required.
 - .2 As required, in conjunction with 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 Work 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 Work Site plans.
 - .7 Notice as to where a copy of the Workers' Compensation Act and Regulations are available at the Work Site for review by employees and workers.
 - .8 WHMIS documents.
 - .9 MSDS.
 - .10 List of names of Joint Health and Safety Committee members, or Health and Safety Representative, as applicable.
- .2 Post all MSDS 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 Work 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 Work 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 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 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 Contractor is solely responsible for utility clearance.
- .2 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 Work 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 Work 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 Work 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 off-site Contingency and Emergency Response Plan.
- .2 Plan must provide immediate response to serious site occurrence such as explosion, fire, or migration of significant quantities of toxic or hazardous material from Work Site.

1.25 Personnel Health, Safety, and Hygiene

- .1 Training: ensure personnel entering Work Site are trained in accordance with specified personnel training requirements. Training session must be completed by 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 Departmental Representative when level of respiratory protection required increases.
- .7 Ensure appropriate respiratory protection during work activities. As 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 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 Work 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 Related Sections

- .1 Section 01 11 55 (General Instructions)
- .2 Section 01 33 00 (Submittal Procedures)
- .3 Section 01 35 29.14 (Health and Safety for Contaminated Sites)

1.2 Definitions

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

1.1 Construction and On-Board Fire Safety

- .1 The Contractor must provide construction fire safety in accordance with the National Fire Code of Canada.
- .2 The Contractor must provide on-board fire safety for personnel working aboard vessels, tugs, or barges in activities associated with marine construction.

1.2 Fire Safety Enforcement

- .1 Within the confines of the Canadian Forces Base (CFB) Esquimalt, the prescription and enforcement of mandatory Fire Safety measures will be exercised under the authority of the Departmental Representative.
- .2 Comply with and enforce compliance by all Contractor personnel with all requirements of this Specification section, and with the most recent edition of the National Building Code of Canada and the National Fire Code of Canada, including all subsequent revisions issued by the National Research Council of Canada.
- .3 The Departmental Representative reserves the right to require the dismissal from site of persons deemed careless or otherwise in violation of the Fire Safety Requirements.

1.3 Fire Department Briefing

- .1 The Departmental Representative will coordinate arrangements for Pre-Construction Meeting following Contract Award. The Contractor will be briefed on fire safety by the Departmental Representative or their designated representative before work starts.

1.4 Reporting Fires

- .1 The Contractor must inform the Departmental Representative of all fire incidents at the Work Site and Y Jetty Access Area, regardless of size.
- .2 The Contractor must know location of nearest fire alarm box and telephone, including emergency phone number.
- .3 The Contractor must immediately report fire incidents to the local fire department using one of the following methods:
 - .1 Activate nearest fire alarm box.
 - .2 Contact using telephone.
- .4 Person activating fire alarm pull station will remain at the front entrance to direct local fire department to scene of fire.
- .5 When reporting fire by telephone, give location of fire and the name or number of building, and be prepared to verify location. When the Contractor(s) calls 911, they must specify that the location of fire is the closest point of land at CFB Esquimalt, Colwood, Y Jetty, and/or Lang Cove, to ensure first responders go to correct location.

1.5 Submittals

- .1 Submittals must be in accordance with Section 01 33 00 (Submittal Procedures).
- .2 As part of the Contractor's Health and Safety Plan, submit a Fire Safety Plan for the work prior to commencement of construction work. The Fire Safety Plan must conform to the National Fire Code of Canada.
- .3 The Fire Safety Plan must be submitted to the Departmental Representative for review by the local fire department. Any comments by the local fire department must be implemented by the Contractor.
- .4 The Fire Safety Plan must be limited to the area of construction only. The Contractor is not responsible for amending fire safety plans in existing buildings.
- .5 Post the Fire Safety Plan at the entrance to the Work Site or near the Work Site health and safety board, and on floating equipment.
- .6 The Fire Safety Plan must conform to the National Fire Code of Canada, and must contain, at minimum:
 - .1 Emergency procedures to be used in case of fire, including:
 - .1 Sounding the fire alarm
 - .2 Notifying the fire department
 - .3 Instructing occupants on procedures to be followed when the fire alarm sounds

- .4 Evacuating occupants, including special provisions for persons requiring assistance
- .5 Confining, controlling, and extinguishing fires
- .2 The appointment and organization of designated supervisory staff to carry out fire safety duties.
- .3 The training of supervisory staff and other occupants in their responsibilities for fire safety.
- .4 Documents including diagrams, showing the type, location, and operation of building fire emergency systems.
- .5 The holding of fire drills (where applicable).
- .6 The control of fire hazards in the building.
- .7 The inspection and maintenance of building facilities provided for the safety of occupants.

1.6 Fire Warning System

- .1 A fire warning must be provided to notify construction personnel of a fire emergency in the construction area.
- .2 The system used must be capable of being heard throughout the Work Site.

1.7 Interior and Exterior Fire Protection and Alarm Systems

- .1 Fire protection and alarm systems will not be:
 - .1 Obstructed.
 - .2 Shut off.
 - .3 Left inactive at the end of a working day or shift without authorization from the Departmental Representative.
- .2 Do not use fire hydrants, standpipes, or hose systems for other than firefighting purposes unless authorized by the Departmental Representative.

1.8 Fire Protection System Impairment

- .1 Notify the Departmental Representative fifteen (15) working days prior to shutting down any active fire protection system, including water supply, fire suppression, fire detection, and life safety systems.
- .2 Where a fire protection system that provides fire alarm monitoring is impaired in an existing building, a fire watch may be required at the discretion of the Departmental Representative.

- .3 Implement all fire protection system impairments in accordance with the National Fire Code of Canada and CFB Esquimalt Fire Orders. CFB Esquimalt Fire Orders will be provided at the Pre-Construction Meeting.

1.9 Fire Extinguishers

- .1 In addition to other requirements of this Specification, supply fire extinguishers, as directed by the Departmental Representative, necessary to protect work in progress and the Contractor's physical plant on site.
- .2 Fire extinguishers may be required in the following areas as directed by the Departmental Representative
 - .1 Aboard vessels, tugs, or barges
 - .2 Adjacent to hot works
 - .3 In areas where combustibles are stored
 - .4 Near or on any internal combustion engines
 - .5 Adjacent to areas where flammable liquids or gases are stored or handled
 - .6 Adjacent to temporary oil fired or gas fired equipment
 - .7 Adjacent to bitumen heating equipment
- .3 Extinguishers must be sized as 4-A:40-B:C 9 kilograms (20 pounds) unless otherwise directed by the Departmental Representative.
- .4 Extinguishers must be of the dry chemical type unless otherwise required by the hazard being protected.
- .5 The Contractor may assume the quantity of extinguishers based on a maximum travel distance between extinguishers of 23 metres (m).

1.10 Access for Fire Fighting

- .1 Access for firefighting must be provided in accordance with the National Fire Code of Canada.
- .2 Advise the Departmental Representative of work that would impede fire apparatus response. This includes violation of minimum horizontal and overhead clearance, as prescribed by the Departmental Representative, erecting of barricades, and digging of trenches.
- .3 Minimum horizontal clearance: Clear width of not less than 5 m, or as defined by the Departmental Representative.
- .4 Minimum vertical clearance: Overhead height of not less than 6 m, or as defined by the Departmental Representative.

1.11 Smoking Precautions

- .1 Smoking is prohibited in all buildings
- .2 Smoking on Contractor's vessels, barges, tugs, or barges must be in compliance with Occupational Health and Safety Regulations, WorkSafeBC.
- .3 Observe posted smoking restrictions near existing buildings. See Appendix A for CFB Esquimalt Base Smoking Policy.

1.12 Rubbish and Waste Materials

- .1 Keep rubbish and waste materials at minimum quantities.
- .2 Burning of rubbish is prohibited.
- .3 Removal:
 - .1 Remove rubbish from Work Site and Y Jetty Access Area at end of a working day or shift or as directed.
- .4 Storage:
 - .1 Store oily waste in approved receptacles to ensure maximum cleanliness and safety.
 - .2 Deposit greasy or oily rags and materials subject to spontaneous combustion in approved receptacles and remove as directed by the Departmental Representative.

1.13 Flammable and Combustible Liquids

- .1 Handle, store and use of flammable and combustible liquids in accordance with the National Fire Code of Canada.
- .2 Keep flammable and combustible liquids such as gasoline, kerosene, and naphtha for ready use in quantities not exceeding 45 litres provided they are stored in approved safety cans bearing Underwriters' Laboratory of Canada or Factory Mutual seal of approval. Obtain written authorization from the Departmental Representative for storage of quantities of flammable and combustible liquids exceeding 45 litres.
- .3 Do not transfer flammable and combustible liquids inside buildings or jetties.
- .4 Do not transfer flammable or combustible liquids in vicinity of open flames or any type of heat-producing devices.
- .5 Do not use flammable liquids having flash point below 38°C such as naphtha or gasoline as solvents or cleaning agents.
- .6 Store flammable and combustible waste liquids, for disposal, in approved containers located in a safe ventilated area. Keep quantities to a minimum and notify the Departmental Representative when disposal is required.

- .7 Dumping or burning of flammable liquids on site is prohibited.
- .8 The Departmental Representative reserves the right to require removal from the site of any storage containers not acceptable to the Departmental Representative.

1.14 Hot Works

- .1 The Contractor must implement a hot works program in accordance with the National Fire Code of Canada and National Fire Protection Association 51B Standard for Fire Prevention during Welding, Cutting and Other Hot Work.
- .2 The Contractor must coordinate, through the Departmental Representative, a “hot work” permit from DND (Base Fire Hall; Mike Mclean 250-363-1911) for all hot works in the construction area. Frequency of renewal for hot works permits is at the discretion of the Departmental Representative.
- .3 The Contractor must adhere to Base Standing Order (BSO) 7665-0 Base Fire Safety Policy provided in Appendix A to these Specifications.
- .4 When work is carried out in dangerous or hazardous areas involving use of heat, provide fire watchers equipped with sufficient fire extinguishers. Determination of dangerous or hazardous areas along with level of protection necessary for fire watch is at discretion of the Departmental Representative.
- .5 Provide fire watch service for work on scale established and in conjunction with the Departmental Representative as defined in the Fire Department Briefing. Fire watchers must be trained in the use of fire extinguishing equipment.
- .6 Area of hot works:
 - .1 Hot works must be carried out in an area free of combustible and flammable content.
 - .2 Where carrying out hot works in an area free of combustible and flammable content is not possible:
 - .1 All flammable and combustible materials within 15 m of the hot works must be protected in accordance with the National Fire Code of Canada.
 - .2 A fire watch must be provided during the hot work and for a period of not less than 60 minutes unless otherwise directed by the Departmental Representative.
 - .3 A final inspection of the hot work area must be conducted not less than 4 hours after the completion of hot works unless otherwise directed by the Departmental Representative.
 - .3 Where there is a possibility of sparks leaking onto combustible materials in areas adjacent to the areas where the hot work is carried out:

- .1 Openings in walls, floors, or ceilings must be covered or closed to prevent the passage of sparks to such adjacent areas.
- .7 Protection of flammable and combustible materials:
 - .1 Any combustible or flammable material, dust, or residue must be:
 - .1 Removed from the area where hot works is carried out; or
 - .2 Protected from ignition by non-combustible materials.
- .8 Fire extinguisher:
 - .1 A fire extinguisher must be provided within 3 m of all hot works. The minimum size must be 9 kilograms (20 pounds) ABC unless otherwise directed by the Departmental Representative.

1.15 Hazardous Substances

- .1 Work entailing use of toxic or hazardous materials, chemicals and/or explosives, or otherwise creating hazard to life, safety, or health, must be in accordance with National Fire Code of Canada.
- .2 Obtain from the Departmental Representative a hot work permit for work involving welding, burning, or use of blowtorches and salamanders, in buildings or facilities.
- .3 When work is carried out in dangerous or hazardous areas involving use of heat, provide fire watchers equipped with sufficient fire extinguishers. Determination of dangerous or hazardous areas along with level of protection necessary for fire watch is at discretion of the Departmental Representative. The Contractor is responsible for providing fire watch service for work on scale established and in conjunction with the Departmental Representative at pre-work conference.
- .4 Provide ventilation where flammable liquids, such as lacquers or urethanes are used. Eliminate all sources of ignition. Inform the Departmental Representative prior to and at completion of such work.

1.16 Questions and/or Clarification

- .1 Direct questions or clarification on Fire Safety in addition to above requirements to the Departmental Representative.

1.17 Fire Inspection

- .1 Coordinate site inspections through the Departmental Representative.
- .2 Allow the Departmental Representative unrestricted access to the Work Site.
- .3 Cooperate with the Departmental Representative during routine fire safety inspection of the Work Site.

- .4 Immediately remedy unsafe fire situations observed 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 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 as Appendix B of these Contract documents. 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 Site.
- .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 Site (including the Y Jetty Access Area), Contractor Off-Site Offload Facility and Processing Facility, Off-Site Stockpile Area, and during barge transport over water and land-based transportation of dredge material and Debris. This section primarily addresses work conducted at the Work Site, but the Contractor is responsible for complying with environmental protection regulations at all locations that are used.
- .5 This section assumes that dredge material, Hazardous Waste Quality Materials, Identified Debris, Dredge Debris, and Demolition Debris will be directly transported from the Work Site via haul barge to the Contractor Off-Site Offload Facility, temporarily stockpiled within an Off-Site Stockpile Area, dewatered (if applicable), amended (if applicable), treated (if applicable), re-handled, and loaded into trucks or railcars for upland transportation to a Disposal Facility. In addition, processing of dredge material will occur at a Processing Facility located either on a barge within the Work Site (prior to transport to the Contractor Off-Site Offload Facility) or at an upland location that has been reviewed and accepted by the Departmental Representative.

1.2 Related Sections

- .1 Section 01 11 55 (General Instructions)

- .2 Section 01 33 00 (Submittal Procedures)
- .3 Section 01 35 13.43 (Special Project Procedures for Contaminated Sites)
- .4 Section 01 35 35 (DND Fire Safety Requirements)

1.3 Measurement and Payment Procedures

- .1 No separate payment will be made for work associated with environmental procedures. Activities associated with environmental procedures must be 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 prepared by the Contractor's Environmental Specialist (who is required to be a QP), for review and acceptance by the Departmental Representative, within ten (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 See Section 01 35 13.43 (Special Project Procedures for Contaminated Sites) for additional information and requirements to be included in the EPP.
- .5 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 Site.
 - .3 Means and methods for monitoring and reporting water quality protection measures.
 - .4 Upland Work: See Section 01 35 13.43 (Special Project Procedures for Contaminated Sites) for upland work submittal requirements at the Y Jetty

Access Area, and/or Contractor Off-Site Offload Facility as part of the EPP.

- .5 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 or additives to be used for stabilization of material from the Leachable Metals Area and provide Safety Data Sheet documentation for the amendments or additives. If additional amendments or additives are proposed for the remainder of the sediment, the Contractor must also provide the same information for those amendments or additives.
 - .3 The Contractor must provide detail on the methods that it will use to monitor haul barges for leakage during transport of dredge material to the Contractor Off-Site Offload Facility. If leakage is observed, however minor, the barge transport operations must be halted and not restarted until repairs, satisfactory to the Departmental Representative, are made.
- .6 As a section of the EPP, include at a minimum the following information pertaining to spills and pollution 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 Site and within Esquimalt Harbour.
 - .3 The name of the individual who will be responsible for implementing and supervising the spill containment and cleanup and identify the environmental response organizations that will be used if additional resources are required.
 - .4 Non-hazardous and hazardous solid waste disposal plan identifying methods and locations for solid waste disposal generated during dredging activities.
 - .5 Identification of potentially hazardous substances to be used on the Work Site; 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 Site.

- .6 Wastewater management plan that identifies methods and procedures for management and/or discharge of waste waters that are directly derived from construction activities, such as cleanup water, sediment processing, dewatering of sediment stockpiles on barges used for temporary on-site stockpiling and at the Contractor Off-Site Offload Facility, water management at the Y Jetty Access Area, disinfection water, personnel and equipment decontamination facilities, and water used in flushing of lines. See Section 01 35 13.43 (Special Project Procedures for Contaminated Sites) for additional requirements regarding wastewater management and disposal.

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 Site 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 Site 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 Site, Y Jetty Access Area, Off-Site Stockpile Area, Contractor Off-Site Offload Facility, Contractor Processing Facility, and Contractor Treatment Facility (if applicable) 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.
- .2 Refer to Section 01 35 35 (DND Fire Safety Requirements) for additional requirements associated with fire safety related to this Contract.

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 Storage Tanks

- .1 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 subject to the 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 on the Work Site and Y Jetty Access Area.
- .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 Maintenance and use:
 - .1 Prevent contamination of access roads. Immediately scrape up debris or material on access roads that is suspected to be contaminated from Contractor activities as determined by the Departmental Representative; transport and place into a designated area accepted by the Departmental Representative. Clean access roads at least once per shift.
 - .2 The Departmental Representative may collect soil samples for chemical analyses from traveling surfaces of constructed and existing access routes prior to, during, and upon completion of the work. Excavate and dispose of clean soil contaminated by Contractor's activities at no extra cost to Canada.
- .2 Vehicles/equipment must be in good working order and not be leaking any fuel or fluids.
- .3 Traffic management measures (such as 'flag person') must be implemented if required at site access points to direct traffic.

1.12 Upland Equipment Decontamination

- .1 See Section 01 35 13.43 (Special Project Procedures for Contaminated Sites) for environmental procedures requirements regarding upland equipment decontamination.

1.13 Drainage at Upland Facilities

- .1 Comply with the temporary erosion control measures, as prepared for and provided in the EPP and described in Section 01 35 13.43 (Special Project Procedures for Contaminated Sites), for work at any upland facility used for the Contract during performance of the work. Implement monitoring and reporting requirements to ensure that control measures are in compliance with Laws and 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 Site.
- .2 Comply with the over-land water control requirements (i.e., stormwater and surface water control), as prepared for and provided in the EPP and described in Section 01 35 13.43 (Special Project Procedures for Contaminated Sites), for work to be completed at any upland facility used for the Contract during performance of the work. Implement monitoring and reporting requirements to ensure that control measures are in compliance with Laws and Regulations.
- .3 Provide temporary drainage and pumping as necessary to keep upland excavations and upland sites free from water.

- .4 Do not allow water containing suspended materials to enter into public or private roadways, waterways, sewers, or drainage systems.
- .5 Control disposal or runoff of water containing suspended materials or other harmful substances in accordance with local authority requirements.
- .6 Do not direct water flow in a manner that would cause erosion to existing areas.

1.14 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.

1.15 Work Adjacent to Waterways

- .1 Applies to work to be performed at the Work Site and the Contractor Off-Site Offload Facility:
 - .1 Do not use waterway beds for borrow material.
 - .2 Do not dump excavated fill, waste material, or Debris in waterways.
 - .3 Do not blast under water.
 - .4 Special care must be exercised while working near the water's edge including implementation of site-specific erosion and sediment control measures. Silt fences must be used to minimize soil or intertidal sediment transport into the waterway.

1.16 Pollution Control

- .1 See Section 01 35 13.43 (Special Project Procedures for Contaminated Sites) for requirements regarding pollution control.

1.17 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 Site, at the Y Jetty Access Area, at the Contractor Off-Site Offload Facility and Processing Facility, 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, Appendix G.
- .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 Site 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, including sediment-laden runoff, leave the Work Site, Contractor Processing Facility, or any upland facility used for the Contract during performance of the work or enter any surface water, stormwater, or sanitary sewers at or near the Work Site or any upland facility used for the Contract during performance of the work.
- .8 The use of any paints, corrosion protective coatings, wood preservatives including “Timberfume” chloropicrin fumigant vials, or any other potentially deleterious substances that may be applied to surfaces that will have contact with the marine environment, must be in accordance with Esquimalt Harbour – Practices and Procedures – March 2017 (Appendix A).
- .9 Any land-based equipment remaining on site overnight must have appropriately placed drip pans.
- .10 The rinse, cleaning water, or solvents for glues, wood preservatives including “Timberfume” chloropicrin fumigant vials, and other potentially harmful or toxic substances should be controlled so as to prevent leakage, loss, or discharge into the storm drain system or into the marine environment.
- .11 Protect roadways at any upland facility used for the Contract during performance of the work from tracking of mud, soil, sediment, and debris throughout the work.
- .12 Prevent discharges containing asphalt, grout, concrete, or other waste materials from reaching storm drains or the marine environment. This includes, but is not limited to the following:
 - .1 Minimizing the washing of sand or gravel from new asphalt, debris from drilling or cutting, or other materials into storm drains and the marine environment by sweeping.
 - .2 Application of fog seals, tack coats, or other coatings, if required, during periods when rainfall is unlikely to occur during application.
 - .3 Cleaning equipment off site.
 - .4 Protection of drainage structures with filter fences, if required.

- .13 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 Site or any upland facility used for the Contract during performance of the work.

1.18 Noise and Lighting Control

- .1 The Contractor must comply with local ordinances regarding noise control while conducting activities at the Work Site.
- .2 The Contractor is to meet the intent of Township of Esquimalt, Colwood, and View Royal Noise By-laws at the Work Site 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.

1.19 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 Site.
- .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.

1.20 Species at Risk

- .1 Refer to the Esquimalt Harbour Remediation Project Phase 2C and 2D – Y Jetty and Lang Cove, 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 Site.
- .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 within the silt curtain, in accordance with the EMP.
- .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 ten (10) to fourteen (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 re-commence until the eggs have hatched and detached from the equipment.
- .6 In the event that it is determined by the Departmental Representative or 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.

1.21 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 Site, 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 ten (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 Specification 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 four (4) electronic copies of all Inspection and Laboratory Test Reports to the Departmental Representative within two (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 Site, who is responsible for overall management of quality control as part of the Contract, and have 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 Inspection

- .1 The Contractor must allow the Departmental Representative access to the work. If part of the work is in preparation at locations other than the Work Site (i.e., the Contractor Off-Site Offload Facility, Disposal Facility, and Processing Facility), the Contractor must allow access to such work whenever and wherever it is in progress.
- .2 Give timely notice requesting inspection if work is designated for special tests, inspections, or reviews by the Departmental Representative's instructions.
- .3 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 Site and off-site facilities (i.e., Contractor Off-Site Offload Facility, Disposal Facility, Treatment Facility, Processing Facility, and material source locations) as applicable.
- .2 The Contractor must make accessible to the Departmental Representative all construction equipment that is employed for completion of the work.
- .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 or materials required for testing, as requested in the Specifications. Submit with reasonable promptness and in orderly sequence to not cause delays in work.
- .3 Provide labor and facilities to obtain and handle samples and materials at the Work Site and Contractor Off-Site Offload Facility. Provide sufficient space to store samples as necessary.
- .4 Complete required materials testing as described in the Specifications 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 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; the establishment of necessary site offices including office trailers for the Departmental Representative and consultants as specified in Specification Section 01 51 00 (Temporary Facilities), site perimeter fencing, site preparation, and other temporary facilities including utility connections; Work Site, Y Jetty Access Area, and Contractor Off-Site Offload Facility site preparation and maintenance, including any applicable rent or other payments required to obtain and operate the Contractor Off-Site Offload Facility; Processing Facility 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 the Contractor's dredging plant and equipment, piling equipment, marine derricks for demolition work, capping and backfill placement equipment, sediment processing equipment, and all other required equipment, labor, supplies, and incidentals for transit; moving plant, equipment, labor, supplies, and incidentals to the Work Site, Y Jetty Access Area, and Contractor Off-Site Offload Facility; making ready for work; and maintaining plant and equipment in working condition at the site during the construction period.
- .4 Demobilization must include: project closeout; all things necessary to remove all construction equipment, piling equipment, marine derricks for demolition work, floating plant, sediment processing equipment, and excess materials from the Work Site, Y Jetty Access Area, and Contractor Off-Site Offload Facility; dismantling and removal of all temporary facilities; and the cleanup of the Work Site and Contractor Off-Site Offload Facility 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)
- .2 Section 01 51 00 (Temporary Facilities)

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 will 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 will 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 presents requirements for establishment of temporary facilities at the Y Jetty Access Area as part of the work.
- .2 The Y Jetty Access Area and locations where temporary facilities will be made available to the Contractor at the Work Site during the work, are shown on the Drawings.
- .3 The Contractor must install, maintain, and operate all temporary facilities as long as needed for the safe and proper completion of the work.
- .4 If any damage to DND utilities occurs and is attributable to the Contractor's actions, the Contractor must immediately notify the Departmental Representative and provide incident reports, and must immediately repair any such damage to satisfaction of the Departmental Representative.

1.2 Measurement and Payment Procedures

- .1 Measurement and payment for temporary facilities will be by week and paid for under the allowance Tender Item for SITE FACILITIES OPERATIONS.

1.3 Related Sections

- .1 Section 01 11 55 (General Instructions)
- .2 Section 01 33 00 (Submittal Procedures)
- .3 Section 01 35 35 (DND Fire Safety Requirements)
- .4 Section 01 35 43 (Environmental Procedures)
- .5 Section 01 74 11 (Cleaning)

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 Submit Work Site layout drawings showing temporary facilities provided by the Contractor for the Departmental Representative's acceptance, including the following:

- .1 Location and dimensions of the area to be fenced to be used for temporary facilities.
 - .2 Grading, including contours, required to construct temporary facilities.
 - .3 Number of office trailers.
 - .4 Means of ingress and egress to fenced area.
 - .5 Means of temporary traffic control.
 - .6 Details of fence installation.
- .3 Prior to initiating work at the Y Jetty Access Area, qualified Contractor's personnel must submit to the Departmental Representative's satisfaction a brief conditions inspection report, consisting of photographs of the property, objects, and structures that may be damaged.

1.6 References – Not Used

1.7 Access to Site and Y Jetty Access Area

- .1 All individuals requiring access to the Y Jetty Access Area (including Contractor and subcontractor staff) must refer to requirements of the Security Requirements Checklist (SRCL) and sub-SRCLs for subcontractors administered by the Military Police Unit Esquimalt. All Contractor and subcontractor staff must be registered with the Canadian Industrial Security Directorate (CISD) and be granted a Designated Organizational Screening (DOS) 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 (RSSS) and a DND Contractor Visitor Clearance Request (VCR). The SRCL is provided as a Reference.
- .2 Vehicular movement in and out of the Work Site and Y Jetty Access Area must pass through a check point and be monitored by Canadian Forces Base (CFB) Esquimalt security.
- .3 Access to the Y Jetty Access Area after work hours must be provided to DND personnel in the event of an emergency (i.e., double lock system with Contractor and DND/Commissionaire- provided locks).
- .4 The Contractor is required to use only the designated entrance to access the Work Site and Y Jetty Access Area as shown on the Drawings, for deliveries to the site, and access to the Y Jetty Access Area.
- .5 Use of the Y Jetty Access Area will be granted to the Contractor through the Departmental Representative.
 - .1 The Y Jetty Access Area made available to the Contractor for this Contract is to be used for parking, office space, equipment staging, and loading/unloading purposes only.

- .2 The Contractor may access the Y Jetty shoreline to conduct riprap removal and Engineered Capping work and may stockpile riprap that is removed from Dredge Units (DUs) 29 and 30 prior to reinstallation.
 - .1 The Contractor must install an impermeable liner below the proposed riprap stockpile to prevent contact between stockpiled material and ground.
 - .2 All riprap stored in the Y Jetty Access Area must be free of sediment.
 - .3 If the Contractor elects to access the Y Jetty shoreline, the Contractor would be required to propose modifications to the existing fence around the Y Jetty Access Area and restore the fence to the current condition at the end of the project, to the satisfaction of the Departmental Representative.
- .3 The Contractor is responsible for environmental protection during all construction activities at the Work Site including the Y Jetty Access Area in accordance with Section 01 35 43 (Environmental Procedures).
- .4 Provide access at all times to the monitoring wells in the Y Jetty Access Area as shown on the Drawings.
- .5 No stockpiling or storage of dredged material, Identified Debris, Dredge Debris, Demolition Debris, or any other item removed or relocated from the Work Site, such as fender piles or any other structural elements must occur at the Y Jetty Access Area, without written acceptance from the Departmental Representative.
- .6 Export all dredged sediment, Identified Debris, Dredge Debris, and Demolition Debris by barge.
- .7 Import all fill materials by barge, with the exception of nominal quantities of backfill materials to complete the Engineered Cap in Material Placement Area C3 (DUs 29 and 30). The Contractor would be permitted to propose measures for importing this material via trucks to the Y Jetty Access Area in the event that the Contractor elects to place material from the Y Jetty Access Area directly onto the Y Jetty shoreline area with upland based equipment. The Contractor would be required to propose trucking methods for acceptance by the Departmental Representative and meet all applicable requirements for trucking into CFB Esquimalt.
- .8 The Y Jetty Access Area cannot be used to store supplies that are hazardous materials, such as fuel, oil, or timber treatment.
- .6 Keep all roadways and walkways outside of the Y Jetty Access Area clear of materials and equipment at all times.

- .7 Provide and maintain competent flag operators, traffic signals, barricades and flares, lights, or lanterns as may be required to perform work and to protect other users within the vicinity of the Work Site and Y Jetty Access Area.

1.8 Storage Facilities and Site Office Space

- .1 The Contractor's storage and office space is limited to the Y Jetty Access Area, as shown on the Drawings.
- .2 The Departmental Representative must accept the layout drawings for the Y Jetty Access Area, prior to construction of the Y Jetty Access Area.
- .3 The Contractor must provide, install, commission, clean, and maintain two (2) temporary site offices within the Y Jetty Access Area for the sole use of the Departmental Representative's consultant team and the Departmental Representative, respectively, for the duration of the project. The temporary site offices must comply with the following requirements:
 - .1 Dimensions:
 - .1 Minimum width = approximately 3.0 metres (m; 10 feet)
 - .2 Minimum length = approximately 9.8 m (32 feet)
 - .2 Utilities, Safety, and Security:
 - .1 Electrical power must be provided at all times (120 volts for lighting and wall outlets; sufficiently distributed wall outlets, lighting, and heating for typical office environment), including exterior electrical outlet for refrigerator and freezer.
 - .2 The Contractor must provide access to handwashing and washroom facilities within the Y Jetty Access Area.
 - .3 Appropriate fire protection (portable hand-held extinguishers at a minimum) and appropriate smoke detectors with audible alarm.
 - .4 First aid station (including eye wash station and basic first aid kit).
 - .3 Appliances:
 - .1 Electric baseboard heaters (to provide sufficient heating to maintain 20 °C internal ambient temperature) in both offices.
 - .2 The consultant team's office will require:
 - .1 Full-size refrigerator (minimum 12 cubic feet capacity, all refrigerator and no freezer) inside the office.
 - .2 Chest freezer (for ice packs; minimum 7 cubic feet capacity) inside the office.
 - .3 The Departmental Representative's office will require:
 - .1 A small refrigerator.

- .4 Office complex requirements:
 - .1 Stairs and landings with handrails as necessary.
 - .2 Four workstations (desks and swivel chairs) and part-height divider walls to form temporary work areas.
 - .3 One mudroom area near entrance for field gear (approximately 3 m [10 feet] by 3 m [10 feet]) with hooks on wall for hanging wet clothing and benches for changing into and out of field gear.
 - .4 For the consultant team's office, the following will be required:
 - .1 Work bench (typical kitchen counter height; minimum dimensions 0.9 m [3 feet] deep by 1.8 m [6 feet] long; can be a folding table) with power available and the floor area in front of the bench clear to a minimum distance of 1.5 m (5 feet) from the bench.
 - .5 The Departmental Representative's office must contain a board room to facilitate meetings.
- .5 Other required services as part of this scope:
 - .1 Site must be cleared, flat, compact, and accessible for delivery and installation of the temporary site office.
 - .2 Use of standard non-engineered blocking/foundation plan.
 - .3 Pressure-treated foundation and exterior skirting with vents (with access provided underneath for storage of coolers and equipment).
 - .4 Electrical work (including inter-module connections).
 - .5 The operating and maintenance cost of the site office must be paid by the Contractor.
 - .6 The site office must be cleaned in conjunction with Contractor plans for cleaning other off-site office trailers (during working hours, timing to be mutually agreed in advance), unless this requirement is relaxed by the Departmental Representative. Maintain the site office in a state of good repair, to the satisfaction of the Departmental Representative.
 - .7 Comprehensive warranty and insurance coverage for the full period that the site office is operational.
- .6 The temporary site office is to be provided on (or just before) the Contractor's on-site mobilization date and is to remain operational until the Final Completion date.
- .7 The acceptance for all site office details, delivery, installation, and removal must be coordinated with and accepted by the Departmental Representative.

- .8 The Contractor must decommission and remove the site offices at the end of the construction.
- .9 The site offices must remain the property of the Contractor.
- .4 The Contractor must provide means of access (gate keys for security perimeter) for the Departmental Representative and designated consultant team personnel.

1.9 Electric Power

- .1 The Contractor must coordinate with the Departmental Representative regarding availability of electric power at the Y Jetty Access Area. The Contractor must not rely on availability of electric power at the Y Jetty Access Area.

1.10 Water Supply

- .1 Contractor must coordinate with the Departmental Representative regarding access to water. The Contractor must not rely on availability of a water supply at the Y Jetty Access Area and must assume a portable water supply.

1.11 Temporary Communication Facilities

- .1 Provide and pay for temporary telephone fax, data hook-up, lines, and equipment necessary during the construction period.
- .2 Provide wireless internet service.

1.12 Temporary Heating and Ventilation

- .1 Provide temporary heating and ventilation required during construction period, including attendance, maintenance, and fuel.
- .2 Maintain strict supervision of operation of temporary heating and ventilating equipment to:
 - .1 Conform with applicable codes and standards.
 - .2 Enforce safe practices.
 - .3 Prevent abuse of services.
 - .4 Prevent damage to finishes.
 - .5 Vent direct-fired combustion units to outside.

1.13 Sanitary Facilities

- .1 The Contractor is responsible for providing its own washroom facilities for its crew and subcontractors and sufficient washroom facilities for the Departmental Representative and its consultants.

1.14 Construction Parking

- .1 Parking space for use by the Contractor must be within the approved confines of the Y Jetty Access Area. A minimum of five (5) parking spaces at the Y Jetty Access Area must be provided for the sole use of the Departmental Representative and consultant team. It must not disrupt the performance of work, nor must it disrupt the CFB Esquimalt operations. Personal vehicles will be permitted.
- .2 Additional parking capacity must be arranged by and paid for by the Contractor, off site.
- .3 Passes for Contractor and subcontractor vehicles are issued by CFB Esquimalt Parking Control Office and may only be available in limited quantities.

1.15 Fire Protection

- .1 Provide and maintain temporary fire protection equipment during performance of work required by insurance companies having jurisdiction and governing codes, regulations, and by-laws, and in accordance with Section 01 35 35 (DND Fire Safety Requirements).
- .2 Burning rubbish and construction waste materials is not permitted on the Work Site or Y Jetty Access Area.

1.16 Temporary Erosion and Sedimentation Control

- .1 Provide temporary erosion and sedimentation control measures to prevent soil erosion and discharge of soil-bearing water runoff or airborne dust to adjacent properties and walkways. Refer to Section 01 35 43 (Environmental Procedures).
- .2 Inspect, repair, and maintain erosion and sedimentation control measures during construction until permanent vegetation has been established.
- .3 Remove erosion and sedimentation controls and restore and stabilize areas disturbed during removal.

1.17 Removal of Temporary Facilities

- .1 Remove temporary facilities from the Work Site and Y Jetty Access Area when all work is completed and accepted by the Departmental Representative.
- .2 Clean and repair damage caused by installation or use of temporary facilities.

1.18 Cleanup

- .1 Conduct all project cleanup activities in accordance with Section 01 74 11 (Cleaning).
- .2 Remove construction Debris, waste materials, and packaging material from the Work Site and Y Jetty Access Area.

- .3 Clean dirt or mud tracked onto paved or surfaced roadways.
- .4 Store materials resulting from work activities that are salvageable.

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)

1.2 Definitions

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

1.3 Project Cleanliness

- .1 Maintain work in tidy condition, free from accumulation of waste products and debris, other than that caused by the Departmental Representative or other contractors.
- .2 Remove waste materials from the Work Site and Y Jetty Access Area at daily regularly scheduled times or dispose of as directed by the Departmental Representative. Do not burn waste materials on site or at the Y Jetty Access Area.
- .3 Make arrangements with and obtain permits from authorities having jurisdiction for disposal of waste and debris.
- .4 Provide on-site dump containers with secure lids for collection of waste materials and debris.
- .5 Provide and use marked separate bins for recycling.
- .6 Dispose of waste materials and debris off site.
- .7 Store volatile waste in covered metal containers, and remove from premises at the end of each working day.
- .8 Schedule cleaning operations so that resulting dust, debris, and other contaminants will not fall in Harbour or on wet, newly painted surfaces and will not contaminate systems.

1.4 Final Cleaning

- .1 When work is substantially performed, remove surplus products, tools, construction machinery and equipment not required for performance of remaining work.
- .2 Re-instate areas to pre-construction conditions or better.
- .3 Ensure any surrounding area that has been affected has been mitigated and returned to pre-construction conditions.

- .4 Remove waste products and debris other than that caused by others, and leave the Work Site and Y Jetty Access Area clean and suitable for occupancy.
- .5 Prior to final review, remove surplus products, tools, construction machinery, and equipment.
- .6 Provide written documentation that all dredge material, Dredge Debris, Identified Debris, and wastewater have been removed from the Contractor Off-Site Offload Facility and have been taken to their appropriate Disposal Facility and that the areas are free of any residual materials.
- .7 Remove waste materials from the Work Site and Y Jetty Access Area at daily regularly scheduled times or dispose of as directed by the Departmental Representative. Do not burn waste materials on site or at the Y Jetty Access Area.
- .8 Make arrangements with and obtain permits from authorities having jurisdiction for disposal of waste and Debris.
- .9 Sweep and wash clean paved areas.
- .10 Remove Debris and surplus materials from accessible concealed spaces.

1.5 Waste Management and Disposal

- .1 Separate waste materials, not including any material generated as part of dredging operations, for re-use, recycling, or composting.
- .2 Remove recycling containers and bins from site and dispose of materials at appropriate off-site facility.

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 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 Site and Y Jetty Access Area.

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)
- .3 Section 33 11 16 (Water Utility Distribution Piping)
- .4 Section 33 34 00 (Sanitary Sewer Force Mains)

1.4 Definitions

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

1.5 Submittals – Not Used

1.6 References – Not Used

1.7 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, accompanied by the Contractor, will inspect 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.

1.8 Submittals

- .1 No later than ten (10) working days after completion of the work of the Project, submit to the Departmental Representative, four (4) final copies of Record Documents 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 of the Specification.
- .2 No later than ten (10) working days after completion of the work of the project, submit to the Departmental Representative, one (1) copy of the Certificate of Completion.

1.9 Format for Record Documents

- .1 Provide four (4) CDs in AutoCAD 2013 *.dwg file format and that meet the DND CAD standards, with all record information on the CDs.

- .2 Provide other project closeout submissions in format acceptable to Departmental Representative.

1.10 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 and shop drawings: Mark each item to record actual construction, including:
 - .1 Measured depths of dredged area in relation to Chart Datum.
 - .2 Measured horizontal and vertical locations of each dredged area.
 - .3 Measured depths of backfill/cap placement areas in relation to Chart Datum.
 - .4 Measured horizontal and vertical locations of each backfill/cap placement area.
 - .5 Measured locations and magnitude of dredge slope. Field changes of dimension and detail.
 - .6 Measured locations of structures, internal utilities, and appurtenances, referenced to visible and accessible features of construction.
 - .7 Measured bathymetry, including metadata.
 - .8 Field changes of dimension and detail.
 - .9 Changes made by change orders.
 - .10 Details not on original Contract Drawings.
 - .11 References to related shop drawings and modifications.
- .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 of the Specifications.
- .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.

1.11 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 This section covers general requirements relating to commissioning of project components and systems, specifying general requirements for Performance Verification (PV) of components, equipment, sub-systems, systems, and integrated systems (if required for the work).

1.2 Related Sections

- .1 Section 01 11 55 (General Instructions)
- .2 Section 01 33 00 (Submittal Procedures)
- .3 Section 02 41 16.01 (Structure Demolition)
- .4 Section 26 05 00 (Common Work Results for Electrical)
- .5 Section 27 05 13 (Communication Services)

1.3 Acronyms

- .1 AFD - Alternate Forms of Delivery, service provider.
- .2 BMM - Building Management Manual.
- .3 Cx - Commissioning.
- .4 EMCS - Energy Monitoring and Control Systems.
- .5 O&M - Operation and Maintenance.
- .6 PI - Product Information.
- .7 PV - Performance Verification.
- .8 TAB - Testing, Adjusting and Balancing.

1.4 Measurement and Payment Procedures

- .1 No measurement or payment will be made under this section. All work performed to satisfy the requirements of this section will be paid under the relevant payment item in Section 02 41 16.01 (Structure Demolition).

1.5 Definitions

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

1.6 General

- .1 Cx is a planned program of tests, procedures and checks carried out systematically on systems and integrated systems of the finished project. Cx is performed after systems and integrated systems are completely installed, functional, and the Contractor's PV responsibilities have been completed and approved. Objectives:
 - .1 Verify installed equipment, systems and integrated systems operate in accordance with Contract documents and design criteria and intent.
 - .2 Effectively train O&M staff.
 - .3 The Contractor is to assist in Cx process, operating equipment and systems, troubleshooting, and making equipment adjustments as required.

1.7 Non-Conformance with Performance Verification Requirements

- .1 Should equipment, system components, and associated controls be incorrectly installed or malfunction during Cx, correct deficiencies, re-verify equipment and components within the non-functional system, including related systems as deemed required by the Departmental Representative to ensure effective performance.
- .2 Costs for corrective work, additional tests, inspections, to determine acceptability and proper performance of such items to be borne by the Contractor.

1.8 Pre-Cx Review

- .1 During Construction: Coordinate provision, location, and installation of provisions for Cx.
- .2 Before start of Cx:
 - .1 Ensure installation of related components, equipment, sub-systems, and systems is complete.
 - .2 Fully understand Cx requirements and procedures.
 - .3 Understand completely design criteria and intent and special features.
 - .4 Submit complete start-up documentation to the Departmental Representative.
 - .5 Ensure systems have been cleaned thoroughly.
 - .6 Ensure "As-Built" (red-line markups) system schematics are available.
- .3 Inform the Departmental Representative in writing of discrepancies and deficiencies on finished works.

1.9 Conflicts

- .1 Report conflicts between requirements of this section and other sections of the Specification to the Departmental Representative before start-up and obtain clarification.
- .2 Failure to report conflict and obtain clarification will result in application of most stringent requirement.

1.10 Submittals (if replacement components are required)

- .1 Submittals: in accordance with Section 01 33 00 (Submittal Procedures), if replacement of electrical components is required.
 - .1 Submit proposed Cx procedures to the Departmental Representative and obtain written acceptance at least seven (7) working days prior to start of Cx.
 - .2 Documentation to be provided for electrical and mechanical systems.

1.11 Commissioning Documentation

- .1 The Departmental Representative will review and accept Cx documentation.
- .2 Provide completed and accepted Cx documentation to the Departmental Representative.

1.12 Commissioning Schedule

- .1 Provide adequate time for Cx activities prescribed in the Specification, including:
 - .1 Approval of Cx reports.
 - .2 Verification of reported results.
 - .3 Repairs, re-testing, re-commissioning, re-verification.
 - .4 Training.

1.13 Starting and Testing (by DND Personnel)

- .1 The Contractor assumes liabilities and costs for inspections, including disassembly and re-assembly after approval, starting, testing, and adjusting, including supply of testing equipment.

1.14 Witnessing of Starting and Testing

- .1 Provide seven (7) working days advance notice prior to commencement.

- .2 The Departmental Representative will witness start-up and testing.
- .3 The Contractor's Cx Agent is to be present at tests performed and documented by sub-trades, suppliers, and equipment manufacturers.

1.15 Manufacturer's Involvement (if replacement components are required)

- .1 Obtain manufacturer's installation, start-up and operations instructions prior to start-up of components, equipment and systems and review with the Departmental Representative.
 - .1 Compare completed installation with manufacturer's published data, record discrepancies, and review with manufacturer.
 - .2 Modify procedures detrimental to equipment performance and review same with manufacturer before start-up.

