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**SOLICITATION AMENDMENT
MODIFICATION DE L'INVITATION**

The referenced document is hereby revised; unless otherwise indicated, all other terms and conditions of the Solicitation remain the same.

Ce document est par la présente révisé; sauf indication contraire, les modalités de l'invitation demeurent les mêmes.

Comments - Commentaires

**Vendor/Firm Name and Address
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fournisseur/de l'entrepreneur**

Issuing Office - Bureau de distribution

Public Works and Government Services Canada -
Pacific Region

800 Burrard Street, Room 219
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Title - Sujet Colwood Jetties Remediation	
Solicitation No. - N° de l'invitation EZ113-170698/B	Amendment No. - N° modif. 003
Client Reference No. - N° de référence du client	Date 2016-09-29
GETS Reference No. - N° de référence de SEAG PW-\$PWY-020-7856	
File No. - N° de dossier PWY-6-39080 (020)	CCC No./N° CCC - FMS No./N° VME
Solicitation Closes - L'invitation prend fin at - à 02:00 PM on - le 2016-10-12	
Time Zone Fuseau horaire Pacific Daylight Saving Time PDT	
F.O.B. - F.A.B.	
Plant-Usine: <input type="checkbox"/> Destination: <input checked="" type="checkbox"/> Other-Autre: <input type="checkbox"/>	
Address Enquiries to: - Adresser toutes questions à: Ly, Ronny(PWY)	Buyer Id - Id de l'acheteur pwy020
Telephone No. - N° de téléphone (604) 666-0043 ()	FAX No. - N° de FAX (604) 775-6633
Destination - of Goods, Services, and Construction: Destination - des biens, services et construction: DND - CFB Esquimalt - Colwood, BC	

Instructions: See Herein

Instructions: Voir aux présentes

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Vendor/Firm Name and Address Raison sociale et adresse du fournisseur/de l'entrepreneur	
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Name and title of person authorized to sign on behalf of Vendor/Firm (type or print) Nom et titre de la personne autorisée à signer au nom du fournisseur/ de l'entrepreneur (taper ou écrire en caractères d'imprimerie)	
Signature	Date

Solicitation No. - N° de l'invitation
EZ113-170698/B
Client Ref. No. - N° de réf. du client

Amd. No. - N° de la modif.
003
File No. - N° du dossier

Buyer ID - Id de l'acheteur
pwy020
CCC No./N° CCC - FMS No./N° VME

Please find Addendum #2 herein

ALL OTHER TERMS AND CONDITIONS REMAIN UNCHANGED.

**Tender Addendum #2
Colwood Jetties Remediation Project**

GENERAL

The following changes/clarifications in the tender documents are effective immediately. This Addendum will form part of the Contract Documents.

SPECIFICATIONS

- 1) Specification section 35 37 10 (Material Placement) was updated to include additional requirements for material chemical testing. The revised specification section is attached.

DRAWINGS

- 1) One drawing was updated. Drawing T-4 was updated with revised Available On-Site Staging Areas.

CLARIFICATIONS

Reponses to questions received by PWGSC through 27 September 2016 are provided in the attached table.

CJRP Response to Bidders Questions
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Question Number	Question	Response
1	<p>01 35 29 Health and Safety Requirements, 1.26.7 Hydrogen sulfide monitoring will be undertaken in and around the work area during dredging of sediment.</p> <p>Who performs the hydrogen sulfide monitoring? PWGSC Environmental Monitor?</p>	<p>The Contractor, in their role as Prime Contractor, is responsible for the health and safety of workers at the site, and environmental protection. As such, if the Prime Contractor deems this necessary for worker safety, the Contractor will perform monitoring, such as hydrogen sulfide monitoring, in and around the work area.</p>
2	<p>01 51 00 Temporary Facilities, 1.9..1 The Contractor shall coordinate with the Departmental Representative regarding availability of power and light at the On-Site Staging Areas. The Contractor shall not rely on availability of power and light at the On-Site Staging Areas.</p> <p>Is a power drop available for the On-Site Staging Areas?</p>	<p>The present location for the staging area at Yew Point does not have a power drop available. At the F/G Jetty On-Site Staging Area, an adjacent power pole is present; however, the Contractor will need to request a power drop from the Departmental Representative.</p>
3	<p>01 74 11 Cleaning 1.1..2 Remove waste materials from site at daily regularly scheduled times or dispose of as directed by the Departmental Representative. Do not burn waste materials on site. Given anticipated small quantities of waste can the removal be completed weekly per normal commercial waste pick up schedules?</p>	<p>It is anticipated that this will be acceptable; however, the Contractor would be required to schedule normal commercial waste pick-up, in accordance with CFB Esquimalt security requirements.</p>
4	<p>Please confirm EM is PWGSC EM, and that PWGSC Environmental Monitor will perform the water quality sampling, testing, and monitoring. Is the contractor required to provide a boat for the PWGSC EM to use?</p>	<p>The Contractor's water quality monitoring requirements are described in Section 01 35 13.43 (Clause 1.26.1, 3.6.1) and Section 35 20 23 (Clause 1.1.10). The Contractor must satisfy themselves the requirements of the Specification, EMP, WQMP, and the EPP are being met. Per Section 01 35 13.43, (Clause 3.6.3), "Under no circumstances will activities conducted by the PWGSC EM alleviate the Contractor's responsibility to monitor its own operations to ensure the Contractor is meeting the water quality requirements of the EMP." PWGSC's EM will separately conduct field inspections and monitoring on behalf of the Departmental Representative to verify the requirements are being met.</p> <p>The Contractor is not responsible to provide a boat for the Departmental Representative's environmental monitor.</p>