1.16 Procedures

- .1 Verify that equipment and systems are complete, clean, and operating in normal and safe manner prior to conducting start-up, testing and Cx.
- .2 Conduct start-up and testing in following distinct phases:
 - .1 Included in delivery and installation:
 - .1 Verification of conformity to Specifications, approved shop drawings, and completion of PI report forms.
 - .2 Visual inspection of quality of installation.
 - .2 Start-up: follow accepted start-up procedures.
 - .3 Operational testing: document equipment performance.
 - .4 System PV: include repetition of tests after correcting deficiencies.

1.17 Operation and Maintenance of Equipment and Systems (if replacement components are required)

- .1 After start-up, operate and maintain equipment and systems as directed by equipment/system manufacturer.
- .2 Operate and maintain systems for length of time required for start-up, testing, and commissioning to be completed.
- .3 After completion of commissioning, operate and maintain systems until the Substantial Performance date.

1.18 Test Results

- .1 If start-up, testing and/or PV produce unacceptable results, repair, replace or repeat specified starting and/or PV procedures until acceptable results are achieved.
- .2 Provide labour and materials, assume costs for re-commissioning.

1.19 Start of Commissioning

- .1 Notify the Departmental Representative at least seven (7) working days prior to start of Cx.
- .2 Start Cx after other elements of the work affecting start-up and performance verification of systems have been completed.

1.20 Commissioning Performance Verification

- .1 Carry out Cx under actual operating conditions, over entire operating range, in all modes.
- .2 Cx procedures to be repeatable and reported results are to be verifiable.
- .3 Follow equipment manufacturer's operating instructions.

1.21 Witnessing Commissioning

- .1 The Departmental Representative will witness activities and verify results.

1.22 Deficiencies, Faults, Defects

- .1 Correct deficiencies found during start-up and Cx to satisfaction of the Departmental Representative.
- .2 Report problems, faults, or defects affecting Cx to the Departmental Representative in writing. Stop Cx until problems are rectified. Proceed only with written acceptance from the Departmental Representative.

1.23 Completion of Commissioning

- .1 Upon completion of Cx, leave systems in normal operating mode.
- .2 Cx to be considered complete when Contract Cx deliverables have been submitted and accepted by the Departmental Representative.

1.24 Maintenance Materials, Spare Parts, Special Tools (if replacement components are required)

- .1 Supply, deliver, and document maintenance materials, spare parts, and special tools as specified.

1.25 Occupancy

- .1 Cooperate fully with the Departmental Representative during stages of acceptance and occupancy of facility.

2. PART 2 – PRODUCTS – NOT USED

3. PART 3 – EXECUTION – NOT USED

END OF SECTION

1. PART 1 – GENERAL

1.1 Description

- .1 Local survey control and upland control monument locations are shown on the Drawings. The Contractor must refer to provided control monument location information to help establish 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 The Contractor must employ a third-party surveyor (i.e., not the Contractor's own survey crew) to conduct measurement and payment of Pre- and Post-Construction Surveys. The Contractor's third-party 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 to be used for measurement and payment purposes.
- .5 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 more strict survey requirements must take precedence unless the Contractor obtains clarification from the Departmental Representative otherwise.
 - .1 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

- .2 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
- .6 The Contractor's third-party licensed surveyor must perform the Pre-Construction Survey prior to conducting any dredging or Debris removal work.
- .7 The Contractor's third-party licensed surveyor must perform the Post-Construction (final) Survey following the Departmental Representative's acceptance of the work, based on Progress Survey results. Final measurement and payment for the work will be determined using the Contractor's third-party survey results.
- .8 The Departmental Representative may conduct its own Pre-Construction Survey to compare against the Contractor's third-party Pre-Construction Survey for quality assurance. If there are discrepancies between the two Pre-Construction Surveys, the Contractor's third-party licensed surveyor or engineer must coordinate with the Departmental Representative's surveyor to determine which survey is inaccurate, and if the Departmental Representative determines that the Contractor's third-party survey means and methods are inaccurate, the Contractor must adjust and correct its surveying means and methods at no extra cost to Canada.
- .9 The Departmental Representative may review the Contractor's survey work or conduct additional surveys 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 surveyor or engineer 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 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, positions, and other aspects of the work.
- .12 Progress Survey data collected by the Contractor must be used for work progress tracking and for monthly progress payment for work completed.

- .13 The Contractor must calculate completed in situ quantities for dredging and material placement, based on Progress Survey data, for progress reporting and measurement and payment purposes.
- .14 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 cost 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, 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)

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 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 a licensed 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: 1) 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.
 - .6 Procedures and quantity calculation methods for calculating progress volumes and final measurement and payment volumes.
 - .7 Special underpier and nearshore surveys methods, as required, to ensure that the full extent of the Work Site is surveyed.
- .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 (Chart Datum [CD]) provided in Section 01 11 55 (General Instructions) and on the Drawings.
 - .2 The Contractor's third-party licensed surveyor or engineer must stamp all the Departmental Representative-accepted Pre-Construction and Post-Construction Surveys. The Contractor's third-party licensed surveyor or engineer 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 and calculated quantities to the Departmental Representative at least two (2) weeks prior to start of in-water construction activities.

- .5 Submit daily Progress Surveys and calculated 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 twenty-four (24) hours after completing the Post-Construction Survey, and as part of the Contractor's Daily Construction Report.
- .6 Hard Copy and PDF Drawing Requirements:
 - .1 Provide plan view contour drawing, using 0.2-metre (m) contour intervals (using even number intervals).
 - .2 Provide plan view spot elevation drawing.
 - .3 Provide cross sections through the area where work was completed at no greater than 15-m spacing between cross sections or at the Departmental Representative-requested spacing. Cross section information must show the pre-construction elevations, progress or post-construction elevations, and the design template (elevations and grades).
 - .4 Provide isopach drawings for dredge surveys (pre-dredge vs. post-dredge) and backfill surveys (post-dredge vs. post-backfill).
 - .5 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 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 Site basemap file in *.dwg format for Contractor use.
- .8 Quantity Calculations
 - .1 The Contractor must submit its quantity (volume) calculations to the Departmental Representative for review and acceptance. 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, certified weight 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.

- .2 Quantities must be computed to the nearest in situ cubic metre based on comparison to the Contractor's third-party Pre-Construction Survey or relevant Progress Surveys. Quantities must be broken down by each Tender Item listed in the Unit Price Table. Each quantity must also be broken down into payable quantities, and Payable Overdredge Allowance, Excessive Dredging, and Excessive Overplacement quantities.
- .3 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.
- .4 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 surveyor or engineer 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. Topographic equipment may be used for shoreline excavation and Engineered Capping survey 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 (CRD) 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 Ranges and Tide Gauges

- .1 The Contractor must furnish, set, and maintain in good order, all ranges, buoys, tide gauges, and other markers necessary to define the work and to facilitate inspection. The Contractor must establish and maintain a tide gauge or board in a location where it may be clearly seen during in-water construction operations and inspections. The location where ranges, buoys, and tide gauges are established must be accepted by the Departmental Representative. The Contractor must also install an automatic recording tide gauge with water level sensor. The tide gauge must provide a continuous recording of tidal change for every 15-minute interval or each 0.03-m change, whichever occurs first. Tidal changes must be recorded in Chart Datum, with these changes visually provided to the dredging and material placement equipment operator at all times during the construction activities to allow proper adjustment of dredge and placement elevations. Conversions between Chart Datum and Geodetic Datum are provided in the Drawings.

3.3 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.

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

- .1 Each Dredge Unit within a Work Zone will require a Pre- and Post-Construction Survey for measurement and payment purposes. Pre- and Post-Construction Surveys are required for dredging and all Engineered Cap and Backfill Material placement activities.
- .2 Pre-Construction Survey
 - .1 The Contractor's third-party licensed surveyor or engineer must conduct a pre-construction multi-beam bathymetric survey and supplemental surveys as necessary to fully identify pre-construction elevations and grades throughout the Work Site. This Pre-Construction Survey must be completed and submitted to the Departmental Representative at least two (2) weeks prior to the start of dredging activities, and will be used as the basis for measurement and payment purposes.
 - .2 The Pre-Construction Survey must cover all areas of work as shown on the Drawings, and extend at least 15 m past the water boundaries of the Work Site and under all of Y Jetty.
 - .3 If vessels or other Obstructions prevent the Contractor from being able to fully survey all of the Work Site prior to the start of construction, the Contractor must coordinate with the Departmental Representative to perform an additional interim Pre-Construction Survey of an entire Work Zone once all obstructions have been moved, but prior to start of any Required Dredging within that Work Zone. This survey is to be coordinated with the Departmental Representative and will be at no additional cost to Canada.
 - .4 The Contractor must not begin dredging any area prior to Departmental Representative and Contractor mutual acceptance of Pre-Construction Survey.
- .3 Progress Surveys
 - .1 The Contractor must provide daily (or less frequent only if accepted by the Departmental Representative) measurements of the previous day's work, using multi-beam survey equipment. The survey's spot elevation spacing is determined by the Contractor and must provide sufficient density of

spot elevation data to provide adequate information for the Contractor to provide quality control of its work. The Departmental Representative must be satisfied as to the survey's data density, and if not satisfied may require the Contractor to increase the survey data density at no extra cost to Canada.

- .2 The survey data will accompany the Contractor's Daily Construction Report submitted to the Departmental Representative, including all electronic information and data from survey instruments.
- .3 Survey results may be used to adjust construction procedures to ensure that the configuration of the work conforms to the Drawings and permit requirements. The Contractor may be required to adjust its construction procedures to ensure compliance with the Drawings and permit requirements, at no extra cost to Canada.
- .4 Required Dredging Progress Surveys
 - .1 The Contractor must complete Required Dredging Progress Surveys on a daily basis to document daily progress for completion of Required Dredging activities. Results of daily Progress Surveys should accurately depict the daily progress of the dredging work and must be submitted as part of the Contractor Daily Construction Reports.
 - .2 When Required Dredging is completed as determined by the Contractor, the Contractor will conduct its Progress Survey over the entire dredge area and submit to the Departmental Representative to review.
 - .3 If all of the Required Dredging has not been satisfactorily completed, as determined by the Departmental Representative, the Contractor must correct the deficiencies indicated in the survey, re-survey the area, and the Departmental Representative will review the re-survey to confirm that dredging has been satisfactorily completed. The cost for Contractor re-survey will not be cause for additional compensation to the Contractor.
 - .4 The Contractor's Required Dredging Progress Surveys will be used to determine post-required dredging elevations and for computing progress dredge volumes used for progress measurement and payment for the work.
 - .5 The Departmental Representative reserves the right to conduct its own surveys during construction to verify the Contractor's survey work. In the event of a discrepancy, the Departmental Representative may choose to retain another surveyor or engineer mutually acceptable to both the Contractor and the Departmental Representative to resolve the discrepancy.

- .5 Contingency Re-Dredging Progress Surveys
 - .1 The Contractor must conduct Contingency Re-Dredging Progress Surveys if the Departmental Representative elects to include Contingency Re-Dredging as part of the Contract.
 - .2 Following evaluation of confirmation sampling data, the Departmental Representative may require the Contractor to conduct additional dredging activities for removal of dredge residuals or Missed Inventory within select areas.
 - .3 The Contractor must complete Contingency Re-Dredging Progress Surveys on a daily basis, during completion of additional dredging activities, to document progress for completion of the work. Results of daily Contingency Re-Dredging Progress Surveys should accurately depict the daily progress of the additional dredging work and must be submitted as part of the Contractor Daily Construction Reports.
 - .4 The Contractor and the Departmental Representative must follow the same procedures regarding acceptance of the work as described above for Required Dredging Progress Surveys.
- .6 Engineered Capping and Backfill Placement Progress Surveys
 - .1 Following completion of all dredging activities and acceptance of the work by the Departmental Representative, the Departmental Representative will direct the Contractor to place Engineered Cap and Backfill Material within areas shown on the Drawings.
 - .2 The Contractor must complete Engineered Capping and Backfill Placement Progress Surveys on a daily basis to document daily progress for completion of material placement activities. Results of Engineered Capping and Backfill Placement Progress Surveys should accurately depict the daily progress of the material placement work and must be submitted as part of the Contractor Daily Construction Reports.
 - .3 The Contractor and the Departmental Representative must follow the same procedures regarding acceptance of the work as described above for Required Dredging Progress Surveys.
 - .4 Placement of Material Type 3 in Material Placement Area E must be placed in lifts not to exceed 300 millimetres in thickness per lift. A Progress Survey must be performed between each lift and accepted by the Departmental Representative prior to placing the next successive lift.
- .4 Post-Construction Surveys
 - .1 Required Dredging Post-Construction Survey

- .1 Following completion of Required Dredging work and the Departmental Representative acceptance of the work completion, the Contractor's third-party licensed surveyor or engineer must conduct a Post-Construction Survey (for Required Dredging) that will be used for final measurement and payment for Required Dredging work.
 - .2 Results of the Post-Construction Survey will be compared to the monthly progress reports provided by the Contractor (for progress payment) and adjustments to final payment for the work will be made as necessary.
 - .3 The Required Dredging Post-Construction Survey will be used as the Pre-Construction Survey for Contingency Re-Dredging activities, or Engineered Cap and Backfill Material placement activities, if no Contingency Re-Dredging is required.
 - .4 The Departmental Representative reserves the right to conduct its own Post-Construction Survey during construction to verify the Contractor's survey work. In the event of a discrepancy, the Departmental Representative may choose to retain another surveyor or engineer mutually acceptable to both the Contractor and the Departmental Representative to resolve the discrepancy.
- .2 Contingency Re-Dredging Post-Construction Survey
- .1 The Contractor's third-party licensed surveyor or engineer must conduct Contingency Re-Dredging Post-Construction Surveys if the Departmental Representative elects to include Contingency Re-Dredging as part of the Contract.
 - .2 Following completion of Contingency Re-Dredging work and the Departmental Representative acceptance of the work completion, the Contractor's third-party licensed surveyor or engineer must conduct a Post-Construction Survey (for Contingency Re-Dredging) that will be used for final measurement and payment for Contingency Re-Dredging work.
 - .3 Results of the Post-Construction Survey (for Contingency Re-Dredging) will be compared to the monthly progress reports provided by the Contractor (for progress payment) and adjustments to final payment for the work will be made as necessary.
 - .4 The Post-Construction Survey (for Contingency Re-Dredging) will be used as the Pre-Construction Survey for Backfill Material placement activities.
 - .5 The Contractor and the Departmental Representative must follow the same procedures regarding acceptance of the work as described above for Required Dredging Post-Construction Survey.

- .3 Engineered Cap Post-Construction Surveys
 - .1 Following completion of each Engineered Cap material layer (e.g., sand, filter material, and armour rock) within each Material Placement Area, and the Departmental Representative acceptance of the work completion, the Contractor's third-party licensed surveyor or engineer must conduct a Post-Construction Survey of each of the Engineered Cap material layers (prior to placement of the subsequent layer in that area) that will be used for final measurement and payment purposes.
 - .2 Results of the Engineered Cap Post-Construction Survey will be compared to the monthly progress reports provided by the Contractor (for progress payment) and adjustments to final payment for the work will be made as necessary.
 - .3 The Contractor and the Departmental Representative must follow the same procedures regarding acceptance of the work as described above for Required Dredging Post-Construction Survey.
- .4 Backfill Post-Construction Surveys
 - .1 Following completion of Backfill Material placement in each Material Placement Area and the Departmental Representative's acceptance of the work completion, the Contractor's third-party licensed surveyor or engineer must conduct a Post-Construction Survey of the Backfill Material placement that will be used for final measurement and payment purposes.
 - .2 Results of the Backfill Post-Construction Survey will be compared to the monthly progress reports provided by the Contractor (for progress payment) and adjustments to final payment for the work will be made as necessary.
 - .3 The Contractor and the Departmental Representative must follow the same procedures regarding acceptance of the work as described above for Required Dredging Post-Construction Survey.

END OF SECTION

1. PART 1 – GENERAL

1.1 Description

- .1 This section covers methods and procedures for dismantling, disconnection, storage, cleaning, and reinstallation of miscellaneous jetty attachments and components designated to be disconnected, dismantled or removed and subsequently reinstalled, in whole or in part, as described on the Drawings and as found in the field.
 - .1 Miscellaneous designated jetty attachments and components at Y Jetty include all incidental items requiring temporary disconnection, dismantling or removal, including designated wharf safety ladders, hanging cathodic protection anodes, and any other peripheral item or component which requires reinstallation to match the pre-existing configuration.
 - .2 Dismantling, disconnection, and extraction (and off-site disposal where not suitable for re-use) of designated existing timber piles at Y Jetty are covered under Section 02 41 16.01 (Structure Demolition).
 - .3 Temporary disconnection, relocation, storage, and subsequent reinstatement of floating camels, tire fender logs and barrier boom system at Y Jetty, is covered under Section 02 41 16.02 (Structure Relocation).
 - .4 Temporary de-energizing, locking out, re-energizing, and testing of electrical services and communication services are covered under Section 26 05 00 (Common Work Results for Electrical) and Section 27 05 13 (Communication Services), respectively.
 - .5 Storage and reinstatement of salvaged timber piles at Y Jetty, or supply and installation of new timber piles, are covered under Section 31 62 19 (Timber Piling).

1.2 Related Sections

- .1 Section 00 01 10 (Specification Index)
- .2 Section 01 11 55 (General Instructions)
- .3 Section 01 33 00 (Submittal Procedures)
- .4 Section 01 35 13.43 (Special Project Procedures for Contaminated Sites)
- .5 Section 01 35 29.14 (Health and Safety Requirements for Contaminated Sites)
- .6 Section 01 35 43 (Environmental Procedures)
- .7 Section 01 74 11 (Cleaning)
- .8 Section 02 41 16.01 (Structure Demolition)

- .9 Section 02 41 16.02 (Structure Relocation)
- .10 Section 02 55 10 (Dust Control)
- .11 Section 26 05 00 (Common Work Results for Electrical)
- .12 Section 27 05 13 (Communication Services)
- .13 Section 31 62 19 (Timber Piling)

1.3 Measurement and Payment Procedures

- .1 Selective site demolition items at Y Jetty (all incidental items requiring temporary disconnection, dismantling or removal, including designated wharf safety ladders, hanging cathodic protection anodes, and any other peripheral item or component which requires reinstallation to match the pre-existing configuration) to be dismantled, disconnected, and reinstalled in the work as shown on the Drawings, will not be measured individually. Dismantling, disconnection, and reinstallation of the selective site demolition items at Y Jetty will be paid for at the Lump Sum Price tendered for SELECTIVE SITE DEMOLITION: GENERAL. Payment will be full compensation for all work in connection with the selective site demolition items, as described in this section and on the Drawings.
- .2 Dismantling, disconnection, and extraction (and off-site disposal where not suitable for re-use) of designated existing timber fender piles at Y Jetty will be measured to Section 02 41 16.01 (Structure Demolition), and payment will include all costs in connection with such work as specified in that section.
- .3 Temporary de-energizing, locking out, re-energizing, and testing of electrical services and communication services will be measured to Section 26 05 00 (Common Work Results for Electrical) and Section 27 05 13 (Communication Services), respectively, and payment will include all costs in connection with such work as specified in those sections.
- .4 Storage and reinstatement of designated existing timber fender piles at Y Jetty, or supply and installation of new timber piles, where indicated on the Drawings, will be measured to Section 31 62 19 (Timber Piling), and payment will include all costs in connection with such work as specified in that section.
- .5 All costs associated with removal and disposal of Demolition Debris associated with selective site demolition work under this section must be included within the relevant Tender Item price(s) for selective site demolition. No separate payment will be made for removal of Demolition Debris as Obstructions.

1.4 References

- .1 CAN/CSA-S350-M19 80(R2003), Code of Practice for Safety in Demolition of Structures.
- .2 Occupational Health and Safety Regulations, WorkSafeBC.

- .3 National Building Code of Canada (NBCC), Part 8 – Safety Measures at Construction and Demolition Sites.

1.5 Definitions

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

1.6 Submittals

- .1 In accordance with the requirements of Section 01 33 00 (Submittal Procedures), submit as part of the Construction Work Plan for review by the Departmental Representative the proposed method, sequencing of work and product data for demolition, dismantling, disassembly, and off-site disposal of the items designated for selective site demolition (including the proposed location and details of the Disposal Facility), and the method for protection of the hanging cathodic protection anodes.
- .2 Within the Construction Work Plan and the Environmental Protection Plan (EPP) include control measures, as required by the Environmental Management Plan (EMP), to be implemented to protect the environment during selective site demolition work.

1.7 Site Conditions

- .1 Review environmental site information and the EMP and take precautions to protect environment.
- .2 The Contractor must inspect the Work Site to thoroughly familiarize himself with site conditions before starting selective site demolition work.
- .3 For geotechnical investigation data reports, structure condition inspection reports, and other background data, refer to the Data Reports listed in Section 00 01 10 (Specification Index). Review all Data Reports for information regarding composition and condition of items to be demolished and geotechnical conditions.
- .4 Should material resembling spray or trowel-applied asbestos or other designated substance listed as hazardous be encountered, stop work, take preventative measures, and notify the Departmental Representative immediately. Do not proceed until written instructions have been received from the Departmental Representative.
- .5 Notify the Departmental Representative at least seven (7) working days before disrupting access or services at Y Jetty.

2. PART 2 – PRODUCTS – NOT USED

3. PART 3 – EXECUTION

3.1 Preparation and Protection

- .1 Within ten (10) working days after Contract Award, inspect site with the Departmental Representative to verify extent and location of items designated for removal, disposal, and salvage and items to remain or to be re-used in the work.
- .2 Do work in accordance with Section 01 35 29.14 (Health and Safety Requirements for Contaminated Sites).
- .3 Protect existing items designated to remain and items designated for salvage or re-use. In event of damage to such items, immediately replace or make repairs to acceptance of the Departmental Representative.
- .4 Cut existing surfaces as required to accommodate new work.
- .5 Remove items so shown or specified.
- .6 Make cuts with clean, true, smooth edges. Make patches inconspicuous in final assembly.
- .7 Patch and make good surfaces cut, damaged, or disturbed, to the Departmental Representative's acceptance. Match existing material, colour, finish, and texture.
- .8 Making good is defined as matching construction and finishing materials and the adjacent surfaces such that there is no visible difference between existing and new surfaces when viewed from 1.5 metres (m) in ambient light, and includes painting the whole surface to the next change in plane.
- .9 Locate and protect electrical services. Preserve active services traversing site in operating condition.
- .10 Gather up and temporarily affix to the underside of the deck structure (or temporarily remove) each of the hanging anodes that form the cathodic protection system under the deck of Y Jetty, during periods when the placement of Backfill Material is within a lateral distance of 10 m of each hanging anode. Do not allow construction equipment to abrade or impact the anodes or their support cables.
- .11 Notify and obtain acceptance of the Departmental Representative at least ten (10) working days before starting selective site demolition activities.
- .12 Maintain full vehicular and pedestrian access, for DND vehicles and personnel, on Y Jetty deck (along full length of approach trestle and wharf head) throughout the work as shown on the Drawings, except as allowed by the Departmental Representative for the installation, maintenance, and removal of the utilities protection system.
- .13 Allow DND personnel unfettered access and working space around the electrical and mechanical service mounts (utility cabinets) on Y Jetty, including space to open the cabinet doors and make service connections, if required at any time during the work. A lockable, secure gated access through the Work Site

- perimeter safety fence (through which DND has unrestricted access) will be acceptable for this purpose.
- .14 Schedule work on electrical services to minimize disruption for DND operations. For work scheduling constraints and notification periods, refer to Section 26 05 00 (Common Work Results for Electrical) and Section 27 05 13 (Communication Services).
 - .15 Ensure site demolition work is performed in accordance with provincial and federal environmental regulations.
 - .16 Ensure that functionality of electrical systems is not altered from original installation.
 - .17 Repair and make good any damage to electrical components caused during disconnection work. Use best practices and applicable codes.
 - .18 Perform site demolition work in accordance with the Occupational Health and Safety Regulations of WorkSafeBC.
 - .19 Keep noise, dust, and inconvenience to occupants and users to minimum and in accordance with Section 01 35 13.43 (Special Project Procedures for Contaminated Sites), Section 01 35 43 (Environmental Procedures), Section 02 55 10 (Dust Control), the EMP, and the EPP.
 - .20 Carry out selective site demolition in conformance with Township of Esquimalt, City of Colwood, and View Royal noise by-laws as stipulated in Section 01 35 43 (Environmental Procedures).
 - .21 Manage hazardous materials in accordance with provincial and federal environmental regulations.
 - .22 Prevent debris, dust, and any sediment laden waters from entering any drainage system, water course, or marine environment in line with DND Formation Safety and Environment (FSE) directives (included in Appendices A and G of the Specification), the EMP, and the EPP.
 - .23 Ensure that selective demolition work does not adversely affect adjacent watercourses, groundwater, and wildlife or contribute to excess air and noise pollution.
 - .24 When cutting creosote timbers near or over water, ensure that all cuttings are contained and collected from the water, and ensure that any sheen or residue resulting from cutting creosote timbers is contained and cleaned up.
 - .25 Do not dispose of waste or volatile materials including, but not limited to, mineral spirits, oil, petroleum-based lubricants, or toxic cleaning solutions into watercourses or storm or sanitary sewers.
 - .26 Ensure proper disposal procedures are maintained throughout the project.
 - .27 Ensure any existing electrical cables that need to be replaced are recycled appropriately.

- .28 Do not pump water containing suspended materials into watercourses, storm or sanitary sewers, or onto adjacent properties.
- .29 Control disposal or runoff of water containing suspended materials or other harmful substances in accordance with provincial and federal environmental regulations.
- .30 Do not disturb or damage items designated to remain in place.
- .31 For temporary protection of mechanical and electrical utility services (utilities protection system) refer to Section 02 41 16.01 (Structure Demolition).
- .32 During all in-water and above-water demolition and pile extraction work, environmental protection control measures must comply with the requirements of Section 01 35 43 (Environmental Procedures), Section 01 35 13.43 (Special Project Procedures for Contaminated Sites), the EMP, and the EPP.
- .33 Do not allow buoyant items that have been demolished or detached from their original position (i.e., floating debris) to float beyond the Work Site. Do not allow such floating debris to cause any hindrance or obstacle to marine traffic and DND operations. Identify and collect such floating debris on an as-needed basis, and dispose in accordance with the Specifications.

3.2 Removal, Storage and Re-Use (General)

- .1 Selective site demolition materials and debris may be stockpiled on the Contractor's barge(s) within the Work Site. Selective site demolition materials and debris may be stockpiled elsewhere within the Work Site at the sole discretion of the Departmental Representative, only if suitable storage location(s) are available, and then only at location(s) reviewed and accepted by the Departmental Representative. Materials to be re-used in the Work must not be stockpiled off site.
- .2 Remove and store materials designated to be salvaged or re-used, in a manner to prevent damage, at the Contractor's storage location. Advise the Departmental Representative in writing of designated storage location.
- .3 Where items identified for selective site demolition and re-use have been in contact with contaminated seabed material, those items must be decontaminated before being re-used in the work.
- .4 Store and protect in accordance with requirements for maximum preservation of material.
- .5 Handle salvaged materials as new materials.
- .6 Label stored materials, indicating material type and quantity. All parts and components of electrical equipment specified for salvage are to be clearly labeled prior to removal to facilitate re-assembly. All components and parts should be packaged and labelled in a manner that prevents damage or loss.

- .7 Label the location of storage areas for salvaged material and provide barriers and security devices. Designate appropriate security resources and other measures to prevent vandalism, damage, and theft.
- .8 Locate stored materials convenient for re-use in new construction to eliminate double handling wherever possible.
- .9 Where salvaged materials are to be re-used in the work, re-use such materials in accordance with the section of the Specifications relevant to the item in question.
- .10 Stockpile materials designated for off-site disposal in location(s) that facilitate removal from site and examination by potential end markets, and that do not impede disassembly, processing, or hauling procedures.
- .11 Dismantle items containing materials for salvage and stockpile salvaged materials at the Contractor's storage location.
- .12 Handle and dispose of hazardous materials in accordance with provincial and federal environmental regulations.
- .13 Remove stockpiled material, as directed by the Departmental Representative, when it interferes with construction activities.
- .14 If temporary termination of electrical utility services is required, the Contractor must megger/electrically test all cables that are to remain in place, to ensure no damage has been incurred during demolition or disconnection work, and that the cables remain in the same usable condition as found at start of the work. Refer to Section 26 05 00 (Common Work Results for Electrical).

3.3 Removal from Site and Disposal

- .1 Except where salvage and re-use in the work is specified, the Contractor becomes the owner of, and is responsible for, any soil, sediment, debris, waste, jetty components designated for demolition, or other material once it is removed, dredged, or excavated to be loaded onto a vehicle, barge, or other vessel for transport to the Contractor Off-Site Offload Facility, Disposal Facility, or Treatment Facility.
- .2 Except where re-use of materials in the work is required or specified, transport all selective site Demolition Debris off site only by use of waterborne transport. Do not use trucks, unless requested and accepted by the Departmental Representative in writing, to transport Demolition Debris from Y Jetty.
- .3 Remove materials that cannot be salvaged for re-use in the work, and dispose of in accordance with applicable codes at licensed facilities.
- .4 Dismantle items containing materials for salvage and stockpile salvaged materials at the Contractor's storage location.
- .5 Handle and dispose of hazardous materials in accordance with provincial and federal environmental regulations.

- .6 Transport material designated for disposal by approved haulers to receiving organizations listed in the Construction Work Plan and in accordance with regulations. Do not deviate from haulers and receiving organizations listed in the Construction Work Plan without prior written authorization from the Departmental Representative.
- .7 Offload, process, treat, and dispose of selective site Demolition Debris to receiving organizations in accordance with regulations. Do not deviate from the Contractor Off-Site Offload, Processing, Treatment, and Disposal Facilities that are included in the Construction Work Plan without prior written authorization from the Departmental Representative.

3.4 Cleaning and Restoration

- .1 Keep site clean and organized throughout selective site demolition work.
- .2 For items that are required by the Specification to be cleaned (during removal, relocation, or reinstallation), use cleaning solutions and procedures that are effective and are not harmful to health, are not injurious to plants, and do not endanger wildlife or marine environment.
- .3 Repair damage to adjacent structures and utilities caused by selective site demolition work, as directed by the Departmental Representative.
- .4 Conduct Work Site restoration activities in accordance with Section 01 74 11 (Cleaning).
- .5 Upon Substantial Performance date, remove debris, trim surfaces, and leave Work Site clean.

END OF SECTION

1. PART 1 – GENERAL

1.1 Description

- .1 This section covers the dismantling, extraction, removal, cleaning, and temporary storage of existing timber fender piles and timber chocks at Y Jetty (only those designated for temporary removal), and disposal off site only where accepted by the Departmental Representative as being unsuitable for re-use in the work, as shown on the Drawings and as found in the field. Dismantling and disposal of steel bolting materials, miscellaneous steel materials, and attachments at existing timber fender piles and timber chocks (only at those designated for temporary removal), are also covered in this section.
- .2 This section also covers the demolition of an existing timber structure referred to as the Former Marine Railway within Work Zone 1C, which is nearly completely buried in the seabed. The scope includes structure dismantling, pile extraction and off-site disposal of Demolition Debris arising from steel rail tracks, rail track support system, timber piled foundations, timber framing, bolting materials and miscellaneous timber and steel components, all as shown on the Drawings and as found in the field. Portions of the substructure (i.e., timber pilings and bracings) that lie below the Required Cut Thickness or Required Dredge Elevation are not required to be removed.
- .3 This section also covers the pre-construction condition inspection of jetty structures, jetty utilities, and foreshore structures to be performed by the Contractor in advance of the start of any structure demolition or structure relocation work, and the post-construction condition inspection of jetty structures, jetty utilities, and foreshore structures at completion of construction. Pre-construction condition inspection and post-construction condition inspection (except where structures or components have been demolished and removed in the work) are to be performed for:
 - .1 Y Jetty structure: inspect the condition of waterside face and underside of concrete deck structure along complete length of wharf head and approach trestle, all jetty support piles above and below water, shore abutment, all timber fender piles, all marine fenders/camels/fender logs, rubber fenders, cable trays, access platforms, safety nets, and safety ladders. Inspections are to include visual condition inspection of the cathodic protection system (hanging anodes under the jetty structure).
 - .2 Y Jetty electrical utilities: inspect the condition of exposed cables, connections, electrical boxes, cable ducts and cable trays, for the electrical and communications services. Note that the electrical and communications services are to be temporarily de-energized during installation/relocation/removal of the utilities protection system.

- .3 Y Jetty mechanical utilities: inspect the condition of exposed pipework, valves, joints, pipe hangers and insulation, including visual inspection and testing for leakage, for the sanitary sewer force main and for the water main. Note that the sanitary sewer force main and water main are to be left in service (fully operational) throughout the work. The requirements for leakage inspection and testing are covered under Clause 3.10 of this Specification section.
- .4 Electrical unit substation: inspect the condition of concrete slabs, apparent integrity of ground support condition at slab perimeter – by visual inspection only, and the condition of the security fence, and make survey measurements of the verticality of the fence posts. The unit substation is located south of the shore abutment of Y Jetty, as shown on the Drawings. The verticality survey of the fence posts is included to monitor for any disturbance to ground support caused by the work.
- .5 Small boat ramp: inspect the condition of waterside faces and surface of concrete boat ramp above and below water, and lock-block walls. This boat ramp is sometimes referred to as the Yarrows boat ramp, and is located south of Y Jetty.
- .6 Former Marine Railway: inspect the condition of the exposed portions of the timber piled foundations, timber framing, rail tracks, rail track support system, and miscellaneous timber and steel components. This structure is completely underwater, and most portions are buried within the seabed. Only the portions of the structure exposed (visible to divers) above the seabed surface must be inspected.
- .4 This section also covers the temporary protection of mechanical and electrical utility services at Y Jetty (i.e. the utilities protection system).
- .5 This section also covers the temporary protection for exposed faces and soffit edges of the existing Y Jetty superstructure (and fender components left in place during the work), and temporary protection of existing Y Jetty steel pipe piles (to protect the jetty structure from abrasion or impact damage caused by the Contractor).
- .6 This section also includes the measurement and payment procedures for temporary de-energizing, locking out (including disconnection if required for the work), re-energizing, testing and commissioning of the electrical system and communication services. The scope for this work is described in Section 01 91 13 (Commissioning Requirements), Section 26 05 00 (Common Work Results for Electrical) and Section 27 05 13 (Communication Services). Reconnection of the electrical system and communication services (if required for the work) will be performed by DND personnel as described in those Specification sections.
- .7 This section also includes the measurement and payment procedures for leakage inspection and testing of sanitary sewer force main and water main.

- .8 Temporary disconnection, relocation, storage, and subsequent reinstatement of floating camels, tire fender logs and barrier boom system at Y Jetty, is covered under Section 02 41 16.02 (Structure Relocation).
- .9 Dismantling, disconnection, storage, cleaning, and reinstatement of the designated wharf safety ladders at Y Jetty is covered under Section 02 41 13 (Selective Site Demolition).
- .10 Modification and re-use of salvaged timber components for the fender pile system at Y Jetty (including timber chocks and any other miscellaneous timber components) is covered under Section 06 10 10 (Timber).
- .11 Modification and reinstallation of salvaged timber fender piles at Y Jetty is covered under Section 31 62 19 (Timber Piling).
- .12 Dredging of marine sediments is covered under Section 35 20 23 (Remedial Dredging and Barge Dewatering).

1.2 Related Sections

- .1 Section 00 01 10 (Specification Index)
- .2 Section 01 11 55 (General Instructions)
- .3 Section 01 33 00 (Submittal Procedures)
- .4 Section 01 35 13.43 (Special Project Procedures for Contaminated Sites)
- .5 Section 01 35 29.14 (Health and Safety Requirements for Contaminated Sites)
- .6 Section 01 35 43 (Environmental Procedures)
- .7 Section 01 74 11 (Cleaning)
- .8 Section 01 91 13 (Commissioning Requirements)
- .9 Section 02 41 13 (Selective Site Demolition)
- .10 Section 02 41 16.02 (Structure Relocation)
- .11 Section 02 55 10 (Dust Control)
- .12 Section 26 05 00 (Common Work Results for Electrical)
- .13 Section 27 05 13 (Communication Services)
- .14 Section 31 62 19 (Timber Piling)
- .15 Section 35 20 23 (Remedial Dredging and Barge Dewatering)
- .16 Section 35 20 23.01 (Offloading, Material Processing, Transportation, and Disposal)
- .17 Section 35 37 10 (Capping and Material Placement)

1.3 Measurement and Payment Procedures

- .1 Pre-construction condition inspection of the marine structures and utilities described in Clause 1.1.3 of this section (to be performed by the Contractor prior to the start of any structure demolition work), will not be measured individually. Payment for the pre-construction condition inspection of the marine structures and utilities will be paid for at the Lump Sum Price tendered for STRUCTURE DEMOLITION: PRE-CONSTRUCTION CONDITION INSPECTION OF MARINE STRUCTURES. Payment will be full compensation for pre-construction condition inspection of the marine structures and utilities, including reporting, as specified herein.
- .2 Post-construction condition inspection of the marine structures and utilities described in Clause 1.1.3 of this section (to be performed by the Contractor at completion of construction), will not be measured individually. Payment for the post-construction condition inspection of the marine structures and utilities will be paid for at the Lump Sum Price tendered for STRUCTURE DEMOLITION: POST-CONSTRUCTION CONDITION INSPECTION OF MARINE STRUCTURES. Payment will be full compensation for post-construction condition inspection of the marine structures and utilities, including reporting, as specified herein.
- .3 Demolition of the Former Marine Railway structure, which is nearly completely buried in the seabed (including timber piled foundations, timber framing, rail tracks, rail track support system, and miscellaneous timber and steel components), will be measured for payment by the tonne of structure Demolition Debris arising from the required demolition work. Quantities will be computed to the nearest whole tonne for timber and to the nearest tenth of a tonne for steel rails and other steel components. Demolished timber and steel components will be measured for payment by weighing on accurately calibrated weigh scales furnished by and at the expense of the Contractor. The weigh scales must be capable of printing a weight ticket including time, date, truck number, and weight. Weight tickets furnished by a public weigh-master will be acceptable. An accurately recorded tare weight of hauling equipment with operator must be provided on each weight ticket.
- .4 For Contractor information, the estimated tonnage shown at the line item for demolition of the Former Marine Railway timber structure in the Unit Price Table (in tonnes) was calculated from the estimated neat line volume of timber structure, based on an assumed density of 840 kilograms per cubic metre (kg/m^3).
- .5 Notwithstanding the stipulated method of measurement for structure Demolition Debris, the Contractor must perform quality control checks (and the Departmental Representative may, at its sole discretion, elect to perform parallel quality assurance checks) on the tonnage of structure Demolition Debris as it leaves the Work Site on waterborne transport, by calculating weights in tonnes based upon barge freeboard measurements. Separation of timber and steel Demolition Debris

loads (or partial loads) will be required. The Contractor must provide the Departmental Representative with barge tonnage/displacement tables certified by a Qualified Marine Surveyor for salt water service, and must jointly measure with the Departmental Representative the freeboard of the unloaded/loaded barge at all four corners of the deck. The barge must not depart the site until all measurements are complete and agreed to by both parties. Freeboard measurement for calculation of tonnage will be the average of the four corner measurements. Unless agreed otherwise by the Departmental Representative in writing, the resulting tonnages of structure Demolition Debris must only be used by the Contractor as a quality control check on general progress of the structure demolition work, and by the Departmental Representative as a quality assurance check, not for payment purposes.

- .6 Demolition of the Former Marine Railway structure (including timber piled foundations, timber framing, rail tracks, rail track support system, and miscellaneous timber and steel components), as described in this section of the Specification, and regardless of the method of demolition or the method of off-site disposal, will be paid for at the Tender Item prices tendered for:

- .1 STRUCTURE DEMOLITION: FORMER MARINE RAILWAY –
TIMBER STRUCTURE.
- .2 STRUCTURE DEMOLITION: FORMER MARINE RAILWAY –
STEEL RAILS AND STEEL COMPONENTS.

Payment will include for all costs in connection with demolition, controlled extraction and cleaning of timber piles from driven condition in seabed, and controlled breakup, sorting, transport, and disposal of the timber structures (and steel rails/components) off site to a Disposal Facility, including any environmental fees/levies and all work incidental thereto, as specified and as shown on the Drawings.

- .7 Dismantling, extraction, removal, cleaning, and temporary storage of designated timber fender piles and timber chocks, regardless of the method of extraction or removal, will not be measured individually. Dismantling, extraction, removal, cleaning, and temporary storage of designated timber fender piles and timber chocks will be paid for at the Lump Sum Price tendered for STRUCTURE DEMOLITION: TIMBER FENDER PILES AND TIMBER FENDER COMPONENTS. Payment will be full compensation for dismantling, extraction, removal, cleaning and temporary storage of designated timber fender piles and timber chocks.
- .8 All costs associated with transportation and off-site disposal of timber fender piles and timber chocks (where timber fender piles and timber chocks are accepted by the Departmental Representative as being unsuitable for re-use in the work), including any environmental fees/levies and all work incidental thereto, are to be included in the Tender Item prices for replacement timber fender piles and timber chocks covered under Section 06 10 10 (Timber) and Section 31 62 19 (Timber

- Piling), respectively. For certainty, timber fender piles and timber chocks that are accepted by the Departmental Representative as being unsuitable for re-use in the work are not to be considered Demolition Debris.
- .9 All other costs associated with removal and disposal of Demolition Debris associated with structure demolition work under this section are to be included within the relevant Tender Item price(s) for structure demolition. No separate payment will be made for removal of Demolition Debris as Obstructions, as defined in Section 01 11 55 (General Instructions).
- .10 Temporary protection of mechanical and electrical utility services at Y Jetty during the work will not be measured individually. Temporary protection of the mechanical and electrical utility services during the work will be paid for at the Lump Sum Price tendered for STRUCTURE DEMOLITION: UTILITIES PROTECTION SYSTEM. Payment will be full compensation for temporary protection of utility services, and all work incidental thereto, including all intermediate steps necessary for the work, and as specified and as shown on the Drawings.
- .11 Temporary de-energizing, locking out (including disconnection if required for the work), re-energizing and testing of the electrical system and communication services will not be measured individually. Payment for temporary de-energizing, locking out (including disconnection if required for the work), re-energizing and testing of the electrical system and communication services is to be included within the Lump Sum Price tendered for STRUCTURE DEMOLITION: UTILITIES PROTECTION SYSTEM. Refer to Clause 1.3.10 of this Specification section. The scope for this work is described in Section 26 05 00 (Common Work Results for Electrical) and in Section 27 05 13 (Communication Services), respectively.
- .12 Leakage inspection and testing of sanitary sewer force main and water main will not be measured individually. Payment for leakage inspection and testing of sanitary sewer force main and water main is to be included within the Lump Sum Price tendered for STRUCTURE DEMOLITION: UTILITIES PROTECTION SYSTEM. Refer to Clause 1.3.10 of this Specification section. The scope for this work is described in Clause 3.10 of this Specification section.
- .13 No separate measurement or payment will be made for incidental materials (such as reinforcing bars, screws, nails, tie-rods, bolts, through-bolts, threaded rod, anchor bolts, steel brackets, or connectors) that are recovered during structure demolition, except for steel rails and steel components of the Former Marine Railway as stipulated in Clause 1.3.6 of this Specification section. Demolition, dismantling, extraction, sorting, transport, and off-site disposal of such incidental materials within and attached to the existing timber structures to be dismantled (except at the Former Marine Railway) will not be paid for separately, but must be included in the relevant prices of the work covered by this section.

- .14 No separate measurement or payment will be made for inspection for, decommissioning of, or off-site disposal of “Timberfume” chloropicrin fumigant vials.
- .15 Temporary protection of exposed faces and soffit edges of the existing Y Jetty superstructure (and fender components left in place during the work), temporary protection of existing Y Jetty steel pipe piles (to protect the jetty structure from abrasion or impact damage caused by the Contractor) and temporary protection of hanging anodes under the jetty structure, are all considered incidental to the structure demolition work, and will not be measured or paid separately.

1.4 References

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

1.5 Definitions

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

1.6 Submittals

- .1 In accordance with the requirements of Section 01 33 00 (Submittal Procedures), submit as part of the Construction Work Plan for review by the Departmental Representative design, drawings, and supporting data prepared by a qualified professional engineer registered or licensed in the Province of British Columbia showing the proposed method, sequencing of work and product data for demolition, partial demolition, dismantling, extraction, disassembly, and off-site disposal of the designated timber and steel structures (including the proposed location and details of the Disposal Facility). Include details for temporary protection of existing mechanical and electrical utilities (utilities protection system). Include details for temporary protection of exposed faces and soffit edges of the existing Y Jetty superstructure (and fender components left in place during the work), details for temporary protection of existing Y Jetty steel pipe piles (to protect the jetty structure from abrasion or impact damage caused by the Contractor), and details of temporary protection of hanging anodes under the jetty structure. Include details on demolition methods and the use of silt curtain(s) around the perimeter of the structure demolition work of the underwater portions of the Former Marine Railway, as required by Section 01 35 13.43 (Special Project Procedures for Contaminated Sites).

- .2 Within the Construction Work Plan provide specific information (including end-use) for any materials that are to be recycled and/or re-used by others, in lieu of off-site disposal, for the Departmental Representative's review and acceptance.
- .3 Within the Construction Work Plan and the Environment Protection Plan (EPP) include control measures, as required by the Environmental Management Plan (EMP), to be implemented to protect the environment during structure demolition work.
- .4 If the proposed method to extract existing driven timber piles from seabed does not utilize vibratory piling hammer (with timber pile clamp), then submit within the Construction Work Plan the proposed alternative equivalent method for review by the Departmental Representative. The Contractor's proposed methods must take into account the underwater noise and vibration requirements of the EMP.
- .5 In accordance with the requirements of Section 01 33 00 (Submittal Procedures), submit for review by the Departmental Representative the pre-construction condition inspection reports and dive videos covering the marine structures described in Clause 1.1.3 of this section.
- .6 The pre-construction condition inspections must be performed by, and the reports must be sealed by, a qualified professional engineer registered or licensed in the Province of British Columbia. The scope of the inspections and reports is to be as follows:
 - .1 The structures, utilities and other components to be inspected are listed in Clause 1.1.3 of this Specification section.
 - .2 The inspections and reports must include visual observations of the condition above and below water of the main structural components (e.g., piles, beams, deck slabs, fender pile system, fender logs, camel fenders, and marine hardware) and their coating systems where relevant, representative photographs identifying areas of significant deterioration or physical damage, with tables describing the damage in detail at each location (e.g., "*Y Jetty, pile bent XX row YY, 200 mm wide by 100 mm high by 25 mm deep concrete spall, no rebar exposed*") and supporting sketch drawings or reference drawings.
 - .3 The pre-construction condition inspections must be carried out in a manner and detail that will ensure repeatability to allow direct comparisons of conditions to be made with the post-construction condition inspections, as described in Clause 3.1.5 and Clause 3.10.9 of this section.
 - .4 Underwater and above-water inspections will be required to satisfy the requirement.
 - .5 Inspection of portions of structures that are buried within the seabed is not required. Inspection of portions of structures visible at the seabed surface, or above seabed, is required.

- .6 Inspection of underwater portions of structures that are covered in marine growth (and are thus fully obscured from view during dive inspection) and where the Contractor considers removal of the marine growth to be impractical or detrimental to structural condition, subject to acceptance by the Departmental Representative, will be limited to the unobstructed areas.
- .7 For each underwater inspection provide a video of the complete dive inspection (in format acceptable to the Departmental Representative), with real-time inspection commentary.
- .8 In addition, for Y Jetty, the inspection and report must include visual observations of the condition of the mechanical and electrical services (including the results of the leakage inspection and testing of the water utility distribution system and the sanitary sewer force main), and a visual inspection of the cathodic protection system (hanging anodes under the jetty structure).
- .9 Once accepted by the Departmental Representative as an accurate representation of existing conditions, these pre-construction condition inspection reports will be used as a baseline reference in the event that any damage to existing adjacent structures or utilities within the Work Site occurs during the work.
- .7 In accordance with the requirements of Section 01 33 00 (Submittal Procedures), submit for review by the Departmental Representative the post-construction condition inspection reports covering the existing marine structures adjacent to the work (same structures and scope as described in Clauses 1.1.3, 1.6.5 and 1.6.6 of this section, including tables of observed damage, photographs, and dive videos). Include the results of the leakage inspection and testing of the water utility distribution system and the sanitary sewer force main.
- .8 In accordance with the requirements of Section 01 33 00 (Submittal Procedures), submit for review by the Departmental Representative proof of accurate calibration and certification of weigh scale facilities that will be used for measurement and payment of structure Demolition Debris.
- .9 Throughout the structure demolition work, submit to the Departmental Representative within twenty-four (24) hours of each Demolition Debris weight measurement taken copies of all manifests, weight tickets, and other documentation to demonstrate and track the final disposition of the structure Demolition Debris at a Disposal Facility. The documentation must track the Demolition Debris from the point of leaving the Work Site to final disposal.

1.7 Site Conditions

- .1 Review environmental site information and the EMP and take precautions to protect environment.

- .2 For geotechnical investigation data reports, structure condition inspection reports and other background data, refer to the Data Reports listed in Section 00 01 10 (Specification Index). Review all Data Reports for information regarding composition and condition of items to be demolished, and geotechnical conditions.
- .3 Should material resembling spray or trowel-applied asbestos or other designated substance listed as hazardous be encountered, stop work, take preventative measures, and notify the Departmental Representative immediately. Do not proceed until written instructions have been received from the Departmental Representative.
- .4 Timber piles and other timber components may contain "Timberfume" chloropicrin fumigant vials. Dispose of such piles and timber components in accordance with this section of the Specification.
- .5 The Contractor must inspect the Work Site to thoroughly familiarize himself with site conditions before starting structure demolition work.
- .6 DND personnel, other contractors, and users operate at the Y Jetty facility. Coordinate with DND personnel, other contractors, and users of the Y Jetty facility and comply with instructions from the Departmental Representative. The Contractor is responsible for coordinating all work within the Work Site.

2. PART 2 – PRODUCTS

2.1 Equipment

- .1 Leave equipment and machinery running only while in use, except where extreme temperatures prohibit shutting down.
- .2 Demonstrate that tools and machinery are being used in a manner that allows for salvage of materials in best condition possible.

3. PART 3 – EXECUTION

3.1 Preparation and Protection

- .1 Notify the Departmental Representative not less than seven (7) working days prior to commencing structure demolition activities. Structure demolition work must not commence until the Departmental Representative has reviewed and accepted the Contractor's Construction Work Plan. Schedule work in conformance with the sequencing requirements of the Specifications.
- .2 Notify the Queen's Harbour Master not less than ten (10) working days prior to commencing structure demolition activities. Maintain liaison with the Queen's Harbour Master as the work progresses, and keep the Departmental Representative informed of all such communications.

- .3 Within ten (10) working days after Contract Award, inspect site with the Departmental Representative to verify location and extent of structural demolition work.
- .4 Do work in accordance with Section 01 35 29.14 (Health and Safety Requirements for Contaminated Sites).
- .5 Perform (and report on) pre-construction condition inspections of existing marine structures in advance of any structural demolition work, as described elsewhere in this section. Each pre-construction condition inspection must be organized in a logical and methodical fashion (by the Contractor and their dive crew), to allow the scope and sequence to be replicated and direct comparisons of conditions to be made when the post-construction condition inspections are performed at completion of the work.
- .6 Protection:
 - .1 Support affected structures and prevent movement, settlement, or damage to adjacent structures, utilities, and portions of structures to remain in place. Provide bracing, shoring, and underpinning as required.
 - .2 If safety of structure being disassembled or demolished (or adjacent structures and services) appears to be endangered, take preventative measures, cease operations, and immediately notify the Departmental Representative.
 - .3 Prevent debris from blocking surface drainage system, mechanical, and electrical systems.
 - .4 Keep noise, dust, and inconvenience to occupants and users to minimum and in accordance with Section 01 35 13.43 (Special Project Procedures for Contaminated Sites), Section 01 35 43 (Environmental Procedures), Section 02 55 10 (Dust Control), the EMP, and the EPP.
 - .5 Carry out structure demolition in conformance with Township of Esquimalt, City of Colwood, and View Royal noise by-laws as stipulated in Section 01 35 43 (Environmental Procedures).
 - .6 Install and maintain temporary structural safety barricades and Work Site procedures throughout the demolition work, in accordance with WorkSafeBC requirements.
 - .7 Provide temporary dust screens, covers, railings, supports, and other protection as required.
- .7 Locate and protect utility lines. Do not disrupt active or energized utilities designated to remain undisturbed.
- .8 Post warning signs on electrical lines and equipment, which must remain energized to serve other equipment and services during period of demolition.

- .9 During all in-water and above-water demolition and pile extraction work, environmental protection control measures must comply with the requirements of Section 01 35 43 (Environmental Procedures), Section 01 35 13.43 (Special Project Procedures for Contaminated Sites), the EMP, and the EPP.
- .10 Protect existing structures and Y Jetty existing steel piles (and hanging anodes) from accidental damage during the work, and as stipulated in this section, in Section 35 20 23 (Remedial Dredging and Barge Dewatering) and in Section 35 37 10 (Capping and Material Placement).
- .11 Do not allow any marine vessels to berth, moor or impact against wharf structures from which the existing fender system has been partially or fully removed or modified in any way by the Contractor.
- .12 Notify the Departmental Representative at least seven (7) working days before disrupting access or services at Y Jetty.
- .13 Maintain full vehicular and pedestrian access, for DND vehicles and personnel, on Y Jetty deck (along full length of approach trestle and wharf head) throughout the work as shown on the Drawings, except as allowed by the Departmental Representative for the installation, maintenance, and removal of the utilities protection system.
- .14 Allow DND personnel unfettered access and working space around the electrical and mechanical service mounts (utility cabinets) on Y Jetty, including space to open the cabinet doors and make service connections, throughout the work. A lockable, secure gated access through the Work Site perimeter safety fence (through which DND has unrestricted access) will be acceptable for this purpose.
- .15 Provide temporary protection of mechanical and electrical utility services (i.e., utilities protection system) at all affected areas of Y Jetty to protect the existing utilities from abrasion or impact damage caused by the Contractor's floating construction equipment, tugboats, or by other construction activities.
 - .1 The utilities protection system must provide both physical protection and visual warning of the enclosed utility services.
 - .2 The utilities protection system must comprise steel and/or timber shrouding designed by the Contractor for the specified purpose, as indicated on the Drawings and as specified, to the Departmental Representative's satisfaction.
 - .3 The Contractor must design the utilities protection system (including initial installation, any intermediate relocation and reinstallation, and removal at completion of the work) to minimize any disruption to access or services at Y Jetty.
 - .4 Temporarily isolate, disconnect or de-energize the electrical and communications services during installation/relocation/removal of the utilities protection system, as described in the relevant sections of the

- Specification. Note that the sanitary sewer force main and water main are to be left in service (fully operational) throughout the work.
- .5 The utilities protection system must be maintained (to ensure its continued effectiveness) and must remain in place either from commencement of structure demolition until reinstatement of the timber fender piles, floating camels, tire fender logs and barrier boom system in that area of the work, or throughout the remediation dredging in that area of the work, whichever is the longer period.
 - .6 Allow DND personnel emergency access to the electrical and mechanical services protected by the utilities protection system, if required at any time during the work. The provision of suitably sized removable covers (in the protective shroud) over all electrical/communication service boxes, water system valves, and shutoffs, will be acceptable for this purpose.
 - .7 The Contractor is responsible for protecting existing mechanical and electrical utility services from damage throughout the work.
- .16 Provide temporary protection of the existing steel pipe piles (pile protection system) at all affected areas of Y Jetty to protect the existing steel pipe piles from abrasion or impact damage caused by the Contractor's floating construction equipment, tugboats, or by other construction activities.
- .1 The pile protection system must provide both physical protection and visual warning at all jetty support piles.
 - .2 The pile protection system must comprise metal or plastic sleeves, attached to the steel pipe piles and effectively encapsulating the whole exposed surface of the piles (throughout the water column up to underside of pile cap beams, and including within the dredge cut depth), or similar protection system, to the Departmental Representative's satisfaction.
 - .3 The pile protection system must be maintained (to ensure its continued effectiveness) and must remain in place throughout the period during which dredging and placement of Material Type 1 (structural backfill) are occurring, in that area of the work.
 - .4 The pile protection system, in each affected area of Y Jetty, must be detached and removed within seven (7) days after acceptance of the as-placed Material Type 1 (structural backfill) by the Departmental Representative, or within seven (7) days after reinstallation of the timber fender piles, whichever is later.
 - .5 The Contractor is responsible for protecting existing structures from damage throughout the work.
 - .6 The Contractor is also responsible for repair, to the Departmental Representative's satisfaction, of any damage to the existing pipe piles (and their coating system) caused by the pile protection system, or caused by any accidental abrasion or other impact by the Contractor's floating

construction equipment, tugboats, or by other construction activities.
Refer also to Clause 3.9 of this section of the Specification.

- .17 Designated timber fender piles and timber chocks are to be temporarily removed to allow placement of Backfill Material in the under-pier area and adjacent to the timber fender piles. Notwithstanding this requirement, provide temporary protection to the Y Jetty superstructure at exposed faces and soffit edges (where timber fender piles have been removed during the work) that are adjacent to the marine construction work activities. This is intended to protect the concrete structure, glulam timber walers and rubber fender units (i.e., components to be left in place during the work) from abrasion or impact damage caused by the Contractor's floating construction equipment, tugboats, or by other construction activities.
 - .1 The temporary protection must provide both physical protection and visual warning of the exposed structure and fender components.
 - .2 The temporary protection must be designed by the Contractor for the specified purpose, as indicated on the Drawings and as specified, to the Departmental Representative's satisfaction.
 - .3 The temporary protection must be maintained (to ensure its continued effectiveness) and must remain in place throughout the period during which the designated timber fender piles, floating camels and tire fender logs are removed in that Work Zone.
 - .4 The Contractor is responsible for protecting existing structures from damage throughout the work.
- .18 Use silt curtain(s) around the perimeter of the structure demolition work for the underwater portions of the Marine Railway, as required by Section 01 35 13.43 (Special Project Procedures for Contaminated Sites).
- .19 Do not allow buoyant items that have been demolished or detached from their original position (i.e., floating debris) to float beyond the Work Site. Do not allow such floating debris to cause any hindrance or obstacle to marine traffic and DND operations. Identify and collect such floating debris on an as-needed basis, and dispose in accordance with the Specifications.

3.2 Sequencing of Work

- .1 Refer to Section 02 41 16.02 (Structure Relocation) for sequencing requirements for disconnection and reconnection of the floating camels, tire fender logs and barrier boom system at Y Jetty, which also apply for timber fender pile removal and reinstallation at Y Jetty.

3.3 Demolition and Salvage

- .1 Demolish and remove existing structures, portions of existing structures, and attachments as shown on the Drawings.
- .2 Demolish and remove the structures of the Former Marine Railway, subject to acceptance by the Departmental Representative that reasonable and practicable means and methods have been employed.
- .3 Except where an equivalent alternative method has been submitted and accepted by the Departmental Representative, use vibratory piling hammer (with timber pile clamp) to extract existing driven timber piles from the seabed.
- .4 Extract, dismantle, and store existing timber piles ready for off-site disposal, as shown on the Drawings.
- .5 Use all practicable means to extract timber piles intact. Extract timber piles carefully, to maximize the number and length of intact piles that are removed from the site, to minimize damage caused by pile clamp to the top end of timber piles, and to minimize pile breakage and/or debris on the seabed caused by the pile extraction process.
- .6 In the event that pile breakage occurs during extraction of timber piles from the seabed, make all reasonable efforts to extract the broken portion of the pile(s). Contractor must verify that no pile remnants remain above final grade of seabed. In the event that extraction of broken portion is impractical (e.g., the remnant is below seabed), then survey the pile location and report such occurrence to the Departmental Representative in writing, and await direction of the Departmental Representative.
- .7 Demolish portions of existing structures only to the extent shown on the Drawings. Only partial removal of timber fender piles and timber chocks is required at Y Jetty, as shown on the Drawings. Portions of the Former Marine Railway substructure (e.g., timber pilings, walers and bracings) that lie below the Required Cut Thickness or the Required Dredge Elevation are not required to be removed.
- .8 Prevent debris, dust, and any sediment laden waters from entering any drainage system, water course, or marine environment in line with DND Formation Safety and Environment (FSE) directives (included in Appendices A and G of the Specification), the EMP, and the EPP.
- .9 Ensure that structure demolition work does not adversely affect adjacent watercourses, groundwater, and wildlife, or contribute to excess air and noise pollution.
- .10 Extracted timber piles and other timber components must be inspected to look for the presence of “Timberfume” chloropicrin fumigant vials. Piles and other timber components containing the vials must be decommissioned and disposed offsite in accordance with applicable provincial and federal legislation and as per the

- disposal methods indicated in the material safety data sheets (MSDS), and must not be re-used in the work. Precautions must be taken to ensure that the contents of the vials are not inadvertently released to the marine environment.
- .11 When cutting creosote timbers near or over water, ensure that all cuttings are contained and collected from the water, and ensure that any sheen or residue resulting from cutting creosote timbers is contained and cleaned up.
 - .12 Do not dispose of waste or volatile materials including, but not limited to, mineral spirits, oil, petroleum-based lubricants, or toxic cleaning solutions into watercourses or storm or sanitary sewers.
 - .13 During timber demolition work, recover and dispose of steel bolting materials, screws, nails, tie-rods, through-bolts, threaded rod, anchor bolts, and other miscellaneous materials within the affected timber structures.
 - .14 Blasting or other explosive methods must not be used to assist in demolition of structures.
 - .15 Refer to the Drawings and Specifications for attachments and utilities to be disposed, or salvaged for re-use. Remove attachments and utilities to be salvaged, store as directed by the Departmental Representative, and reinstall under appropriate section of the Specifications where re-use is indicated.

3.4 Disassembly and Demolition Procedures

- .1 Except where salvage and re-use in the work is specified, the Contractor becomes the owner of, and is responsible for, any soil, sediment, debris, waste, jetty components designated for demolition, or other material once it is removed, extracted, dredged, or excavated to be loaded onto a vehicle, barge, or other vessel for transport to a Contractor Off-Site Offload Facility, or Disposal Facility, Treatment Facility.
- .2 Throughout course of disassembly and demolition, pay close attention to connections and material assemblies. Employ workmanship procedures, which minimize damage to materials and equipment.
- .3 Ensure workers and subcontractors are trained to carry out work in accordance with appropriate demolition techniques.
- .4 The Contractor's Superintendent for structure demolition work must have previous demolition experience, and must be present on site throughout structure demolition work.
- .5 Carry out demolition in accordance with CAN/CSA S350 and other applicable safety standards.
- .6 Workers must utilize adequate fall protection as required by WorkSafeBC.
- .7 Ensure that the sequence of disassembly and demolition is such that structural integrity is maintained and that collapse of the structure, or adjacent structures, is

- prevented. Ensure that all workers are aware of critical supports, both existing and temporary.
- .8 Remove and store materials to be salvaged, in manner to prevent damage.
 - .9 Store and protect in accordance with requirements for maximum preservation of material.
 - .10 Handle salvaged materials as new materials.
 - .11 Where existing materials are to be re-used in the work, use special care in removal, handling, storage, and reinstallation to ensure proper function in completed work.
 - .12 Trim faces and edges of partially demolished structural elements to tolerances shown on the Drawings.

3.5 Processing

- .1 Designate location for processing of materials, which eliminates double handling (except where specified otherwise) and provides adequate space to maintain efficient material flow.
- .2 De-nail, strip, and separate materials to ensure best possible condition of salvaged materials.
- .3 Keep processing area clean and free of excess debris.
- .4 Supply separate, marked disposal bins for categories of waste material.
- .5 Separate processed materials into organized piles for stockpiling. Provide collection area for materials processed designated for alternate disposal. Pile miscellaneous materials on pallets to facilitate transport off site.

3.6 Cleaning of Extracted Timber Piles

- .1 After extraction of timber piles, clean off all sediment and other objects that are attached to the surface of the piles.
 - .1 Handle, store, and transport the extracted timber piles in the same manner as contaminated sediment prior to cleaning the timber piles, except where otherwise allowed by the EMP.
 - .2 Prevent the removed sediment or other removed objects from entering the marine environment (unless the cleaning process is contained within an adequate silt curtain system and is conducted before start of remediation dredging in that area), and comply with water quality decision criteria of the EMP during extraction, transport, and cleaning of the extracted timber piles as described in Section 01 35 13.43 (Special Project Procedures for Contaminated Sites).

- .3 Where cleaning of timber piles is conducted on a barge or at the Contractor Off-Site Offload Facility, all sediment and other objects that were cleaned off the surface of the timber piles must be managed for disposal in accordance with Section 35 20 23 (Remedial Dredging and Barge Dewatering) and Section 35 20 23.01 (Offloading, Material Processing, Transportation, and Disposal).
- .4 Prevent removed sediment or other removed objects from re-contaminating areas where dredging or material placement is in process or has been completed.

3.7 Stockpiling

- .1 Structure demolition materials and debris may be stockpiled on the Contractor's barge(s) within the Work Site. Structure demolition materials and debris must be stockpiled within the Work Site only at location(s) reviewed and accepted by the Departmental Representative. Materials to be re-used in the work must not be stockpiled off site.
- .2 Label stockpiles, indicating material type and quantity.
- .3 Designate appropriate security resources/measures to prevent vandalism, damage, and theft.
- .4 For salvaged attachments that are to be re-used in the work, locate stockpiled materials convenient for use in new construction. Eliminate double-handling wherever possible.
- .5 Stockpile materials that are designated for alternate disposal in a location which facilitates removal from site and examination by potential end markets, and which does not impede disassembly, processing, or hauling procedures.
- .6 Stockpile materials must be contained and filtered to eliminate particle transfer into the marine environment.

3.8 Removal from Site and Disposal

- .1 Remove from the Work Site all Demolition Debris that is not required or specified for re-use in the work.
- .2 Except where re-use of materials in the work is required or specified, transport all structure Demolition Debris off site only by waterborne transport. Do not use trucks to transport Demolition Debris off site, except where accepted in writing by the Departmental Representative.
- .3 Dispose of removed materials, including creosoted or treated timber components (including end pieces, wood scraps, and sawdust), to a Disposal Facility in Canada or the United States except where specified otherwise, in accordance with provincial or state regulations and/or authority having jurisdiction. Provide the

- location of the Disposal Facility as part of the EPP for acceptance by the Departmental Representative.
- .4 Transport material designated for disposal by approved haulers to receiving organizations listed in the Construction Work Plan and in accordance with regulations. Do not deviate from haulers and receiving organizations listed in the Construction Work Plan without prior written authorization from the Departmental Representative.
 - .5 Offload, process, treat, and dispose of structure Demolition Debris to receiving organizations in accordance with regulations. Do not deviate from Contractor Off-Site Offload, Processing, Treatment and Disposal Facilities that are included in the Construction Work Plan without prior written authorization from the Departmental Representative.

3.9 Repair of Damage to Existing Steel Piling or Concrete Structures

- .1 If, during the course of the work, the Contractor causes abrasion or other impact damage to the coating or substrate of the Y Jetty support piles, the Contractor must repair all such damage to as-new condition using equivalent steel pipe pile materials and equivalent coatings for pile repairs, to the satisfaction of the Departmental Representative, and at Contractor's own cost.
- .2 If, during the course of the work, the Contractor causes abrasion or other damage to concrete structures, the Contractor must repair all such damage to as-new condition using appropriate concrete repair products, to the satisfaction of the Departmental Representative, and at Contractor's own cost.

3.10 Leakage Inspection and Testing

- .1 During the pre-construction condition inspection, and during the post-construction condition inspection, perform leakage inspection and testing of the mechanical systems (sanitary sewer force main and water main) and present the results for acceptance by the Departmental Representative.
- .2 Notify the Departmental Representative seven (7) working days in advance of all proposed tests. Perform tests in presence of the Departmental Representative.
- .3 Do not undo or modify existing pipe insulation, except to facilitate further observations at locations where leakage is noted (e.g. at valves, joints, and fittings).
- .4 When testing is carried out during freezing weather, protect valves, joints, and fittings from freezing.
- .5 Test the mechanical systems for leakage (with outlets closed) by inspecting all interfaces visually for leaks. In addition, perform visual checks for leakage throughout the system length (as far as the onshore connection point), and report any leakage to the Departmental Representative. Leakage testing must be

- performed once before work commences, and once after work is complete to confirm that the work has not caused a detrimental effect on the mechanical systems.
- .6 Do not exceed allowable leakage of 0.03 litres per millimetre diameter per 300 metres of pipe, including lateral connections, per hour.
 - .7 Examine exposed pipe, valves, joints and fittings while system is under normal service pressure. Locate defects if leakage is greater than amount specified.
 - .8 If any parts are found to be defective and replacement parts are required for safe operation of the system, seek direction from the Departmental Representative.
 - .9 Repeat test until leakage is within specified allowance for full length of system (as far as the onshore connection point).
 - .10 Hydrostatic testing and flushing of sanitary sewer force main and water main is not required unless the system is modified during the work. If the system is modified during the work, perform hydrostatic testing and flushing as directed by the Departmental Representative. Disinfection is not required.

3.11 Cleaning and Restoration

- .1 Keep site clean and organized throughout structure demolition work.
- .2 For items that are required by the Specification to be cleaned (during removal, relocation, or reinstallation), use cleaning solutions and procedures that are effective and are not harmful to health, are not injurious to plants, and do not endanger wildlife or marine environment.
- .3 Repair damage to adjacent structures and utilities caused by disassembly or demolition of structures in the work, as directed by the Departmental Representative.
- .4 Conduct Work Site restoration activities in accordance with Section 01 74 11 (Cleaning).
- .5 Upon Substantial Performance date, remove debris, trim surfaces, and leave Work Site clean.
- .6 Upon Substantial Performance date, reinstate any damage caused by the Contractor to miscellaneous wharf hardware, timber bull rails or mechanical and electrical utility services, as directed by the Departmental Representative to match the pre-existing conditions.
- .7 Perform (and submit report on) post-construction condition inspection of jetty structures, jetty utilities, and foreshore structures at completion of construction (except for the timing constraint described in Clause 3.10.8), as described elsewhere in this section.
- .8 Perform (and submit report on) post-construction condition of the Former Marine Railway immediately after completion of dredging in proximity to the Former

Marine Railway. The intent of this specific post-construction condition inspection is to confirm removal of the steel components and timber structures of the Former Marine Railway as specified. Backfilling in this area must not commence until the structure demolition work at the Former Marine Railway is accepted by the Departmental Representative as being complete, as evidenced by the Contractor's post-construction condition inspection report and by the bathymetric surveys stipulated elsewhere in the Specification.

- .9 Each post-construction condition inspection must be organized in a logical and methodical fashion (by the Contractor and his dive crew), to allow direct comparisons of conditions to be made with the corresponding pre-construction condition inspection.

END OF SECTION

1. PART 1 – GENERAL

1.1 Description

- .1 This section covers the temporary disconnection, relocation, storage, cleaning, and reinstallation of the floating camels, tire fender logs and barrier boom system at Y Jetty, to facilitate marine dredging activities as shown on the Drawings and as described in the Specification. The work includes full reinstatement of operational functionality for these components.
- .2 Dismantling, extraction, cleaning, and temporary storage (and off-site disposal where not accepted for re-use in the work) of designated timber fender piles at Y Jetty, is covered under Section 02 41 16.01 (Structure Demolition).
- .3 Dismantling, removal, cleaning, and temporary storage (and off-site disposal where not accepted for re-use in the work) of designated timber chocks at Y Jetty, is covered under Section 02 41 16.01 (Structure Demolition).
- .4 Storage and subsequent reinstatement of timber fender piles at Y Jetty, designated for re-use in the work, is covered under Section 31 62 19 (Timber Piling).
- .5 Demolition, salvage, and disposal off site of miscellaneous items designated to be disposed off site (if any so designated), are covered under Section 02 41 13 (Selective Site Demolition).

1.2 Related Sections

- .1 Section 00 01 10 (Specification Index)
- .2 Section 01 11 55 (General Instructions)
- .3 Section 01 33 00 (Submittal Procedures)
- .4 Section 01 35 13.43 (Special Project Procedures for Contaminated Sites)
- .5 Section 01 35 29.14 (Health and Safety Requirements for Contaminated Sites)
- .6 Section 01 35 43 (Environmental Procedures)
- .7 Section 01 74 11 (Cleaning)
- .8 Section 02 41 13 (Selective Site Demolition)
- .9 Section 02 41 16.01 (Structure Demolition)
- .10 Section 02 55 10 (Dust Control)
- .11 Section 05 50 00 (Metal Fabrications)
- .12 Section 26 05 00 (Common Work Results for Electrical)
- .13 Section 27 05 13 (Communication Services)
- .14 Section 31 62 19 (Timber Piling)

1.3 Measurement and Payment Procedures

- .1 Temporary disconnection, relocation, storage, cleaning, and reinstallation of the floating camels, tire fender logs and barrier boom system at Y Jetty will not be measured individually. Temporary disconnection, relocation, storage, cleaning, and reinstallation of the floating camels, tire fender logs and barrier boom system at Y Jetty as specified will be paid for at the Lump Sum Price tendered for **STRUCTURE RELOCATION: FLOATING CAMELS, TIRE FENDER LOGS AND BARRIER BOOM SYSTEM**. Payment will be full compensation for temporary disconnection, relocation, storage, cleaning, and reinstallation of the affected structures, all as specified and shown on the Drawings.
- .2 Payment under Clause 1.3.1 will also cover the protection and safeguarding of the floating camels, tire fender logs and barrier boom system at Y Jetty from environmental effects (wind and wave attack) throughout the periods during which these components are removed from their existing positions, as described in the Specification.

1.4 References

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

1.5 Definitions

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

1.6 Submittals

- .1 In accordance with the requirements of Section 01 33 00 (Submittal Procedures), prepare and submit (as part of the Construction Work Plan) for review by the Departmental Representative a section of the Construction Work Plan that describes the method and procedures for structure relocation. Structure relocation activities must not begin until: 1) the Construction Work Plan has been reviewed and accepted by the Departmental Representative; and 2) other Notifications and review have been completed as necessitated by the permits or other requirements of the Contract. At a minimum, the method and procedures for relocation of designated structures must contain the following information:
 - .1 Order and sequence in which the structure relocation work is to be performed, including a description of equipment to be used and methods of operation.

- .2 Identify timing and sequencing of structure relocation activities at Y Jetty, as they relate to other elements of the work, and integration with the overall Construction Progress Schedule. Note that DND operations take precedence over work in this Contract.
 - .3 Proposed storage location and the proposed method of protection and safeguarding of the floating camels, tire fender logs and barrier boom system from environmental effects (wind and wave attack) throughout the period during which the aforementioned items are removed from their existing positions.
 - .4 Methods, procedures, and equipment to be utilized for structure relocation work.
 - .5 Methods and procedures for providing environmental protection throughout the structure relocation work.
- .2 Within the Construction Work Plan and the Environmental Protection Plan (EPP) include control measures, as required by the Environmental Management Plan (EMP), to be implemented to protect the environment during structure relocation work.
 - .3 Prior to disconnecting the floating camels, tire fender logs and barrier boom system currently at Y Jetty, and in accordance with the requirements of Section 01 33 00 (Submittal Procedures), submit for review by the Departmental Representative a dimensioned scale drawing for each of the aforementioned items to show location, general arrangement with key dimensions and positions, and miscellaneous attachments. Submit the aforementioned drawing to the Departmental Representative for review (and as a record of pre-existing conditions). Do not disconnect structures for relocation until the aforementioned drawing has been submitted to and accepted as complete by the Departmental Representative.

1.7 Site Conditions

- .1 Inspect the Work Site thoroughly and verify site conditions before starting structure relocation work.
- .2 Review environmental site information and the EMP and take precautions to protect environment.
- .3 For geotechnical investigation data reports, structure condition inspection reports, and other background data, refer to the Data Reports listed in Section 00 01 10 (Specification Index). Review all Data Reports and Reference Drawings for information regarding composition and condition of structures to be relocated, and geotechnical conditions.
- .4 Should material resembling spray or trowel-applied asbestos or other designated substance listed as hazardous be encountered, stop work, take preventative measures, and notify the Departmental Representative immediately. Do not

proceed until written instructions have been received from the Departmental Representative.

2. PART 2 – PRODUCTS – NOT USED

3. PART 3 – EXECUTION

3.1 Preparation and Protection

- .1 Notify the Departmental Representative not less than seven (7) working days prior to commencing structure relocation activities. Structure relocation work must not commence until the Departmental Representative has reviewed and accepted the Contractor's Construction Work Plan. Schedule work in conformance with the sequencing requirements of the Specifications.
- .2 Notify the Queen's Harbour Master not less than ten (10) working days prior to commencing structure relocation activities. Maintain liaison with the Queen's Harbour Master as the work progresses, and keep the Departmental Representative informed of all such communications.
- .3 Within ten (10) working days after Contract Award, inspect the site with the Departmental Representative to verify the extent and location of structures designated for relocation.
- .4 Leave equipment and machinery running only while in use, except where extreme temperatures prohibit shutting down.
- .5 Demonstrate that tools and machinery are being used in a manner that minimizes potential damage to structures that are to be relocated.
- .6 Support affected structures and prevent movement, settlement, or damage to adjacent structures, utilities, and portions of structures to remain in place. Provide bracing, shoring, and underpinning as required.
- .7 If the safety of a structure being relocated (or adjacent structures and services) appears to be endangered, take preventative measures, cease operations, and immediately notify the Departmental Representative.
- .8 Prevent Demolition Debris from blocking surface drainage, mechanical, and electrical systems.
- .9 Keep noise, dust, and inconvenience to occupants and users to a minimum, and in accordance with Section 01 35 13.43 (Special Procedures for Contaminated Sites), Section 01 35 43 (Environmental Procedures), Section 02 55 10 (Dust Control), the EMP, and the EPP.
- .10 Install and maintain temporary structural safety barricades throughout the structure relocation work, in accordance with WorkSafeBC requirements.
- .11 Provide temporary dust screens, covers, railings, supports, and other protection as required.

- .12 Locate and protect utility lines. Do not disrupt active or energized utilities designated to remain undisturbed.
- .13 The Contractor is responsible for coordination, through the Departmental Representative, with the appropriate parties regarding identification of active utility lines prior to the start of structure relocation work. The Contractor is responsible for disconnection of all active utility lines as necessary for the work.
- .14 Do not damage any active or disconnected utility line during the work.
- .15 Post warning signs on electrical lines and equipment that must remain energized to serve other dock equipment and services during period of structure relocation.
- .16 Protect and safeguard the floating camels, tire fender logs and barrier boom system at Y Jetty from environmental effects (wind and wave attack) throughout the period during which the aforementioned items are removed from their existing positions.
- .17 During all in-water dismantling work, environmental protection control measures must comply with the requirements of Section 01 35 43 (Environmental Procedures), Section 01 35 13.43 (Special Project Procedures for Contaminated Sites), the EMP, and the EPP.
- .18 Do not allow buoyant items that have been disconnected or detached from their original position (i.e., floating debris) to float beyond the Work Site. Do not allow such floating debris to cause any hindrance or obstacle to marine traffic and DND operations. Identify and collect such floating debris on an as-needed basis, and dispose in accordance with the Specifications.

3.2 Sequencing of Work

- .1 The floating camels, tire fender logs and barrier boom system at Y Jetty must be disconnected and relocated in sequence to match the dredge Work Zones.
- .2 Only disconnect and relocate the floating camels, tire fender logs and barrier boom system for which the footprint lies directly adjacent to or within the active dredge Work Zone. Leave other floating camels, tire fender logs and barrier boom system in place and in full service condition until all relocated items have been reconnected and are reinstated to full service condition.

3.3 Structure Disconnection, Relocation and Storage

- .1 All structures and fender components identified for temporary removal or relocation must be stockpiled within the Work Site only at location(s) reviewed and accepted by the Departmental Representative. Materials to be re-used in the work must not be stockpiled off site.
- .2 Disconnect, relocate, safely moor and store the floating camels, tire fender logs and barrier boom system, all in accordance with the methods and procedures described in the Construction Work Plan and as shown on the Drawings.

- .3 Prior to disconnecting the floating camels, tire fender logs and barrier boom system at Y Jetty, survey the aforementioned items and prepare a dimensioned scale drawing as stipulated in Clause 1.6 of this section. Do not disconnect structures for relocation until the aforementioned drawing has been submitted to and accepted as complete by the Departmental Representative.
- .4 Relocate all structures identified for relocation and attachments, including floating camels, tire fender logs and barrier boom system currently at Y Jetty in a manner to prevent damage, within the Work Site at locations reviewed and accepted by the Departmental Representative.
- .5 Store, safely moor, and protect all relocated or stored structures and components so as to ensure their preservation and their structural integrity.
- .6 Do not disturb or damage items designated to remain in place.

3.4 Structure Reinstallation and Sequencing of Work

- .1 Reinstall structures to the designated location as shown on the Drawings, and to pre-existing operational condition.
- .2 Reinstall the floating camels, tire fender logs and barrier boom system at Y Jetty, to the following sequence:
 - .1 Reinstall the timber fender piles (salvaged piles that were removed earlier in the work, or new piles as accepted by the Departmental Representative), in accordance with Section 31 62 19 (Timber Piling), and as shown on the Drawings.
 - .2 Temporarily secure each floating component in its designated location.
 - .3 Reconnect each floating component per existing details, and as shown on the Drawings.
- .3 The Contractor must reinstall all relocated structures so that they maintain their original use and function.
- .4 The Contractor will be responsible for any damage that occurs to the structures designated for relocation throughout the disconnection, relocation, storage, and reinstallation work.
- .5 The Contractor and the Departmental Representative must jointly inspect all relocated structures following reinstallation and reconnection of utilities, to confirm adherence to the requirements of the Specifications.

3.5 Cleaning and Restoration

- .1 Keep Work Site clean and organized throughout structure relocation work.
- .2 For items that are required by the Specification to be cleaned (during removal, relocation or reinstallation), use cleaning solutions and procedures that are

effective and are not harmful to health, are not injurious to plants, and do not endanger wildlife or marine environment.

- .3 Repair damage to adjacent structures and utilities caused by disconnection, relocation, or reinstallation of structures in the work, as directed by the Departmental Representative.
- .4 Conduct Work Site restoration activities in accordance with Section 01 74 11 (Cleaning).
- .5 Upon completion of the work, remove debris and leave Work Site clean.

3.6 Acceptance of the Work

- .1 Notify the Departmental Representative following completion of the structure relocation work.
- .2 The Departmental Representative will inspect the work and provide acceptance, or require the Contractor to perform additional work in order to complete the structure relocation work as described in the Contract documents.
- .3 Do not demobilize from the project site prior to the Departmental Representative's acceptance of the work.

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)
- .2 Section 01 35 13.43 (Special Project Procedures for Contaminated Sites)
- .3 Section 02 41 13 (Selective Site Demolition)
- .4 Section 02 41 16.01 (Structure Demolition)
- .5 Section 02 41 16.02 (Structure Relocation)

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 or truck transportation, material stockpiling, and demolition work, is controlled by water application and use of dust screens.
- .2 Prevent debris, dust, and any sediment laden waters from entering any drainage system, water course, or marine environment in line with DND Formation Safety and Environment (FSE) directives (included in Appendices A and G of the Specification), 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 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 excavated material, and re-use the covers.
- .10 If the Contractor's dust and particulate control is not sufficient for controlling dusts and particulates into 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 This section covers the fabrication and installation of miscellaneous steel fabrications (if required for the work). It is to be assumed, for Tender pricing purposes, that the steel fabrications will be replacement marine safety ladder(s). If fabrication and installation of replacement steel fabrication is required during the course of the work, then the Departmental Representative will provide direction.
- .2 Bolting materials and other miscellaneous steel fabrications not described elsewhere must also be fabricated in accordance with this section of the Specification.
- .3 Temporary protection of mechanical and electrical utility services at Y Jetty (i.e., the utilities protection system) is covered under Section 02 41 16.01 (Structure Demolition).

1.2 Related Sections

- .1 Section 01 11 55 (General Instructions)
- .2 Section 01 33 00 (Submittal Procedures)
- .3 Section 01 35 13.43 (Special Project Procedures for Contaminated Sites)
- .4 Section 01 35 29.14 (Health and Safety Requirements for Contaminated Sites)
- .5 Section 01 35 43 (Environmental Procedures)
- .6 Section 01 74 11 (Cleaning)
- .7 Section 02 41 13 (Selective Site Demolition)
- .8 Section 02 41 16.01 (Structure Demolition)
- .9 Section 06 10 10 (Timber)
- .10 Section 31 62 19 (Timber Piling)

1.3 Measurement and Payment Procedures

- .1 Where existing structural steel components at Y Jetty are identified by the Contractor and are accepted by the Departmental Representative as being unsuitable for re-use, measure the supply and installation of new structural steel components in weight actually installed (in kilograms), as required for the work. Supply of new structural steel components will be paid for at the Tender Item price for METAL FABRICATIONS: SUPPLY AND INSTALL REPLACEMENT STEEL COMPONENTS. Payment will be full compensation for all work in connection with supply and installation of new structural steel components to the

measured weight (and include for reinstallation of re-used steel components where new steel components are not required in the work), as described in this section. Nominal weight of new structural steel components at Y Jetty is included in the Unit Price Table for Tender pricing purposes.

- .2 Anchor bolts, brackets, rubber gaskets, rubber bearing pads and other miscellaneous steel items, necessary to replicate the existing condition of the timber fender pile system at Y Jetty, will not be measured separately, but considered incidental to the work of this section.
- .3 Temporary protection of mechanical and electrical utility services at Y Jetty (i.e., the utilities protection system) will not be measured in this section of the Specification, but will be measured and paid under Section 02 41 16.01 (Structure Demolition).

1.4 References

- .1 Canadian Standards Association (CSA):
 - .1 CAN/CSA G40.20/G40.21, General Requirements for Rolled or Welded Structural Quality Steel/Structural Quality Steel.
 - .2 CAN/CSA-W47.1, Certification of Companies for Fusion Welding of Steel.
 - .3 CAN/CSA-W48, Filler Metals and Allied Materials for Metal Arc Welding (Developed in cooperation with the Canadian Welding Bureau).
 - .4 CAN/CSA-W59, Welded Steel Construction.
 - .5 CAN/CSA-W178.1, Certification of Welding Inspection Organizations.
 - .6 CAN/CSA-W178.2, Certification of Welding Inspectors.
 - .7 CAN/CSA-S16.1, Limit States Design of Steel Structures.
- .2 American Society for Testing and Materials (ASTM):
 - .1 ASTM A27/27M, Specification for Steel Castings, Carbon, for General Applications.
 - .2 ASTM A53/A53M, Standard Specification for Pipe, Steel, Black and Hot-Dipped, Zinc-Coated, Welded and Seamless.
 - .3 ASTM A108, Low Carbon Steel.
 - .4 ASTM A123/A123M, Standard Specification for Zinc (Hot-Dip Galvanized) Coatings on Iron and Steel Products.
 - .5 ASTM A153/A153M, Standard Specification for Zinc Coating (Hot-dip) on Iron and Steel Hardware.
 - .6 ASTM A307, Standard Specification for Carbon Steel Bolts and Studs, 60,000 psi Tensile Strength.

- .7 ASTM A325M, Standard Specification for Structural Bolts, Steel, Heat Treated 830 MPa Minimum Tensile Strength (Metric).
- .3 Other standards:
 - .1 CGSB I-GP-40M, Standard for: Primer, Structural Steel, Oil Alkyd Type.

1.5 Definitions

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

1.6 Submittals

- .1 In accordance with the requirements of Section 01 33 00 (Submittal Procedures), submit shop drawings to the Departmental Representative prior to commencing fabrication (this also applies to adaption and re-use of salvaged steelwork items, if any).
- .2 Indicate materials, core thicknesses, finishes, connections, joints, methods of anchorage, number of anchors, supports, reinforcement, details and accessories.
- .3 Review of shop drawings by the Departmental Representative will not relieve the Contractor of responsibilities for the accuracy of the detail dimensions, general fit-up of parts to be assembled, adequacy of connection details, nor errors or defects contained in the shop drawings.

1.7 Quality Control Submittals

- .1 At time of delivery of steel fabrications or steel components to the Work Site, submit to the Departmental Representative certified copies of mill reports, analyses, and tests covering chemical and physical properties of all new steel fabrications and steel components used in the work.

1.8 Site Conditions and Operating Environment

- .1 Review environmental site information and the Environmental Management Plan and take precautions to protect the environment.
- .2 Management of environmental effects (such as wind, tidal state, and sea state) on steel coating work is the sole responsibility of Contractor.
- .3 The work covered by this section is located above, within and below the intertidal and splash zones. The normal tidal range at Esquimalt Harbour is indicated on the Drawings. Extreme tidal elevations including surge effects will exceed the indicated tidal range.
- .4 The design ambient temperature is from -6°C minimum to 24°C maximum.