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5	<p>EMP 7.7.2: "An abalone field assessment will be conducted in accordance with DFO survey protocol guidance (e.g. conducted during nighttime) to survey for potential abalone presence in areas previously identified as potentially suitable abalone habitat. Should the density of abalone observed during the nighttime survey exceed the density threshold in DFO's guidance (Lessard et al. 2007), DFO will be consulted to develop appropriate mitigation measures. Mitigation measures may include relocation of individual abalone; therefore, a permit pursuant to the Species at Risk Act will be applied for to allow for relocation if necessary." Will the abalone field assessment be conducted by PWGSC?</p>	<p>An abalone field assessment has been conducted by PWGSC and no abalone were observed at the Work Site. The Contractor will not need to conduct abalone-related assessments or consultation with DFO regarding abalone.</p>
6	<p>The EMP contemplates off-site, upland processing facility. Please confirm that an on-site barge mounted processing facility is allowed and compatible with EMP.</p>	<p>An on-site barge-mounted Processing Facility is allowed, per the Specifications, and is still bound by the same environmental requirements as an upland facility, as described in the EMP.</p>
7	<p>Please clarify the roles and responsibilities of the PWGSC Environmental Monitor versus the Contractor's Environmental Monitor. What testing, sampling and analysis is the Contractor's environmental monitor responsible for?</p>	<p>Definitions for PWGSC EM and Contractor Qualified Professional are provided in Section 01 11 55 (Clause 1.3.46/47). The Contractor must satisfy themselves the requirements of the Specification, EMP, WQMP, and the EPP are being met. Per Section 01 35 13.43, (Clause 3.6.3), "Under no circumstances will activities conducted by the PWGSC EM alleviate the Contractor's responsibility to monitor its own operations to ensure the Contractor is meeting the water quality requirements of the EMP." PWGSC's EM will separately conduct field inspections and monitoring on behalf of the Departmental Representative to verify the requirements are being met.</p>
8	<p>Specification Section 01 11 55 - General Instructions indicates the Processing Facility must be located within the extents of the area of responsibility for the DND's explosive ordinance disposal (EOD) based at the Fleet Diving Unit Pacific as shown on the drawings. Please direct us to the drawing showing this area or provide at your earliest convenience.</p>	<p>The area of responsibility is depicted on Drawing Sheet T-2.</p>
9	<p>GC1.8 (2014-06-26) Laws, permits and taxes Item 2 states "Unless stipulated otherwise in the Contract, the Contractor shall obtain and maintain all permits, certificates, licenses, registrations and authorizations required for the lawful performance of the Work." Please provide an exhaustive list of which permits are the responsibility of the Contractor.</p>	<p>The Contractor is required to obtain all permits, certificates, licenses, registrations, and authorizations required for the work and will need to determine what these permits may be. PWGSC will be responsible for all coordination with the Department of Fisheries and Oceans associated with on-site activities.</p>