2. PART 2 – PRODUCTS

2.1 Materials

- .1 Steel sections and plates: to CAN/CSA-G40.21, Grade 350W (or Grade 300W for plates/sections not commonly available in Grade 350W, subject to Departmental Representative's review and acceptance).
- .2 Steel pipe (except where indicated otherwise): to ASTM A53/A53M, galvanized finish.
- .3 Welding materials: to CSA W59.
- .4 Bolts and anchor bolts: to ASTM A325 and A307, respectively, except where noted otherwise.
- .5 Galvanizing (where specified): hot dipped galvanizing with zinc coating 610 grams per square metre (g/m^2) to ASTM A123/A123M or ASTM A153/A153M as appropriate.

3. PART 3 – EXECUTION

3.1 Fabrication

- .1 Fabrication, connection design and detailing of all structural steelwork must conform to CAN/CSA-S16.1 (Limit States Design of Steel Structures).
- .2 Welding of structural steelwork must conform to CAN/CSA-W59 (Welded Steel Construction) and must be performed by certified welders. Fabrication shops must be approved by the Canadian Welding Bureau to CAN/CSA-W47.1.
- .3 Fabricate work square, true, straight and accurate to required size, with joints closely fitted and properly secured.
- .4 Use welded connections for exterior metalwork unless indicated otherwise, or accepted otherwise by the Departmental Representative.
- .5 Ensure exposed welds are continuous for length of each joint. File or grind exposed welds smooth and flush. Seal exterior steel fabrications to provide corrosion protection in accordance with CAN/CSA-S16.1.
- .6 Where possible, fit and shop assemble work, ready for erection.

3.2 Corrosion Protection

- .1 Unless otherwise noted, all steel fabrications covered by this section must be hot-dip galvanized after fabrication.
- .2 Apply zinc rich primer as field touch-up corrosion protection to exposed surfaces of steel components that are modified in the work.

3.3 Repair of Damage to Existing Steel Components

- .5 If, during the course of the work, the Contractor causes abrasion or other impact damage to the coating or substrate of existing steel components, the Contractor must repair all such damage to as-new condition using equivalent steel materials and equivalent coatings, to the satisfaction of the Departmental Representative, and at Contractor's own cost.

3.4 Quality Assurance Inspection

- .1 The Departmental Representative, at its sole discretion, may inspect the steel prior to galvanizing for the degree of cleanliness to check for compliance with ASTM A123/A123M or ASTM A153/A153M as appropriate. In the event that the Departmental Representative elects to inspect the steel prior to galvanizing, no galvanizing will be allowed until the Departmental Representative has accepted the surface preparation.
- .2 The Departmental Representative, at its sole discretion, may measure the dry film thickness (DFT) of the galvanizing or other specified coating on new steel fabrications, and of field-applied coatings, to check for compliance with these specifications.

3.5 Erection and Field Welding

- .1 Erection of all structural steelwork must conform to CAN/CSA-S16.1 (Limit States Design of Steel Structures).
- .2 Erect metalwork square, plumb, straight, and true, accurately fitted, with tight joints and intersections.
- .3 Provide suitable means of anchorage acceptable to the Departmental Representative such as dowels, anchor clips, bar anchors, expansion bolts and shields, and toggles.
- .4 Perform field welding in accordance with CAN/CSA-W59 (Welded Steel Construction).
- .5 After completion of field erection of painted steelwork, touch-up all field welds; weld areas; bolts; burnt, flame cut or scratched surfaces; and other areas of coating damage in accordance with the requirements of the Specification.
- .6 After completion of field erection of galvanized steelwork, touch-up all field welds; weld areas; bolts; burnt, flame cut or scratched surfaces; and other areas of coating damage with two (2) coats of zinc rich primer.

END OF SECTION

1. PART 1 – GENERAL

1.1 Description

- .1 This section covers the preservative treatment by pressure impregnation of new timber piles and new timber components, and field preservative treatment of new and re-used timber components, including quality control inspection and testing.
- .2 Re-use of salvaged timber components, and the supply and installation of new timber components, is covered under Section 06 10 10 (Timber).
- .3 Re-use of salvaged timber piles, and the supply and installation of new timber piles, is covered under Section 31 62 19 (Timber Piling).

1.2 Related Sections

- .1 Section 01 11 55 (General Instructions)
- .2 Section 01 33 00 (Submittal Procedures)
- .3 Section 06 10 10 (Timber)
- .4 Section 31 62 19 (Timber Piling)
- .5 Section 35 20 23.01 (Offloading, Material Processing, Transportation, and Disposal)

1.3 Measurement and Payment Procedures

- .1 Wood treatment will not be measured separately, but is considered incidental to the work. All costs in connection with wood treatment, including quality control inspection and testing, must be included in the prices tendered for the associated items of work.
- .2 Timber will be measured to Section 06 10 10 (Timber), and payment will include all costs in connection with timber components as specified in that section.
- .3 Timber piles will be measured to Section 31 62 19 (Timber Piling), and payment will include all costs in connection with timber piles as specified in that section.

1.4 References

- .1 Canadian Standards Association (CSA):
 - .1 CAN/CSA-O80 Series-08, Standard for Wood Preservation.
- .2 Wood Preservation Canada (WPC): “Best Management Practices for the use of Treated Wood in Aquatic and Wetland Environments (2012)”.
- .3 Canadian Wood Preservation Certification Authority (CWPCA).

- .4 Fisheries and Oceans Canada (DFO): “Guidelines to Protect Fish and Fish Habitat from Treated Wood Used in Aquatic Environments in the Pacific Region, Technical Report of Fisheries and Aquatic Sciences 2314 (Hutton and Samis, 2000)”.

1.5 Definitions

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

1.6 Submittals

- .1 Submit name and credentials of testing firm to be used for quality control testing of treated wood products, in accordance with the requirements of Section 01 33 00 (Submittal Procedures), to the Departmental Representative prior to commencing quality control testing. Provide evidence that the Contractor’s testing firm has certification from CWPCA.
- .2 Submit certificates, in accordance with the requirements of Section 01 33 00 (Submittal Procedures), to the Departmental Representative at time of delivery of treated wood products to the Work Site. For products treated with preservative by pressure impregnation, submit the following information certified by authorized signing officer of treatment plant:
 - .1 Information specified in CAN/CSA-O80 Series applicable to specified treatment.
 - .2 Moisture content after drying following treatment with waterborne preservative.
 - .3 Confirmation that the products meet the specified Use Category.
- .3 At time of delivery of treated wood products to the Work Site, provide to the Departmental Representative certification that the pressure treated timbers comply with the “Best Management Practices for the Use of Treated Wood in Aquatic and Wetland Environments” published by WPC.

1.7 Requirements of Regulatory Agencies

- .1 Work must be carried out in accordance with the Guidelines to Protect Fish and Fish Habitat from Treated Wood used in Aquatic Environments in the Pacific Region, Technical Report 2314.

1.8 Quality Control

- .1 Quality control inspection and testing of pressure-treated timbers are to be carried out by a qualified testing firm proposed by the Contractor and accepted by the Departmental Representative. Plant inspection of products treated with

preservative by pressure impregnation must be carried out by the Contractor's designated testing firm to CSA O80 Series requirements. The Contractor is responsible for all costs associated with such inspection and testing.

- .2 The Departmental Representative may elect to have additional tests, including core sampling, performed by the Departmental Representative's testing firm as a quality assurance measure. Data from such tests will be made available to the Contractor for information only. The Departmental Representative will pay for all costs associated with these additional tests. Inspection and/or testing by the Departmental Representative for quality assurance purposes will not augment or replace the requirement for the Contractor's quality control nor relieve him of his contractual responsibility. Notwithstanding any aforementioned quality assurance inspection and/or testing, the Departmental Representative reserves the right to reject materials on site.

2. PART 2 – PRODUCTS

2.1 Materials

- .1 Copper naphthenate: To contain 2% minimum copper, per CAN/CSA-O80 Series.
- .2 Preservative for new timber piles and for new timber components: Creosote to CAN/CSA-O80 Series.

3. PART 3 – EXECUTION

3.1 Application: Preservative

- .1 Treat new timber piles and new timber components in accordance with the "Best Management Practices for the use of Treated Wood in Aquatic and Wetland Environments" published by WPC.
- .2 Treat new timber piles and new timber components to CAN/CSA-O80 Series for Use Category UC5A (continuous salt water exposure) using creosote preservative by the full cell process to obtain minimum net retention of 290 kilograms per cubic metre (kg/m^3) of wood. Creosote treatment of new timber piles and new timber components to be applied off site before delivery to site.

3.2 Application: Field Treatment

- .1 Comply with CAN/CSA-O80 Series requirements.
- .2 Surfaces of timber components that are exposed by cutting, trimming, or boring, cracks, and holes (including bolt holes and drift pin holes) must be treated promptly with three (3) separate coats of copper naphthenate (2% minimum copper). Allow enough time between coats for full absorption. Alternatively, creosote field-treatment of creosoted timber piles in accordance with CAN/CSA-O80 Series will be allowed.

- .3 Take all reasonable precautions to minimize the amount of field preservative treatment from escaping into the marine environment.

3.3 Waste Management and Disposal

- .1 Place materials defined as hazardous or toxic in designated containers.
- .2 Do not store wood treatment materials at the Y Jetty Access Area, unless appropriate measures are in place to protect personnel and the environment as described in the Environmental Management Plan.
- .3 Dispose of removed materials at a Disposal Facility in accordance with Section 35 20 23.01 (Offloading, Material Processing, Transportation, and Disposal), and in accordance with federal, provincial, state (as applicable), and local jurisdiction regulations.
- .4 Dispose of creosoted or preservative-treated timber components, end pieces, wood scraps, and sawdust in accordance with federal, provincial, state, and local jurisdiction regulations.
- .5 Dispose of unused wood preservative at official hazardous material collections site that is permitted to accept such materials.
- .6 Do not dispose of unused preservative material into sewer system, streams, or lakes; onto ground; or in other locations where they will pose health or environmental hazards.

END OF SECTION

1. PART 1 – GENERAL

1.1 Description

- .1 This section covers the modification and re-use of salvaged timber components for the fender pile system at Y Jetty (including timber chocks and any other miscellaneous timber components). Re-use of salvaged timber components is a project requirement, except where the Departmental Representative accepts that extracted timber components are unsuitable for re-use in the work.
- .2 This section also covers the supply, fabrication, and installation of miscellaneous replacement timber components in the event that some of the salvaged timber components are accepted by the Departmental Representative as being unsuitable for re-use in the work.
- .3 Metal fabrications (including through-bolts, straps, and anchors) for timber chocks are covered under Section 05 50 00 (Metal Fabrications), and are considered as incidental to the work of this section.
- .4 Preservative treatment for timber components is covered under Section 06 05 73 (Wood Treatment), and is considered as incidental to the work.
- .5 For re-use of timber piles, if required in the work, refer to Section 31 62 19 (Timber Piling).

1.2 Related Sections

- .1 Section 01 11 55 (General Instructions)
- .2 Section 01 33 00 (Submittal Procedures)
- .3 Section 02 55 10 (Dust Control)
- .4 Section 05 50 00 (Metal Fabrications)
- .5 Section 06 05 73 (Wood Treatment)
- .6 Section 31 62 19 (Timber Piling)

1.3 Measurement and Payment Procedures

- .1 No measurement or payment will be made under this section. All work performed to satisfy the requirements of this section will be paid under the relevant payment items in Section 31 62 19 (Timber Piling).
- .2 Metal fabrications (including through-bolts, straps, and anchors) for timber components are considered as incidental to the work, and will not be measured or paid for separately.
- .3 Re-use of timber piles (and supply and installation of new timber piles where salvaged piles are accepted by the Departmental Representative as being

unsuitable for re-use in the work) will be measured in accordance with Section 31 62 19 (Timber Piling), and payment will include all costs in connection with timber piles as specified in that section.

- .4 Re-use of timber components (and supply and installation of new timber components where salvaged components are accepted by the Departmental Representative as being unsuitable for re-use in the work) will be measured in accordance with Section 31 62 19 (Timber Piling), and payment will include all costs in connection with timber components as specified in that section.
- .5 Preservative treatment is considered as incidental to supply and installation of new timber components, and will not be measured or paid separately.

1.4 References

- .1 Canadian Standards Association (CSA):
 - .1 CAN/CSA B111-1974(R2003), Wire Nails, Spikes and Staples.
 - .2 CAN/CSA G40.20/G40.21, General Requirements for Rolled or Welded Structural Quality Steel/Structural Quality Steel.
 - .3 CAN/CSA-O86, Engineering Design in Wood.
 - .4 CAN/CSA-O80 Series-08, Standard for Wood Preservation.
 - .5 CAN/CSA-O121, Douglas Fir Plywood.
 - .6 CAN/CSA-O122, Structural Glued-Laminated Timber (this standard is included in the event that any glulam timber walers are damaged during the work and need repair or replacement).
 - .7 CAN/CSA-O177, Qualification Code for Manufacturers of Structural Glued-Laminated Timber (this standard is included in the event that any glulam timber walers are damaged during the work and need repair or replacement).
 - .8 CAN/CSA-O141, Softwood Lumber.
- .2 American Society for Testing and Materials (ASTM):
 - .1 ASTM A 307, Specification for Carbon Steel Bolts and Studs, 60,000 PSI Tensile Strength.
 - .2 ASTM A123/A123M, Standard Specification for Zinc (Hot-Dip Galvanized) Coatings on Iron and Steel Products.
 - .3 ASTM A153/A153M, Standard Specification for Zinc Coating (Hot-dip) on Iron and Steel Hardware.
- .3 National Lumber Grades Authority (NLGA):
 - .1 Standard Grading Rules for Canadian Lumber.

- .4 Wood Preservation Canada: “Best Management Practices for the Use of Treated Wood in Aquatic and Wetland Environments (2012)”.
- .5 Canadian Wood Council (CWC), Wood Design Manual (2005).

1.5 Definitions

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

1.6 Submittals

- .1 Product Data: For new timber components, submit manufacturer’s printed product literature, specifications, and datasheet in accordance with Section 01 33 00 (Submittal Procedures).
- .2 In the event that any glulam timber walers are damaged during the work and need repair or replacement, submit in accordance with Section 01 33 00 (Submittal Procedures) shop drawings for glued-laminated timber components clearly indicating stress grade, service grade, appearance grade, shop applied finishes, shop and erection details, including cuts, holes, fastenings and connection hardware.
- .3 Submit, in accordance with Section 01 33 00 (Submittal Procedures), certification that new timber components comply with the Best Management Practices for the Use of Treated Wood in Aquatic Environments and CAN/CSA-O80-08 Series (Wood Preservation).

1.7 Quality Control

- .1 Timber must be identified by grade stamp of an agency certified by Canadian Lumber Standards Accreditation Board.
- .2 Plywood must be identified by grade mark in accordance with applicable CSA standards.
- .3 The Departmental Representative may inspect materials and products at its discretion at all stages of their manufacture, transportation, and installation. Satisfactory inspection at any stage does not preclude future rejection. Acceptance will not be made until the materials and products are satisfactorily installed in the completed structure to the project Specifications.

1.8 Waste Management and Disposal

- .1 Separate waste materials to the maximum extent economically possible.
- .2 Do not burn scrap timber at the project site.
- .3 Fold up metal banding, flatten, and place in designated area for disposal.

2. PART 2 – PRODUCTS

2.1 Framing and Structural Materials

- .1 Timber: (if required)
 - .1 Coastal Douglas Fir No. 1 structural grade or better.
 - .2 In accordance with CAN/CSA-O86 and CAN/CSA-O141.
 - .3 Timber to bear a grading stamp of an agency certified by Canadian Lumber Standards Administration Branch, and be in accordance with NLGA Standard Grading Rules for Canadian Lumber.
 - .4 The Departmental Representative may inspect materials and products at its discretion at all stages of their manufacture, transportation, and assembly. Satisfactory inspection at any stage does not preclude future rejection if the materials or products are subsequently found to lack uniformity or fail to conform to the requirements specified. Acceptance will not be made until the materials or products are satisfactorily installed in the completed structure as specified.
 - .5 Timber to be seasoned with a maximum moisture content of 20%.
 - .6 Timbers to be rough sizes unless noted otherwise.
 - .7 Timbers must not contain centre cores.
- .2 Glued-laminated Timber: (if required)
 - .1 Structural glued-laminated members to be manufactured to the requirements of CAN/CSA-O122 in plant certified by the Administrative Board Structural Glued-Laminated Timber Division, to CAN/CSA-O177 to manufacture Class XS (exterior softwood).
 - .2 Laminating stock: Douglas Fir to CSA O122.
 - .3 Adhesive: to CAN/CSA O122, Clause 5.3 as per service grade requirement using water proof glue.
 - .4 Fabricate glued-laminated timber members to the following classifications:
 - .1 Stress grade: 24f Bending grade.
 - .2 Service grade: “Exterior”.
 - .3 Appearance grade: “Industrial”.
 - .5 Mark laminated members for identification during erection so that marks will be concealed in final assembly for appearance grade members.
 - .6 Steel for connections: to Section 05 50 00 (Metal Fabrications).

- .7 Galvanizing: hot dipped galvanizing to Section 05 50 00 (Metal Fabrications).
- .8 Preservative Treatment: Treat Glued-laminated members to CAN/CSA-O80 with full-cell creosote oil treatment to a net retention of 128 kilogram per cubic metre.
- .3 Plywood: (if required)
 - .1 DFP (Douglas Fir Plywood) Exterior Grade.
 - .2 In accordance with CAN/CSA-O121.
- .4 Plank decking: (if required)
 - .1 Coastal Douglas Fir No. 1 76 millimetre (mm) x 305 mm.
 - .2 In accordance with CAN/CSA-O86 and CAN/CSA-O141.
 - .3 In accordance with NLGA Standard Grading Rules for Canadian Lumber.
 - .4 Decking to be wane free.
 - .5 Timber to be seasoned with a maximum moisture content of 20%.
 - .6 Decking lengths: 1.8 metres (m) to 6.0 m or longer with a minimum of 90% of planks exceeding 3.0 m. For spans shorter than 3.0 m, use decking of same length as span.

2.2 Accessories

- .1 Nails, spikes, and staples: to CAN/CSA-B111. Nails must be Ardox nails.
- .2 Bolts: 19 mm diameter unless indicated otherwise, complete with nuts and washers.
- .3 Drift pins: to ASTM A307 or CAN/CSA G40.20/G40.21.
- .4 Proprietary fasteners: lag bolts, screws, and other fasteners, recommended for purpose by manufacturer.
- .5 Asbestos-containing Materials Prohibition: Any material containing any degree of asbestos is banned from use in any and all sites, designs, and projects.

2.3 Fastener Finishes

- .1 Hot dip galvanizing: to ASTM A153/A153M.

2.4 Wood Preservative

- .1 Wood treatment: All timber components must be treated in accordance with the requirements of Section 06 05 73 (Wood Treatment) and to Wood Preservation Canada Best Management Practices for the Use of Treated Wood in Aquatic and Wetland Environments.

3. PART 3 – EXECUTION

3.1 Preparation

- .1 Wherever possible, timbers to be treated must be cut to final length prior to treatment. Wherever possible, bolt holes and drift pin holes must be drilled prior to treatment. Treat bolt holes and drift pin holes with wood preservative in accordance with Section 06 05 73 (Wood Treatment).
- .2 The cut ends of timbers that must be field-cut to suit dimensions or locations of installed components (e.g., timber chocks to be installed between timber piles) must be field-treated in accordance with Section 06 05 73 (Wood Treatment),
- .3 Store and protect wood products.
- .4 Timbers must be handled and installed carefully to avoid damage. Use fibre slings during transportation. Timbers must not be unloaded by dumping them from a truck or trailer. Peavies, cant hooks, pile hooks, or other pointed tools must not be used for handling treated timbers.
- .5 Glued-laminated timbers (if required for the work) must be delivered and handled with care, and as follows:
 - .1 Wrap industrial appearance grade members prior to leaving plant with polypropylene prior to preservative treatment.
 - .2 Use padded, non-marring slings for handling glued-laminated members.
 - .3 Protect corners with wood blocking.
 - .4 Slit underside of membrane covering during storage at site.
 - .5 Store glued-laminated timbers, well blocked off the ground and separated with stripping, so air may circulate around all four sides of members.

3.2 Selection of Timber Components for Re-use in the Work

- .1 Timber components chosen by the Contractor for re-use in the work (e.g., timber chocks) are to be pre-selected by the Contractor as generally suitable for intended use. Upon notification of readiness by the Contractor, with minimum notification time of twenty-four (24) hours, the Departmental Representative will inspect the pre-selected timber components and either accept the timber components as being generally suitable for intended use, or require the Contractor to replace any unsuitable timber components with new material. The Departmental Representative's decision as to acceptability of timber components for re-use in the work is final.

3.3 Installation

- .1 Comply with requirements of the CWC Wood Design Manual supplemented by the following requirements:
 - .1 Install members true to line, levels, and elevations, square and plumb.
 - .2 Construct continuous members from pieces of longest practical length.
 - .3 Treated timbers must not be cut on site except as accepted by the Departmental Representative.
- .2 Install glued-laminated timber components (if required in the work) in accordance with CAN/CSA-O122 and to match details of reinstalled glued-laminated timbers. Field cutting and alteration of glued-laminated members is not permitted except with the written acceptance of the Departmental Representative.

3.4 Erection

- .1 Frame, anchor, fasten, tie, and brace members to provide necessary strength and rigidity.
- .2 Counterbore bolts where necessary to provide clearance for other work. Fill counterbore holes with mastic after bolts have been tightened.
- .3 Plate washers are required under the heads and nuts of all timber members. Washer sizes to be as indicated on the Drawings.
- .4 Bolts to be tightened from the nut end only and tightened to the full human effort with a spud wrench or with an impact wrench.
- .5 Holes for drift bolts and pins must be 0.8 mm to 1.5 mm smaller than the diameter of the drift bolt or pin.
- .6 Holes for bolts must be same diameter as the bolt, to provide a driving fit.
- .7 Unused holes in pressure-treated timber to be plugged with full length pressure treated creosoted dowels and covered with mastic.
- .8 Counterbores must be filled with mastic after the bolts have been installed and tightened.

END OF SECTION

1. PART 1 – GENERAL

1.1 Description

- .1 This section describes the common work results applicable to electrical disciplines, including the temporary de-energizing, locking out, re-energizing and testing (and disconnection and reconnection if required for the work) of electrical services at Y Jetty.
- .2 Reconnection and re-energization of electrical services (if required for the work) will be performed by DND personnel.
- .3 Testing of re-energized or reconnected electrical services must be performed by the Contractor.

1.2 Related Sections

- .1 Section 01 11 55 (General Instructions)
- .2 Section 01 33 00 (Submittal Procedures)
- .3 Section 01 35 29.14 (Health and Safety Requirements for Contaminated Sites)
- .4 Section 01 51 00 (Temporary Facilities)
- .5 Section 01 78 30 (Closeout Submittals)
- .6 Section 01 91 13 (Commissioning Requirements)
- .7 Section 02 41 13 (Selective Site Demolition)
- .8 Section 02 41 16.01 (Structure Demolition)
- .9 Section 26 05 20 (Low Voltage Wire and Box Connectors)
- .10 Section 26 05 21 (Low Voltage Wires and Cables)
- .11 Section 27 05 13 (Communication Services)

1.3 Measurement and Payment Procedures

- .1 No measurement or payment will be made under this section. All work performed to satisfy the requirements of this section will be paid under the relevant payment item in Section 02 41 16.01 (Structure Demolition). Payment will be full compensation for temporary de-energizing, locking out (including disconnection if required for the work), testing, and commissioning of the re-energized or reconnected electrical services, and all related work as described in the Drawings.

1.4 References

- .1 Canadian Standards Association
 - .1 CSA C22.1, Canadian Electrical Code, Part 1 (Current Edition), Safety Standard for Electrical Installations.
 - .2 CSA C22.2 No. 65, Wire Connectors.
 - .3 CAN3-C235, Preferred Voltage Levels for AC Systems, 0 to 50,000 Volts.
- .2 Electrical and Electronic Manufacturer's Association of Canada (EEMAC)
 - .1 EEMAC 2Y-1, Light Gray Colour for Indoor Switch Gear.
- .3 Institute of Electrical and Electronics (IEEE)/National Electrical Safety Code Product Line (NESC)
 - .1 IEEE SP1122, The Authoritative Dictionary of IEEE Standards Terms, 7th Edition.
- .4 National Building Code of Canada.
- .5 Telecommunications Industry Association/Electronic Industries Alliance:
 - .1 TIA/EIA Standard 568C – Commercial building telecommunications wiring standard.

1.5 Definitions

- .1 Electrical and electronic terms: unless otherwise specified or indicated, terms used in these Specifications, and on Drawings, are those defined by IEEE SP1122.
- .2 Refer to Section 01 11 55 (General Instructions) for all other definitions related to this Contract.

1.6 Submittals (if replacement electrical components are required)

- .1 Provide submittals to the Departmental Representative in accordance with the requirements of Section 01 33 00 (Submittal Procedures), if replacement of electrical components is required.
- .2 Product Data: (if replacement electrical components are required)
 - .1 Submit manufacturer's printed product literature, specifications and datasheets and include product characteristics, performance criteria, physical size, materials, finish and limitations.
 - .2 Manufacturer's Instructions: submit manufacturer's installation instructions and special handling criteria, installation sequence, cleaning procedures, maintenance instructions and manuals.
- .3 Quality Control (if replacement electrical components are required):

- .1 Provide CSA certified equipment and material with visible, legible labels.
- .2 Where CSA certified equipment and material is not available, submit such equipment and material to the Departmental Representative and authority having jurisdiction for acceptance before delivery to site.
- .3 Submit test results of installed electrical systems and instrumentation.
- .4 Permits and fees: in accordance with General Conditions of Contract.
- .5 Submit electrical permit and certificate of acceptance from authority having jurisdiction upon completion of work to the Departmental Representative.

1.7 Operating Requirements

- .1 Operating voltages: to CAN3-C235.
- .2 Motors, control and distribution devices and equipment are to operate satisfactorily at 60 hertz within normal operating limits established by CAN3-C235. Equipment to operate in extreme operating conditions established in above standard without damage to equipment.
- .3 Language operating requirements: provide identification nameplates and labels for control items in English only.

1.8 Site Conditions – Not Used

1.9 Scheduling of Work

- .1 Schedule work to minimize interruptions to existing electrical services.
- .2 The Y Jetty electrical services are to be de-energized and locked-out when working with the utilities protection system throughout construction. Coordinate the de-energization and lock-out of electrical services with the Departmental Representative.
- .3 Isolation and out-of-service duration for the electrical services serving Y Jetty must be coordinated with the Departmental Representative and must be performed in a manner to minimize impact on DND operations. Each out-of-service period for the electrical services during disconnection and reconnection work must be limited to six (6) hours duration and must be scheduled to take place at night between 6:00 p.m. and 6:00 a.m., unless authorized in writing by the Departmental Representative.
- .4 Notify the Departmental Representative a minimum of seven (7) days prior to any planned interruption of service. Notify the Departmental Representative immediately of any accidental interruption of electrical system.
- .5 Upon reinstatement of electrical services, coordinate commissioning and re-energization with the Departmental Representative.

1.10 Quality Assurance

- .1 Qualifications: electrical work to be carried out by qualified, licensed electricians or apprentices in accordance with authorities having jurisdiction.
- .2 Health and Safety Requirements: do construction occupational health and safety in accordance with Section 01 35 29.14 (Health and Safety Requirements for Contaminated Sites).

1.11 Delivery, Storage and Handling (if replacement components are required)

- .1 Material Delivery Schedule: provide the Departmental Representative with schedule in accordance with the requirements of Section 01 33 00 (Submittal Procedures).

1.12 Waste Management and Disposal (if replacement components are required)

- .1 Collect and separate waste and packaging materials for reuse, recycling, and disposal in appropriate on-site bins.
- .2 Divert unused wiring materials from landfill to metal recycling facility as accepted by the Departmental Representative.

1.13 Closeout Submittals

- .1 Provide as-built information, including details of electrical system components and connections for Record Documents in accordance with Section 01 78 30 (Closeout Submittals).
- .2 Include on the as-built drawings any alteration to the electrical system, and testing information at start-up.

2. PART 2 – PRODUCTS

2.1 General

- .1 All replacement cable tray, cable tray supports, PVC conduit, cables and wires, and cable and wire connectors must match existing type and size unless otherwise noted.
- .2 Choose products and materials with recycled content or resource efficient characteristics whenever possible. Use least toxic sealants, adhesives, sealers and finishes necessary to comply with the requirements of the project.

2.2 Materials and Equipment

- .1 Material and equipment to be CSA certified, except as otherwise accepted by the Departmental Representative. Where CSA certified material and equipment are

not available, obtain special acceptance from the Departmental Representative and authority having jurisdiction before delivery to site and submit such acceptance as described in Clause 1.6 of this section.

- .2 Material and equipment to be suitable for a damp marine environment.
- .3 Factory assemble control panels and component assemblies.
- .4 Asbestos-containing Materials Prohibition: Any material containing any degree of asbestos is banned from use in any and all sites, designs, and projects.

3. PART 3 – EXECUTION

3.1 Preparation

- .1 All existing utilities are shown according to available reference drawings. The Contractor must locate all existing utilities prior to construction and must notify the Departmental Representative of any conflicts a minimum of seventy-two (72) hours prior to construction. Any additional work required as a result of failing to pre-locate known or potential conflicts must be completed at the Contractor's expense, and without impact to the Construction Progress Schedule.
- .2 Allow DND personnel unfettered access and working space around the electrical and mechanical service mounts (utility cabinets) on Y Jetty, including space to open the cabinet doors and make service connections, if required at any time during the work. A lockable, secure gated access through the Work Site perimeter safety fence (through which DND has unrestricted access) will be acceptable for this purpose.

3.2 De-energizing and Re-energizing Electrical Services

- .1 Electrical services must be de-energized and locked out when installing, relocating, and during final removal of the utilities protection system.
- .2 Electrical services must be re-energized (by DND personnel) upon completion of installation, relocation and final removal of the utilities protection system.
- .3 Instruct the Departmental Representative and DND operating personnel in operation, care and maintenance of any new systems, system equipment and components.
- .4 Electrical service (if disconnected) will be reconnected and reinstated to its original condition by DND personnel.

3.3 Disconnection (if necessary)

- .1 Disconnect wiring from existing 480 Volt electrical unit substation located on the shore near Y Jetty as indicated on the Drawings.

- .2 If electrical cables are damaged locally along the jetty, disconnect and replace cables between nearest panels in service mount as indicated on the Drawings. Splicing of electrical cables is not permitted. Unless cables are damaged past the last service mount terminals, it should not be necessary to replace buried cables back to the unit substation.
- .3 Take note of all connections. Disconnected cable and conductors must have their open ends sealed with plastic, weatherproof caps or tapes, coiled, made safe for protection and stored for re-installation in final installation.

3.4 Reconnection (by DND Personnel) (if necessary)

- .1 The design assumption is that the electrical services may not comply with current code requirements. On this basis, the Contractor is not required to reconnect and re-energize the electrical system.
- .2 If necessary, DND personnel will reconnect, reinstate and terminate electrical services to match existing condition as found prior to disconnection.
- .3 Carry out complete re-installation in accordance with CSA C22.1.
- .4 Comply with TIA/EIA-569-C recommendations for separating unshielded copper control, voice and data communication cable from potential electromagnetic interference sources, including electrical power lines and equipment.
- .5 Obtain and pay for electrical permits (if required), at the Contractor's own cost.
- .6 Review Drawings from other disciplines for details related to the electrical installation scope of work including bonding of metallic parts. Coordinate electrical works with works of other disciplines such as structural, mechanical and civil disciplines including bonding of metallic parts.

3.5 Testing

- .1 Conduct the following tests in accordance with CSA C22.1-09, Canadian Electrical Code, Part 1:
 - .1 Insulation resistance testing:
 - .1 Megger 350-600 Volt circuits, feeders, and equipment with a 1,000 Volt instrument.
 - .2 After installing cable but before splicing and/or terminating, perform insulation resistance test on each phase conductor.
 - .3 Check insulation resistance after each splice and/or termination.
 - .4 Check each feeder for continuity, short circuits, and grounds. Ensure resistance to ground of circuits is not less than 100 megohms for one (1) minute, corrected to 20°C, before energizing.

- .2 Cathodic Protection System:
 - .1 Check that the cathodic protection system (hanging anodes under the jetty structure) is reinstated to the same arrangement and details as the pre-existing condition.
 - .2 If requested by the Departmental Representative, conduct electrical testing of the cathodic protection system to confirm performance.
- .2 Carry out all stipulated electrical tests in the presence of the Departmental Representative, and upon completion of tests, submit all electrical test results to the Departmental Representative for review.
- .3 Provide instruments, meters, equipment and personnel required to conduct tests during and at conclusion of project.
- .4 Include a signed off copy of all electrical test results with the final operation and maintenance manual.

3.6 Damage

- .1 The Contractor will be responsible for all damage which may arise as a result of their operations and must make good such damage (including subsequent testing of electrical services) at no additional cost to Canada.

END OF SECTION

1. PART 1 – GENERAL

1.1 Description

- .1 This section covers supply (if required for the work) for low voltage (LV) wire connectors and box connectors at Y Jetty.

1.2 Related Sections

- .1 Section 01 11 55 (General Instructions)
- .2 Section 01 33 00 (Submittal Procedures)
- .3 Section 02 41 13 (Selective Site Demolition)
- .4 Section 02 41 16.01 (Structure Demolition)
- .5 Section 26 05 00 (Common Work Results for Electrical)
- .6 Section 26 05 21 (Low Voltage Wires and Cables)

1.3 Measurement and Payment Procedures

- .1 No measurement or payment will be made under this section. All work performed to satisfy the requirements of this section will be paid under the relevant payment item in Section 02 41 16.01 (Structure Demolition).

1.4 References

- .1 Canadian Standards Association
 - .1 CAN/CSA-C22.2 No. 18, Outlet Boxes, Conduit Boxes, Fittings and Associated Hardware.
 - .2 CSA C22.2 No. 65, Wire Connectors.
- .2 Electrical and Electronic Manufacturers' Association of Canada (EEMAC)
 - .1 EEMAC 1Y-2 Bushing Stud Connectors and Aluminum Adapters (1200 Ampere Maximum Rating).
- .3 National Electrical Manufacturers Association (NEMA).

1.5 Definitions

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

1.6 Submittals

- .1 Provide submittals to the Departmental Representative in accordance with Section 01 33 00 (Submittal Procedures).
- .2 Product Data: (only needed if new electrical components are required)
 - .1 Submit manufacturer's printed product literature, specifications, and datasheets and include product characteristics, performance criteria, physical size, materials, finish, and limitations.
 - .2 Manufacturer's Instructions: submit manufacturer's installation instructions and special handling criteria, installation sequence, cleaning procedures, and maintenance instructions and manuals.

2. PART 2 – PRODUCTS

2.1 Materials (if required)

- .1 All replacement cable tray, cable tray supports, PVC conduit, cables and wires, and cable and wire connectors must match existing type and size unless otherwise noted.
- .2 Pressure type wire connectors: to CSA C22.2 No. 65, with current carrying parts of copper sized to fit copper conductors as required.
- .3 Fixture type splicing connectors: to CSA C22.2 No. 65, with current carrying parts of copper sized to fit copper conductors 10 American Wire Gauge (AWG) or less.
- .4 Bushing stud connectors: to EEMAC 1Y-2 to consist of:
 - .1 Connector body and stud clamp for stranded copper conductors.
 - .2 Clamp for stranded copper conductors.
 - .3 Stud clamp bolts.
 - .4 Bolts for copper conductors.
 - .5 Sized for conductors as indicated.
- .5 Clamps or connectors for armoured cable, as required: to CAN/CSA-C22.2 No.18.
- .6 Asbestos-containing Materials Prohibition: Any material containing any degree of asbestos is banned from use in any and all sites, designs, and projects.

3. PART 3 – EXECUTION

3.1 Re-Installation (by DND Personnel) (if required)

- .1 Remove insulation carefully from ends of conductors, where necessary, and:
 - .1 Install mechanical pressure type connectors and tighten screws with appropriate compression tool recommended by manufacturer. Installation must meet secureness tests in accordance with CSA C22.2 No.65.
 - .2 Install fixture type connectors and tighten. Replace insulating cap.
 - .3 Install bushing stud connectors in accordance with EEMAC 1Y-2.

END OF SECTION

1. PART 1 – GENERAL

1.1 Description

- .1 This section covers supply (if required for the work) at Y Jetty of low voltage (LV) copper conductors rated from 0 to 1,000 Volts (V), including heat trace and ground conductors.

1.2 Related Sections

- .1 Section 01 11 55 (General Instructions)
- .2 Section 01 33 00 (Submittal Procedures)
- .3 Section 02 41 13 (Selective Site Demolition)
- .4 Section 02 41 16.01 (Structure Demolition)
- .5 Section 26 05 00 (Common Work Results for Electrical)
- .6 Section 26 05 20 (Low Voltage Wire and Box Connectors)

1.3 Measurement and Payment Procedures

- .1 No measurement or payment will be made under this section. All work performed to satisfy the requirements of this section will be paid under the relevant payment items in Section 02 41 16.01 (Structure Demolition).

1.4 References

- .1 Canadian Standards Association
 - .1 CSA-C22.2 No. 38, Thermoset-Insulated Wires and Cables.
 - .2 CSA-C22.2 No. 41, Grounding and Bonding Equipment
 - .3 CSA-C22.2 No. 130, Electrical Resistance Trace Heating and Heating Device Sets.
 - .4 CSA-C22.2 No. 131, Type Teck 90 Cable.

1.5 Definitions

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

1.6 Submittals

- .1 Provide submittals to the Departmental Representative in accordance with Section 01 33 00 (Submittal Procedures).

- .2 Product Data (if required):
 - .1 Provide cable splice kit datasheets and installation instructions.
 - .2 Submit manufacturer's printed product literature, specifications and datasheets and include product characteristics, performance criteria, physical size, materials, finish and limitations.
 - .3 Manufacturer's Instructions: submit manufacturer's installation instructions and special handling criteria, installation sequence, cleaning procedures and maintenance instructions and manuals.

2. PART 2 – PRODUCTS

2.1 General

- .1 All replacement wires, cables and conductors must match existing type and size unless otherwise noted.
- .2 Asbestos-containing Materials Prohibition: Any material containing any degree of asbestos is banned from use in any and all sites, designs, and projects.

3. PART 3 – EXECUTION

3.1 Field Quality Control

- .1 Perform tests in accordance with Section 26 05 00 (Common Work Results for Electrical).
- .2 Perform tests using method appropriate to site conditions and to acceptance of the Departmental Representative and local authority having jurisdiction over installation.
- .3 Check insulation resistance of each phase conductor after each splice and/or termination.
- .4 Perform tests before energizing electrical system.

3.2 General Cable Removal (if required)

- .1 Removed cable and conductors must have their open ends sealed with plastic, weatherproof caps or tapes, coiled, made safe, and placed in a box or enclosure for protection.

3.3 General Cable Re-Installation (by DND Personnel) (if required)

- .1 Terminate cables and conductors in accordance with Section 26 05 20 (Low Voltage Wire and Box Connectors).

- .2 Lace or clip groups of feeder cables at distribution centres, pull boxes, and termination points.

END OF SECTION

1. PART 1 – GENERAL

1.1 Description

- .1 This section covers the temporary de-energizing, locking out, re-energizing and testing (and disconnection and reconnection if required for the work) of telephone and SCADA communication services at Y Jetty.
- .2 This section also covers the temporary removal, disconnection, coiling up, safe storage, and reinstatement of the (blue) communication wires laying on the safety netting at both the north and south faces of the Y Jetty wharf head.
- .3 Reconnection and re-energization of telephone and SCADA communication services (if required for the work) will be performed by DND personnel.
- .4 Testing of re-energized or reconnected telephone and SCADA communication services must be performed by the Contractor.

1.2 Related Sections

- .1 Section 01 11 55 (General Instructions)
- .2 Section 01 33 00 (Submittal Procedures)
- .3 Section 01 35 29.14 (Health and Safety Requirements for Contaminated Sites)
- .4 Section 01 51 00 (Temporary Facilities)
- .5 Section 01 78 30 (Closeout Submittals)
- .6 Section 01 91 13 (Commissioning Requirements)
- .7 Section 02 41 13 (Selective Site Demolition)
- .8 Section 02 41 16.01 (Structure Demolition)
- .9 Section 26 05 00 (Common Work Results for Electrical)
- .10 Section 26 05 20 (Low Voltage Wires and Box Connectors)
- .11 Section 26 05 21 (Low Voltage Wires and Cables)

1.3 Measurement and Payment Procedures

- .1 No measurement or payment will be made under this section. All work performed to satisfy the requirements of this section will be paid under the relevant payment item in Section 02 41 16.01 (Structure Demolition). Payment will be full compensation for de-energizing, locking out (including disconnection if required for the work), and testing of the re-energized or reconnected communication services, and all related work as described in the Drawings.

1.4 References

- .1 Canadian Standards Association (CSA)
 - .1 CSA-C22.2 No. 214, Communications Cables.
 - .2 CSA-C22.2 No. 239, Control and Instrumentation Cables.
- .2 BICSI Telecommunications Distribution Methods Manual (TDMM).

1.5 Definitions

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

1.6 Submittals (if replacement communications components are required)

- .1 Provide submittals to the Departmental Representative in accordance with the requirements of Section 01 33 00 (Submittal Procedures).
- .2 Product Data (only needed if replacement communication service components are required):
 - .1 Submit manufacturer's printed product literature, specifications, and datasheets and include product characteristics, performance criteria, physical size, materials, finish, and limitations.
 - .2 Manufacturer's Instructions: submit manufacturer's installation instructions and special handling criteria, installation sequence, cleaning procedures and maintenance instructions and manuals.

1.7 Scheduling of Work

- .1 Schedule work to minimize interruptions to existing communication services.
- .2 The Y Jetty communication services are to be disconnected when working with the utilities protection system throughout construction. Coordinate the re-connection of communication services with the Departmental Representative.
- .3 Refer to Section 26 05 00 (Common Work Results for Electrical) for scheduling constraints, out-of-service periods and notification requirements, which also apply to communication services.
- .4 Notify the Departmental Representative a minimum of seven (7) working days prior to any planned interruption of service. Notify the Departmental Representative immediately of any accidental interruption of communication services.
- .5 Upon reinstatement of communication services, coordinate commissioning and re-energization with the Departmental Representative.

1.8 Closeout Submittals

- .1 Provide as-built information, including details of communication system components and connections for Record Documents in accordance with Section 01 78 30 (Closeout Submittals).
- .2 Include on the as-built drawings any alteration to the communication system, and testing information at start-up.

2. PART 2 – PRODUCTS

2.1 General

- .1 All replacement cables and wires, and cable and wire connectors must match existing type and size unless otherwise noted.

2.2 Telephone Wire

- .1 Service wire: number of pairs and sizes as indicated on the Drawings, solid annealed copper conductors with polyethylene insulation, made into twisted pairs cabled together, inner jacket polyvinyl chloride, close serving of flat galvanized steel wire armour, outer jacket of polyvinyl chloride.

3. PART 3 – EXECUTION

3.1 Preparation

- .1 All existing utilities are shown according to available reference drawings. The Contractor must locate all existing utilities prior to construction, and must notify the Departmental Representative of any conflicts a minimum of seventy-two (72) hours prior to construction. Any additional work required as a result of failing to pre-locate known or potential conflicts must be completed at the Contractor's expense, and without impact to the Construction Progress Schedule.
- .2 Allow DND personnel unfettered access and working space around the electrical and mechanical service mounts (utility cabinets) on Y Jetty, including space to open the cabinet doors and make service connections, if required at any time during the work. A lockable, secure gated access through the Work Site perimeter safety fence (through which DND has unrestricted access) will be acceptable for this purpose.

3.2 De-energizing and Re-energizing Communication Services

- .1 Communication services must be de-energized and locked out when installing, relocating, and during final removal of the utilities protection system.

- .2 Communication services must be re-energized (by DND personnel) upon completion of installation, relocation, and final removal of the utilities protection system.
- .3 Instruct the Departmental Representative and DND operating personnel in operation, care and maintenance of any new systems, system equipment, and components.
- .4 Communication services (if disconnected) will be reconnected and reinstated to their original condition by DND personnel.

3.3 Disconnection

- .1 Disconnect communication wiring terminated at existing communication shed next to the 480-Volt electrical unit substation located on the shore near Y Jetty as indicated on the Drawings.
- .2 At start of timber fender pile removal, disconnect, coil up, and safely store the (blue) communication wires laying on and attached with zip ties to the safety netting at both the north and south faces of the Y Jetty wharf head.
- .3 If communication cables are damaged locally along the jetty, disconnect and replace cables between nearest panels in service mount as indicated on the Drawings. Splicing of communication cables is not permitted. Unless cables are damaged past the last service mount terminals, it should not be necessary to replace buried cables back to the unit substation.
- .4 Take note of all connections. Disconnected cable and conductors must have their open ends sealed with plastic, weatherproof caps or tapes, coiled, made safe for protection and stored for re-installation in final installation.
- .5 Coil up communication lines and protect for re-use. Store in a clean and dry location for re-use in final installation.

3.4 Reconnection (by DND Personnel)

- .1 The design assumption is that the communications system may not comply with current code requirements. On this basis, the Contractor is not required to reconnect and re-energize the communications system.
- .2 If necessary, DND personnel will reconnect, reinstate and terminate communication cables to existing conditions as found prior to disconnection.
- .3 Reinstate the (blue) communication wiring on the safety netting at completion of timber fender pile reinstallation.
- .4 Make grounding and bonding connections to terminal boxes, telephone outlets, and cable armour in accordance with the Canadian Electrical Code CSA-C22.1.

3.5 Testing

- .1 Perform continuity test on communications cables, both before and after terminating, in the presence of the Departmental Representative, and within twenty-four (24) hours of completion of each test, submit electrical test results to the Departmental Representative for review.

3.6 Damage

- .1 The Contractor is responsible for all damage which may arise as a result of their operations and must make good such damage (including subsequent testing of communication services) at no additional cost to Canada.

END OF SECTION

1. PART 1 – GENERAL

1.1 Description

- .1 This section covers the modification and reinstallation of salvaged timber fender piles at Y Jetty, as shown on the Drawings. Re-use of salvaged timber piles is a project requirement, except where the Departmental Representative accepts that salvaged timber piles are unsuitable for re-use in the work.
- .2 Removal of existing timber piles as described on the Drawings, including storage for re-use, and identification and disposal where unsuitable for re-use, is covered under Section 02 41 16.01 (Structure Demolition), except that the submittal and execution requirements for pile extraction are covered under this section.
- .3 This section also covers the supply and installation of new timber piles (including for any pile length wastage associated with installation), in the event that some of the salvaged timber fender piles are accepted by the Departmental Representative as being unsuitable for re-use in the work.
- .4 This section also covers the supply and installation of aluminum pile coverings (caps), steel through-bolts, straps, and accessories, which are considered as incidental to the reinstallation of re-used timber piles and incidental to the installation of new timber piles.
- .5 Preservative treatment for timber piles is covered under Section 06 05 73 (Wood Treatment).
- .6 For re-use of other timber components (such as timber chocks), refer to Section 06 10 10 (Timber).

1.2 Related Sections

- .1 Section 00 01 10 (Specification Index)
- .2 Section 01 11 55 (General Instructions)
- .3 Section 01 33 00 (Submittal Procedures)
- .4 Section 01 35 13.43 (Special Project Procedures for Contaminated Sites)
- .5 Section 01 35 29.14 (Health and Safety Requirements for Contaminated Sites)
- .6 Section 01 35 43 (Environmental Procedures)
- .7 Section 01 50 00 (Mobilization and Demobilization)
- .8 Section 02 41 13 (Selective Site Demolition)
- .9 Section 02 41 16.01 (Structure Demolition)
- .10 Section 02 41 16.02 (Structure Relocation)
- .11 Section 06 05 73 (Wood Treatment)

- .12 Section 06 10 10 (Timber)
- .13 Section 35 20 23.01 (Offloading, Material Processing, Transportation, and Disposal)
- .14 Section 35 37 10 (Capping and Material Placement)

1.3 Measurement and Payment Procedures

- .1 Reinstallation of timber fender piles and timber fender components at Y Jetty will not be measured individually. Reinstallation of timber fender piles and timber fender components will be paid for at the Lump Sum Price tendered for **TIMBER PILING: REINSTALL TIMBER FENDER PILES AND TIMBER FENDER COMPONENTS**. Payment will be full compensation for all work in connection with modification and reinstallation of salvaged timber fender piles and timber fender components at Y Jetty (and installation of new timber piles and timber fender components if required for the work) as described in this section and on the Drawings.
- .2 Where salvaged timber fender piles at Y Jetty are identified by the Contractor and are accepted by the Departmental Representative as being unsuitable for re-use, measure the supply of new timber fender piles in net length actually installed (in metres measured from tip elevation to cut-off elevation at pile top, computed to the nearest tenth of a metre), as required for the work. Supply of new timber fender piles at Y Jetty will be paid for at the Tender Item price for **TIMBER PILING: SUPPLY REPLACEMENT TIMBER FENDER PILES**. Payment will be full compensation for all work in connection with supply of new timber fender piles at Y Jetty, as described in this section and is to include for any pile length wastage associated with installation. Payment will also include all costs associated with transportation and off-site disposal of salvaged timber fender piles (where those timber fender piles are accepted by the Departmental Representative as being unsuitable for re-use in the work), including any environmental fees/levies and all work incidental thereto. Nominal net length of new timber fender piles at Y Jetty is indicated in the Unit Price Table for Tender pricing purposes. Payment for reinstallation of salvaged timber fender piles (and for installation of new timber fender piles if required for the work) is covered under Clause 1.3.1 of this section.
- .3 Where salvaged timber components for the fender pile system at Y Jetty are identified by the Contractor and are accepted by the Departmental Representative as being unsuitable for re-use, measure the supply of new timber components in net volume actually installed (in cubic metres), as required for the work. Supply of new timber components will be paid for at the Tender Item price for **TIMBER PILING: SUPPLY REPLACEMENT TIMBER FENDER COMPONENTS**. Payment is to be full compensation for all work in connection with supply of new timber components, as described in Section 06 10 10 (Timber) and is to include for any wastage associated with installation. Payment will also include all costs

associated with transportation and off-site disposal of salvaged timber components (where those timber components are accepted by the Departmental Representative as being unsuitable for re-use in the work), including any environmental fees/levies and all work incidental thereto. Nominal net volume of new timber components at Y Jetty is included in the Unit Price Table for Tender pricing purposes. Payment for reinstallation of salvaged timber components (and for installation of new timber components if required for the work) is covered under Clause 1.3.1 of this Specification section.

- .4 Mobilization and demobilization of pile-driving equipment will be measured to Section 01 50 00 (Mobilization and Demobilization), and payment will include all costs in connection with mobilization and demobilization as specified in that section.
- .5 Aluminum pile coverings (caps), steel through-bolts, straps, accessories, and preservative treatment are considered as incidental to the reinstallation of timber piles, and will not be measured or paid separately.
- .6 There will be no additional payment for delays or downtime incurred by marine vessel traffic, permit requirements, water quality requirements, environmental closures required by Fisheries and Oceans Canada (DFO), or shutdowns due to the Contractor's non-compliance with regulations, permits, and the Environmental Management Plan (EMP).
- .7 Failure of the Contractor to satisfy himself as to the acceptable means of undertaking the works in compliance with permits, the EMP, and regulatory agency requirements will not constitute a basis for any additional payment.

1.4 References

- .1 Canadian Standards Association (CSA):
 - .1 CAN/CSA B111-1974(R2003), Wire Nails, Spikes and Staples.
 - .2 CAN/CSA-O56-10, Round Wood Piles.
 - .3 CAN/CSA-O80 Series, Wood Preservation.
- .2 American Society for Testing and Materials (ASTM):
 - .1 ASTM A 307, Specification for Carbon Steel Bolts and Studs, 60,000 PSI Tensile Strength.
 - .2 ASTM A123/A123M, Standard Specification for Zinc (Hot-Dip Galvanized) Coatings on Iron and Steel Products.
 - .3 ASTM A153/A153M, Standard Specification for Zinc Coating (Hot-dip) on Iron and Steel Hardware.
 - .4 ASTM D 25-99(2005), Standard Specification for Round Timber Piles.

- .3 Wood Preservation Canada (WPC): “Best Management Practices for the use of Treated Wood in Aquatic and Wetland Environments (2012)”.
- .4 Fisheries and Oceans Canada (DFO): “Guidelines to Protect Fish and Fish Habitat from Treated Wood Used in Aquatic Environments in the Pacific Region, Technical Report of Fisheries and Aquatic Sciences 2314 (Hutton and Samis, 2000)”.

1.5 Definitions

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

1.6 Submittals

- .1 Provide submittals in accordance with Section 01 33 00 (Submittal Procedures).
- .2 Product Data: Submit manufacturer’s printed product literature, specifications, and datasheet in accordance with Section 01 33 00 (Submittal Procedures).
- .3 As part of the detailed Construction Work Plan, and in accordance with Section 01 33 00 (Submittal Procedures), prepare and submit a section of the Construction Work Plan that describes the methods and procedures for timber pile extraction and reinstallation at Y Jetty. Timber pile extraction and reinstallation activities must not begin until: 1) the Construction Work Plan has been reviewed and accepted by the Departmental Representative; and 2) other notifications and review have been completed as necessitated by the permits or other requirements of the Contract. At a minimum, the timber pile extraction and reinstallation method and procedures must contain the following information:
 - .1 Proposed method of extracting and driving timber piles: indicate proposed method of pile-driving. If proposed method to drive the piles utilizes vibratory piling hammer, then submit method for review by the Departmental Representative. If proposed method to drive the piles does not utilize vibratory piling hammer, then submit alternative equivalent method for review by, and the acceptance of the Departmental Representative.
 - .2 The Contractor’s method for extracting and driving timber piles designed to reduce underwater sound levels to no greater than the prescribed limits, and to monitor underwater sound levels during the pile extraction and pile-driving work.
 - .3 Impact hammers: provide manufacturer’s name, type, rated energy per blow at normal working rate, mass of striking parts of hammer, mass of driving cap, and type and elastic properties of hammer and pile cushions.

- .4 Non-impact methods of installation such as vibratory hammers, jacking, or other means: provide full details of characteristics necessary to evaluate performance.
- .5 Methods for vertical and lateral support of timber piles during pile installation.
- .6 Proposed method of pile head/tip protection during pile-driving, and proposed method of protection from abrasion and/or impact by the Contractor's plant and equipment during the work.
- .7 Pile layout drawings and planned sequence of pile-driving.
- .4 Quality Control submittals:
 - .1 Test reports: In accordance with the requirements of Section 01 33 00 (Submittal Procedures), submit three (3) copies of inspection reports for new piles from certified independent testing laboratories, indicating compliance in accordance with applicable CSA standards.
 - .2 Certificates: In accordance with the requirements of Section 01 33 00 (Submittal Procedures), submit certificates signed by manufacturer certifying that materials comply with specified performance characteristics and physical properties.

1.7 Requirements of Regulatory Agencies

- .1 The scheduling of the timber pile extraction and pile-driving work must be carried out in strict accordance with all acts, regulations, and permit requirements. The Contractor must hold harmless and protect DND from all claims, costs, and delays that could or do arise from the Contractor's non-compliance with any act, regulation, or permit requirement.
- .2 Notwithstanding the acquisition of permits by the Departmental Representative, the Contractor must investigate and satisfy itself as to the acceptable means of undertaking the works in compliance with the permits, the EMP, and regulatory agency requirements.
- .3 Notify the Departmental Representative not less than ten (10) working days prior to commencing the timber pile extraction work, and not less than twenty-four (24) hours prior to timber pile installation work.
- .4 Notify the Queen's Harbour Master not less than ten (10) working days prior to commencing the timber pile extraction work, not less than twenty-four (24) hours prior to pile installation work, and at completion of the timber piling work. Maintain liaison with the Queen's Harbour Master as the work progresses, and keep the Departmental Representative informed of all such communications.
- .5 Ensure that equipment used in construction does not block marine navigation.

- .6 Work must be carried out in accordance with the Guidelines to Protect Fish and Fish Habitat from Treated Wood used in Aquatic Environments in the Pacific Region, Technical Report 2314.

1.8 Existing Conditions and Site Information

- .1 For existing jetty conditions, refer to the Reference Drawings and Data Reports listed in Section 00 01 10 (Specification Index).
- .2 For geotechnical investigation reports, dive inspection reports, and other background data, refer to the Data Reports listed in Section 00 01 10 (Specification Index).
- .3 The Contractor is informed that debris may lie on, or be partly or fully embedded within the seabed soils in the area of the pile-driving work. For debris survey information, refer to the Data Reports listed in Section 00 01 10 (Specification Index).
- .4 The Contractor is informed that Obstructions may lie fully embedded within the seabed soils in the area of the pile-driving work.
- .5 The Contractor is informed that variable pile-extraction conditions and variable pile-driving conditions may be encountered in the work.
- .6 Notify the Departmental Representative in writing if subsurface conditions at the Work Site differ from those indicated and await further instructions from the Departmental Representative.

1.9 Operating Environment

- .1 Management of environmental effects (such as wind, tidal state, and sea state) on timber piling work is the sole responsibility of the Contractor.
- .2 The timber piles will be installed in seawater. The normal tidal range at Esquimalt Harbour is indicated on the Drawings. Extreme tidal elevations, including surge effects, will exceed the indicated tidal range.
- .3 The design ambient temperature range is from -6°C minimum to 24°C maximum.
- .4 Historical wind records taken in the vicinity of Esquimalt Harbour may be obtained from Environment and Climate Change Canada.

2. PART 2 – PRODUCTS

2.1 Materials

- .1 New round timber piles (if required):
 - .1 To CAN/CSA-056, with minimum butt size of 356 millimetre (mm) diameter (14 inches) and tip diameter related to length as indicated in

- Table A-1 of that standard. Order length of piles to suit project requirements.
- .2 Pile branding: Brand treated piles to indicate producer, in accordance with CAN/CSA-O56.
 - .3 Piles to be clean peeled. Do not damage the pile surface.
 - .4 Pile species: Coastal Douglas fir.
 - .5 Each new pile is to be supplied in one piece; splices are not permitted.
 - .6 The Departmental Representative will be sole judge of quality and dimension of piles. Remove rejected piles from site of work.
- .2 Bolts, nuts, and washers: to ASTM A307.
 - .3 Wire nails, spikes, and staples: to CAN/CSA B111.
 - .4 Pile coverings: Annealed aluminum sheet, gauge as described on the Drawings.
 - .5 Hot dip galvanize bolts, nuts, washers, and, unless otherwise specified, staples, cable clamps, pipe sleeves, spikes, and nails to ASTM A153/A153M. Galvanize other hardware to ASTM A123/A123M.
 - .6 Asbestos-containing Materials Prohibition: Any material containing any degree of asbestos is banned from use in any and all sites, designs, and projects.

2.2 Wood Preservation

- .1 Additional wood preservation of re-used timber piles is not required.
- .2 For field preservation treatment of re-used timber components, refer to Section 06 05 73 (Wood Treatment).
- .3 Treat new timber piles with wood preservative treatment in accordance with Section 06 05 73 (Wood Treatment) and WPC Best Management Practices for the Use of Treated Wood in Aquatic and Wetland Environments.

2.3 Equipment

- .1 Pile hammer: select and use vibratory pile-driving/extracting equipment of sufficient energy to suitably extract specified piles without damage from soils expected to be encountered, and to suitably install specified piles without damage into soils expected to be encountered. Only use impact hammer pile-driving equipment if accepted by Departmental Representative.
- .2 Comply with the Coasting Trade Act for vessels used for this Contract.

3. PART 3 – EXECUTION

3.1 General

- .1 The sequence of work must be as described on the Drawings.
- .2 The Contractor is responsible for all temporary conditions during construction, including moorage and loads from floating construction equipment and environmental effects during the work.
- .3 The Contractor's floating construction equipment must not impede other vessels.
- .4 Make adequate provision for access and support of piling equipment during performance of the work.
- .5 Ensure that pile extraction, pile-driving, and methods of construction do not cause marine traffic disruptions, damage to existing jetty structures or jetty hardware, damage to existing utilities, or damage to the environment. In the event that the Contractor causes such damage, then the Contractor must be responsible for all necessary repairs and at his sole expense.
- .6 Unless agreed otherwise with the Departmental Representative in writing, the Contractor must, within ten (10) working days, repair any damage made to the existing jetty structures, jetty hardware, or utilities and restore to original or better condition at the Contractor's sole expense. Failure to do so will be considered non-compliance by the Contractor as defined by the Contract.

3.2 Preparation and Protection

- .1 Take all necessary precautions, including the provision of suitable screening fences and barriers to protect public, existing structures, facilities, and services from damage due to pile extraction, pile installation, and associated works.
- .2 Protect existing jetty structures and floats, services, and work of other sections from hazards due to pile extraction and pile-driving operations and against damage caused by the Contractor's floating construction equipment, tugboats, or by other construction activities throughout the work.
- .3 Protect public and construction personnel, and adjacent structures from hazards attributable to pile extraction and pile-driving operations.
- .4 Sequence all pile extraction and pile-driving operations and methods to avoid damage to existing jetty structures and floats.
- .5 Avoid dropping, bruising, or breaking of wood fibres. Fibre slings must be used, except where accepted otherwise by the Departmental Representative.
- .6 Avoid breaking surfaces of treated piles.
- .7 Do not damage surfaces of treated piles below cutoff elevation.

- .8 Protect timber piles from damage, abrasion, or impact by the Contractor's plant and equipment during the work.
- .9 Treat cuts, breaks, or abrasions on surfaces of treated piles, bolt holes, and field cuts in accordance with CSA-O80 Series and as specified on the Drawings.
- .10 During all in-water and above-water timber pile extraction and pile-driving work, environmental protection control measures must comply with the requirements of Section 01 35 43 (Environmental Procedures), Section 01 35 13.43 (Special Project Procedures for Contaminated Sites), the EMP, and the Environmental Protection Plan (EPP).
- .11 For temporary protection of mechanical and electrical utility services (utilities protection system), refer to Section 02 41 16.01 (Structure Demolition).
- .12 For temporary protection of the existing concrete deck structure from abrasion or impact damage, refer to Section 02 41 16.01 (Structure Demolition).
- .13 For temporary fender protection of the existing steel pipe piles (pile protection system) from abrasion or impact damage, refer to Section 02 41 16.01 (Structure Demolition).
- .14 The Contractor is responsible for protecting existing structures and existing mechanical and electrical utility services from damage throughout the work.
- .15 Use silt curtain(s) around the perimeter of the pile extraction work at the Former Marine Railway, as required by Section 01 35 13.43 (Special Project Procedures for Contaminated Sites).
- .16 Do not allow buoyant items that have been demolished or detached from their original position (i.e., floating debris) to float beyond the Work Site. Do not allow such floating debris to cause any hindrance or obstacle to marine traffic and DND operations. Identify and collect such floating debris on an as-needed basis, and dispose in accordance with the Specifications.

3.3 Selection of Piles for Re-use in the Work

- .1 Timber piles that have been extracted, salvaged and chosen by the Contractor for re-use in the work are to be pre-selected by the Contractor, within twenty-four (24) hours after extraction from the seabed, as generally suitable for intended use.
- .2 Upon notification of readiness by the Contractor, with minimum notification time of twenty-four (24) hours, the Departmental Representative will inspect the pre-selected piles and either accept the piles as being generally suitable for intended use, or require the Contractor to replace any unsuitable piles with new material.
- .3 In the event that some pre-selected piles are deemed by the Departmental Representative as being unacceptable for re-use, those piles must not be re-used in the work, and the Contractor must then supply new piles for inspection by the Departmental Representative. The notification time stipulated in Clause 3.3.2

may, at the Departmental Representative's sole discretion, be waived for this inspection of new piles.

- .4 The Departmental Representative's decision as to acceptability of timber piles for re-use in the work is final.
- .5 After timber piles have been accepted by the Departmental Representative as being generally suitable for intended use, the Contractor must remove all incidental steel hardware (through-bolts, screws, drift pins, etc.), trim off the timber length (if any) that was damaged by the pile clamp during pile extraction, and make ready for reinstallation of the piles in the work. The Contractor must minimize the loss of pile length caused by this trimming operation.

3.4 Cleaning of Extracted Piles for Re-use in the Work

- .1 For cleaning of extracted piles intended for re-use in the work, refer to Section 02 41 16.01 (Structure Demolition).

3.5 Pile Extraction and Pile Installation

- .1 Carry out pile extraction and pile-driving using marine-based floating equipment in conformance with the Construction Work Plan, EMP, EPP, federal and provincial regulations, and the requirements of this section.
- .2 Carry out pile extraction and pile-driving in conformance with applicable noise by-laws, as described in Section 01 35 43 (Environmental Procedures).
- .3 Timber fender piles at Y Jetty are to be re-installed to match (after trimming of the reinstalled piles to remove damaged tops) the pre-existing top of pile elevations, as recorded by the Contractor prior to the work. No termination criteria for timber pile installation will be provided by the Departmental Representative.
- .4 If proposed method to drive the timber piles into the seabed does not utilize vibratory piling hammer, then submit alternative equivalent method for review and acceptance by the Departmental Representative, in accordance with Clause 1.6 of this section.
- .5 When the required pile embedment cannot be achieved with the proposed hammer, propose larger or alternate hammer as required and allow five (5) working days for Departmental Representative's review and acceptance.
- .6 Use work procedures and marine-based floating equipment that will ensure turbidity in the water column does not exceed the prescribed limits throughout the work.
- .7 Use pile extraction and pile-driving equipment appropriate for the soil conditions. Use pile-driving equipment that generates the minimum amount of energy necessary to drive the timber piles to the required elevation.

- .8 In the event that the Contractor's pile extraction and pile-driving equipment is inadequate to perform the work or to maintain schedule, then the Contractor must mobilize and use larger equipment suitable for the work, at the Contractor's sole expense.
- .9 At the start of pile extraction operations, and at the start of pile-driving operations, monitor underwater sound pressure levels (SPLs) to confirm that the pressures do not exceed the maximum allowable levels. In addition, monitor the SPLs each time the pile extraction (or pile-driving) methods or techniques are changed.
- .10 Underwater noise during pile extraction and pile-driving operations must be controlled and monitored in accordance with the following performance criteria. For pile extraction or pile-driving activities that may result in SPLs of greater than 206 decibels (dB) SPL_{peak} re 1 (micropascal [μPa]) at 1.0 metre (m) distance or further from the face of pile, the following mitigation measures must be employed:
 - .1 The Contractor must undertake mitigation measures that minimize the transmission of sound pressure. Potential mitigation measures may include deployment of a "bubble curtain" designed by the Contractor to surround the entire length of each pile being extracted/driven and attenuate shock waves radiating out from the pile. Additional mitigations may be available. Different mitigations apply to reduction in sound transmission (e.g., bubble curtain, isolation casing, cofferdam, cushion block), versus sound generated by the pile and the pile-driving equipment used.
 - .2 The Contractor must employ further mitigation measures to reduce the pressure wave if pile extraction/pile-driving activities result in hydrophone readings in excess of 206 dB SPL_{peak} re 1 (μPa), measured at 1.0 m distance or further from the face of pile being extracted/driven. The design of the mitigation measures will be the responsibility of the Contractor, but the mitigation methods must meet DFO requirements and adhere to the EMP, and the proposed mitigation methods must also be subject to the Departmental Representative's acceptance.
 - .3 If there is any sign of dead or injured fish within the work area, then the Contractor must suspend immediately all pile-extraction/driving activities. The Contractor must immediately notify the Departmental Representative, and implement required mitigation measures prior to recommencing pile extraction/pile-driving activities. The design of the mitigation measures will be the responsibility of the Contractor, but the mitigation methods must meet DFO requirements and adhere to the EMP, and the proposed mitigation methods must also be subject to the Departmental Representative's acceptance.
- .11 Sequence the pile extraction and pile-driving work to minimize construction duration, and in conformance with the sequence described on the Drawings.

- .12 Provide pile-extraction / pile-driving equipment and all accessories necessary to remove / install the piles as specified, and as described on the Drawings.
- .13 Use driving caps and cushions to protect piles as necessary. Reinforce pile heads if necessary. Piles with damaged heads after cut-off will be rejected by the Departmental Representative.
- .14 Use templates to hold piles securely and accurately in position while driving.
- .15 Re-install the timber locator piles in correct position and vertical alignment so that the piles maintain their original use and function over the full tidal range.
- .16 Align vibratory pile driver (or deliver hammer blows) directly along axis of pile. Ensure pile is not overstressed.
- .17 Ensure that the leads of the pile-driving equipment do not exert lateral forces on the piles during driving. No adjustment of a possible misalignment will be permitted during driving, except at the very initial stage.
- .18 Drive each pile continuously to final tip elevation as indicated on the Drawings.
- .19 Piles are to be driven so that splitting, brooming, or other damage does not occur.
- .20 Place driving helmet, cap, and cushion block combination capable of protecting pile head between top of pile and ram to prevent impact damage to pile. Use block helmet to transmit energy uniformly to pile and to minimize loss of energy.
- .21 Replace block if it is damaged, split, highly compressed, charred, or burned or has become spongy or deteriorated, with a new block.
- .22 During pile driving, restrain lateral movement of piles at intervals not exceeding 6 m over length between ground surface and driving head.
- .23 Ensure completion by day's end of installation of all piles for which installation has commenced that day.
- .24 Trim the timber length (if any) that was damaged by the pile driving shoe during pile installation. The Contractor must minimize the loss of pile length caused by this trimming operation.
- .25 Treat bolt holes and exposed ends of cut off piles as specified by Section 06 05 73 (Wood Treatment), and as indicated on the Drawings.
- .26 Install aluminum pile coverings (caps) on tops of all new and reinstalled piles immediately after treatment of exposed end; bend edges down over sides of pile, neatly trim and fasten with eight (8) large-headed galvanized roofing nails.
- .27 If conditions are encountered that make it difficult to drive a pile in the location shown and to advance the pile to the tip elevation shown on the Drawings, employ all reasonable means to advance the pile.
- .28 Installed piles will be subject to acceptance of the Departmental Representative:

- .1 The Departmental Representative will be sole judge of acceptability of each pile with respect to acceptable quality of re-used piles, depth of penetration, depth of embedment, and installation accuracy.
- .2 Do not remove pile-driving equipment from site until the Departmental Representative has accepted final driving of all piles.

3.6 Pile-Driving Tolerances

- .1 Variation of not more than 6 mm per 300 mm of pile length from vertical is permitted for plumb piles.
- .2 Center of butts: within 100 mm of location indicated.
- .3 Notwithstanding the verticality and location tolerances stipulated in Clauses 3.6.1 and 3.6.2, the reinstalled piles must fit the connection locations at the glulam waler beams at Y Jetty.
- .4 Manipulation of piles is not permitted.
- .5 Re-drive heaved piles to required tip elevation.
- .6 The specified tolerances must be met after all piles are driven.
- .7 Remove and replace damaged piles, mis-located piles, and piles driven out of alignment, and provide additional piles driven as directed.

3.7 Identification and Removal of Obstructions

- .1 Notify the Departmental Representative immediately in writing upon encountering an object which causes sudden unexpected change in penetration resistance, or deviation from specified tolerances, or prevents driving a timber pile to full penetration and which might be classified as an Obstruction. Include all pertinent details in the notification. Proceed as directed by the Departmental Representative.
- .2 If any Obstructions are encountered during timber pile-driving and are agreed by the Departmental Representative to be Obstructions, remove the obstructed pile(s), bypass the affected area after clearly marking the Obstruction location, and proceed to drive remaining piles. Leave sufficient gap to allow for Obstruction removal. After removal of Obstruction, return and attempt to complete driving of timber piles.
- .3 Record the agreed Obstruction removal effort (including the cost of labour, materials, and equipment used to remove the Obstruction and for off-site disposal) and submit to the Departmental Representative for review and acceptance.

3.8 Disposal of Obstructions

- .1 Dispose of Obstructions off site as directed by the Departmental Representative.

3.9 Damaged or Defective Piles

- .1 The integrity of the timber piles (based on the existing condition as found at the start of the work) will remain at all times the responsibility of the Contractor. Should any pile be damaged by overdriving or by pile installation techniques or other causes including attempting to pass an Obstruction, or be out of position as a result of improper survey or driving practice, the Contractor must drive an additional pile or piles in its place, as directed by the Departmental Representative. The Contractor must extract rejected piles and replace with new ones. No additional compensation will be made to the Contractor for removing and replacing piles, driving extra piles or other work made necessary through rejection of a defective or damaged pile.

3.10 Pile Extraction and Pile-Driving Records

- .1 Maintain accurate records of extraction and driving for each timber pile, including:
 - .1 Date, weather, and tidal levels.
 - .2 Type and make of hammer, stroke, and related energy.
 - .3 Other driving equipment, including water jet, driving cap, and cushion block type and thickness.
 - .4 Pile size, length, and location of pile.
 - .5 Sequence of driving piles in pre-selected pile numbering system.
 - .6 If impact hammer method is used for pile installation, record blow counts for each 305 mm of penetration for entire length of pile and for each 25 mm for the final 150 mm of penetration.
 - .7 If vibratory pile-driving method is used for pile extraction or for pile installation, record duration of active pile-driving work for each pile installed (i.e., not counting down-time), and record vibratory hammer settings (if adjustable).
 - .8 Impact rate at least every 1.0 m of penetration depth, including final set.
 - .9 Elevation of refusal where bedrock is encountered during pile installation.
 - .10 Seating procedures where relevant.
 - .11 Final tip and cut-off elevations at completion of pile installation.
 - .12 Elevation of adjacent piles before and after driving of each pile.
 - .13 Other pertinent information such as interruption of continuous driving, or pile damage.

- .2 As a component of the Daily Construction Report, provide the Departmental Representative with pile-extraction and pile-driving records for all piles extracted/driven or partly extracted/driven during the previous day.
- .3 At completion of the work, provide the Departmental Representative with one (1) copy of all pile-extraction and pile-driving records.

3.11 Repair of Damage to Existing Steel Piling or Concrete Structures

- .1 If, during the course of the work, the Contractor causes abrasion or other damage to the coating or substrate of the Y Jetty support piles, the Contractor must repair all such damage to as-new condition using equivalent steel pipe pile materials and equivalent coatings for pile repairs, to the satisfaction of the Departmental Representative, and at Contractor's own cost.
- .2 If, during the course of the work, the Contractor causes abrasion or other damage to concrete structures, the Contractor must repair all such damage to as-new condition using appropriate concrete repair products, to the satisfaction of the Departmental Representative, and at Contractor's own cost.

3.12 Waste Management and Disposal

- .1 Place materials defined as hazardous or toxic in designated containers.
- .2 Dispose of removed materials, including creosoted or treated timber components (including end pieces, wood scraps, and sawdust), to a Disposal Facility except where specified otherwise, in accordance with provincial or state regulations and/or authority having jurisdiction.
- .3 Creosoted or preservative-treated wood must not be disposed of through incineration, unless that disposal method is accepted by the Departmental Representative.
- .4 Transport material designated for disposal by accepted haulers to receiving organizations in accordance with regulations. Do not deviate from haulers and receiving organizations listed in the Construction Work Plan without prior written authorization from the Departmental Representative.
- .5 Off-load, process, treat, and dispose of timber piling debris to receiving organizations in accordance with regulations. Do not deviate from the Contractor Off-Site Offload Facility, Processing Facility, Treatment Facility, and Disposal Facility that are included in the Construction Work Plan without prior written authorization from the Departmental Representative.
- .6 Dispose of unused wood preservative at official hazardous material collections site that is permitted to accept such materials.
- .7 Do not dispose of unused preservative material into sewer system, streams, or lakes; onto ground; or in other locations where they will pose health or environmental hazards.

3.13 Cleaning

- .1 On completion and verification of performance of installation, remove surplus materials, excess materials, rubbish, tools and equipment.

END OF SECTION

1. PART 1 – GENERAL

1.1 Description

- .1 This section describes details regarding remedial dredging, Dredge Debris removal, Identified Debris removal, Suspected Unexploded Explosive Ordnance (UXO) removal, on-site barge dewatering, and dredge effluent water treatment related to remedial dredging activities. Dredging activities include Required Dredging work to remove contaminated sediments from the Work Site and potential Contingency Re-Dredging to remove Dredge Residuals or Missed Inventory contaminated materials, if the Departmental Representative's confirmation sampling and testing results indicate the need for Contingency Re-Dredging in order to meet remedial cleanup objectives and if the Departmental Representative elects to include Contingency Re-Dredging (Optional Work as shown in the Unit Price Table) as part of the Contract.
- .2 The Contractor is responsible for reviewing the anticipated water depths based on tidal elevations, the presence of structure and associated elevations relative to the Dredge Prism, and all information provided in the Specifications (including Appendices and Reference Documents), the Environmental Management Plan (EMP), and other Contract documents regarding the nature of the material to be encountered at the Work Site. The Contractor's review of these documents is intended to inform and facilitate the selection of appropriate dredging or excavation equipment, barge dewatering, dredge effluent water treatment, and in-water transportation that is appropriate for the project, as well as to develop the Construction Progress Schedule and the cash flow estimate.
- .3 Grounding of the Contractor's equipment on the seabed outside of dredge areas within the Work Site boundary shown on the Drawings, in previously dredged areas, or in areas where material placement has already occurred, during performance of the work 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 marine equipment.
- .4 The Contractor must also be responsible for dredging in Lang Cove to the Required Cut Thickness or Contingency Re-Dredging thickness (if applicable) while keeping vessels out of the Exclusion Zone (especially when dredging in DU 33), as shown on the Drawings. The Exclusion Zone is an area with sensitive archaeological items that are present on the seabed in shallow waters, thus the Contractor must incorporate archaeological monitoring because some structures from the Exclusion Zone (i.e., slipway steel rails as shown on the Drawings) may extend into this area. The Contractor must not bring vessels in the Exclusion Zone at any time or during any range of tide heights for risk of damaging the sensitive archaeological objects.
- .5 The Contractor must assume that till or bedrock material may be present within the Dredge Prism. If a till or bedrock surface is encountered within the Dredge

Prism during Required Dredging or Contingency Re-Dredging (if applicable), the Contractor must immediately notify the Departmental Representative and provide evidence as to why they believe they have encountered till or bedrock material. The Departmental Representative will review the Contractor's evidence for the presence of the till or bedrock surface. The Contractor is not required to remove the till or bedrock material to the Required Dredge Elevation or Required Cut Thickness or Contingency Re-Dredging thickness (if applicable) to achieve remedial cleanup objectives. The intent of remedial dredging is to remove contaminated sediment and not to remove till or bedrock material, which is not contaminated sediment. The Dredge Pay Volume will not include volume of till or bedrock material left un-dredged.

- .6 Dredging activities must be completed according to the sequencing and access requirements described in these Specifications, the Drawings, and the approach described in the Contractor's Construction Work Plan. Descriptions of material to be dredged (including nature and extent of contaminated sediment, material from the Leachable Metals Area, Dredge Debris, and Identified Debris) are provided in the Appendices and Reference Documents attached to the Specifications. The Contractor must review this information and use it to inform the Contractor's work.
- .7 The work includes removal of contaminated sediment and debris from the Work Site as part of Required Dredging. Contaminated sediment with the potential for lead leachate concentrations to exceed the hazardous waste Leachate Quality Standard, as indicated by sediment Toxicity Characteristic Leaching Procedure (TCLP) analysis (data available in Appendix C to these Specifications), has been identified for removal in the Leachable Metals Area as shown on the Drawings. This material located within the Leachable Metals Area requires a specific removal sequence to be performed by the Contractor as defined in Section 01 11 55 (General Instructions), and subsequent confirmation sampling and testing to be performed by the PWGSC Environmental Monitor, to confirm all material associated with the Leachable Metals Area has been removed.
- .8 The Contractor is responsible for evaluating the conditions at the Work Site to determine its own means and methods, number of and types of equipment, and whether specialized equipment or techniques may be required to conduct the dredging in nearshore areas, protect existing structures from damage or instability, prevent grounding of in-water equipment, safely remove and temporarily store Suspected UXO, and complete all dredging and material placement work by the deadline stated in Section 01 11 55 (General Instructions). Existing structures include the Y Jetty superstructure and steel pipe piles, Y Jetty mechanical and electrical utility services, existing boat ramp, previously recorded heritage ship wrecks in the Exclusion Zone, and existing riprap slope protection, as shown on the Drawings.
- .9 Dredging work must be completed using mechanical dredging equipment.

- .10 The Contractor must employ dredging techniques that result in the protection of existing structures adjacent to the work, such as the Y Jetty superstructure and steel pipe piles, Y Jetty mechanical and electrical utility services, existing boat ramp, previously recorded heritage ship wrecks in the Exclusion Zone, existing riprap slope protection, and the archaeological items in the Exclusion Zone as shown on the Drawings. Contractor must employ extreme care and take all practicable precautions when conducting work adjacent to the Y Jetty structure and fender piles, and dredging equipment is prohibited from operating within the specific dredge offsets identified on the Drawings to protect the Y Jetty structure.
- .11 Land-based excavation of Dredge Units (DUs) 29 and 30 to remove shoreline riprap is allowed.
- .12 The Contractor must plan its work to remove sediment, encountered Dredge Debris, Identified Debris, and Suspected UXO to the Required Dredge Elevations or Required Cut Thickness as shown on the Drawings, and if the Departmental Representative elects to include Contingency Re-Dredging as part of the Contract (Optional Work as shown in the Unit Price Table), plan for additional contingency removal for Contingency Re-Dredging material, as described in this section.
- .13 The Contingency Re-Dredging for removal of either residuals and/or Missed Inventory contamination may be required if confirmation sampling and testing results indicate that there is either Missed Inventory or that residuals concentrations of contaminants in the sediment exceed criteria following completion of Required Dredging and if the Departmental Representative elects to include Contingency Re-Dredging as part of the Contract. If the Departmental Representative directs the Contractor to perform Contingency Re-Dredging based on the testing results, only one pass of Contingency Re-Dredging will be performed. No Contingency Re-Dredging will occur in DU 27, 29, 30, 32, 34, 38, and 41. The Contractor must include Contingency Re-Dredging in scheduling and construction sequencing of work to complete the work by the Substantial Performance date, if the Departmental Representative elects to include Contingency Re-Dredging as part of the Contract.
- .14 The Contractor becomes the owner of, and is responsible for, any soil, sediment, debris, dredge effluent water, or other material once it is removed, dredged, or excavated from the Work Site to be loaded on a vehicle, barge, or other vessel for transport to a Contractor Off-Site Offload Facility, Processing Facility, Disposal Facility, or Treatment Facility, with the exception of Suspected UXO or structures, ionizing radiation items, or archaeologically significant items that may be valued for their historical, archaeological, architectural, and paleontological significance as determined by the Archaeological Monitor. Exception items remain the property of Canada.
- .15 The Contractor must use a sealed (watertight) barge for all dredging performed at the Work Site and all in-water barge transportation. Collect, store, treat as necessary, and discharge or dispose of excess water in the sealed haul barges in

such a manner that meets the water quality requirements described in Section 01 35 13.43 (Special Project Procedures for Contaminated Sites) and Section 01 35 43 (Environmental Procedures), and performance objectives of the EMP.

- .16 The Contractor is not allowed to passively dewater dredge material on the haul barge within the Work Site in the DUs identified on the Drawings and in the EMP, or during any in-water transportation. Passive dewatering on barges consists of drainage of dredge effluent water from the sealed barge in a controlled manner back into the Work Site waters after passing through filter media (such as filter fabric). The Contractor is responsible for fully understanding these water quality requirements, monitoring its work and complying with EMP requirements and all permit conditions.
- .17 The Contractor is responsible for selecting the appropriate dredging equipment that considers the conditions at the Work Site, character of materials, and existing structures adjacent to the dredge areas that may be encountered during dredging operations. By submitting its Tender, the Contractor acknowledges that it has carefully considered these conditions and other project considerations and included appropriate means and methods for dredging activities.
- .18 Table 35 20 23-1 provides the estimated surface area and Dredge Pay Volume associated with Required Dredging for each DU. The table is presented for Contractor convenience only.

Table 35 20 23-1
Dredge Pay Volume Summary by Dredge Unit

Dredge Unit (DU)	Surface Area (m²)	Required Dredging, Dredge Pay Volume (m³)	Assumed Optional Contingency Re-Dredge Volume (m³)
DU 1	1,600	1,800	300
DU 2	1,800	2,800	300
DU 3	2,300	2,800	400
DU 4	200	200	50
DU 5	200	300	50
DU 6	400	400	50
DU 7	900	1,200	150
DU 8	800	900	150
DU 9 (Leachable Metals Area)	100	200	50
DU9 (Remaining Area)	200	300	50

Dredge Unit (DU)	Surface Area (m²)	Required Dredging, Dredge Pay Volume (m³)	Assumed Optional Contingency Re-Dredge Volume (m³)
DU 10	200	200	50
DU 11	600	600	100
DU 12	800	1,600	150
DU 13	600	1,200	100
DU 14	2,000	3,400	350
DU 15	3,000	6,400	500
DU 16	200	200	50
DU 17	200	600	50
DU 18	900	900	150
DU 19	2,500	3,100	400
DU 20	1,300	1,800	250
DU 21	500	900	100
DU 22	500	300	100
DU 23	300	600	50
DU 24	100	200	50
DU 25	600	800	100
DU 26	700	1,300	150
DU 27	900	1,200	0
DU 28	900	1,000	150
DU 29	100	100	0
DU 30	300	200	0
DU 31	400	500	50
DU 32	400	600	0
DU 33	1,300	2,000	200
DU 34	1,000	1,600	0
DU 35	100	200	50
DU 36	300	200	50
DU 37	800	1,400	150
DU 38	300	500	0
DU 39	100	100	50
DU 40	800	1,400	150
DU 41	700	1,100	0
TOTAL	31,900	47,100	5,100

Notes:

- (1) Volumes presented in this table are estimated only and must not be used for basis of measurement and payment. Refer to the Unit Price Table for Tender volumes associated with this work.
- (2) The Dredge Pay Volume and Contingency Re-Dredge Volume include Payable Overdredge Allowance. Pay Volumes for DUs 29 and 30 include the volume of existing riprap armor that must be removed, stockpiled, and re-used within Material Placement Area C3.
- (3) Pay Volumes include all required 3H:1V daylight slopes around the perimeter of the extents of dredging, but does not include assumed slough volume and internal vertical slopes between dredge units, as shown on the Drawings.
- (4) Contingency Re-Dredge Volume is an assumed quantity for the optional Tender Item CONTINGENCY RE-DREDGING (under Optional Work as shown in the Unit Price Table).
- (5) Dredge Pay Volume within DU 9 contains the Leachable Metals Area. The Leachable Metals Area includes an estimated 200 m³ of Dredge Pay Volume within DU9.

1.2 Measurement and Payment Procedures

- .1 Measurement for DREDGING will be by the in-situ cubic metre (m³), based on comparison of the Contractor's Pre-and Post-Construction Surveys. Measurement for CONTINGENCY RE-DREDGING will be by the in-situ cubic metre (m³), based on comparison of the Contractor's Pre-and Post-Construction Surveys.
- .2 Payment for Required Dredging, in-water transportation to the Processing Facility, barge dewatering (including passive dewatering, where allowed), dredge effluent water treatment (as applicable) of dredge materials will be made by the in-situ m3 at the Tender Item price for DREDGING as shown in the Unit Price Table. Payment for Contingency Re-Dredging, in-water transportation to the Processing Facility, barge dewatering (including passive dewatering), and dredge effluent water treatment of dredge materials (as applicable) will be made by the in-situ m3 at the Tender Item price for CONTINGENCY RE-DREDGING under Optional Work, as shown in the Unit Price Table. Final payment for Required Dredging under the Tender Item price for DREDGING, and Contingency Re-Dredging under the Tender Item price for CONTINGENCY RE-DREDGING will be based on the final measurement of Dredge Pay Volumes, and final payment will be reconciled with monthly progress payments to determine the amount of final payment.
 - .1 The actual in-situ volume of dredge material that the Contractor removes in order to achieve the Required Dredge Elevations, Required Cut Thickness, Residuals Contingency Re-Dredging Minimum Cut Thickness (if applicable), and Missed Inventory Contingency Re-Dredging Minimum Cut Thickness (if applicable) is dependent upon the Contractor's dredging means and methods. The Payable Overdredge Allowance is the maximum extent of dredging below the Required Dredge Elevation or Required Cut Thickness that will be paid as part of Required Dredging. The Residuals Contingency Re-Dredging Payable Overdredge Allowance and Missed Inventory Contingency Re-Dredging Payable Overdredge Allowance are the maximum extent of dredging below the Residuals Contingency Re-

Dredging Minimum Cut Thickness or Missed Inventory Contingency Re-Dredging Minimum Cut Thickness, respectively, that will be paid as part of Contingency Re-Dredging. Dredging below any Payable Overdredge Allowance is considered Excessive Dredging and will not be paid. The Contractor must select its means and methods to conduct its dredging work to stay within any of the Payable Overdredge Allowance limits to the extent practicable. Should the Contractor's means and methods result in Excessive Dredging, the Contractor must account for the total dredge volume in its Tender Item price for Dredge Pay Volume under DREDGING, and Contingency Re-Dredge Volume under CONTINGENCY RE-DREDGING. The Dredge Pay Volume and Contingency Re-Dredge Volume will be determined by calculating the total amount of in-situ cubic metres (m³) of material dredged (based on comparison of the Dredging Pre-Construction and Required Dredging Post-Construction or Contingency Re-Dredging Post-Construction Surveys, as applicable), minus Excessive Dredging.