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10	GC3.8 (2014-03-01) Labour – 1 states “To the extent to which they are available, consistent with proper economy and the expeditious carrying out of the Work, the Contractor shall, in the performance of the Work, employ a reasonable number of persons who have been on active service with the Armed Forces of Canada and have been honourably discharged therefrom.” Please define "reasonable" and if this is a requirement that will be enforced by PWGSC during the work.	It is up to the Contactor to decide what a “reasonable” number is, to the extent to which they are available. The requirement is enforceable up to the discretion of PWGSC.
11	GC5.10 (2007-05-25) states “Assessments and Damages for Late Completion. If the Contractor does not complete the Work by the day fixed for its completion but completes it thereafter, the Contractor shall pay Canada an amount equal to the aggregate of a. all salaries, wages and travelling expenses incurred by Canada in respect of persons overseeing the performance of the Work during the period of delay; b. the cost incurred by Canada as a result of the inability to use the completed Work for the period of delay; and c. all other expenses and damages incurred or sustained by Canada during the period of delay as a result of the Work not being completed by the day fixed for its completion.” Please confirm what these costs are for incorporation into the pricing.	The Contractor is expected to provide pricing as indicated in Appendix 2 – Combined Price Form and adhere to the schedules as indicated in the Request for Proposal.
12	Specification Section 01 11 55 - General Instructions – Definitions – 1.3.6 – Contingency Re-Dredge Decision Duration indicates that “The Contractor will not be paid for this decision duration and shall account for this time in the Tendered Price...”. Given the critical schedule component of this project and the recurrence of this duration being no less than three (3) times throughout the course of the work, a fixed duration is required to ensure schedule requirements are met.	Clause 3.1.7 of Section 35 20 23 Remedial Dredging, Barge Dewatering, and In-water Transportation provides the fixed durations for each zone of work.
13	Please clarify if “Obstructions” as defined includes dredging obstructions.	No. The definition of Obstructions in Section 01 11 55 General Instructions limits obstructions to pile driving, pile re-driving, or pile extraction work.

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<p>14</p>	<p>The documents dictate that the work is to be performed continuously but also require a five (5) day review period between the minimum five (5) submissions and a minimum three (3) Contingency Re-Dredge Decision Durations for which the duration remains undefined. This accounts for twenty-five (25) business days added to the schedule when not allowing for the Contingency Re-Dredge Decision Durations. Will PWGSC relax the requirement for the work to be continuous to facilitate the review and acceptance of the required submission in the timeline required or is further refinement of these timelines possible (reduced duration, calendar days in lieu of business days, etc.)? Additionally, can the Contractor proceed with work at risk (without the DR's approval) if Contractor feels the work has been performed conforming to the specifications?</p>	<p>No, PWGSC will not relax the sequencing requirements for work to be continuous to facilitate review and acceptance. As identified in Section 01 11 55, the Contractor is allowed to relocate equipment to other Work Zones during the 5-day survey review period and the Contingency Re-dredge Decision Durations to minimize equipment downtime. With regard to the Contractor working at risk, this can be discussed with the DR on a case-by-case basis during construction.</p>
<p>15</p>	<p>General Instructions 01 11 55 – 1.25 Archeological Structures, Sites or Things indicate that the DR may dictate a slowdown of construction operations at no cost to the Contract. For purposes of comparing competing tenders, please indicate if/how this slowdown is to be captured in the bid or if this is a risk to be assessed/quantified by the Contractor.</p>	<p>It is PWGSC's intent that the risk associated with potential slowdowns due to Archeological Chance Finds during dredging needs be assessed by the Contractor based on the provided Archeological Impact Assessment (AIA) addendum to the Contract Documents and that any potential cost implications be captured in the existing Unit Price Table items.</p>

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<p>16</p>	<p>We are seeking clarification regarding the responsibilities of the Qualified Professional hired by the Contractor for the work and those of the PWGSC Environmental Monitor. In the Special Project Procedures for Contaminated Sites section of the Tender Specifications, Part 3.6 on page 19 of 20 the Aquatic Water Quality Monitoring specifications state: ".1The Qualified Professional will ensure that the Contractor performs all required water quality monitoring identified in the EMP and EPP"... <i>(remainder of clauses removed due to space requirements)</i></p> <p>The Environmental Management Plan produced by Golder Associates Ltd. seems to indicate that the Environmental Monitor hired by PWGSC will complete all water quality monitoring and other environmental monitoring requirements of the EMP. With respect to water quality monitoring, please confirm that the responsibility of the Contractor's Qualified Professional will be to monitor and report on turbidity and TSS and that monitoring for other parameters such as PAH's and metals will be the sole responsibility of the Environmental Monitor under contract with PWGSC. If this interpretation of responsibilities is incorrect, please confirm the water quality monitoring responsibilities of the Contractor's Qualified Professional.</p>	<p>The Contractor must satisfy themselves the requirements of the Specification, EMP, WQMP, and the EPP are being met. Per Section 01 35 13.43, (Clause 3.6.3), "Under no circumstances will activities conducted by the PWGSC EM alleviate the Contractor's responsibility to monitor its own operations to ensure the Contractor is meeting the water quality requirements of the EMP." PWGSC's EM will separately conduct field inspections and monitoring on behalf of the Departmental Representative to verify the requirements are being met.</p> <p>The Contractor is directed to the list of parameters within the WQMP (EMP, Appendix A, Section 3.1) which will be part of the PWGSC EM's evaluation of Contractor compliance</p>
<p>17</p>	<p>Can I confirm that from the definitions in the specifications: That the monitor be a "Registered Professional Archaeologist". Can I confirm that the requirement refers to Registered Professional Consulting Archaeologist (RPCA)? Which is a BC based professional organisation (BCAPA) formed in 1996. In my experience working on similar projects with PWGSC this has commonly been the requirement.</p> <p>Registered Professional Archaeologist, means RPA which is a Baltimore-based organisation formed out of the Society for American Archaeology (SAA). By definition, this is a designation given to Registered Professional Archaeologists who hold a graduate degree in archaeology. Essentially similar designations from similar organisations just based in different countries.</p>	<p>Yes, the RPCA or RPA accreditations are acceptable.</p>