- .2 Slough Material from the daylight slopes surrounding the perimeter of the Dredge Prism that does not require a 3 horizontal to 1 vertical (3H:1V) slope and internal vertical slopes between DUs, as shown on the Drawings and as described in Note 3 of Table 35 20 23-1 in this Specification section, must be incidental to the work and will not be included in the Dredge Pay Volume.
- .3 No separate payment will be made for work associated with removal, barge management, and in-water transportation of Dredge Debris, which includes any solid waste materials other than sediment excavated as part of the dredging operations, such as timber piles and pile stubs, logs, wire, cable, rails that may be encountered (exclusive of the identified Former Marine Railway structure), steel bands, anchors, lumber, trash, concrete, etc. Activities associated with removal, barge management, and in-water transportation of Dredge Debris, which includes removal and handling of all timber piling and pile stubs within DU areas, is incidental to the dredging work and will be paid under the Tender Item for DREDGING as described under the definition for Debris in Section 01 11 55 (General Instructions).
- .3 Measurement for the REMOVAL OF IDENTIFIED DEBRIS, TRANSPORTATION, AND DISPOSAL will be by the tonne of Identified Debris removed and segregated, as determined from certified scales and as accepted by the Departmental Representative. Failure to keep Identified Debris segregated from Dredge Debris will result in the combined debris to be considered Dredge Debris. Dredge Debris is incidental to the work and not measured or paid for separately, as described in Section 01 11 55 (General Instructions) and this Specification section). Demolition Debris related to the Former Marine Railway will be paid for separately as identified in Section 02 41 16.01 (Structure Demolition).

- .4 Payment for the REMOVAL OF IDENTIFIED DEBRIS, TRANSPORTATION, AND DISPOSAL will be by the tonne per the Tender Item price as shown in the Unit Price Table. Payment will be full compensation for removal, and segregating of Identified Debris, offloading, transportation, and disposal as specified and as shown on the Drawings. Payment for the work will be made when the Contractor provides the Certificate of Disposal from the Disposal Facility. Certificates of Disposal will be reported as a tonnage measurement.
- .5 Measurement for DISPOSAL OF TIMBER PILES DURING DREDGING will be by the tonne of timber pile Dredge Debris segregated, as determined from certified scales and as accepted by the Departmental Representative.
- .6 Payment for the DISPOSAL OF TIMBER PILES DURING DREDGING will be by the tonne per the Tender Item price as shown in the Unit Price Table. Payment will be full compensation for offloading, transportation, and disposal as specified. Removal and handling of the timber pile Dredge Debris is incidental to DREDGING. Payment for DISPOSAL OF TIMBER PILES DURING DREDGING will be made when the Contractor provides the Certificate of Disposal from the Disposal Facility. Certificates of Disposal will be reported as a tonnage measurement.
- .7 Measurement for STAND-BY TIME – IN-WATER will be by the hour for the duration work is stopped as directed by the Departmental Representative.
- .8 Payment for STAND-BY TIME – IN-WATER will be by the hour per the Tender Item price as shown in the Unit Price Table. Payment will be full compensation for the duration work is stopped as directed by the Departmental Representative:
 - .1 If the Departmental Representative or the UXO Qualified Personnel determines that a suspected UXO is unsafe to move, or is unable to determine if it is safe to move, the Departmental Representative may direct the Contractor to stop work, and will contact DND’s Explosive Ordnance Disposal (EOD) Team to further assess and dispose of the Suspected UXO. The Contractor will be paid for that time by the hour under the Tender Item for STAND-BY TIME – IN-WATER for the directed stop duration. Notification and requirements for payment for this Tender Item are described in 01 11 55 (General Instructions).
 - .2 If the Departmental Representative directs work to stop due to CFB Esquimalt operational needs within the Work Site that occur with less than eight (8) hours’ notice, the Contractor will be paid for that time by the hour under the Tender Item for STAND-BY TIME – IN-WATER for the directed stop duration. Notification and requirements for payment for this Tender Item are described in 01 11 55 (General Instructions).
 - .3 If structures, sites, or things that may be valued for their historical, archaeological, architectural, and paleontological significance are encountered during dredging at the Work Site as determined by the Archaeological Monitor and accepted by the Departmental Representative,

or there are observations of herring spawn as described in Section 01 35 43 (Environmental Procedures), the Departmental Representative will direct work to stop. The Contractor will be paid for that time by the hour under the Tender Item for STAND-BY TIME – IN-WATER for the directed stop duration. Notification and requirements for payment for this Tender Item are described in 01 11 55 (General Instructions).

1.3 Related Sections

- .1 Section 01 11 55 (General Instructions)
- .2 Section 01 33 00 (Submittal Procedures)
- .3 Section 01 35 00.50 (Special Procedures for Harbour Control)
- .4 Section 01 35 13.43 (Special Project Procedures for Contaminated Sites)
- .5 Section 01 35 43 (Environmental Procedures)
- .6 Section 01 45 00 (Quality Control)
- .7 Section 02 21 13 (Surveying and Positioning Control)
- .8 Section 02 41 16.01 (Structure Demolition)
- .9 Section 35 20 23.01 (Offloading, Material Processing, Transportation, and Disposal)

1.4 Definitions

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

1.5 Submittals

- .1 Submittals must be in accordance with Section 01 33 00 (Submittal Procedures).
- .2 Submit a detailed Construction Work Plan within ten (10) working days following Contract Award for review and acceptance by the Departmental Representative.
- .3 As part of the detailed Construction Work Plan, the Contractor must prepare a section that describes the approach that will be implemented for Identified Debris removal, dredging, barge dewatering (including passive dewatering), dredge effluent water treatment (if applicable), in-water transportation, and material processing. Identified Debris removal, dredging, barge dewatering, dredge effluent water treatment, and in-water transportation activities must not begin until: 1) the Construction Work Plan, the Environmental Protection Plan (EPP), and Quality Control Plan (QCP) have been reviewed and accepted by the Departmental Representative; and 2) Queen’s Harbour Master-required notifications and review have been completed. At a minimum, the dredging, barge dewatering (including passive dewatering), dredge effluent water treatment

(if applicable), and in-water transportation to the Processing Facility approach description must contain the following information:

- .1 Equipment Layout, including position of dredge(s), Wastewater Treatment and Processing Facility on a floating platform (if used), and in-water transport barges for work to be completed in the Work Site, including for work to be completed in the Leachable Metals Area.
- .2 Reference to the Construction Progress Schedule that identifies timing and sequencing for completion of dredging and in-water transportation activities, as they relate to other major elements of the work.
- .3 Number, types, and capacity of equipment to be used, including names of dredge(s) and other marine vessels, registration numbers of all vessels, and last port of call of each vessel.
- .4 In-water transportation route.
- .5 Means and methods for completion of dredging, barge dewatering, dredge effluent water treatment, sediment processing to remove Suspected UXO, and in-water transportation activities:
 - .1 Methods, procedures, and equipment to be used for Required Dredging and Contingency Re-Dredging (if applicable) activities.
 - .2 Methods, procedures, and equipment to be used for Required Dredging activities in Slope Dredging areas.
 - .3 Methods, procedures, and equipment to be used for material removed from the Leachable Metals Area.
 - .4 Methods, procedures, and equipment to be used during dredging adjacent to the Exclusion Zone and how the Contractor will complete the work while keeping equipment out of the Exclusion Zone.
 - .5 Methods, procedures, and equipment to be used for segregating, managing, and disposing of piles and pile stubs encountered during dredging activities.
 - .6 Methods, procedures, and equipment to be used for anchoring floating equipment.
 - .7 Methods, procedures, and equipment to be used to provide lights, lighted buoys, or other required markings to warn other vessels of the presence of floating equipment and anchoring lines.
 - .8 Methods, procedures, and equipment to be used for all barge dewatering activities (including passive dewatering or addition of amendments if applicable) and associated dredge effluent water treatment of dredge material.

- .9 Methods, procedures, and equipment to be used for in-water transportation of contaminated dredge material, Dredge Debris, Identified Debris, Demolition Debris, and segregation and temporary storage of Suspected UXO to the Processing Facility, including procedures for preventing release of sediment and water during transportation, and transfer between barges and sediment processing. Identified Debris and timber piling and pile stubs must remain segregated at all times.
- .10 Methods, procedures, and equipment for protecting existing structures, including the Y Jetty superstructure and steel pipe piles, Y Jetty mechanical and electrical utility services, existing boat ramp, and previously recorded heritage ship wrecks in the Exclusion Zone (as shown on the Drawings), to be maintained in place during the work.
- .6 Identified Debris and Dredge Debris Removal:
 - .1 Procedures and equipment for collecting, segregating, and disposing of submerged and floating debris encountered prior to and during dredging and demolition operations.
 - .2 Procedures and equipment for offloading, segregating, stockpiling (if necessary), transport, weighing, and disposal of Identified Debris and Dredge Debris. This information must include methods to prevent spillage of debris back into the waterway during offloading and cleanup of the barge.
 - .3 Methods and procedures for the full removal of timber piles and pile stubs within the Dredge Prism, to the extent practicable, prior to using breaking or cutting methods such that the remaining portion of timber piles must not be higher than the pre-construction seabed elevation.
 - .4 Methods and procedures for maintaining segregation of dredged sediment, timber piles and pile stubs, and Identified Debris.
- .7 Methods and procedures for managing Suspected UXO as detailed in Section 35 20 23.01 (Offloading, Material Processing, Transportation, and Disposal).
- .4 Daily Reporting: As part of the Daily Construction Report, the Contractor must provide to the Departmental Representative a daily record of the area(s) dredged; the estimated Dredge Pay Volume removed; estimated Excessive Dredging volume removed; estimated Contingency Re-Dredge Volume removed (if applicable); estimated tonnage of Identified Debris; estimated tonnage of Dredge Debris removed and transported to the Contractor Off-Site Offload Facility; number of haul barge trips to the Contractor Processing Facility; estimated volume and tonnage of dredge materials (including Demolition Debris and

Suspected UXO); material from the Leachable Metals Area; estimated quantities of Suspected UXO safe/unsafe for transportation; estimated quantities of archaeological items observed, retained, and disposed of; Progress Surveys; and a summary of other details of the work. Once a week, the Daily Construction Report must also include a cumulative summary (e.g., number, type, and disposition) of all Suspected UXOs and archaeological items observed, found, or handled. The Contractor must include a checkbox within the Daily Construction Report to confirm that equipment and barges have been adequately secured overnight. The Contractor must also provide certification of seaworthiness of loaded barges with the Daily Construction Report. This daily record must be submitted to the Departmental Representative the morning following completion of the work for that day as part of the Daily Construction Report. The Daily Construction Report must be signed by Contractor's site superintendent and quality control manager.

- .5 Monthly progress claims: The Contractor must submit to the Departmental Representative all barge displacement sheets, truck scale tickets and manifests, and Certificates of Disposal, and any other required backup documentation, as part of the Contractor monthly progress claim.

1.6 References

- .1 British Columbia Environmental Management Act (SBC 2003, Chapter 53).
- .2 Draft Range Clearance and Unexploded Explosive Ordnance (UXO) Activities Manual B-GL-381-003/TS-000 dated 12 April 2011.
- .3 Hazardous Waste Regulation (HWR), B.C. Reg. 63/88.
- .4 Canadian Transportation of Hazardous Goods Act – Transportation of Hazardous Goods Regulation.

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 may, at the Departmental Representative's sole discretion, inspect the dredging, barge dewatering, dredge effluent water treatment, and in-water transportation for the Departmental Representative's quality assurance purposes. Departmental Representative inspection will in no way release the Contractor from its obligation to comply with the Specifications and all permits and will in no way be construed as acceptance of work.

1.8 Environmental Protection

- .1 Dredging, barge dewatering, dredge effluent water treatment, Identified Debris removal, demolition, and in-water transportation activities must be performed in

accordance with environmental protection requirements, as stated in Section 01 35 13.43 (Special Project Procedures for Contaminated Sites), Section 01 35 43 (Environmental Procedures), the EMP, the Contractor's accepted EPP, and in accordance with all applicable permits.

1.9 Regulatory Requirements

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

1.10 Site Information

- .1 Character of Materials and Site Conditions:
 - .1 Investigations were performed to characterize the physical, chemical, and leachate quality of the dredge material. Detailed results from geotechnical and chemical testing of the sediments are provided in the attached Appendices and Reference Documents.
 - .2 Surveys of seabed, Identified Debris, and structures adjacent to the dredging areas were conducted to assist the Contractor in evaluating the potential nature and extent of debris and structural condition of infrastructure adjacent to locations where dredging will be performed. Results of surveys and other additional relevant site information are provided in the attached Appendix E of the Specifications and Reference Documents.
 - .3 Jet probe data were collected within and adjacent to the Work Site to assess for the presence of bedrock, riprap, or other hard materials within the Dredge Prism. The Contractor must anticipate variations in the field conditions from what is shown on the Drawings. Bedrock may also be encountered within the Dredge Prism at elevations above the Required Dredge Elevation. These jet probe survey results are provided in Appendix E.
 - .4 The Contractor must satisfy itself regarding the nature of materials present at the Work Site prior to Tender. The type of materials encountered at the Work Site may vary from the conditions described in the attached Appendices and Reference Drawings. Variations in the type of materials encountered may occur that do not differ materially from those indicated in the Specifications, and if encountered, will not be considered as basis for claims due to differing Work Site conditions.
 - .5 The Contractor must assume that all waste materials (i.e., dredge material, Dredge Debris, Identified Debris, and Demolition Debris), outside of the footprint designated as the Leachable Metals Area as shown on the Drawings, will be transported and properly disposed of at an off-site Disposal Facility as IL+ material (i.e., material with concentrations

exceeding “Industrial Land” [IL] use standards) as defined by the British Columbia Contaminated Sites Regulation (BC CSR), or an equivalent waste categorization level, minimum of Subtitle D, accepted by the Disposal Facility if disposed of in the United States, and in accordance with Laws and Regulations and as required in Section 35 20 23.01 (Offloading, Material Processing, Transportation, and Disposal). Recycling or beneficial re-use of the waste materials is prohibited.

- .2 Leachable Metals Area:
 - .1 Marine sediments will be removed from the Leachable Metals Area, as shown on the Drawings, and as described in Section 01 11 55 (General Instructions) and Section 35 20 23.01 (Offloading, Material Processing, Transportation, and Disposal). Extents of contaminated material will be confirmed by the Departmental Representative in the field after removal of initial anticipated extents of the Leachable Metals Area.
 - .2 No sediment designated for removal from the Work Site has been identified as Hazardous Waste Quality Materials under the British Columbia Hazardous Waste Regulation (BC HWR), with the potential exception of sediment to be removed from the Leachable Metals Area as described in Section 01 11 55 (General Instructions). The Contractor must stabilize the sediment from the Leachable Metals Area, and the stabilization work must occur within Esquimalt Harbour.
 - .3 If Hazardous Waste Quality Materials are encountered outside of the Leachable Metals Area, the Contractor should immediately notify the Departmental Representative. The encountered Hazardous Waste Quality Materials must be disposed of in accordance with applicable provincial and federal environmental regulations at an approved Disposal Facility in accordance with Laws and Regulations and as required in Section 35 20 23.01 (Offloading, Material Processing, Transportation, and Disposal).
- .3 Marine sediment with polychlorinated biphenyls (PCBs) at concentrations greater than 2 parts per million (ppm).
 - .1 Marine sediments with PCBs at concentrations greater than 2 ppm, and less than 50 ppm, will be removed as part of this work for permanent disposal at a Disposal Facility. Sediment PCB data are located in Appendix C to these Specifications.
- .4 Identified Debris and Dredge Debris:
 - .1 Contractor must anticipate encountering Identified Debris and Dredge Debris during dredging operations that are removable by the dredge plant. Identified Debris target locations and former overwater structure footprints where there are higher amounts of Dredge Debris, including timber piles, are shown on the Drawings (and provided also in Appendix E of these

- Specifications). Available as-builts of former historic overwater structures to inform timber piling quantities estimates that may be encountered during dredging are provided in Appendix F. Should Dredge Debris be encountered that cannot be removed using the dredge plant, immediately notify the Departmental Representative and the Departmental Representative will work with the Contractor to determine its disposition.
- .2 Dredge Debris includes the removal of timber piles or pile stubs encountered during dredging that are not part of identified structures to be demolished or relocated and reinstated. There is an estimated 1,500 to 2,500 timber piles that may be encountered during dredging. The Contractor must attempt to remove the entire length of piles and pile stubs within the Dredge Prism. In the event that pile breakage occurs during extraction, the Contractor must make reasonable efforts to extract the broken portion of the pile(s). Pile remnants must not remain above final grade of seabed.
 - .3 Dredge Debris material potentially may not be suitable for disposal at the permitted Disposal Facility combined with dredge material. The Contractor must coordinate with the Disposal Facility to determine whether Identified Debris and Dredge Debris needs to be screened out of the dredge material prior to upland transport and disposal in accordance with Section 35 20 23.01 (Offloading, Material Processing, Transportation, and Disposal). The Contractor is allowed to propose an alternate Disposal Facility, but its permit must be reviewed and accepted by the Departmental Representative prior to sending any Identified Debris and Dredge Debris material to the alternate Disposal Facility. The change in Disposal Facility will be incidental to the work at no extra cost to Canada.
 - .4 Identified Debris and timber piling Dredge Debris must be segregated from other dredge materials for separate measurement and payment for disposal. Identified Debris, Dredge Debris, and timber piling and pile stubs must be disposed at a permitted Disposal Facility and in accordance with applicable local, provincial, state, and federal regulations and Section 35 20 23.01 (Offloading, Material Processing, Transportation, and Disposal).
 - .5 The Contractor may assume that there is no hazardous waste in the debris for tendering purposes. The Contractor must immediately notify the Departmental Representative if any Identified Debris and Dredge Debris is encountered at any time during dredging or subsequent handling that is considered hazardous waste or Hazardous Waste Quality Material, and the Departmental Representative will determine its disposition.
- .5 Suspected UXO (During Dredging Operations):

- .1 Suspected UXO of an unknown quantity may be encountered during dredging operations. Suspected UXO may consist of UXO, discarded military munitions, exploded ordnance, discarded military munitions, munitions scrap, small arms ammunition, and explosive residue. Others may refer to these items as duds, blinds, munitions, explosives of concern, or hazardous explosive ordnance. A test dredging program performed within the Work Site was completed and multiple small arms munitions were encountered during subsequent segregation of the dredge material. Results of the test dredging program are provided in Appendix E.
- .2 The Contractor must provide UXO Qualified Personnel on call for chance find call-outs in the event Suspected UXO are identified during dredging activities at the Work Site and assess whether Suspected UXO found during dredging is deemed safe or not safe to move in accordance with the *Draft Range Clearance and Unexploded Explosive Ordnance (UXO) Activities Manual*, provided in Appendix A. If the Contractor encounters Suspected UXO that are deemed unsafe to move during dredging operations, the Contractor must immediately call 911 and notify the operator that they are working at CFB Esquimalt and then notify the Departmental Representative, and take safety precautions, to be described as part of the Contractor's Construction Work Plan and the Contractor's Health and Safety Plan.
- .3 If the Departmental Representative or the UXO Qualified Personnel determines the item is unsafe to move, or is unable to determine if it is safe to move, the Departmental Representative may direct the Contractor to stop work, and will contact DND's EOD Team to further assess and dispose of the Suspected UXO.

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 (collectively termed as misplaced materials), the Contractor must promptly recover and remove the misplaced materials. The Contractor must give immediate verbal notice, followed by written confirmation, of the description and location of such misplaced materials to the Departmental Representative and must mark and buoy such misplaced materials until they are removed.
- .2 Should the Contractor refuse, neglect, or delay compliance with this requirement, such misplaced materials may be removed by the Departmental Representative, 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, and must not pass costs to Canada.

- .4 Any contaminated sediments that are spilled from a haul barge into any waters must be reported per the requirements defined in Section 01 35 43 (Environmental Procedures).

2. PART 2 – PRODUCTS – NOT USED

3. PART 3 – EXECUTION

3.1 Sequencing

- .1 Construction sequencing requirements are described in Section 01 11 55 (General Instructions). The Contractor must conduct its dredging work according to those sequencing requirements in addition to the more detailed sequencing considerations associated with dredging, barge dewatering, dredge effluent water treatment, and in-water transportation activities.
- .2 Dredging, barge dewatering, dredge effluent water treatment, and in-water transportation activities must not begin until the Departmental Representative has completed review and accepted the Construction Work Plan, EPP, and QCP.
- .3 Removal of Identified Debris and Dredge Debris, dredging, barge dewatering, dredge effluent water treatment, and in-water transportation activities must not begin until the Departmental Representative has completed a review of and accepted the Construction Work Plan.
- .4 Removal of Identified Debris may be performed prior to dredging or concurrently with dredging activities. Identified Debris must be segregated from any Dredge Debris encountered in order to track the quantity of Identified Debris.
- .5 The Contractor must select its means and methods to conduct its dredging work to stay within the Payable Overdredge Allowance limits to the extent practicable.
- .6 Once Required Dredging activities are considered by the Contractor to be complete within a Work Zone, the Contractor must conduct a Post-Construction Survey (for Required Dredging) over the Work Zone footprint to verify that Required Dredge Elevations or Required Cut Thickness have been met. If high spots remain above the Required Dredge Elevations or the Required Cut Thickness, with the exception of bedrock or till verified by the Departmental Representative, the Contractor must remove such high spots to the satisfaction of the Departmental Representative and perform an updated Post-Construction Survey, at the Contractor's own cost.
- .7 Once any remaining high spots are removed and an updated Post-Construction Survey is completed, the Contractor must allow the Departmental Representative three (3) working days to review the Contractor's Post-Construction Survey and provide acceptance of the work as complete for Required Dredging in that Work Zone. The Departmental Representative-accepted Dredging Post-Construction Survey must be used to compare against the Dredging Pre-

- Construction Survey for measurement and payment purposes for Required Dredging.
- .8 After completing Required Dredging in that Work Zone, and acceptance of the Post-Construction Survey by the Departmental Representative, the Departmental Representative will conduct post-dredge confirmation sampling within that Work Zone.
 - .9 The Contractor must plan for up to ten (10) working days (referred to as the Contingency Re-Dredge Decision Duration) of no site work within the Work Zone, following acceptance of the Required Dredging Post-Construction Survey, for the Departmental Representative to conduct post-dredge confirmation sampling, receive confirmation sampling results, and inform the Contractor whether Contingency Re-Dredging activities will be required. The Contractor is expected to develop the Construction Progress Schedule to account for this required downtime and utilize the existing equipment to perform work in other Work Zones during this downtime as allowed in the construction sequencing requirements described in Section 01 11 55 (General Instructions). The costs associated with this Contingency Re-Dredge Decision Duration is incidental to the work and the Contractor must account for these costs in the Tender Items for DREDGING under Base Work and CONTINGENCY RE-DREDGING, under Optional Work in the Unit Price Table.
 - .10 If the Departmental Representative elects to include Contingency Re-Dredging as part of the Contract, the Contractor must comply with the following requirements during the Contingency Re-Dredge Decision Duration:
 - .1 The Contractor must complete all required work in a continuous manner (i.e., do not leave gaps in time between work activities unless directed by Departmental Representative or during the Contingency Re-Dredge Decision Duration). The Contractor is allowed to temporarily relocate its equipment to perform work activities in other Work Zones (with the exception of the construction sequencing limitations presented in Section 01 11 55 [General Instructions]) during the Contingency Re-Dredge Decision Duration to minimize equipment downtime and/or help achieve the Substantial Performance date.
 - .2 Prior to removal of any of the Contractor's equipment from the Work Site during this period, the Contractor must obtain acceptance in writing from the Departmental Representative and decontaminate the equipment.
 - .3 The Contractor must relocate the equipment to another location to provide access for the Departmental Representative to perform the post-dredge confirmational sampling.
 - .4 If the Contractor elects to keep their equipment at the Work Site during this period, the Contractor must propose a temporary moorage location for the equipment to the Departmental Representative. The temporary

- moorage location must be reviewed and accepted by the Departmental Representative prior to mooring the equipment at that location.
- .11 Following receipt of confirmation sampling results and evaluation of the data by the Departmental Representative, and if the Departmental Representative elects to include Contingency Re-Dredging as part of the Contract, the Departmental Representative will direct the Contractor to complete one or more of the following activities:
- .1 Complete Contingency Re-Dredging within specified area(s) in the Work Zone to remove Dredge Residuals in locations directed by the Departmental Representative.
 - .2 Complete Contingency Re-Dredging within specified area(s) in the Work Zone to remove Missed Inventory in locations directed by the Departmental Representative.
 - .3 Conduct no additional dredging activities.
- .12 Once Contingency Re-Dredging activities are considered by the Contractor to be complete within the Work Zone, the Contractor must conduct a Post-Construction Survey (for Contingency Re-Dredging) over the Work Zone footprint to verify that required Contingency Re-Dredging activities are complete. If the Departmental Representative determines that Contingency Re-Dredging has not been completed, the Contractor must complete Contingency Re-Dredging work to the satisfaction of the Departmental Representative and update the Post-Construction Survey at no additional expense to the Departmental Representative.
- .13 Once Contingency Re-Dredging is accepted as complete within the Work Zone, the Departmental Representative may choose to collect additional samples of the dredge area. The Contractor must provide the Departmental Representative access to collect these additional samples. No additional Contingency Re-Dredging will be required based on this sampling and no additional Contingency Re-Dredge Decision Duration will occur.
- .14 If the Departmental Representative elects to include Contingency Re-Dredging as part of the Contract, the Departmental Representative-accepted Contingency Re-Dredging Post-Construction Survey must be used to compare against the accepted Required Dredging Post-Construction Survey for measurement and payment purposes to determine the payable volume for Contingency Re-Dredging as part of the Contingency Re-Dredge Volume paid under the Optional Work Tender Item for CONTINGENCY RE-DREDGING.
- .15 No Contingency Re-Dredging activities will occur in DUs 27, 29, 30, 32, 34, 38, and 41, as shown on the Drawings.

3.2 Identified Debris Removal

- .1 The seabed in the vicinity of the Y Jetty and Lang Cove may have been used historically as an unapproved disposal area. The Contractor must be especially

vigilant during Identified Debris removal, in case the work uncovers any Suspected UXO or other hazardous substances or dangerous items. If any UXO is suspected or found, then stop work immediately, clear the Work Site of all personnel, and report to Departmental Representative. The Contractor's UXO Qualified Personnel must also be available to respond to chance finds of Suspected UXO at the Work Site during remedial dredging and other in-water activities.

- .2 Remove all Identified Debris items as identified in the Y Jetty Hazard Debris Sweep Report, the Lang Cove Perimeter Hazard Debris Sweep Report (Appendix E), and the Drawings. The Contractor must anticipate encountering additional debris that has not been identified in these reports.
- .3 Ensure that water quality (turbidity) requirements are met during removal of Identified Debris, in accordance with the EMP.
- .4 The Contractor must anticipate that, in addition to the individual items of Identified Debris listed in the referenced data reports, other debris (i.e., Dredge Debris) may exist in other areas of the site. All such additional Dredge Debris that lies within the prescribed cleanup area as shown on the Drawings is to be removed, by equipment appropriate to the task and kept separate from Identified Debris. Removal of such additional Dredge Debris (including removal and handling of timber piles) is incidental to the work and will be paid under the Tender Item for DREDGING. The disposal of timber pile Dredge Debris will be paid separately under the Tender Item for DISPOSAL OF TIMBER PILES DURING DREDGING.
- .5 Identified Debris removal must be performed only during daylight hours, to ensure proper identification and cataloguing of debris, to facilitate the Contractor's quality control and inspection of the work, and to facilitate the Departmental Representative's observation of the work.
- .6 Take extra care when recovering wires and chains from the seabed in case they are attached to the jetty structure. If attached to the jetty structure, stop removal work and carefully disconnect the wires or chains from the jetty structure, and then complete the removal operation.

3.3 Dredging

- .1 The Contractor must dredge the DUs to the lines, grades, slopes, and elevations shown on the Drawings.
- .2 The Contractor must remove all material above the Required Dredge Elevation or Required Cut Thickness. The Contractor must not directly remove material from outside of the Dredge Prism, except to make appropriate grades as displayed on the Drawings. The Contractor must remove Slough Material that falls into the Dredge Prism at no additional cost to Canada.

- .3 The Contractor must perform Slope Dredging to construct Side Slopes adjacent to the Work Zone boundaries, as shown on the Drawings. Slope Dredging for Side Slopes must be performed using a grade no steeper than 3H:1V unless shown otherwise on the Drawings. All Slough Material within the Dredge Prism generated from Slope Dredging of Side Slopes must be removed by the Contractor prior to completion of the work.
- .4 The Contractor must conduct excavation and dredging activities in slope areas starting from the top of slope and working down the slope toward the toe of slope. The Contractor must take care to conduct dredging activities according to the requirements of the Drawings and Specifications, and in a manner that does not result in adverse impacts to the stability of the slopes or adjacent structures to remain.
- .5 The Contractor must adhere to the set-back requirements when performing dredging activities adjacent to the existing structures (including the Y Jetty superstructure and steel pipe piles, Y Jetty mechanical and electrical utility services, existing boat ramp, and previously recorded heritage ship wrecks in the Exclusion Zone) and as shown in detail on the Drawings.
- .6 The Contractor must keep all vessels and equipment outside of the Exclusion Zone, as shown on the Drawings.
- .7 The Contractor must exercise great care when dredging the toe of slopes and slope grades to avoid overdredging below the Payable Overdredge Allowance. Undercutting the toe of slopes may result in excessive slope sloughing and damage to the existing structures (as described in this Specification). Any damage that occurs due to slope sloughing, or sloughing that has the potential to cause damage, caused by or attributed to Excessive Dredging must be repaired at the Contractor's cost.
- .8 The Contractor must remove the material (i.e., perform the dredging of existing sediments) within the Leachable Metals Area as shown on the Drawings. Contractor must take particular care when performing dredging activities in the Leachable Metals Area. If Slough Material falls into the Leachable Metals Area, it must be considered material with the potential for leachability of the metal lead as indicated by sediment TCLP analysis and must be stabilized and tested as required in this Specification section, Section 35 20 23.01 (Offloading, Material Processing, Transportation, and Disposal), and Section 01 11 55 (General Instructions). No separate payment will be made for removal, transport, and disposal of slough material that falls into the Leachable Metals Area.
- .9 All dredging activities must be performed from within a required silt curtain as described in the EMP, and Section 01 35 13.43 (Special Project Procedures for Contaminated Sites).
- .10 The Contractor must conduct mechanical dredging activities using a bucket type and size of the Contractor's choice, provided that water quality requirements of the EMP and permit conditions are met.

- .1 The Contractor's dredging equipment (e.g., derrick barge or hydraulic excavator) must be capable of using a closed-lip, vented environmental clamshell bucket, and the Contractor must have access to this equipment in the event that water quality requirements are not met with use of other bucket types.
- .11 Dredging of the shallow water/intertidal area in DUs 29 and 30 to remove riprap may be completed using land-based excavation equipment. The Contractor must describe plans for land-based excavation, material handling, dewatering (if applicable), effluent water treatment (if applicable), and in-water transportation (if applicable), as part of the Construction Work Plan if this option is selected. All shoreline excavation activities below the higher high water, large tide (HHWLT), must be performed from within a required silt curtain, as described in the EMP, and in Section 01 35 13.43 (Special Project Procedures for Contaminated Sites). Upland transportation of dredged sediment and debris at the Work Site is not allowed.
- .12 All dredging and excavation activities must be performed in accordance with the requirements of the Specifications and using the Best Management Practices (BMPs) presented in the Specifications and EMP to protect water quality during completion of the work. If water quality decision criteria exceedances are observed at locations specified in the Water Quality Monitoring Plan during implementation of dredging, barge dewatering, effluent water treatment, and in-water transportation activities, the Contractor will be required to modify its construction methods to achieve compliance, and at the Contractor's own cost.
- .13 Dredging must be conducted in a manner to minimize, disturbance and resuspension of seabed sediments. The Contractor must remove Identified Debris, sediment, and encountered Dredge Debris from the seabed in a slow and steady manner to minimize resuspension of sediments.
- .14 The Contractor must conduct its vessel operations in a manner to limit the risk of recontamination resulting from the resuspension of sediment from propeller wash by operating at reduced power during vessel movement activities to the maximum extent practicable.
- .15 The Contractor must place dredge material, Identified Debris, Dredge Debris, and Demolition Debris into the transport barge in such a manner that prevents loss of sediment or dredge effluent water over the side rails and prevents barge listing.
- .16 Leveling of the completed dredging surface by dragging a beam, the clamshell bucket, or other Contractor equipment over the completed area is not permitted.
- .17 If daily Progress Survey results indicate that the Contractor is dredging excessively, or is dredging outside of the Dredge Prism, the Contractor must modify its dredging operations and/or positioning control immediately to avoid additional Excessive Dredging.

- .18 The Contractor must follow Archaeological Chance Find Management Procedures during dredging activities, as detailed in Section 01 11 55 (General Instructions).

3.4 Contingency Re-Dredging

- .1 Contingency Re-Dredging is an optional Tender Item (referred to as CONTINGENCY RE-DREDGING under Optional Work in the Unit Price Table) and the Departmental Representative may elect to include Contingency Re-Dredging as part of the Contract.
- .2 After review of the post-dredge confirmational sampling and testing results, the Departmental Representative may choose to direct the Contractor to conduct Contingency Re-Dredging in specified area(s) to remove Dredge Residuals or Missed Inventory.
- .3 The Contractor must re-occupy the specified area(s), as directed by the Departmental Representative, and dredge to the horizontal and vertical limits (including Payable Overdredge Allowances and tolerances) specified for Dredge Residuals or Missed Inventory removal.

3.5 Barge Dewatering

- .1 The Contractor must provide detailed description, photographs, and drawings as necessary describing the means and methods for dredge material dewatering as part of the Construction Work Plan.
- .2 All dredge material must be placed into sealed (watertight) barges. The Contractor must identify, in the Construction Work Plan, the location, method of treatment, and point of discharge for all dredge effluent water collected on the watertight barges. No dredge effluent water that is collected or transported off of the Work Site must be returned to the Work Site for discharging.
- .3 Passive barge dewatering is not permitted outside of the Work Site. Passive dewatering is allowed within the Work Site in specific areas shown on the Drawings and as defined in the EMP.
- .4 Passive dewatering barges consists of drainage of dredge effluent water back into the Work Zone waters passing through filter media (such as filter fabric).
- .5 For areas in which direct discharge of barge dewatering dredge effluent (i.e., wastewater) is not acceptable as described in the EMP and shown on the Drawings, dredge effluent must be collected, stored, and treated per the Laws and Regulations, prior to release back to the harbour as described in Section 01 35 00.50 (Special Procedures for Harbour Controls). If the water quality requirements in the EMP cannot be met, dredge effluent water must be disposed of off-site in accordance with the requirements outlined in these Specifications. Refer to the EMP for discharge criteria.
- .6 No overtopping of the barge sideboards will be allowed.

- .7 Dredge sediment dewatering is not a requirement in this Contract but can be implemented if desired by the Contractor. If the Contractor chooses to dewater the dredge sediment or is required to dewater to meet the Contractor's Disposal Facility transport and/or disposal requirements, it must do so at the Contractor's expense.
- .8 It is the Contractor's responsibility to understand the dewatering requirements and costs to provide sufficient dewatering for the Contractor's identified Treatment Facility (if applicable) and Disposal Facility and include that work in the price for the applicable Tender Item.

3.6 In-Water Transportation to Processing Facility and Contractor's Off-Site Offload Facility, as Applicable

- .1 It is intended that the requirements of this section cover in-water transportation from the dredging location at the Work Site to the Processing Facility, whether this is located on a floating barge in Esquimalt Harbour or elsewhere within the DND EOD team area of responsibility, as shown on the Drawings, or at the Contractor's Off-Site Offload Facility. Requirements regarding in-water transportation from the Processing Facility to the subsequent Contractor's Off-Site Offload Facility for additional transfer to a Disposal Facility are covered in Section 35 20 23.01 (Offloading, Material Processing, Transportation, and Disposal).
- .2 All dredge materials, Identified Debris, Dredge Debris, Demolition Debris, and Suspected UXO must be transported to the Processing Facility using watertight waterborne equipment (i.e., barges). Passive barge dewatering is not allowed outside of the Work Site.
- .3 Watertight barges must have fixed permanent containment walls on all four sides, and be sealed to prevent effluent and sediment discharge during in-water transportation off site. Three sided barges using a temporary wall/fencing on the fourth side may be acceptable for use as long as the Contractor can demonstrate to the Departmental Representative's satisfaction that the barge configuration will hold water and sediment without any leakage from the temporary wall, and be stable and safe to transport a full load of sediment and effluent without spilling or leaking during transport. The Departmental Representative may require the Contractor to provide evidence that the barge is water tight.
- .4 The Contractor must transport dredge material, material from the Leachable Metals Area, Identified Debris, Dredge Debris, Demolition Debris, Suspected UXO, and structures, sites, or things that may be valued for their historical, archaeological, architectural, and paleontological significance to the Processing Facility or the Contractor's Off-site Offload Facility (as applicable) according to the means and methods described in the Contractor's Construction Work Plan. Deviations from the Construction Work Plan must be submitted to the Departmental Representative for review (and re-submission and further review as

- required), and no haul barges must leave the Work Site until the Departmental Representative has accepted such deviations.
- .5 The Contractor is responsible for assessing current and forecasted weather conditions during all in-water transportation and storage activities and appropriately accounting for its potential impact on marine equipment stability.
 - .6 Dredge material, Dredge Debris, Demolition Debris, and Suspected UXO must be transported directly from the Work Site to the Processing Facility or to the Contractor's Off-Site Offload Facility (as applicable), as identified in the Construction Work Plan and as accepted by the Departmental Representative.
 - .7 Transportation of dredge material, Dredge Debris, Demolition Debris, and Suspected UXO to the Processing Facility and Contractor's Off-Site Offload Facility must comply with federal, provincial, and local regulations, permit conditions, and all requirements of the Specifications and the EMP regarding these activities.
 - .8 Water management on haul barges, or other forms of waterborne transport, may be done with the addition of drying amendment if desired by the Contractor. The Contractor is responsible for ensuring that the materials to be disposed, including any amendments, meet all Disposal Facility requirements. The Contractor must select the type of amendment and appropriate dosage to facilitate dewatering. Use of amendments is at the sole discretion of the Contractor and will be incidental for the purposes of payment, and the Contractor is responsible for ensuring that use of amendments is acceptable by the Disposal Facility, and meets requirements of federal, provincial, and local regulations; permit conditions; and any discharge limits appropriately developed by the Contractor's Environmental Specialist and not addressed in the EMP. The use of amendments or additives must be accepted by the Departmental Representative.

3.7 Water Quality Criteria Compliance

- .1 The water quality monitoring requirements are described in the Specifications and the EMP.

END OF SECTION

1. PART 1 – GENERAL

1.1 Description

- .1 Work included in this section to be performed by the Contractor includes furnishing of all labour, equipment, materials, and other incidentals required for set up and operations of the Contractor Off-Site Offload Facility and Processing Facility; haul barge offloading of dredge material including contaminated sediment from the Leachable Metals Area as shown on the Drawings, Identified Debris, Dredge Debris, Demolition Debris, and Suspected UXO (if not performed on a barge) at the Contractor's Off-Site Offload Facility to the Contractor's Off-Site Stockpile Area; Off-Site Stockpile Area management; sediment dewatering and dredge effluent water management (if applicable); treatment (if applicable); stabilization of Leachable Metals Area sediment; contaminated sediment, re-handling; transportation; and off-site disposal of material at the Disposal Facility. In addition, processing of dredge material will occur at a Processing Facility located either on a barge within Esquimalt Harbour (prior to transport to the Contractor's Off-Site Offload Facility) or at an upland location that has been reviewed and accepted by the Departmental Representative.
- .2 The Contractor must provide a Contractor Off-Site Offload Facility to be used to transfer materials between the Contractor's floating equipment and land, including offloading the Contractor's haul barges of dredge material, Identified Debris, Dredge Debris, Demolition Debris, Suspected Unexploded Explosive Ordnance (UXO; if Suspected UXO segregation is not performed on a floating platform), and historically, archaeologically, architecturally, or paleontologically significant structures, sites, or things (if not segregated on a barge). The Contractor Off-Site Offload Facility must be operated in compliance with all Laws and Regulations and have in place all necessary federal, provincial or state, and local permits and approvals for work activities anticipated to occur at the Contractor Off-Site Offload Facility, including permissions for offloading, handling, and transport of contaminated sediment, Identified Debris, Dredge Debris, and Demolition Debris to a Disposal Facility. The Contractor must have in place ownership or lease documentation to demonstrate that the activities to be conducted at the Contractor's Off-Site Offload Facility are allowed or accepted by the property owner and must provide the documentation to the Departmental Representative as part of the Construction Work Plan. The Contractor should be aware that security requirements between DND facilities and the Contractor Off-Site Offload Facility may differ and the Contractor must be responsible for resolving any discrepancies between the two locations at no additional cost to Canada.
- .3 Offloading, material processing, transportation, and disposal activities must not begin until the Departmental Representative has reviewed and accepted the Contractor's Construction Work Plan.