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18	Are daily Environmental Monitoring (EM) reports only required on the days that an Environmental Work Site Inspection is conducted by the EM? (e.g., might only be twice a week)	It would be expected that EM reports should be provided for days that the Contractor's Qualified Personnel is present at the site. However, it is expected that the Contractor provide a daily checklist or other form documenting daily environmental inspections even when the Qualified Professional is not on site. For example, the crew should be inspecting the site daily to ensure there are no spills, leaks, silt curtain issues, etc. and documentation of this inspection will be required daily.
19	Will all mammal, fish and bird monitoring be carried out by PWGSC and their representatives?	The Contractor must satisfy themselves the requirements of the Specification, EMP, and the EPP are being met. Per 01 35 43 (Clause 1.19.3), marine mammal monitoring will be implemented by the PWGSC EM. However, per 01 35 13.43 (Clause 3.7.1), the Contractor shall perform work and take steps to prevent interference or disturbance to fish and wildlife, and is responsible for fulfilling the requirements of the EPP, which include monitoring and inspection. Requirements for mammal, fish, and bird monitoring are outlined in 01 35 43 (Clause 1.19 and 1.20) and in the EMP.
20	Please define mandatory and desirable QEP qualifications.	The definition for the Contractor Qualified Professional is provided in 01 11 55 (Clause 1.3.46/47). The Contractor must satisfy themselves the requirements of the Specification, EMP, WQMP, and the EPP are being met.
21	01 35 29 Para 1.16.1 states that "UXO Qualified Personnel must be responsible for monitoring, identifying, assessing, screening, handling..." This is reiterated in 01 11 55 Para 1.3.66. However, 35 20 23 Para 1.11.3.2 states that "The Contractor shall provide UXO Qualified Personnel on an as needed basis to observe, identify and assess..." Does this mean that a UXO Qualified person must be at each of the screening locations or can we determine based off of precedence and expert opinion where the UXO-qualified personnel can be so long as they are "On Call" for what a general labourer with a one day site-specific UXO brief may "observe" as per 35 20 23 Para 1.11.3.3 which gives the indication that a general labourer may be placed to observe or identify Suspected UXOs. It is therefore requested that PWGSC and/or DND give a clear indication as to the extent that a general labourer may be given the responsibility to monitor, observe or identify a Suspected UXO.	As stated in Clause 1.3.66 in Section 00 11 55 General Instructions, "UXO Qualified Personnel shall be present full time during all processing activities at the Processing Facility and be on call for chance find callouts in the event Suspected UXO are identified during dredging activities at the Work Site. UXO Qualified Personnel shall follow at all times the requirements in Appendix A to these Specifications."
22	We request permission to access the area around Jetty (s) to take sediment samples for bench testing. We will access the area via boat and do not need access to the land.	Access will not be granted prior to the contract being awarded.