- .4 The Contractor must provide a Processing Facility to segregate out all Suspected UXO greater than 6 millimetres (mm; 1/4 inch) in size from the dredge material (excluding Identified Debris, Dredge Debris and Demolition Debris). The Contractor must design its Processing Facility to be capable of segregating out all Suspected UXO down to a screen size of 6 mm (1/4 inch) through Contractor's selected means and methods (e.g., screening, magnetic sorting, hydraulic sorting) and provide sufficiently high production rate in order to meet the required Substantial Performance date and project milestones for the work.
- .5 The Processing Facility must have adequate storage and production rate capacity to allow the dredging and other in-water work to be completed by the Substantial Performance date identified in Section 01 11 55 (General Instructions). The Processing Facility storage must provide a buffer to allow the Contractor the ability to keep conducting in-water remedial activities (e.g., dredging, Engineered Capping, Backfill Material placement, structure reinstatement) even if the Processing Facility is on Stand-by Time – Material Processing, or does not process dredge material at the same production rate that can keep pace with the dredging production rate.
- .6 The Contractor may locate the Processing Facility either on a barge in Esquimalt Harbour or at a Processing Facility located at an upland site after offloading from the barge. If the Contractor elects to locate the Processing Facility on a floating platform, then the Departmental Representative will inform the Contractor where the Processing Facility must be located within Esquimalt Harbour. The Contractor will assume that it is located within the Colwood area of Esquimalt Harbour, and the Contractor must be responsible for anchoring the processing barge and any other floating equipment secured to the processing plant. The Contractor is allowed to propose an alternative floating platform location for Departmental Representative review and acceptance, but it must be located within the extents of the area of responsibility for DND's Explosive Ordnance Disposal (EOD) Team.
- .7 In order for Canada to respond to Suspected UXO items deemed unsafe to move from the Work Site, or to collect Suspected UXO items temporarily stored at the Processing Facility in a timely fashion, the Processing Facility must be located within the area of responsibility for DND's EOD Team based at the Fleet Diving Unit (Pacific). As such, the Processing Facility must be located on southern Vancouver Island (i.e., south of Parksville), as shown on the Drawings. If the Processing Facility is set up on a floating platform, the Contractor must meet requirements as in Section 01 35 00.50 (Special Procedures for Harbour Control). If the Contractor elects to transport the dredge material to the Contractor Off-Site Offload Facility after segregating Suspected UXO on a barge within the Work Site, then the Contractor Off-Site Offload Facility would not be required to be within the boundary described in this clause.
- .8 The Contractor must provide a magazine at the Processing Facility that complies with the Explosives Regulations, 2013 (e.g., the magazine is well ventilated and

- resistant to theft, weather, and fire) and is licensed by Natural Resources Canada (NRCAN) to temporarily store all Suspected UXOs found at the Work Site and Processing Facility that have been deemed safe to move by UXO Qualified Personnel. All Suspected UXO will be collected by DND from the magazine on a regular basis for disposal. Provide safe access for DND personnel to remove Suspected UXO.
- .9 All Suspected UXOs and ionizing radiation items are the property of Canada.
 - .10 No Suspected UXOs are permitted to be disposed of at a soil or debris Disposal Facility. The Contractor must segregate all safe-to-move Suspected UXO from the dredge material at the Processing Facility, in accordance with the DND's *Draft Range Clearance and Unexploded Explosive Ordnance (UXO) Activities Manual B-GL-381-003/TS-000* dated 12 April 2011 (attached to these Specifications in Appendix A) and in accordance with the site-specific means and methods presented in the Contractor's Construction Work Plan and the Contractor's Health and Safety Plan, as reviewed and accepted by the Departmental Representative.
 - .11 The Contractor must assume that all dredge material, Identified Debris, Dredge Debris, and Demolition Debris (excluding Suspected UXO) requires disposal at a Disposal Facility according to the British Columbia Contaminated Sites Regulation (BC CSR) industrial land use standards (i.e., Waste Quality or IL+ waste), with the potential exception for material removed from the Leachable Metals Area. IL+ material is to be transported by a hauler licensed within the Province of British Columbia (or the equivalent state requirements if material is hauled in the United States) to haul such waste in accordance with Laws and Regulations. If disposal of IL+ waste material is to occur in the United States, the minimum level of disposal must be at a Resource Conservation and Recovery Act-permitted Subtitle D Landfill or more restrictive.
 - .12 Any material determined to be Hazardous Waste Quality Materials must be handled in accordance with Laws and Regulations, including but not limited to, the Hazardous Waste Regulation (HWR), B.C. Reg. 63/88, including amendments, and the British Columbia Environmental Management Act (SBC 2003, Chapter 53), including amendments, and must be treated and/or disposed of at a Disposal Facility in Canada authorized to dispose of Class 9 Solid Waste, as defined by HWR, B.C. Reg. 63/88, including amendments. Hazardous Waste Quality Materials must be transported by a licensed hauler with appropriate manifesting paperwork in accordance with Laws and Regulations for disposal and transport inside or outside of the Province of British Columbia, including but not limited to, the HWR, B.C. Reg. 63/88, Interprovincial Movement of Hazardous Waste Regulations (SOR/2002-301), and Federal Export and Import of Hazardous Waste and Hazardous Recyclable Material Regulations (SOR 2005/149).
 - .13 Treatment or additional processing of dredge material, Identified Debris, Dredge Debris, or Demolition Debris (in addition to segregation of Suspected UXO from dredge material) to potentially reduce the level of contamination or to segregate

out cleaner materials is allowed, but is not required as part of this Contract. Treatment does not include blending, mixing, or dilution. If treatment or additional processing activities are to be completed as part of this Contract, the Contractor must provide to the Departmental Representative (as part of the Construction Work Plan) a proposal describing the means and methods by which treatment or additional processing activities will be completed. This proposal must be reviewed and accepted by the Departmental Representative prior to conducting treatment or additional processing activities as part of this Contract.

- .1 Notwithstanding treatment or additional processing, all dredge material, Identified Debris, Dredge Debris, and Demolition Debris must be disposed of at an appropriate Disposal Facility.
- .2 The Treatment and Processing Facilities must provide adequate stockpile space to allow for holding material in discrete cells or batches while analytical testing is being conducted by the Contractor and pending written acceptance by the Departmental Representative.
- .3 Marine sediments to be removed from the Leachable Metals Area, as shown on the Drawings, have the potential for lead leachate concentrations to exceed the hazardous waste Leachate Quality Standard as indicated by previous sediment Toxicity Characteristic Leaching Procedure (TCLP) analyses (data available in Appendix C to these Specifications). Material removed from the Leachable Metals Area must be stabilized within Esquimalt Harbour and subsequently disposed of as IL+ waste material after the results of post-stabilization TCLP analysis (that must be collected and analyzed by the Contractor and accepted by the Departmental Representative) indicate that the material no longer exceeds the hazardous waste Leachate Quality Standard for lead per the BC HWR regulations, Schedule 4 (Table 1 – Leachate Quality Standards).
 - .1 Stabilization of contaminated sediment from the Leachable Metals Area must occur under this Contract in accordance with BC CSR to reduce the leachability of the metal lead as determined by Contractor-collected and -analyzed TCLP testing for metals prior to disposal at a Disposal Facility as IL+ waste material. Stabilization must occur at a location accepted by the Departmental Representative and must be located within Esquimalt Harbour. The Contractor must provide to the Departmental Representative (as part of the Construction Work Plan) a proposal describing the means and methods by which stabilization activities will be completed. The Contractor's proposal must be reviewed and accepted by the Departmental Representative prior to conducting stabilization activities as part of this Contract. Verification sampling associated with the material after stabilization must be conducted in accordance with the BC CSR. Notwithstanding stabilization, all dredged material must be

disposed of at a permitted Disposal Facility for the handling and disposal of IL+ material in accordance with Laws and Regulations and as required in this Specification section.

- .14 The Contractor is allowed to conduct additional testing or treatment (at the Contractor's own cost), to re-classify the dredge material and obtain acceptance from the Disposal Facility to dispose of dredge material at a lower disposal threshold than CSR industrial IL+ waste. The Contractor must conduct any proposed re-classification in accordance with Laws and Regulations, including British Columbia Ministry of Environment and Climate Change Strategy (BC ENV) Technical Guidance No. 1 and 2, and must dispose of appropriate material at a Disposal Facility. All analytical documentation of this additional testing must be provided to and accepted by the Departmental Representative prior to material leaving the Treatment or Processing Facility.
- .15 The Contractor may propose to transport and dispose of the dredge material (with Suspected UXO segregated out), Identified Debris, Dredge Debris, and Demolition Debris at a U.S. Disposal Facility that has been certified to be able to accept the material. No Hazardous Waste Quality Materials are allowed to be transported and disposed outside of Canada. The Contractor must have, and provide to the Departmental Representative, appropriate cross-border documentation to authorize transport of polychlorinated biphenyl (PCB) material with concentrations greater than 2 parts per million (ppm) to the United States. The Contractor may also propose multiple Disposal Facilities and a process for delineating and segregating multiple waste streams (e.g., contaminated sediment with PCB concentrations exceeding 2 ppm). All permits and approvals for transit and entry to the United States are the responsibility of the Contractor. The Departmental Representative anticipates that the lowest classification landfill in the United States that could accept IL+ level contaminated sediments is a Subtitle "D" Landfill, as regulated under the Resource Conservation and Recovery Act (RCRA) Subtitle D regulation for the management of non-hazardous solid waste. However, it is solely the Contractor's responsibility to determine whether disposal using a U.S.-located Disposal Facility is legal, and to determine the appropriate level of Disposal Facility that can legally accept the material. Should the Contractor propose transporting and disposing of the dredge material, Identified Debris, Dredge Debris, and Demolition Debris at a U.S. Disposal Facility, the Contractor must submit to the Departmental Representative all necessary U.S. regulatory approvals (e.g., U.S. Environmental Protection Agency [EPA] approval), subsequent state approvals (e.g., Washington State Department of Ecology for Washington State landfills), and Disposal Facility certifications that they will accept this material ten (10) working days after award of Contract in accordance with Section 01 33 00 (Submittal Procedures). Prior to commencement of work, the Contractor must submit any required export documentation, including satisfying Canadian Environmental Protection Act (CEPA) and Canada Border Services Agency (CBSA) customs, regulations,

- and/or procedures, as well as any required U.S. Border Patrol customs, regulations, and/or procedures.
- .16 Treatment activities must be performed at an accepted Treatment Facility. The Contractor must not conduct treatment activities at the Contractor Off-Site Offload Facility unless documentation can be provided that the facility is an existing, permitted Treatment Facility.
 - .17 The Departmental Representative reserves the right to inspect all off-site Contractor facilities, including collection of sediment samples for characterization and assessment purposes.
 - .18 The Contractor becomes the owner of, and is responsible for, any soil, sediment, or other material once it is loaded on a vehicle, barge, or other vessel for transport, with the exception of Suspected UXO or structures, ionizing radiation items, or historically, archaeologically, architecturally, or paleontologically significant structures, sites, or things, which remain the property of Canada. Ionizing radiation or similar items are not anticipated but if encountered, the Contractor must immediately notify the Departmental Representative to coordinate their handling.
 - .19 The Contractor is responsible for ensuring that the materials to be disposed meet all Disposal Facility requirements.
 - .20 The Contractor must complete final disposal of all dredge material (with Suspected UXO segregated out), Identified Debris, Dredge Debris, and Demolition Debris, and must submit its Certificate of Disposal to the Departmental Representative on a monthly basis and after the Departmental Representative has accepted that all dredging work is complete. The Contractor, or subcontractors, must not move dredge material, Identified Debris, Dredge Debris, or Demolition Debris from one Disposal Facility to another Disposal Facility once the Contractor submits the Certificate of Disposal.

1.2 Measurement and Payment Procedures

- .1 Measurement for OFFLOADING AND TRANSPORTATION; MATERIAL PROCESSING; DISPOSAL; and LEACHABLE METALS AREA STABILIZATION will be the Dredge Pay Volume. The Dredge Pay Volume will be determined by calculating the total amount of in-situ cubic metres (m³) of material dredged (based on Dredging Pre-Construction and Dredging Post-Construction Surveys), minus Excessive Dredging. Final measurement for offloading, transportation, and disposal must be by the payable in-situ m³, based on comparison of the Contractor's Dredging Pre-Construction and Dredging Post-Construction Surveys.
- .2 Measurement for OFFLOADING AND TRANSPORTATION FOR CONTINGENCY RE-DREDGING VOLUME; MATERIAL PROCESSING FOR CONTINGENCY RE-DREDGING VOLUME; and DISPOSAL FOR CONTINGENCY RE-DREDGING VOLUME will be the Contingency Re-

Dredge Volume. The Contingency Re-Dredge Volume will be determined by calculating the total amount of in-situ m³ of material dredged (based on Required Dredging Post-Construction or Contingency Re-Dredging Post-Construction Surveys as applicable), minus Excessive Dredging. Final measurement for offloading, transportation, and disposal must be by the payable in-situ m³, based on comparison of the Contractor's Dredging Post-Construction Surveys, determined by calculating the total amount of in-situ m³ of material dredged between the Required Dredging Post-Construction and Contingency Re-Dredging Post-Construction Surveys, minus Excessive Dredging.

- .3 Payment for offloading of dredge material, Dredge Debris, and Suspected UXO; temporary stockpiling; dewatering (if applicable); treatment (if applicable); or stabilization (if applicable); upland handling of dredge material and Dredge Debris; loading into trucks or railcars in preparation for transportation to the Disposal Facility; and other incidental work, will be made using the Dredge Pay Volume estimates, under the Tender Item price for OFFLOADING AND TRANSPORTATION. Payment for the work will be made on a monthly basis using the monthly estimated Dredge Pay Volume submitted by the Contractor and accepted by the Departmental Representative.
- .4 Payment for handling, segregation, stabilizing, and TCLP sampling and analysis of material dredged from the Leachable Metals Area will be made using the Dredge Pay Volume estimate for the Leachable Metals Area, under the Tender Item price for LEACHABLE METALS AREA STABILIZATION. Payment for the work will be made on a monthly basis using the monthly estimated Dredge Pay Volume submitted by the Contractor and accepted by the Departmental Representative.
- .5 Additional proposed treatment, accepted by the Departmental Representative, except as covered by the Tender Item price for LEACHABLE METALS AREA STABILIZATION, is considered incidental to the work and the Contractor will need to build any associated costs in with other pay items at the time of Tender.
- .6 Payment for offloading of contingency re-dredge material and Suspected UXO; temporary stockpiling; dewatering (if applicable); treatment (if applicable); upland handling of contingency re-dredge material; loading into trucks or railcars in preparation for transportation to the Disposal Facility; and other incidental work, will be made using the Contingency Re-Dredge Volume estimates, under the Tender Item price for OFFLOADING AND TRANSPORTATION FOR CONTINGENCY RE-DREDGING VOLUME. Payment for the work will be made on a monthly basis using the monthly estimated Contingency Re-Dredge Volume submitted by the Contractor and accepted by the Departmental Representative.
- .7 Payment for segregation of Suspected UXO from the dredge material at the Processing Facility, including ancillary costs, will be made using the Dredge Pay Volume estimates, under the Tender Item price for MATERIAL PROCESSING. Ancillary costs include, but are not limited to, providing the UXO Qualified

- Personnel and Archaeological Monitor for full-time monitoring at the Processing Facility and to respond to chance finds (for both Suspected UXO and historically, archaeologically, architecturally, or paleontologically significant structures, sites, or things) during dredging and transportation operations, management of the required magazine to temporarily contain the Suspected UXOs deemed safe to move, and management of the required covered area for temporary storage of archaeologically significant items.
- .8 Payment for segregation of Suspected UXO from the contingency re-dredge material at the Processing Facility, including ancillary costs, will be made using the Contingency Re-Dredge Volume estimates, under the Tender Item price for MATERIAL PROCESSING FOR CONTINGENCY RE-DREDGING VOLUME. Ancillary costs include, but are not limited to, providing the UXO Qualified Personnel and Archaeological Monitor for full-time monitoring at the Processing Facility and to respond to chance finds (for both Suspected UXO and historically, archaeologically, architecturally, or paleontologically significant structures, sites, or things) during dredging and transportation operations; management of the required magazine to temporarily contain the Suspected UXOs deemed safe to move; and management of the required covered area for temporary storage of archaeologically significant items.
 - .9 Payment for disposal of dredge material at the Disposal Facility will be made using the Dredge Pay Volume estimates, under the Tender Item price for DISPOSAL. Payment for the work will be made when the Contractor provides the Certificate of Disposal from the Disposal Facility. Certificates of Disposal will be reported as a tonnage measurement. Therefore, the measurement for tonnage certified to have been disposed of must be converted to a Dredge Pay Volume (in situ cubic metres) for progress payment purposes.
 - .10 Payment for disposal of contingency re-dredge material at the Disposal Facility will be made using the Contingency Re-Dredge Volume estimates, under the Tender Item price for DISPOSAL FOR CONTINGENCY RE-DREDGING VOLUME. Payment for the work will be made when the Contractor provides the Certificate of Disposal from the Disposal Facility. Certificates of Disposal will be reported as a tonnage measurement. Therefore, the measurement for tonnage certified to have been disposed of must be converted to a Contingency Re-Dredge Volume (in-situ m³) for progress payment purposes.
 - .11 All costs associated with offloading, transportation, and disposal of Dredge Debris are explained in Section 01 11 55 (General Instruction) and Section 35 20 23 (Remedial Dredging and Barge Dewatering) and are included in the Tender Item prices for OFFLOADING AND TRANSPORTATION; MATERIAL PROCESSING; and DISPOSAL.
 - .12 All costs associated with offloading, transportation, and disposal of Demolition Debris are explained in Section 02 41 16.01 (Structure Demolition) and are not included in the Tender Item prices for OFFLOADING AND TRANSPORTATION; MATERIAL PROCESSING; and DISPOSAL.

- .13 Measurement, payment, and all costs associated with removal, offloading, transportation, and disposal of Identified Debris are explained in Section 35 20 23 (Remedial Dredging and Barge Dewatering) and are included in the Tender Item price for REMOVAL OF IDENTIFIED DEBRIS, TRANSPORTATION, AND DISPOSAL.
- .14 Measurement, payment, and all costs associated with offloading, transportation, and disposal of timber piling are explained in Section 35 20 23 (Remedial Dredging and Barge Dewatering) and are included in the Tender Items prices for DISPOSAL OF TIMBER PILES DURING DREDGING.
- .15 The disposal of unwanted historical items after DND's first right of refusal must be incidental to the work.
- .16 Tender Item prices for OFFLOADING AND TRANSPORTATION; MATERIAL PROCESSING; and DISPOSAL; will not be adjusted for any reason, including if the Contractor elects to process or treat dredge material to try to reclassify the material from its IL+ designation or greater, and is unable to obtain Disposal Facility approval and must dispose of the material at a different disposal cost than they tender. All reclassification of dredge material must be accepted by the Departmental Representative.
- .17 Tender Item prices for OFFLOADING AND TRANSPORTATION FOR CONTINGENCY RE-DREDGING VOLUME; MATERIAL PROCESSING FOR CONTINGENCY RE-DREDGING VOLUME; and DISPOSAL FOR CONTINGENCY RE-DREDGING VOLUME will not be adjusted for any reason, including if the Contractor elects to process or treat dredge material to try to reclassify the material from its IL+ designation, and is unable to obtain Disposal Facility approval and must dispose of the material at a different disposal cost than they tender. All reclassification of dredge material must be accepted by the Departmental Representative.
- .18 Final payment will be based on the final measurement of Dredge Pay Volumes. Final payment must be reconciled with previous monthly progress payments to determine the amount of final payment.
- .19 If Suspected UXO is discovered at the Processing Facility and is deemed unsafe to move by the UXO Qualified Personnel, and the Contractor is unable to continue working at the Processing Facility due to the Suspected UXO, the Departmental Representative will direct work to stop. The Contractor will be paid for that time by the hour under the Tender Item price for STAND-BY TIME – MATERIAL PROCESSING, with prior written acceptance of stand-by time incurred.

1.3 Related Sections

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

- .3 Section 01 35 00.50 (Special Procedures for Harbour Control)
- .4 Section 01 35 13.43 (Special Project Procedures for Contaminated Sites)
- .5 Section 01 35 43 (Environmental Procedures)
- .6 Section 01 45 00 (Quality Control)
- .7 Section 02 41 16.01 (Structure Demolition)
- .8 Section 35 20 23 (Remedial Dredging and Barge Dewatering)

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 all documentation and permits associated with facilities proposed for off-site disposal of non-hazardous and hazardous materials in compliance with applicable disposal regulations upon award. Include copies of permits for the Disposal Facility and include names, locations, and telephone numbers of all proposed facilities and transporters.
- .3 The Contractor must submit a detailed Construction Work Plan within ten (10) working days following Contract Award for review and acceptance by the Departmental Representative.
- .4 As part of the detailed Construction Work Plan the Contractor must prepare a section that describes the approach that will be implemented for offloading, treatment (if applicable), stabilization (as applicable), material processing, transportation, and disposal activities. Offloading, transportation, and disposal activities must not begin until: 1) the Construction Work Plan, the Environmental Protection Plan, and Quality Control Plan have been reviewed and accepted by the Departmental Representative; and 2) agency- and public-required Notifications and review have been completed. At a minimum, the offloading, transportation, and disposal approach description must contain the following information:
 - .1 Contractor Off-Site Offload Facility location, and copies of federal, provincial, state (as applicable), and local permits and approvals for operation of the facility.
 - .2 Contractor Off-Site Offload Facility layout, as described in Section 01 35 13.43 (Special Project Procedures for Contaminated Sites).

- .3 Reference to the Construction Progress Schedule that identifies timing and sequencing for completion of offloading, transportation, and disposal activities, as they relate to other major elements of the work.
- .4 Order and sequence in which the work is to be performed, including a description of equipment to be used and methods of operation.
- .5 Proposed hours of operation for the Contractor Off-Site Offload Facility and associated activities.
- .6 Methods and procedures for offloading, transportation, treatment (if applicable), and disposal activities, including means and methods for providing environmental protection as described in Section 01 35 13.43 (Special Project Procedures for Contaminated Sites) and Section 01 35 43 (Environmental Procedures). Specifically, the Contractor must provide, at a minimum, the following information as part of the Construction Work Plan:
 - .1 Methods, procedures, and equipment to be used for all dredge material, dredged material from the Leachable Metals Area, contingency re-dredge material, Identified Debris, Dredge Debris, Demolition Debris, and dredge effluent water, offloading from the in-water transportation barge.
 - .2 Spill prevention measures during barge offloading.
 - .3 Wastewater management methods.
 - .4 Methods, procedures, and controls to be used to segregate, handle, store, transport, and dispose of dredge material, contingency re-dredge material, dredged material from the Leachable Metals Area, Identified Debris, Dredge Debris, Demolition Debris, and any material determined to be Hazardous Waste Quality Materials to the appropriate Disposal Facility in accordance with applicable guidelines, protocols, procedures, and regulations.
 - .5 Location of Treatment Facility (if treatment activities are to be completed), and copies of permits, certificates, and approvals for operation of the facility.
 - .6 Methods, procedures, layout, and equipment to be used for stabilization of material from the Leachable Metals Area, including the type and amount of amendments or additives and means and methods of mixing, health and safety procedures, and procedures for meeting federal, provincial, and local regulations including preventing release of water, dust, additives, and sediment during stabilization.
 - .7 Methods, procedures, and equipment to be used for loading and transport of dredge material, contingency re-dredge material, dredge material from the Leachable Metals Area, Identified Debris, Dredge Debris, Demolition Debris, and any material determined to

- be Hazardous Waste Quality Materials to the Disposal Facility, including procedures for meeting federal, provincial, state (as applicable), and local regulations including preventing release of water, dust, and sediment during transportation.
- .8 Methods of transportation to be used, and methods employed to ensure safe transportation of the materials from the Contractor Off-Site Offload Facility to the Treatment Facility (if applicable) and the Disposal Facility.
 - .7 Methods and procedures for managing Suspected UXO found during dredging, barge dewatering and associated wastewater treatment, in-water transportation, offloading (if not performed on a barge), material processing at the Processing Facility, and temporary storage of Suspected UXO. This portion of the Construction Work Plan must satisfy the requirements identified in Annex C to Chapter 3 of DND's Draft Range Clearance and Unexploded Explosive Ordnance (UXO) Activities Manual B-GL-381-003/TS-000 dated 12 April 2011. Specifically, the Contractor must provide, at a minimum, the following information as part of the Construction Work Plan:
 - .1 Location of Processing Facility and layout, as required in Section 01 35 13.43 (Special Project Procedures for Contaminated Sites).
 - .2 Copies of permits, certificates, and approvals for operation of the Processing Facility.
 - .3 Procedures and protocols for coordinating with the Departmental Representative the disposal of Suspected UXOs by DND.
 - .4 An operating plan identifying the facility process and resulting post-material processing output streams. The operating plan must also identify an end point for all post-material processing streams, including but not limited to, disposal options. The Processing Facility must operate within the guidelines of the BC CSR.
 - .5 Methods, procedures, and equipment to be used for segregating Suspected UXO, including procedures for meeting federal, provincial, and local regulations related to the handling, storage, transportation, and transfer of Suspected UXO to DND; and methods, procedures, and equipment to be used for separate segregation of dredge material from within the Leachable Metals Area for Suspected UXO segregation. The portion of the Contractor's Construction Work Plan that addresses Suspected UXO encountered during the project must satisfy the requirements listed in Annex C to Chapter 3 of DND's Draft Range Clearance and Unexploded Explosive Ordnance (UXO)

Activities Manual B-GL-381-003/TS-000 dated 12 April 2011 and must include at a minimum:

- .1 Key UXO Qualified Personnel Roles and Responsibilities
 - .2 A preliminary summary of risks associated with Suspected UXO related activities (including dredging, barging, offloading, transporting, processing, and storage) at the Contractor's barge, Contractor Off-Site Offload Facility, Processing Facility, Disposal Facility. The summary must also document the Contractor's measures to control the identified risks.
 - .3 The Contractor's proposed communication and reporting related to Suspected UXO, as outlined in the Specifications.
 - .4 Documentation and records related to Suspected UXO, including a daily catalogue of Suspected UXO items and representative photographs.
 - .5 Site-specific training for all contractor personnel, subcontractors, and visitors to the Work Site.
 - .6 Security related to the temporary storage of Suspected UXO, including during down times and after hours, in accordance with the Draft Range Clearance and Unexploded Explosive Ordnance (UXO) Activities Manual B-GL-381-003/TS-000 dated 12 April 2011.
 - .7 Excavation procedures related to Suspected UXO.
 - .8 Segregation procedures related to Suspected UXO.
 - .9 Temporary storage procedures related to Suspected UXO, in accordance with the Draft Range Clearance and Unexploded Explosive Ordnance (UXO) Activities Manual B-GL-381-003/TS-000 dated 12 April 2011.
 - .10 Siting plan for the screening and temporary storage of Suspected UXO.
 - .11 Quality control related to Suspected UXO.
- .8 Best Management Practices (BMPs) proposed by the Contractor and/or as required by the Environmental Management Plan (EMP; Appendix B to these Specifications) and as described in Section 01 35 13.43 (Special Project Procedures for Contaminated Sites) and Section 01 35 43 (Environmental Procedures) during completion of offloading, material processing, treatment (if applicable), transportation, and disposal activities.

- .5 Daily Reporting: As part of the Daily Construction Report, the Contractor must provide to the Departmental Representative a daily record of offloading, material processing, transportation, treatment (if applicable), and disposal activities, including the estimated quantity of dredge material, contaminated sediment removed from the Leachable Metals Area, Identified Debris, Dredge Debris, Demolition Debris, and materials determined to be Hazardous Waste Quality Materials offloaded at the Contractor Off-Site Offload Facility (including barge displacement measurements of full and empty barges), truck or railcar weight measurements for material sent off site for disposal at the Disposal Facility,, quantity processed at the Processing Facility, quantity treated at the Treatment Facility (if applicable), certified weight tickets from the Disposal Facility(ies), and a summary of other details of the work. Once a week, the Daily Construction Report must also include a cumulative summary (e.g., number, type, and disposition) of all Suspected UXOs and archaeological items observed, found, or handled. Note that Suspected UXO smaller in size than 12.7 mm (1/2 inch) are not required to be reported. Provide photographic documentation. The Daily Construction Report 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.
- .6 If the Contractor chooses to test each waste stream from the Processing Facility, including any wastewater generated or accumulated as part of processing, the Contractor must submit to the Departmental Representative all test results with each waste stream prior to transporting any material from the Processing Facility.
- .7 If the Contractor chooses to utilize treatment, the Contractor must submit to the Departmental Representative copies of all Certificates of Treatment supported by laboratory analytical data for the contaminants of potential environmental concern as necessary to account for and demonstrate the effectiveness of the treatment of the dredge material. The Contractor must submit Certificates of Treatment for all material that is treated on or off site on a monthly basis and after the Departmental Representative has accepted that all dredging work has been completed.
- .8 The Contractor must submit to the Departmental Representative copies of all Certificates of Disposal to account for and demonstrate the disposal of all material dredged in relation to Section 35 20 23 (Remedial Dredging and Barge Dewatering). The Certificates of Disposal must be from the final resting place of the material and must be provided for all material disposed off site. Certificates of Disposal must be submitted on a monthly basis and after the Departmental Representative has accepted that all dredging work has been completed. The Contractor will also provide a written letter from the Disposal Facility that all material will not be relocated upon placement at the Disposal Facility.
- .9 The Contractor must submit to the Departmental Representative copies of all manifests, weight tickets, and other documentation to demonstrate and track the

- final disposition of the dredge sediment, Identified Debris, Dredge Debris, and Demolition Debris at a Disposal Facility. The documentation must track the material from the point of leaving the Work Site to final disposal at the Disposal Facility.
- .10 The Contractor must submit empty barge displacement measurements when a barge arrives at the Work Site and full displacement measurements before a barge leaves the Work Site, along with the corresponding tonnage of material in each barge. This information must be included as part of the Contractor's Daily Construction Report.
 - .11 The Contractor must record and submit full barge displacement measurements when a barge arrives at the Contractor Off-Site Offload Facility and after emptying the barge.
 - .12 The Contractor must submit to the Departmental Representative stamped engineering drawings of any new or significantly rehabilitated or upgraded structures developed as part of the Contractor Off-Site Offload Facility or Processing Facility.

1.6 References

- .1 British Columbia Ministry of Environment and Climate Change Strategy Technical Guidance No. 1 and 2.
- .2 *Canadian Transportation of Dangerous Goods Act* – Transportation of Dangerous Goods Regulation.
- .3 *British Columbia Environmental Management Act* (SBC 2003, Chapter 53).
- .4 British Columbia Environmental Management Act – Hazardous Waste Regulation, BC Reg 63/88, including amendments up to B.C. Reg. 243/2016, November 1, 2017.
- .5 British Columbia *Environmental Management Act* – Contaminated Sites Regulation, B.C. Reg. 375/96, including amendments up to B.C. Reg. 253/2016, November 1, 2017.
- .6 Interprovincial Movement of Hazardous Waste Regulations (SOR/2002-301).
- .7 Export and Import of Hazardous Waste and Hazardous Recyclable Material Regulations (SOR/2005-149).
- .8 Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) Off-Site Policy (40 CFR 300.440), Procedures for Planning and Implementing Off-Site Response Actions – United States Environmental Protection Agency.
- .9 Resource Conservation and Recovery Act (RCRA) Subchapter III – Hazardous Waste (40 CFR Parts 239 - 282) – United States Environmental Protection Agency.

- .10 Draft Range Clearance and Unexploded Explosive Ordnance (UXO) Activities Manual B-GL-381-003/TS-000 dated 12 April 2011.
- .11 *Explosives Act* – Explosives Regulation 2013.

1.7 Contractor 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 may, at the Departmental Representative's sole discretion, periodically inspect the offloading, transportation, material processing, and disposal operations (and treatment operation as applicable) to verify compliance with the Contract documents and all applicable permits.

1.8 Environmental Protection

- .1 Offloading, material processing, transportation, and disposal activities must be performed in accordance with environmental protection requirements, as stated in Section 01 35 13.43 (Special Project Procedures for Contaminated Sites) and Section 01 35 43 (Environmental Procedures), the EMP, the Environmental Protection Plan, and in accordance with the project permits.

1.9 Regulatory Requirements

- .1 Material transported by barge into or out of Esquimalt Harbour requires that the Contractor obtain authorization from the Queen's Harbour Master (QHM) pursuant to the Canada Marine Act.
- .2 The Contractor must ensure that dredge material and debris offloading, handling, dewatering, and wastewater treatment, and Suspected UXO segregation, transport, processing and/or treatment (as applicable), and disposal, are performed in compliance with federal, provincial or state, and local Laws and Regulations including, but not limited to, the references cited within the Specifications and the EMP, and the Canadian Transportation of Dangerous Goods Act for transport of materials inside and outside of the Province of British Columbia.

1.10 Location, Permitting, and Tracking

- .1 For any Contractor Off-Site Offloading Facility, Disposal Facility, Processing Facility, and Treatment Facility (if applicable) proposed by the Contractor, the Contractor must provide the following information as part of its Construction Work Plan:
 - .1 Location and owner of proposed Contractor Off-Site Offloading Facility, Disposal Facility, Processing Facility, and Treatment Facility.

- .2 Documentation that proposed Contractor Off-Site Offloading Facility, Disposal Facility, Processing Facility, and Treatment Facility is licensed and suitable for acceptance, treatment, and disposal of the dredge material, Identified Debris, Dredge Debris, and Demolition Debris.
 - .3 Methods for material processing and/or treatment, as applicable.
 - .4 Type of disposal, material processing, and/or treatment documentation to be provided by the Disposal Facility, Processing Facility, and Treatment Facility.
- .2 Stabilization of contaminated sediment from the Leachable Metals Area must occur within Esquimalt Harbour. Specific requirements for stabilization of sediments from the Leachable Metals Area are described in this Specification Section and Section 01 11 55 (General Instructions). If the sediment is stabilized on a floating platform, the Contractor must meet requirements as in Section 01 35 00.50 (Special Procedures for Harbour Control).
 - .3 The Contractor must not create a Disposal Facility or Treatment Facility for the specific use of this Contract. Only an existing Disposal Facility or Treatment Facility can be used.
 - .4 All dredge material, Identified Debris, Dredge Debris, and Demolition Debris must be disposed of at the Disposal Facility identified by the Contractor and accepted by the Departmental Representative. If the proposed Disposal Facility is not acceptable to the Departmental Representative, the Disposal Facility is not able to accept the material, or the material cannot be transported to the Disposal Facility, the Contractor must identify an alternate Disposal Facility that is acceptable to the Departmental Representative and must use the accepted Disposal Facility for disposal at no extra cost to Canada.
 - .5 All dredge and contingency re-dredge material must be processed to remove Suspected UXO at the Processing Facility identified by the Contractor and accepted by the Departmental Representative. If the proposed Processing Facility is not acceptable to the Departmental Representative, the Processing Facility is not able to accept the material, or the Contractor's Processing Facility is unable to fully segregate Suspected UXO, the Contractor must identify an alternate Processing Facility that is acceptable to the Departmental Representative and must use the new Processing Facility for Suspected UXO segregation at no extra cost to Canada.

1.11 Inspection of Facilities

- .1 The Departmental Representative or designee may inspect the Contractor Off-Site Offload Facility (including Y Jetty Access Area and Off-Site Stockpile Areas), Processing Facility, Treatment Facility, Disposal Facility, and any additional sediment transfer facilities, proposed by the Contractor prior to the start of construction, and at any time during completion of offloading, transportation,

processing, and disposal activities to ensure that all facilities meet the requirements of the Specifications.

- .2 The Contractor must provide access to the Departmental Representative or designee to inspect the facility, including providing health and safety orientation and access to machinery to facilitate sampling, assessment, and documentation.

1.12 Misplaced Material

- .1 The Contractor is liable for misplacing any dredge material (including Identified Debris, Dredge Debris, Demolition Debris, and Suspected UXO) generated as part of this Contract from the point of loading the material into the Contractor's barge(s) at the Work Site through to disposal. The Contractor will be required to notify and coordinate with appropriate authorities if material is misplaced during transport to the Contractor Off-Site Offload Facility or during completion of offloading, material processing, transport, and disposal activities.
- .2 Should the Contractor refuse, neglect, or delay compliance with this requirement, such misplaced materials may be removed by the Departmental Representative, 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 and must not pass costs to Canada.

2. PART 2 – PRODUCTS – NOT USED

3. PART 3 – EXECUTION

3.1 Suspected UXO Monitoring and UXO Qualified Personnel

- .1 The Contractor must provide UXO Qualified Personnel to conduct full-time monitoring at the Processing Facility for identification of Suspected UXO during all Suspected UXO segregation activities. The Contractor's UXO Qualified Personnel must also be available to respond to chance finds of Suspected UXO at the Work Site during remedial dredging and other in-water activities. The UXO Qualified Personnel must:
 - .1 Be responsible for monitoring, identifying, assessing, screening, handling, segregating, temporarily storing (where safe to do so), and documenting Suspected UXO found during this project.
 - .2 Be the only personnel that may handle Suspected UXO after determining that a UXO has been identified and has been determined to be safe to move.
 - .3 The qualifications for UXO Qualified Personnel are listed in Annex A to Chapter 3 of DND's *DRAFT Range Clearance and Unexploded Explosive Ordnance (UXO) Activities Manual B-GL-381-003/TS-000* dated 12 April 2011 (provided in Appendix A to these Specifications).

- .4 Follow, at all times, the requirements in Appendix A to these Specifications.
- .2 The Contractor must immediately notify the Departmental Representative upon discovery of Suspected UXO that are deemed unsafe to move by the UXO Qualified Personnel, either at the Work Site or at the Processing Facility. The Contractor must not handle any Suspected UXO that the UXO Qualified Personnel has deemed unsafe to move.
- .3 If Suspected UXO is discovered on DND property, and the item is deemed unsafe to move by the UXO Qualified Personnel, the UXO Qualified Personnel will call 911 and notify the operator that they are working at Canadian Forces Base Esquimalt and then immediately notify the Departmental Representative.
- .4 If Suspected UXO has been transported off of DND property and is deemed unsafe to handle by the UXO Qualified Personnel, the Contractor must call 911, and then immediately notify the Departmental Representative.
- .5 If the discovered Suspected UXO is deemed unsafe to move by the UXO Qualified Personnel, and the Contractor is unable to continue working due to the Suspected UXO, the Departmental Representative will direct work to stop, and the applicable Stand-by Time – Material Processing rate will be paid.

3.2 Archaeological Monitoring

- .1 The Contractor must provide an Archaeological Monitor to conduct full-time monitoring at the Processing Facility to retain structures, sites, or things that may be valued for their historical, archaeological, architectural, and paleontological significance. The Archaeological Monitor must also be available to respond to potentially archaeologically significant items at the Work Site during remedial dredging and other in-water activities, as described in the Archaeological Chance Find Management Procedures definition in Section 01 11 55 (General Instructions). This work is incidental to the segregation of Suspected UXO.
- .2 The Departmental Representative will coordinate response to the discovery. If the Departmental Representative directs work to stop, Stand-by Time – Material Processing will be paid.

3.3 In-Water Transportation to Contractor's Off-Site Offload Facility

- .1 It is intended that the requirements of this section are to describe the requirements for in-water transportation from the Processing Facility, whether or not it is located at the Contractor's Off-Site Offload Facility, to the Disposal Facility. Requirements regarding in-water transportation from the location of dredging at the Work Site to the Processing Facility are covered in Section 35 20 23 (Remedial Dredging and Barge Dewatering).

- .2 All dredge materials, Identified Debris, Dredge Debris, and Demolition Debris must be transported from the Processing Facility to the Contractor's Off-Site Offload Facility (as applicable) using watertight waterborne equipment (i.e., barges). No passive barge dewatering is allowed during in-water transportation.
- .3 Watertight barges must follow the same in-water transportation requirements, means, and methods, as described in Section 35 20 23 (Remedial Dredging and Barge Dewatering).
- .4 The Contractor must transport dredge material, Identified Debris, Dredge Debris, Demolition Debris, and structures, sites, or items for disposal to the Contractor's Off-Site Offload Facility according to the means and methods described in the Contractor's Construction Work Plan. Deviations from the Construction Work Plan must be submitted to the Departmental Representative for review (and re-submission and further review as required), and no haul barges must leave the Work Site until the Departmental Representative has accepted such deviations.
- .5 The Contractor is responsible for assessing current and forecasted weather and sea conditions during all in-water transportation and storage activities and appropriately accounting for its potential impact on marine equipment stability.
- .6 Water management on haul barges, or other forms of waterborne transport, may be done with the addition of drying amendment if desired by the Contractor. The Contractor is responsible for ensuring that the materials to be disposed meet all Disposal Facility requirements. The Contractor must select the type of amendment and appropriate dosage to facilitate dewatering. The type of amendments or additives and means and methods of mixing must be accepted by the Departmental Representative. Use of amendments is the Contractor's choice and is incidental for the purposes of payment, and the Contractor is responsible for ensuring that use of amendments is acceptable by the Disposal Facility, and meets requirements of federal, provincial, and local regulations; permit conditions; and the EMP.

3.4 Offloading

- .1 The Contractor must employ all BMPs as described in Section 01 35 13.43 (Special Project Procedures for Contaminated Sites), Section 01 35 43 (Environmental Procedures), the EMP, and included in the permits when performing offloading activities.
- .2 The Contractor must offload in-water transportation barges at the Contractor Off-Site Offload Facility in a manner that prevents spillage of dredge material, Identified Debris, Dredge Debris, Demolition Debris, or dredge effluent to the water. A spill plate (or equivalent spill prevention measure) must be used during all offloading activities.
- .3 No dredge material, Identified Debris, Dredge Debris, Demolition Debris, or dredge effluent water transfer can begin at the Contractor Off-Site Offload Facility until the

spill prevention measures are reviewed by the Departmental Representative and determined to be in place.

- .4 Any spillage on the spill plate must be removed as soon as practicable and properly disposed. Any such spillage outside of the Off-Site Stockpile Area must be promptly cleaned up.
- .5 It is the Contractor's responsibility to determine the structural capacity of the Contractor Off-Site Offload Facility that is proposed for offloading, staging, and stockpile use. The maximum structural capacity of these facilities must not be exceeded by the Contractor.

3.5 Off-Site Stockpile Area

- .1 The Contractor must employ all BMPs as described in Section 01 35 13.43 (Special Project Procedures for Contaminated Sites), Section 01 35 43 (Environmental Procedures), the EMP, and included in the project permits when doing work at the Off-Site Stockpile Area.
- .2 The Contractor must treat, if applicable, and dispose of all dredge material, Identified Debris, Dredge Debris, and Demolition Debris as soon as practical. Materials may not be stockpiled for extended periods of time unless otherwise accepted by the Departmental Representative.
- .3 The Contractor must construct, operate, and maintain the Off-Site Stockpile Area within the Contractor Off-Site Offload Facility such that all effluent drainage water, stormwater, or other form of discharges from stockpiled dredge material, Identified Debris, Dredge Debris, and Demolition Debris are collected for wastewater treatment and proper disposal.
 - .1 No direct discharge of untreated effluent from the Off-Site Stockpile Area to the receiving waters is allowed.
 - .2 All effluent from the Off-Site Stockpile Area must be collected, treated, and discharged to federal, provincial, state (as applicable), and local Laws and Regulations, and conditions of the permits.
 - .3 The Contractor may elect to construct a wastewater treatment system at the Off-Site Stockpile Area. Wastewater management and disposal must be demonstrated by the Contractor in the Construction Work Plan for compliance with water quality requirements to discharge treated effluent back to the receiving waters, as described in Section 01 35 13.43 (Special Project Procedures for Contaminated Sites). All wastewater discharged to any surface water originating from the Off-Site Stockpile Area must meet Canadian Council of Ministers of the Environment (CCME) or BC ENV water quality guidelines, or the more stringent of the two if in BC, or applicable local regulations in the United States. The Contractor must provide analytical test results to the local discharge authority prior to

discharge and must account for time for the local discharge authority to review and accept the discharge as part of the completion of the work.

- .4 Timber piling Dredge Debris, Identified Debris, and Demolition Debris must be segregated from other dredge materials for separate measurement and payment for disposal as described in Section 35 20 23 (Remedial Dredging and Barge Dewatering), Section 01 11 55 (General Instructions), and Section 02 41 16.01 (Structure Demolition).
- .5 Failure to properly segregate Identified Debris, Demolition Debris, and timber piling Dredge Debris from all other Dredge Debris will forfeit result in the combined debris to be considered Dredge Debris for disposal as described in Section 35 20 23 (Remedial Dredging and Barge Dewatering), Section 01 11 55 (General Instructions), and Section 02 41 16.01 (Structure Demolition). Demolition Debris related to the Former Marine Railway will be paid for separately as identified in Section 02 41 16.01 (Structure Demolition).
- .6 The Contractor may propose to mix additives with the dredge material to bind available water and/or stabilize the dredge material during offloading, stockpiling, or dewatering activities at no extra cost to Canada. The Contractor is solely responsible for determining whether additives must be used and whether the Disposal Facility will accept the dredge material with additives for disposal. The type and amount of amendments or additives and means and methods of mixing must be accepted by the Departmental Representative. The Contractor has sole responsibility for proper storage, handling, and containment of additives. The Contractor also has sole responsibility for cleanup and damage costs related to the use of additives.
- .7 Upon completion of the work, the Contractor must remove all vestiges of dredge material, Identified Debris, Dredge Debris, Demolition Debris, liner, pump, discharge pipe, and other materials and clean up the Off-Site Stockpile Area to the pre-project condition.

3.6 Upland Transportation to Processing Facility, Treatment Facility, and/or Disposal Facility, as Applicable

- .1 The Contractor must employ all BMPs as described in Section 01 35 13.43 (Special Project Procedures for Contaminated Sites), Section 01 35 43 (Environmental Procedures), the EMP, and included in the permits when transporting dredge material, Identified Debris, Dredge Debris, and Demolition Debris to the Processing Facility, Treatment Facility, Disposal Facility, as applicable.
- .2 Once offloaded at the Contractor Off-Site Offload Facility, the material may be barged, trucked, or taken by rail to the appropriate Treatment Facility, or Disposal Facility.

- .3 The Contractor is responsible for the safe transport of all dredge material, Identified Debris, Dredge Debris, and Demolition Debris (in accordance with federal, provincial or state, and local Laws and Regulations, and conditions of the permits).
- .4 Dredge material, Identified Debris, Dredge Debris, and Demolition Debris transported from the Contractor Off-Site Offload Facility must be tarped and adequately secured in watertight containers, to minimize the release of odors and dust and to ensure that no spillage occurs, to the satisfaction of the Departmental Representative.
- .5 IL+ dredge material and materials determined to be Hazardous Waste Quality Materials must be transported by licensed haulers for such waste classes within Canada (or equivalent licensed haulers in the United States if applicable).
- .6 The Contractor is responsible for preparing and signing all manifests and obtaining all acceptances for the transportation of all materials. Waste manifests must be provided to the Departmental Representative. The Contractor must provide sufficient documentation to track all material from the Work Site to the Processing Facility, Treatment Facility, and Disposal Facility.