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23	Do you require post-processed soils to be sampled and analyzed for disposal if all the material will be disposed of as IL+?	The Contractor may, if required by the Disposal Facility, perform dredge material waste disposal suitability characterization, as necessary, to achieve the proposed off-site Disposal Facility's permit conditions and associated requirements to maintain compliance with applicable disposal regulations.
24	Ref 35 20 23.01 (Offloading, Material Processing, Upland Transportation and Disposal) sub para 3.6.1.1 on pg 17 of 19, if the magazine is placed on DND land, does that negate the requirement for a License from NRCan due to the precedence derived from the contract with DND through DCC that was executed from May to August 2016 at this site?	The magazine is not allowed in DND upland areas. NRCan regulations and licensing requirements for temporary storage of Suspected UXO shall be followed.
25	Ref 35 20 23 (Remedial Dredging, Barge Dewatering and In-water Transportation) sub para 1.5.2.7.3 on pg 8 of 18, if the magazine is placed on DND land, does this preclude the requirement for security of the magazine 24 hours a day or would a security guard still be required. If so, what are the conditions for the security requirement?	The magazine is not allowed in DND upland areas. If the magazine is placed on a barge at the Worksite, the Contractor is required to provide safe temporary storage of Suspected UXO in a magazine.

1. PART 1 – GENERAL

1.1 Description

- .1 Following completion of all dredging activities (Required Dredging and Contingency Re-Dredging) and acceptance of the work in a Zone by the Departmental Representative, the Contractor shall place Backfill Material.
- .2 Structural Backfill Type A shall be placed to the thicknesses and limits shown on the Drawings for the D Jetty North Zone fender system and F/G Jetty Zone gas float structures. Structural Backfill Type A shall be placed prior to reinstatement of the fender system and gas float structures.
- .3 Structural Backfill Type B shall be placed to the thicknesses and limits shown on the Drawings in the D Jetty East Zone.
- .4 General Backfill shall be placed to the thicknesses and limits shown on the Drawings in the F/G Jetty Zone.
- .5 Underpier Cover shall be placed in underpier areas to the thicknesses and limits shown on the Drawings in the D Jetty North Zone.
- .6 Residuals Management Cover shall be placed in the F/G Jetty Zone to the thicknesses and limits shown on the Drawings. In the D Jetty North and D Jetty East Zones, Residuals Management Cover shall be placed as directed by the Departmental Representative based on the results of the post-dredge confirmation sampling. Residuals Management Cover will not be placed in the D Jetty underpier areas where the Underpier Cover is to be placed. Residuals Management Cover will be placed over the Structural Backfill Type A and Type B materials, to the thicknesses and limits shown on the Drawings.
- .7 This work includes furnishing all labor, materials, tools, equipment, and incidentals required for Backfill Material placement in support of the overall project as described in the Drawings and in these Specifications.

1.2 Measurement and Payment Procedures

- .1 The actual volume of Backfill Material that the Contractor may need to place in order to achieve the Required Minimum Placement Elevation, Required Minimum Placement Thickness, Targeted Placement Elevation, or Targeted Placement Thickness (as shown on the Drawings) is dependent upon the post-dredge surface constructed by the Contractor's placement means and methods. The Contractor shall account for any costs associated with additional placement volume that the Contractor may use in order to meet the Required Minimum Placement Elevation, Required Minimum Placement Thickness, Targeted Placement Elevation, or Targeted Placement Thickness in the unit price for STRUCTURAL BACKFILL TYPE A, STRUCTURAL BACKFILL TYPE B, GENERAL BACKFILL,

RESIDUALS MANAGEMENT COVER, or UNDERPIER COVER (which represents only the payable volume).

- .1 The Contractor shall place Backfill Material, as shown on the Drawings, for STRUCTURAL BACKFILL TYPE A, STRUCTURAL BACKFILL TYPE B, GENERAL BACKFILL, RESIDUALS MANAGEMENT COVER, or UNDERPIER COVER, as included in the Unit Price Table.
 - .2 Backfill Material shall be placed within the lateral extents of dredging shown on the Drawings, and to the Required Minimum Placement Elevation, Required Minimum Placement Thickness, Targeted Placement Elevation, or Targeted Placement Thickness shown on the Drawings. Placement outside the lateral extents of dredging and/or above the Required Minimum Placement Elevation, Required Minimum Placement Thickness, or Payable Vertical Placement Tolerance will not be included as Payable Volume and is referred to as the Non-Payable Overplacement Allowance. Placement within the Payable Vertical Placement Tolerance will be paid. Contractor shall take into account the amount of non-payable overplacement volumes that will result from its placement means and methods, and account for that volume in its Tender Price for each Backfill Material.
 - .3 The Non-Payable Overplacement Allowance is 0.30 m for Structural Backfill Type A and Structural Backfill Type B, as shown on the Drawings. The Payable Vertical Placement Tolerance for each Backfill Material is identified in Section 01 11 55 (General Instructions) and shown on the Drawings. Material placed above the Non-Payable Overplacement Allowance and/or above the Payable Vertical Placement Tolerance is considered Excessive Overplacement. Material placed outside of the backfill placement horizontal extents (i.e., dredging limits), above the Non-Payable Overplacement Allowance, and/or above the Payable Vertical Placement Tolerance is considered Excessive Overplacement. Excessive Overplacement, as determined from comparison of Backfill Pre-Construction and Backfill Post-Construction Surveys, will not be paid for. The Departmental Representative reserves the right to require the Contractor to remove Excessive Overplacement material, at no extra cost to the Contract.
 - .4 If Excessive Dredging requires corrective action to fill in those over-dredged areas, the Backfill Material placed to fill in Excessive Dredging areas will be paid by the Contractor.
- .2 Payment for Backfill Material placement will be made by the payable in situ cubic metre (m³), based on comparison of Backfill Pre-Construction and Backfill Post-Construction Surveys, under the Tender Items for STRUCTURAL BACKFILL TYPE A, STRUCTURAL BACKFILL TYPE B, GENERAL BACKFILL, RESIDUALS MANAGEMENT COVER, or UNDERPIER COVER, as indicated on the Unit Price Table.