3.7 Material Processing, Treatment, Destruction, and Disposal

- .1 The Contractor must conduct Suspected UXO segregation activities at a Processing Facility, as described in the Construction Work Plan accepted by the Departmental Representative.
 - .1 The Contractor must provide a magazine for the safe temporary storage of Suspected UXO that have been deemed safe to move by the Contractor's UXO Qualified Personnel. The magazine must meet the requirements of the Explosives Regulations, 2013, and be licenced by Natural Resources Canada. The magazine will only be required to temporarily store Suspected UXO prior to removal by DND for appropriate disposal. The Contractor should anticipate that DND will remove Suspected UXO from the magazine at least on a weekly basis (pick-up by DND may be more frequent if quantities require it).
 - .2 Transportation of Suspected UXOs from the Processing Facility may only be completed by DND's Explosive Ordnance Disposal Team. The Contractor must not transport Suspected UXO from the Processing Facility.
 - .3 At the Contractor's discretion, material processing methods may include sorting, screening, segregation, washing, dewatering, or redistribution by particle size of the dredge material to segregate Suspected UXO greater than 6 mm in size.
 - .4 Dredge material outside of the Leachable Metals Area are to be processed separately from materials from within the Leachable Metals Area for

- Suspected UXO. The Contractor must take measures to ensure that the separate material types are cleaned from the Processing Facility prior to initiating processing of a separate material type. These measures must be outlined in the Construction Work Plan, for acceptance by the Departmental Representative.
- .2 At the Contractor's discretion, optional treatment methods may include bioremediation, chemical treatment, thermal desorption, and incineration. Treatment does not include blending, mixing, stabilization, or dilution. The Contractor must carefully plan treatment so that it is completed in time for disposal, prior to the Substantial Performance date.
 - .3 Additional processing (in addition to the segregation of Suspected UXO) and/or treatment and destruction of dredge material is permitted under this Contract, and additional processing, treatment, and/or destruction activities must be completed in accordance with this Specification and Laws and Regulations. The Departmental Representative reserves the right to inspect processing, treatment, and destruction activities that are being completed at the Processing and/or Treatment Facility at any time, including conducting independent sampling and testing of dredge material. Additional processing is at the Contractor's discretion and will be performed at no additional cost to Canada.
 - .4 The Contractor must provide any and all waste discharge permits from a governing body (i.e., Transport Canada or the Queen's Harbour Master) required to operate the Processing Facility, as well as other permits and authorizations as described in the definition of the Processing Facility and in Section 01 33 00 (Submittal Procedures)
 - .5 The Contractor must provide all Certificates of Treatment (if applicable) prior to final disposal of dredge material, Identified Debris, Dredge Debris, and Demolition Debris at the Disposal Facility and Certificates of Disposals upon delivery of the material to the Disposal Facility as described in Section 01 33 00 (Submittal Procedures). Processing of dredge material must be performed at a Processing Facility. Treatment of dredge material must be performed at a Treatment Facility. Completion of treatment activities at the Contractor Off-Site Offload Facility is not allowed unless the Contractor can provide existing permit and approval documentation indicating that the Contractor Off-Site Offload Facility is a Treatment Facility.
 - .6 The Contractor must not change location of its Processing Facility, Contractor Off-Site Offload Facility, Treatment Facility, or Disposal Facility without prior notification to, and review and acceptance by, the Departmental Representative.
 - .7 Dredge material or other material sent to a Disposal Facility must be permanently stored at that facility.
 - .8 All materials require disposal at an accepted Disposal Facility as IL+ material or potentially greater than IL+ if the Contractor bulk handles the sediment. The Contractor may elect to propose that some of the waste materials be reclassified

and disposed as a non-IL+ material at an accepted Disposal Facility. The Contractor may propose to perform additional ex situ testing of contaminated sediment for Disposal Facility waste profiling purposes. If Contractor chooses to additionally process dredged sediment to try to reduce the classification to below IL+, or performs ex situ testing for Disposal Facility waste profiling, then the risk is solely on the Contractor and no additional costs will be paid to the Contractor regardless of whether the Disposal Facility accepts the processed or treated materials at a different classification than IL+. The Contractor is not permitted to use blending as a means of reclassifying the in situ classification of sediments to be disposed off site. Reclassification may be acceptable for sediments that are treated or removed from in between previous sediment sampling points subject to appropriate assessment of stockpiled material and according to BC CSR Technical Guidance #1. The Departmental Representative must accept the reclassified material. Recycling or beneficial use of the waste materials (not disposed of at a Disposal Facility) is prohibited.

- .9 If materials are additionally processed to separate waste streams to try to reduce the quantity of IL+ disposal:
 - .1 The Contractor may elect to test each waste stream, including any wastewater generated or accumulated as part of processing and the Contractor must provide results to the Departmental Representative prior to transporting any additionally processed material from the Processing Facility. The Departmental Representative must provide written acceptance of the re-classified material, according to submittals procedures in Section 01 33 00 (Submittals Procedures), prior to the material being removed from the Processing Facility. The Contractor must allow for sufficient time for Departmental Representative review and acceptance of test results in determining its construction sequence and schedule, as part of the completion of their work.
 - .2 The Contractor must provide documentation from the Disposal Facility that the Disposal Facility accepts all waste streams for disposal, whether IL+, less than IL+, or greater than IL+, such as materials determined to be Hazardous Waste Quality Materials, that may have resulted from the Contractor's processing of the dredge material.
 - .3 By additionally processing the sediment to try to reclassify portions of the material for disposal purposes, the Contractor takes on sole responsibility for proper transport and disposal of all materials, regardless of reclassification results. If the Contractor's choice to process the material results in a change in the disposal classification to Hazardous Waste Quality Materials (e.g., concentrating the contaminants in a smaller waste volume), the Contractor must properly dispose of the Hazardous Waste Quality Materials following all applicable Laws and Regulations. No additional costs will be paid to the Contractor for changes resulting from reclassification of materials due to processing.

- .4 The UXO Qualified Personnel and Archaeological Monitor must inspect all processed waste streams and associated stockpiles.
- .5 The Contractor must provide safe access to the processed waste streams for Departmental Representative, Archaeological Monitor, and UXO Qualified Personnel inspection.
- .10 All wastewater discharged to any surface water originating from the Processing Facility must meet applicable permit discharge requirements. Wastewater management and disposal must be demonstrated by the Contractor in the Construction Work Plan for compliance with water quality requirements to discharge treated effluent back to the receiving waters, as described in Section 01 35 00.50 (Special Procedures for Harbour Controls). In the absence of applicable permit discharge requirements, the water must meet CCME or BC ENV water quality guidelines, or the more stringent of the two. The Contractor must provide analytical test results to the local discharge authority prior to discharge, and must account for time for the local discharge authority to review and accept the discharge as part of the completion of the work.

END OF SECTION

1. PART 1 – GENERAL

1.1 Description

- .1 Following completion of all dredging and excavation activities (Required Dredging and Contingency Re-Dredging) and acceptance of the work in the North Work Zones or South Work Zones by the Departmental Representative, the Contractor must place Engineered Cap material and Backfill Material as described in this Specification section and in Section 01 11 55 (General Instructions).
- .2 Engineered Cap and Backfill Material must be placed in the Material Placement Areas described in the table below and shown on the Drawings:

Material Placement Area – Backfill Material	Backfill Material Type	General Description ¹
B1	1	Washed well-graded base (structural backfill)
B2	1	Washed well-graded base (shoreline and underpier backfill)
B3	2	Coarse washed sand (nearshore backfill)
B4	3	Fine grained river sand (post-dredge residuals management cover)
B5	3	Fine grained river sand (natural recovery backfill cover)
B6	9, 5	Gravel-sand (nearshore backfill), cobble and gravel (kelp habitat)

Material Placement Area – Engineered Cap	Engineered Cap Material Type	General Description ¹
C1	4, 5, 2	Layer 3, Material Type 2: coarse washed sand (nearshore habitat backfill) Layer 2, Material Type 5: cobble and gravel (cap filter layer) Layer 1, Material Type 4: GAC-amended gravelly sand (cap isolation layer)
C2	6, 5, 2	Layer 3, Material Type 2: coarse washed sand (nearshore habitat backfill) Layer 2, Material Type 5: cobble and gravel (cap filter layer) Layer 1, Material Type 6: GAC-amended gravelly sand (cap isolation layer)

Material Placement Area – Engineered Cap	Engineered Cap Material Type	General Description ¹
C3	6, 5, 7	Layer 3, Material Type 7: riprap (armour layer) Layer 2, Material Type 5: cobble and gravel (cap filter layer) Layer 1, Material Type 6: GAC-amended gravelly sand (cap isolation layer)
C4	8, 5, 2	Layer 3, Material Type 2: coarse washed sand (nearshore habitat backfill) Layer 2, Material Type 5: cobble and gravel (cap filter and armour layer) Layer 1, Material Type 8: gravelly sand (cap isolation layer)

Note:

(1) Backfill Material and Engineered Cap Material Types are defined in Part 2 of this section.

- .3 Backfill Material will be placed in Material Placement Areas B1 through B6 to the elevations, thicknesses, and limits as shown on the Drawings. A total of five (5) different Material Types must be used for the project as Backfill Material as follows:
 - .1 Material Type 1 must be placed in Material Placement Area B1 to the elevations and limits shown on the Drawings. This material will be placed at the variable Targeted Placement Elevations and includes a Vertical Placement Tolerance as shown on the Drawings. Its purpose is to return elevations to within ± 0.15 metre (m) of pre-construction seabed elevations in order to provide structural support in the area of the fender system (Y Jetty) prior to their reinstatement of the fender system components.
 - .2 Material Type 1 must be placed in Material Placement Area B2 to the thicknesses and limits shown on the Drawings. The material will be placed at the Targeted Placement Thickness of 0.5 m and includes a Vertical Placement Tolerance as shown on the Drawings. Its purpose is to provide backfill cover material over existing site sediments within shoreline areas and underneath the Y Jetty structure. Material Type 1 placed in Material Placement Area B2 must only occur within the active Work Zone and the Contractor must take care to not place this material on the opposite side of Y Jetty adjacent to DND vessels.
 - .3 Material Type 2 must be placed in Material Placement Area B3 to the elevations and limits shown on the Drawings. The material will be placed at the Targeted Placement Elevation and includes a Vertical Placement Tolerance as shown on the Drawings. Its purpose is to return elevations to within ± 0.15 m of pre-construction seabed elevations to support restoring the seabed elevations to pre-construction elevations in these areas.

- .4 Material Type 3 must be placed in Material Placement Area B4 to the thicknesses and limits shown on Drawing. The material will be placed at the Required Minimum Placement Thickness of 0.3 m as shown on the Drawings following dredging as directed by the Departmental Representative based on the results of the post-dredge confirmation sampling. The Contractor must assume that Material Type 3 will be placed over the entirety of Material Placement Area B4. This material includes a Maximum Overplacement Allowance as shown on the Drawings. The purpose of this material is to provide residuals management cover over the post-dredge surface. The Contractor must pay careful attention to its means and methods and use of Maximum Overplacement Allowance to prevent the final surface elevations of Material Type 3 placed in Material Placement Area B4 from being higher than the pre-construction seabed elevations in Area B4. The Departmental Representative reserves the right to require the Contractor to remove Material Type 3 higher than pre-construction seabed elevations at no additional cost to Canada.
- .5 Material Type 3 must be placed in Material Placement Area B5 to the thicknesses and limits shown on the Drawings. The material will be placed at the Required Minimum Placement Thickness of 0.3 m and includes a Maximum Overplacement Allowance as shown on the Drawings. The purpose of this material is to provide backfill cover material to support natural recovery processes in the Lang Cove open water area as shown on the Drawings.
- .6 Material Types 9 and 5 must be placed in Material Placement Area B6 to the elevations and limits shown on the Drawings. The materials will be placed at the Targeted Placement Elevations and include a Vertical Placement Tolerance as shown on the Drawings. The purpose of Material Type 9 is to return elevations to within 0.3 m of pre-construction seabed elevations to support natural recovery and provide cobble substrate to encourage kelp recolonization in these areas. Material Type 5 must be placed in a continuous layer within Material Placement Area B6 as shown on the Drawings.
- .4 Engineered Cap materials will be placed in Material Placement Areas C1 through C4 to the elevations, thicknesses, and limits as shown on the Drawings. Engineered Cap composition and thicknesses consist of three (3) layers of different Material Types. A total of six (6) different Material Types must be used for the project as Engineered Cap material, as follows:
 - .1 The Engineered Cap in Material Placement Area C1 consists of a layer of Material Type 4, covered by Material Type 5, with a top layer of Material Type 2. Material Types 4, 5, and 2 must be placed in Material Placement Area C1 to the thicknesses, elevations, and limits shown on the Drawings. Material Types 4 and 5 will be placed at the Required

- Minimum Placement Thickness and include a Maximum Overplacement Allowance as shown on the Drawings. Material Type 2 will be placed at the Targeted Placement Elevation and includes a Vertical Placement Tolerance as shown on the Drawings.
- .2 The Engineered Cap in Material Placement Area C2 consists of a layer of Material Type 6, covered by Material Type 5, with a top layer of Material Type 2. Material Types 6, 5, and 2 must be placed in Material Placement Area C2 to the thicknesses, elevations, and limits shown on the Drawings. Material Types 6 and 5 will be placed at the Required Minimum Placement Thickness and include a Maximum Overplacement Allowance shown on the Drawings. Material Type 2 will be placed at the Targeted Placement Elevation and includes a Vertical Placement Tolerance as shown on the Drawings.
 - .3 The Engineered Cap in Material Placement Area C3 consists of a layer of Material Type 6, covered by Material Type 5, with a top layer of Material Type 7. Material Types 6, 5, and 7 must be placed in Material Placement Area C3 to the thicknesses and limits shown on the Drawings. Material Type 7 includes the removal, stockpile, and re-use of existing armour rock including procurement and installation, as needed, of additional armour rock to meet the Required Minimum Placement Thickness. The Engineered Cap materials will be placed at the Required Minimum Placement Thickness and include a Maximum Overplacement Allowance for each Material Type as shown on the Drawings.
 - .4 The Engineered Cap in Material Placement Area C4 consists of a layer of Material Type 8, covered by Material Type 5, with a top layer of Material Type 2. Material Types 8, 5, and 2 must be placed in Material Placement Area C4 to the thicknesses, elevations, and limits shown on the Drawings. Material Types 8 and 5 will be placed at the Required Minimum Placement Thickness and include a Maximum Overplacement Allowance as shown on the Drawings. Material Type 2 will be placed at the Targeted Placement Elevation and includes a Vertical Placement Tolerance as shown on the Drawings.
 - .5 This work includes furnishing all labor, materials, tools, equipment, and incidentals required for Engineered Capping and Backfill Material placement in support of the overall project as described in the Drawings and in these Specifications.
 - .1 The Contractor is responsible for re-design of Backfill Material and Engineered Cap layers if Required Dredging and/or Contingency Re-Dredging activities are not completed to the Required Dredge Elevations and grades or to the Contingency Re-Dredging Minimum Cut Thickness due to potential sub-grade variability (i.e., encountering hard material, such as glacial till or bedrock, within the Dredge Prism above the Required Dredging elevations or thicknesses). Re-design of Backfill

Material and Engineered Capping layers must be completed to meet the material thickness requirements as shown on the Drawings. The Contractor must account for this potential re-design within the unit price for Tender Items included in this section of the Specifications.

- .2 If re-design of Backfill Material and Engineered Cap layers is required following completion of Required Dredging and/or Contingency Re-Dredging activities, the Contractor must complete and submit the proposed re-design (stamped by a QP) of the Backfill Material and Engineered Cap layers to the Departmental Representative for review and acceptance prior to starting material placement activities in the re-design areas.
- .6 Grounding of equipment outside of the Work Site boundary shown on the Drawings, in previously dredged areas or in areas where material placement has already occurred, 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.
- .7 The Contractor must proceed with caution when placing all required Backfill and Engineered Capping materials in Lang Cove while maintaining, navigating, or transiting floating vessels or other equipment outside of the Exclusion Zone, as shown on the Drawings.
- .8 All Engineered Cap and Backfill Materials must be delivered to the site by barge, with the exception that Material Placement Area C3 Engineered Cap materials may be delivered by upland transportation with acceptance from the Departmental Representative, and the Contractor must follow the security measures and protocols identified in Section 01 11 55 (General Instructions) and Section 01 51 00 (Temporary Facilities).
- .9 The Contractor must employ material placement techniques that protect existing structures adjacent to the work, such as the Y Jetty superstructure and steel pipe piles, Y Jetty mechanical and electrical utility services, existing boat ramp, previously recorded heritage shipwrecks in the Exclusion Zone, and existing riprap slope protection, as shown on the Drawings. Contractor must employ extreme care and take all practicable precautions when conducting work adjacent to the Y Jetty structure and fender piles and the Lang Cove Exclusion Zone. The Contractor is required to install protection for the Y Jetty superstructure and steel pipe piles, mechanical and electrical services, and other temporary structural protection as described in Section 02 41 16.01 (Structure Demolition).

1.2 Measurement and Payment Procedures

- .1 The actual volume of Engineered Capping and Backfill Material that the Contractor may need to place in order to achieve the Required Minimum Placement Thickness, Targeted Placement Elevation, or Targeted Placement Thickness (as shown on the Drawings) is dependent upon the constructed post-

dredge surface and by the Contractor's placement means and methods. The Contractor must account for any costs associated with additional placement volume (i.e., the Vertical Placement Tolerance, Maximum Overplacement Allowance, loss of Backfill Material during placement) that the Contractor may use in order to meet the Required Minimum Placement Thickness, Targeted Placement Elevation, or Targeted Placement Thickness in the Tender Item price for MATERIAL PLACEMENT AREA B1 – MATERIAL TYPE 1; MATERIAL PLACEMENT AREA B2 – MATERIAL TYPE 1; MATERIAL TYPE 2; MATERIAL TYPE 3; MATERIAL TYPE 4; MATERIAL TYPE 5; MATERIAL TYPE 6; MATERIAL TYPE 7; MATERIAL TYPE 8; and MATERIAL TYPE 9 (which represents only the payable volume or area).

- .1 The Contractor must place Engineered Capping and Backfill Material, as shown on the Drawings, for MATERIAL PLACEMENT AREA B1 – MATERIAL TYPE 1; MATERIAL PLACEMENT AREA B2 – MATERIAL TYPE 1; MATERIAL TYPE 2; MATERIAL TYPE 3; MATERIAL TYPE 4; MATERIAL TYPE 5; MATERIAL TYPE 6; MATERIAL TYPE 7; MATERIAL TYPE 8; and MATERIAL TYPE 9, as included in the Unit Price Table.
- .2 Engineered Capping and Backfill Material must be placed within the lateral extents of the Material Placement Areas shown on the Drawings, and to the Required Minimum Placement Thickness, Targeted Placement Elevation, or Targeted Placement Thickness shown on the Drawings. Placement outside the lateral extents of the Material Placement Areas and/or above the Maximum Overplacement Allowance or Vertical Placement Tolerance will not be included as payable volume. Placement within the Vertical Placement Tolerance or Maximum Overplacement Allowance will be paid. The Contractor must take into account the amount of non-payable overplacement volumes that will result from the Contractor's placement means and methods, and account for that volume and associated costs in its Tender Item price for each Material Type.
- .3 The Vertical Placement Tolerance for each Engineered Cap and Backfill Material is shown on the Drawings. Material placed outside of the Material Placement Area horizontal extents and/or above the Vertical Placement Tolerance or Maximum Overplacement Allowance is considered Excessive Overplacement. Excessive Overplacement, as determined from comparison of Engineered Cap and Backfill Pre-Construction and Engineered Cap and Backfill Post-Construction Surveys, will not be paid for. 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.

- .4 If Excessive Dredging requires corrective action to fill in the over-dredged areas, the Engineered Cap or Backfill Material placed to fill in Excessive Dredging areas will be paid by the Contractor.
- .2 Measurement for Backfill Material placed within Material Placement Areas B2, B4, and B5 will be payable by the square metre (m²) and will be based on comparison of Backfill Pre-Construction Surveys and Backfill Post-Construction Surveys placed within the thicknesses and limits shown on the Drawings to determine the surface area accepted as complete by the Departmental Representative.
 - .1 Payment for placement within Material Placement Area B2 will be made at the price under the Tender Item for MATERIAL PLACEMENT AREA B2 – MATERIAL TYPE 1, as indicated on the Unit Price Table.
 - .2 Payment for placement within Material Placement Area B4 and B5 will be made at the price under the Tender Item for MATERIAL TYPE 3, as indicated on the Unit Price Table.
- .3 Measurement for Backfill Material placed within Material Placement Areas B1, B3, and B6, and measurement for each layer of Engineered Cap placement within Material Placement Areas C1, C2, C3, and C4 will be made by the payable in situ cubic metre (m³), based on comparison of Engineered Cap and Backfill Pre-Construction and Engineered Cap and Backfill Post-Construction Surveys. Payment for Engineered Cap placement will be made under the Tender Items for MATERIAL PLACEMENT AREA B1 – MATERIAL TYPE 1; MATERIAL TYPE 2; MATERIAL TYPE 4; MATERIAL TYPE 5; MATERIAL TYPE 6; MATERIAL TYPE 7; MATERIAL TYPE 8; and MATERIAL TYPE 9 as indicated on the Unit Price Table. It is the Contractor's responsibility for calculation of actual volumes and/or tonnage of Engineered Cap and Backfill Materials that are required to address material consolidation, subgrade settlement, and overall material loss.
- .4 Monthly progress payments during completion of the work will be measured based on Contractor-reported volumes 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 volumes associated with completed work under each respective Tender Item and include a statement certifying that the work has been completed.
- .5 Final payment will be based on the final measurement of volume of material placed, and final payment must be reconciled with previous monthly progress payments to determine the amount of final payment.

1.3 Related Sections

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

- .3 Section 01 35 13.43 (Special Project Procedures for Contaminated Sites)
- .4 Section 01 35 43 (Environmental Procedures)
- .5 Section 01 45 00 (Quality Control)
- .6 Section 01 51 00 (Temporary Facilities)
- .7 Section 02 21 13 (Surveying and Positioning Control)
- .8 Section 02 41 16.01 (Structure Demolition)

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 in accordance with Section 01 33 00 (Submittal Procedures) within ten (10) working days following Contract Award for review and acceptance by the Departmental Representative.
- .2 As part of the detailed Construction Work Plan, in accordance with Section 01 33 00 (Submittal Procedures), the Contractor must prepare a section that describes the approach that will be implemented for Engineered Capping and Backfill Material placement activities. Engineered Capping and Backfill Material placement activities in a North Work Zones or South Work Zones must not begin until: 1) the Construction Work Plan has been reviewed and accepted by the Departmental Representative; and 2) all Required Dredging and Contingency Re-Dredging is completed within the North Work Zones or South Work Zones and has been 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 Engineered Capping and Backfill Material placement activities in each Work Zone, 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 Methods and procedures for pre-soaking and blending of Granular Activated Carbon (GAC) to meet requirements in Part 3 – Execution of this section.

- .5 Documentation of the origin of the imported Engineered Capping and Backfill Material 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.
 - .6 Identification and certification documents for the independent, certified analytical laboratory that will conduct required testing for all Engineered Capping and Backfill Material that will be used as part of this Contract, as described in this Specification.
 - .7 Methods and procedures for completing Engineered Capping and Backfill Material placement activities must include means and methods for providing Environmental Protection, as described in Section 01 35 13.43 (Special Project Procedures for Contaminated Sites).
 - .8 Methods and procedures for completing Engineered Capping and Backfill Material placement activities must include means and methods for the protection of the underpier concrete bearing piles and timber piles, and any other existing structures during placement.
- .3 A sample of each of Material Types 1 through 9 (with the exception of Material Type 7) to be used for the work must be provided to the Departmental Representative a minimum of two (2) weeks in advance of use at the Work Site. Each sample must consist of approximately 20 kilograms (kg) of material and must be composited from no less than five (5) subsamples taken throughout any one source. The Contractor must ensure that the sample is representative of the material to be imported. The Contractor must ensure that the source of Engineered Cap and Backfill Material will not change once the sample has been submitted or must submit a new separate sample for review and acceptance by the Departmental Representative if a new source of Engineered Cap or Backfill Material is used.
- .1 For imported Material Type 7 the Contractor does not need to submit a sample but must adhere to the inspection of materials requirements as required in this Specification section.
- .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 two (2) weeks prior to the start of Engineered Capping and Backfill 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 Engineered Capping and Backfill Material has 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 by noon the following day,

after 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 Formation Safety Environment Manual, Directive E2. Environmental and Archaeological Management of Land Alteration Activities (provided in Appendix G)
- .8 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 Engineered Capping and Backfill Material placement activities must be performed in accordance with environmental protection requirements, as stated in Section 01 35 13.43 (Special Project Procedures for Contaminated Sites), and 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 Engineered Capping and Backfill Material 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 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 Site at no extra cost to Canada. Acceptance or rejection of import materials brought to the Work Site will be provided within one (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 Engineered Capping or Backfill Material. 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 Site will meet the appropriate requirements of the Specifications. The Contractor must provide notice to the Departmental Representative within five (5) working days of such inspections. At the discretion of the Departmental Representative, the Departmental Representative or another Departmental Representative-designated representative may accompany the Contractor to witness such inspections. 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, and the cost of such operations may be deducted from any money due to 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 Backfill Material and Engineered Cap Material Types

- .1 All nine (9) types of Backfill Material and Engineered Cap materials must meet the testing requirements as described in these Specifications.
- .2 All nine (9) types of Backfill Material and Engineered Cap materials must not contain any man-made products or debris, odorous substances must not be present, and the materials must meet CSR and CCME applicable standards as defined in this Specification section.
 - .1 For Material Type 7, this requirement is applicable for the imported material that will likely be needed to provide the sufficient quantity of armour to meet the Required Minimum Placement Thickness shown on the Drawings.
- .3 Material Type 1 must conform to the British Columbia Ministry of Transportation and Infrastructure (BC MOTI) specifications for Well-graded Base 75 millimetres (WGB 75 mm) as provided in the table below:

Material Type 1

Sieve Designation	Percent Passing
75 mm	100
37.5 mm	60 – 100
19 mm	35 – 80
9.5 mm	25 – 60
4.75 mm	20 – 40
2.36 mm	15 – 30
1.18 mm	10 – 20
0.30 mm	3 – 10
0.075 mm	0 – 5

- .1 Material Type 1 must be washed prior to placement. Contractor must ensure material is clean and free of suspendable fines. Material Type 1 may be inspected by the Departmental Representative and/or the PWGSC Environmental Monitor.
- .4 Material Type 2 must be a coarse washed sand material, free of organic material, and must conform to the gradation defined in the table below:

Material Type 2

Sieve Designation	Percent Passing
12.5 mm	100
4.75 mm	35 – 100
2.36 mm	20 – 70
1.18 mm	13 – 50
0.6 mm	8 – 35
0.3 mm	5 – 25
0.15 mm	2 – 15
0.075 mm	0 – 2

- .1 Material Type 2 must be washed prior to placement. Contractor must ensure material is clean and free of suspendable fines. Material Type 2 may be inspected by the Departmental Representative and/or the PWGSC Environmental Monitor.
- .5 Material Type 3 must be clean, fine-grained river sand material free of organic material, as similar in nature to the native sediment within the Work Site (sand) as

practicable, and must conform to the 2009 Platinum Edition (Volume II) of the MMCD as provided in the table below:

Material Type 3

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

.6 Material Type 4:

- .1 Material Type 4 must be a granular gravelly sand and must meet the gradation as defined below for Material Type 8, and must be amended by uniformly blending GAC with a 1% to 1.5% content (by dry weight). See additional pre-soaking and blending requirements in Part 3 – Execution of this section.
- .2 The Contractor must provide a means of verification of the GAC content, subject to acceptance by the Departmental Representative.
- .3 Material Type 4 must be blended prior to placement and must be blended by proportioning the granular material and GAC in proper amounts.
- .4 Granular Activated Carbon
 - .1 GAC must be virgin material.
 - .2 GAC must be washed and free of floatable material.
 - .3 Water soluble ash content of GAC must be less than 0.5% (by weight) per ASTM International (ASTM) D5029.
 - .4 Product specification sheets for the selected GAC must be submitted to the Departmental Representative for review and acceptance prior to ordering the material.
 - .5 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

- .6 The GAC must be suitably packaged to isolate the material from the environment so as to preserve its efficacy for the duration of storage.
 - .7 A visual inspection of the GAC must be made during unloading to identify if any packaging has been damaged. The Departmental Representative must be notified of GAC in damaged packaging. The individual packaging must be marked and further inspected for product integrity.
 - .8 The Contractor may propose an alternative GAC material or products for the purpose of minimizing or eliminating blending or pre-soaking of the GAC prior to placement, to be accepted by the Departmental Representative prior to procurement.
- .7 Material Type 5
- .1 Material Type 5 must be a granular mixture of cobble and gravel, free of organic material, and must conform to the gradation defined in the table below:

Material Type 5

Sieve Designation	Percent Passing
150 mm	100
125 mm	65 – 90
100 mm	40 – 70
56 mm	10 – 20
25 mm	0 – 5

- .8 Material Type 6
- .1 Material Type 6 must be a granular gravelly sand and must meet the gradation as defined below for Material Type 8, and must be amended by uniformly blending GAC with a 3% to 5% content (by dry weight). See additional pre-soaking and blending requirements in Part 3 – Execution of this section.
 - .2 The Contractor must provide a means of verification of the GAC content, subject to acceptance by the Departmental Representative.
 - .3 Material Type 6 must be blended prior to placement, and must be blended by proportioning the granular material and GAC in proper amounts.
 - .4 GAC:
 - .1 GAC must be virgin material.
 - .2 GAC must be washed and free of floatable material.

- .3 Water soluble ash content of GAC must be less than 0.5% (by weight) per ASTM D5029.
- .4 Product specification sheets for the selected GAC must be submitted to the Departmental Representative for review and acceptance prior to ordering the material.
- .5 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
- .6 The GAC must be suitably packaged to isolate the material from the environment so as to preserve its efficacy for the duration of storage.
- .7 A visual inspection of the GAC must be made during unloading to identify if any packaging has been damaged. The Departmental Representative must be notified of GAC in damaged packaging. The individual packaging must be marked and further inspected for product integrity.
- .8 The Contractor may propose an alternative GAC material or products for the purpose of minimizing or eliminating blending or pre-soaking of the GAC prior to placement, to be accepted by the Departmental Representative prior to procurement.
- .9 Material Type 7
 - .1 Material Type 7 must be removed, stockpiled, and re-used armour material from within Material Placement Area C3:
 - .1 Salvaged riprap material excavated from the intertidal bank shoreline within Material Placement Area C3 that is clean (free of sediment), intact, and reusable, must be stockpiled on site (either on a barge, in an available upland location, such as the Y Jetty Access Area, or other area approved by the Departmental Representative with a protected ground surface covering). After riprap has been removed, the post-riprap removal surface of Material Placement Area C3 must be prepared and smoothed for Engineered Cap material placement. Any sediment on the removed riprap must be cleaned off, contained, and disposed of appropriately.
 - .2 Salvaged riprap material must be replaced as armor material as shown on the Drawings and as described in this section.

- .2 Imported material will likely be needed to provide sufficient quantity of armour to meet the Required Minimum Placement Thickness shown on the Drawings and must meet the following requirements:
- .1 Material Type 7 must meet the testing requirements as described in these Specifications.
 - .2 Material Type 7 must not contain any synthetic material or debris.
 - .3 Material Type 7 must consist of material with a median diameter (D50) of between 0.4 m and 0.6 m.
 - .4 Material Type 7 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 7

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

.10 Material Type 8

- .1 Material Type 8 must be a granular gravelly sand material, free of organic material, and must conform to the 2009 Platinum Edition (Volume II) of the MMCD gradation for granular base as provided in the table below:

Material Type 8

Sieve Designation	Percent Passing
19 mm	100
12.5 mm	75 – 100
9.5 mm	60 – 90
4.75 mm	40 – 70
2.36 mm	27 – 55
1.18 mm	16 – 42
0.6 mm	8 – 30
0.3 mm	5 – 20
0.075 mm	2 – 8

.11 Material Type 9

- .1 Material Type 9 must be a washed gravel-sand material, free of organic material, and must conform to the gradation defined in the table below:

Material Type 9

Sieve Designation	Percent Passing
25 mm	100
12.5 mm	80 – 100
9.5 mm	50 – 100
6.35 mm	30 – 85
4.75 mm	20 – 70
2.36 mm	2 – 50
1.18 mm	0 – 25
0.42 mm	0 – 10
75 mm	0 – 2

- .2 Material Type 9 must be washed prior to placement. Contractor must ensure material is clean and free of suspendable fines. Material Type 9 may be inspected by the Departmental Representative and/or the PWGSC Environmental Monitor.

2.2 Materials Testing

- .1 Chemical testing of Material Type 1 through Material Type 9 is required to assess the acid rock drainage (ARD) and metal leaching (ML) potential of the materials given the potential for ARD and ML to negatively impact water quality. The following laboratory tests must be performed by an independent, certified testing laboratory, hired by the Contractor. The laboratory must be accredited according to Standards Council of Canada, Canadian Association of Laboratory Accreditation Inc. (ISO/IEC 17025) and British Columbia Ministry of Environment and Climate Change Strategy (BC ENV). Laboratory testing of Material Type 1 through Material Type 9 must consist of the following:
- .1 ARD Potential: Acid Base Accounting (ABA) testing
 - .2 ML Potential: Multi-Element Analysis (ICP-MS)
 - .3 ML Potential: Shake Flask Extraction (SFE) testing
- .2 The Contractor must implement a quality assurance/quality control program for Backfill Material and Engineered Cap material 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.

- .3 Relevant portions of ARD/ML guidelines have been developed for mine sites in Canada and must be used as general guidance in assessing ARD and ML potential for non-mining projects. See Price (2009) for discussions on sampling and testing methods and interpretation of test results.
- .4 Results of shake flask extraction laboratory testing of metal leaching must be compared, as a screening benchmark, with the British Columbia Approved Quality Water Guidelines and the Canadian Council for Ministers of the Environment (CCME) guidelines for the protection of marine aquatic life. If tests results do not meet requirements for acceptance by these guidelines, then the Contractor must submit a letter from a Qualified Professional regarding suitability recommendation for use of material at the Work Site to the Departmental Representative for acceptance.
- .5 The following additional tests are required to assess durability of Material Type 5 and Material Type 7:
 - .1 Specific gravity per ASTM C127/American Association of State Highway and Transportation Officials (AASHTO) T85; a bulk density of the material must be determined using results of this specific gravity analysis.
 - .2 Aggregate soundness per ASTM D5240.
- .6 Material Type 1 through Material Type 9 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.
- .7 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.
- .8 One sample for every one thousand (1,000) m³ (with an absolute minimum of one sample) of Engineered Capping and Backfill Material imported to the Work Site must be collected by the Contractor and analyzed per the above tests. 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. A minimum of one sample must be collected and analyzed for each backfill type even if the required volume imported to the Work Site is less than 1,000 m³.
- .9 The Contractor must provide a sufficient number of samples (minimum of five [5]) for ARD/ML laboratory testing for Material Type 1 through Material Type 9 (with the exception of Material Type 7).
- .10 All laboratory test results must be submitted to the Departmental Representative no less than two (2) weeks prior to the start of Engineered Capping and Backfill

Material placement activities. Laboratory test results must be less than three (3) months old when submitted. The Departmental Representative will accept or reject the use of the material(s) in writing based on the material testing guidelines and requirement identified in this Specification within two (2) working days of receipt. No material can be placed by the Contractor prior to receipt of acceptance in writing by the Departmental Representative. All material brought to the Work Site that does not meet the above-noted guidelines must be removed from the Work Site immediately at the Contractor's cost. 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 meets the stated guidelines.
 - .2 Include the name and location of all material 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 each type of material tested and 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 provide the material.
- .11 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 General

- .1 The GAC for Material Types 4 and 6 must be soaked in water (fully submerged) and agitated for a minimum of twenty-four (24) hours prior to blending with granular gravelly sand material (Material Type 8). Material Types 4 and 6 must be placed within eight (8) hours after blending the pre-soaked GAC.

3.2 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 Engineered Capping and Backfill Material placement.
- .2 Engineered Capping and Backfill Material placement must be completed in the North Work Zones or South Work Zones after completion of the Required Dredging Post-Construction Survey or Contingency Re-Dredging Post-Construction Survey (if directed by the Departmental Representative) within the North Work Zones or South Work Zones. This Required Dredging Post-Construction Survey or Contingency Re-Dredging (if directed by the Departmental Representative) Post-Construction Survey will serve as the Engineered Cap and Backfill Pre-Construction Survey for placing the Engineered Cap material layers and Backfill Material.
- .3 The Contractor must place all Material Type 1 in Material Placement Area B1 prior to fender pile reinstatement within each Work Zone.
- .4 Material Type 3 must be placed in Material Placement Area B4 (or subareas within Material Placement Area B4) only if directed by the Departmental Representative.
- .5 The Contractor must use the Engineered Cap and Backfill Material Pre-Construction Surveys completed prior to the start of work to determine the Targeted Placement Elevations, Required Minimum Placement Thicknesses, and Targeted Placement Thicknesses for each Work Zone.
- .6 When placing the Engineered Cap, the Contractor must first place the Material Types 4, 6, or 8 (i.e., granular gravelly sand material) bottom layer as required to meet the Required Minimum Placement Thickness, as shown on the Drawings, to be verified by a Post-Construction Survey and accepted by the Departmental Representative, prior to placing the next Engineered Cap material layer in that area.
- .7 Once the Departmental Representative accepts completion of the first Engineered Cap material layer (i.e., Material Types 4, 6, or 8), the Contractor may commence with placement of the second layer of Material Type 5 followed by the final layer of Material Types 2 or 7 as shown on the Drawings, following the same procedure for placement, verification, and acceptance as described above for each layer in each area being worked.
- .8 The Contractor must conduct Progress Surveys and Engineered Cap and Backfill Post-Construction Surveys (and other field verification as the Contractor determines necessary to assess compliance with Required Minimum Placement Thickness, Targeted Placement Elevation, and Targeted Placement Thickness) in accordance with Section 02 21 13 (Surveying and Positioning Control). Engineered Cap and Backfill Post-Construction Surveys must be conducted after placing each Engineered Capping and Backfill Material Type. The Departmental Representative will review the Engineered Cap and Backfill Post-Construction

Survey data and, if satisfactorily completed, will accept the Engineered Capping and Backfill Material placement activities as complete.

- .9 If the Required Minimum Placement Thickness, Targeted Placement Elevation, and Targeted Placement Thickness requirements are not achieved at all specified placement locations for each layer as shown on the Drawings, or Excessive Overplacement occurred, the Contractor must correct placement deficiencies and conduct additional Engineered Cap or Backfill Post-Construction Surveys to the satisfaction of the Departmental Representative and at no extra cost to Canada prior to placing the next subsequent layer.

3.3 Engineered Capping and Backfill Material Placement

- .1 The Contractor must provide barge displacement measurements as obtained by a Qualified Marine Surveyor, or their designee, for all loaded material barges as they arrive at the Work Site. Barge displacement measurements, both empty and full, must also be collected, and provided as part of the Contractor's Daily Construction Report, at the end of each work shift and following placement of all Engineered Cap and Backfill Material stockpiled on the Contractor material barges.
 - .1 The Marine Surveyor Report must document seaworthiness of each barge used for transport of Engineered Cap and Backfill Material to the Work Site from the Contractor's Off-Site Offload Facility or 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 Backfill Material from off site.
- .2 The Contractor must place the Engineered Cap and Backfill Material to meet the Required Minimum Placement Thickness, Targeted Placement Elevation, and Targeted Placement Thickness as shown on the Drawings. No compaction is required.
- .3 If placement of Engineered Capping and/or Backfill 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 When placing materials on slopes, all Engineered Capping and Backfill Material must be placed from the bottom (toe) of the slope upward. Materials must be placed in such a way that allows for complete coverage of the designated area and minimizes disturbance to the existing dredge material surface.
- .5 The Contractor must employ placement means and methods that will avoid resuspending seabed sediment during placement activities and prevent excessive mixing of the placed materials into the seabed sediment. The Contractor must place Engineered Capping and Backfill Material by methods proposed in the

- Construction Work Plan and accepted in writing by the Departmental Representative.
- .6 The Contractor must not place Engineered Capping and Backfill 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.
 - .7 The Contractor must not place barge and dredge derrick anchors or spuds or any other equipment into completed Engineered Capping Areas (Material Placement Areas C1 through C4) or Material Placement Area B1 and must minimize to the extent practicable any anchoring or spudding within other completed Backfill Material areas unless accepted by the Departmental Representative.
 - .8 The Contractor must proceed with caution when placing all required Backfill Material and Engineered Capping material in Lang Cove while maintaining, navigating, or transiting floating vessels or other equipment outside of the Exclusion Zone, as shown on the Drawings.
 - .9 In the event that the Contractor excessively dredges, such that the placement of Engineered Cap and/or Backfill Material is unstable or does not meet the original intent of the backfill design, the Contractor is responsible for redesigning the Engineered Cap and/or Backfill Material placement, and the procurement and installation of materials required to implement the new design, at no additional cost to Canada, and must obtain Departmental Representative acceptance to proceed with the Contractor's proposed redesign (to be stamped by a QP) prior to material placement.

3.4 Backfill Material Placement Under Y Jetty Structure

- .1 Comply with the requirements from Clause 3.3. In addition to those requirements, additional requirements for underpier placement of Material Type 1 are identified in this section.
- .2 Underpier access must be from the water only through the piling bents on the waterside faces of the Y Jetty. No placement operations are allowed through the Y Jetty deck.
- .3 Y Jetty piling bent spacing, cross bracing and other structural items, and deck elevations are shown on the Drawings for information purposes. Contractor is responsible for field verifying dimensions/elevations of structures and underpier access.
- .4 The Contractor must protect all Y Jetty structural items during underpier placement and report any incidents that may have caused damage to the Y Jetty structure immediately to the Departmental Representative. The Contractor will be solely responsible for any corrective actions to repair damage caused by Contractor actions, at no cost to Canada.
- .5 The Contractor must carefully select and implement their means and methods for placing materials under Y Jetty to account for both the tidal fluctuation over the

construction duration and limited access to the underpier areas (both physical access and fluctuating clearance), and to prevent damage to any portion of the existing Y Jetty structure. If Contractor uses a high speed conveyor to place materials under Y Jetty, the placement operations must not damage existing structures through direct impact of either the conveyor equipment or Material Type 1 into the structure. As stated in Section 02 41 16.01 (Structure Demolition), the Contractor is required to protect existing structures during placement of Engineered Capping and Backfill Material.

- .6 The Contractor may only place material on the side of Y Jetty within the active Work Zone. The Contractor must take care to avoid placing material on the other side of the Y Jetty where active DND vessels may be berthed.

3.5 Material Type 3 in Material Placement Area B5

- .1 Comply with the requirements from Clause 3.3. In addition to those requirements, additional requirements for placing Material Type 3 in Material Placement Area B5 are identified below.
- .2 The Contractor must employ controlled placement methods that will avoid re-suspending seabed sediment during placement activities. Placement methods must prevent mixing of the placed materials into the seabed sediment and minimize disturbance of the existing seabed.
- .3 Material Type 3 placement in Material Placement Area B5 must not be dumped in a rapid manner, but must be placed in a controlled manner to prevent disturbance of the seabed sediments.
- .4 Material Type 3 placement in Material Placement Area B5 must be placed as separate individual lifts not exceeding a 300 mm thickness per lift. The elevation of the top of each placed lift must be surveyed and submitted to the Departmental Representative for acceptance prior to placing the next lift.

3.6 Water Quality Criteria Compliance

- .1 The water quality monitoring requirements are described in the EMP and are attached as Appendix B to these Contract documents.
- .2 In accordance with the EMP, the Contractor's Environmental Specialist must conduct water quality monitoring, for quality assurance, during completion of Engineered Capping and Backfill 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 13.43 (Special Project Procedures for Contaminated Sites) and Section 01 35 43 (Environmental Procedures).
- .3 The Contractor must describe in its Construction Work Plan what means, methods, and procedures will be used to prevent water quality exceedances, and what contingency actions will be taken to restore compliance with water quality

requirements should water quality exceedances occur during completion of Backfill Material and Engineered Capping placement activities.

- .4 Delays caused by complying with water quality requirements are not cause for additional compensation to the Contractor.

END OF SECTION