- .3 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 shall 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.
- .4 Final payment will be based on the final measurement of volume of material placed, and final payment shall 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 02 21 13 (Surveying and Positioning Control)
- .7 Section 35 20 23 (Remedial Dredging, Barge Dewatering and In-Water Transportation)

1.4 Definitions

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

1.5 Submittals

- .1 The Contractor shall submit a detailed Construction Work Plan in accordance with Section 01 33 00 (Submittal Procedures) within fifteen (15) 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 shall prepare a section that describes the approach that will be implemented for Backfill Material placement activities. Backfill Material placement activities in a Zone shall not begin until: 1) the Construction Work Plan has been reviewed and accepted by the Departmental Representative; 2) agency- and community-required notifications and review have been completed; and 3) all Required Dredging and Contingency Re-Dredging is completed within that Zone and has been accepted by the Departmental Representative. At a minimum, the description of the approach for placing materials shall 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 work schedule that identifies timing and sequencing for completion of Backfill Material placement activities in each Zone, as they relate to other major elements of the work.
 - .3 Methods and procedures for placement of materials within required tolerances as laid out in these Specifications and shown on the Drawings.
 - .4 The Contractor shall provide documentation of the origin of the imported 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.
 - .5 The Contractor shall provide identification and certification documents for the independent, certified analytical laboratory that will conduct required testing for all Backfill Material that will be used as part of this Contract, as described in this Specification.
 - .6 Methods and procedures for completion of Backfill Material placement activities shall include means and methods for providing Environmental Protection, as described in Section 01 35 13.43 (Special Project Procedures for Contaminated Sites).
 - .7 Methods and procedures for completion of Backfill Material placement activities shall 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 the five (5) types of Backfill Material to be used for the work shall be provided to the Departmental Representative a minimum of two (2) weeks in advance of use at the Work Site. The sample shall consist of approximately 20 kilograms (kg) of material and should be composited from no less than five (5) subsamples taken throughout any one source. The Contractor shall ensure that the sample is representative of the material to be imported. The Contractor shall ensure that the source of Backfill Material will not change once the sample has been submitted or will submit a new separate sample for review and acceptance by the Departmental Representative if a new source of Backfill Material is used.
- .4 The Contractor shall obtain laboratory test reports, as described in these Specifications. All laboratory test results shall be submitted to the Departmental Representative for review and acceptance no less than two (2) weeks prior to the start of 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 shall keep a daily record of the area(s) where 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 shall be submitted to the Departmental Representative the morning following completion of the work for that day. The Daily Construction Report shall be signed by the Contractor's site superintendent and quality control manager.

- .6 Weekly Reporting: As part of the Contractor's Weekly Construction Report, as described in Section 01 33 00 (Submittal Procedures), the Contractor shall summarize the week's Backfill Material placement activities. The Weekly Construction Report shall also identify anticipated work to be completed in the present week, and present the latest Post-Construction (i.e., post-placement) Survey and Progress Surveys. The Weekly Construction Report shall 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. 2012 Standard Specifications for Highway Construction. November 1, 2012.
- .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, 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, 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 E)

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 shall in no way release the Contractor from complying

with the Specifications and all permits, and shall in no way be construed as acceptance of work.

1.8 Environmental Protection

- .1 Backfill Material placement activities shall 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 Barges of Backfill Material shall be visually inspected by the Contractor upon delivery. Materials shall 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. 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 shall be the responsibility of the Contractor to remove all rejected material from the Work Site at no extra cost to the Contract. Acceptance or rejection of import materials brought to the Work Site shall 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 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 the Contract. Segregated materials may be tested according to designated procedures at the Departmental Representative's discretion. Inspection and testing by the Departmental Representative shall not be used by the Contractor as a delay claim.
- .3 Inspection of Source: The borrow source(s) shall be inspected by the Contractor. During such inspection, the Contractor shall ensure that the materials to be delivered to the Work Site will meet the appropriate requirements of the Specifications. The Contractor shall 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 shall in no way release the Contractor from complying with the Specifications, and shall in no way be construed 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 shall promptly recover and remove the same. The Contractor shall give immediate verbal notice, followed by written confirmation, of the description and location of such obstructions to the Departmental Representative and shall 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 shall be responsible for any fees, fines, penalties, or other costs resulting from misplaced materials.

2. PART 2 – PRODUCTS

2.1 Backfill Material

- .1 All five (5) types of Backfill Material must meet the testing requirements as described in these Specifications.
- .2 All five (5) types of Backfill Material shall not contain any man-made products or debris.
- .3 Structural Backfill Type A shall conform to the British Columbia Ministry of Transportation and Infrastructure (BC MOTI) specifications for Well-graded Base 75 millimetres (WGB 75 mm).
- .4 Structural Backfill Type B shall consist of crushed granular materials, free of organic material, meeting the gradation shown in the table below. The specified gradation is anticipated to be achieved by a blend of approximately 20% by weight BC MOTI Open-graded Base 75 millimetres (OGB 75 mm) and approximately 80% by weight of suitably sized quarry spalls. The blended product shall be developed prior to placement on the transport barge, and the Contractor shall take necessary measures to avoid segregation of the Structural Backfill Type B material during transport and placement. The Structural Backfill Type B material shall not be blended on the transport barge.

Structural Backfill Type B

Sieve Designation (mm)	Percent Passing
200	100
75	20 – 52
50	14 – 40
37.5	10 – 33
19	3 – 19
6.3	0 – 12
2.36	0 – 10
0.3	0 – 8
0.075	0 – 5

- .5 General Backfill shall conform to the British Columbia Ministry of Transportation and Infrastructure Specifications for Granular Sub-Base (SGSB).
- .6 Underpier Cover shall conform to the British Columbia Ministry of Transportation and Infrastructure specifications for Well-graded Base (WGB) 75 mm.
- .7 Residuals Management Cover shall 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 shall conform to the 2009 Platinum Edition (Volume II) of the Master Municipal Construction Documents (MMCD) as provided in the table below:

Residuals Management Cover

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

2.2 Materials Testing

- .1 Chemical testing of Structural Backfill Type A, Structural Backfill Type B , General Backfill, and Underpier Cover (not required for Residuals Management Cover) is required to assess the acid rock drainage (ARD) and metal leaching (ML) potential of the materials as this can negatively impact water quality. The following laboratory tests shall be performed by an independent, certified testing laboratory, hired by the Contractor. The laboratory will be accredited according to Standards Council of Canada, Canadian Association of Laboratory Accreditation Inc. (ISO/IEC 17025) and British Columbia Ministry of Environment. Laboratory tests shall consist of the following:
 - .1 ARD Potential: Acid Base Accounting (ABA) testing
 - .2 ML Potential: Multi-Element Analysis (ICP-MS)
 - .3 Shake Flask Extraction (SFE) testing
- .2 Guidelines for ARD/ML have been developed for mine sites in Canada and shall be used as general guidance in assessing ARD and ML potential for non-mining projects.
- .3 Results of laboratory testing of metal leaching shall be compared, as a screening benchmark, with the British Columbia Approved Water Guidelines and the CCME guidelines for marine aquatic life. If tests results do not meet requirements for acceptance by these guidelines, then the Contractor shall submit a letter of professional opinion regarding suitability recommendation for use of material at the Work Site to the Departmental Representative for acceptance.
- .4 The following additional tests are required to assess the durability of Structural Backfill Type B:

- .1 Specific gravity per ASTM D6437; a bulk density of the material shall be determined using results of this specific gravity analysis.
- .5 The Contractor shall analyze samples of the Residual Management Cover and General Backfill for metals, LEPH, and HEPH. Chemical concentrations of these materials must be lower than the Canadian Council for Ministers of the Environment (CCME) Sediment Quality Guidelines “Probable Effects Levels” (PEL) and British Columbia Contaminated Sites Regulation (CSR) Generic Numerical Sediment Criteria for typical sites. For LEPH (Light Extractable Petroleum Hydrocarbons), and HEPH (Heavy Extractable Petroleum Hydrocarbons), concentrations must be lower than the Contaminated Sites Regulation numerical soil standards for residential land use. This testing is intended to analyze the finer grained portions of these materials the larger fractions (i.e. gravel) of the General Backfill may need to be removed prior to submission to the analytical laboratory.
- .6 One sample for every one thousand (1,000) m³ (with an absolute minimum of one sample) of Backfill Material imported to the Work Site will be collected 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 will be collected and analyzed for each Backfill Material type regardless of the volume imported to the Work Site.
- .7 All laboratory test results shall be submitted to the Departmental Representative no less than two (2) weeks prior to the start of Backfill Material placement activities. Laboratory test results shall 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 shall 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 will be removed from the Work Site immediately at the Contractor’s cost.
- .8 Documented proof of meeting the above-referenced guidelines shall be in the form of a signed cover letter and signed test analysis results from an independent testing firm accredited according to the Standards Council of Canada, the Canadian Association of Laboratory Accreditation Inc. (ISO/IEC 17025), and British Columbia Ministry of Environment.
 - .1 The cover letter shall:
 - .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 shall:
 - .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 all material sources.
- .9 The laboratory utilized by the Contractor must have the appropriate certification in accordance with ISO/IEC Standard 17025. The Contractor shall submit documentation showing that the proposed laboratory is certified for the specific parameters of concern and proposed analytical methods.
- .10 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.

3. PART 3 – EXECUTION

3.1 Sequencing

- .1 This section supplements the general sequence of work as described in Section 01 11 55 (General Instructions) and provides more specific requirements related to Backfill Material placement.
- .2 Backfill Material placement must be completed in each Zone after completion of the Required Dredging Post-Construction Survey or Contingency Re-Dredging Post-Construction Survey (if directed by the Departmental Representative) within the Zone. This Required Dredging Post-Construction Survey or Contingency Re-Dredging Post-Construction Survey (if directed by the Departmental Representative) will serve as the Backfill Pre-Construction Survey for placement of the Backfill Material.
- .3 The Contractor shall place all Backfill Material prior to structure reinstatement.
- .4 The Contractor will use the Backfill Pre-Construction Survey completed prior to the start of work to determine the Targeted Placement Elevations and Thicknesses for the F/G Jetty Zone.
- .5 The Contractor shall place Structural Backfill prior to Underpier Cover (at D Jetty North Zone) and General Backfill (at F/G Jetty Zone), as shown on the Drawings.
- .6 The Contractor shall place Residuals Management Cover in each Zone after all other Backfill Material placement is completed within each Zone, as indicated on the Drawings for the F/G Jetty Zone and as directed by the Departmental Representative for the D Jetty East and D Jetty North Zones. The Contractor is allowed to place Residuals Management Cover in both the D Jetty North Zone and D Jetty East Zone concurrently.

- .7 The Contractor shall conduct Progress Surveys and Backfill Post-Construction Surveys (and other field verification as the Contractor determines necessary to assess compliance with Required Minimum Placement Elevation, Required Minimum Placement Thickness, Targeted Placement Elevation, and Targeted Placement Thickness) in accordance with Section 02 21 13 (Surveying and Positioning Control). Backfill Post-Construction Surveys shall be conducted after the placement of each Backfill Material type. The Departmental Representative will review the Backfill Post-Construction Survey data and, if satisfactorily completed, will accept the Backfill Material placement activities as complete.
- .8 If the Required Minimum Placement Elevation, Required Minimum Placement Thickness, Targeted Placement Elevation, and Targeted Placement Thickness requirements are not achieved at all specified placement locations as shown on the Drawings, or Excessive Overplacement occurred, the Contractor shall correct placement deficiencies and conduct additional Backfill Post-Construction Surveys to the satisfaction of the Departmental Representative and at no extra cost to the Contract.

3.2 Backfill Material Placement (Structural Backfill Type A or B, General Backfill, Residuals Management Cover)

- .1 The Contractor shall provide barge displacement measurements as obtained by a certified marine surveyor, or their designee, for all loaded material barges as they arrive at the Work Site. Barge displacement measurements, both empty and full, shall also be collected, and provided as part of the Contractor's Daily and Weekly Construction Report, at the end of each work shift and following placement of all Backfill Material stockpiled on the Contractor material barges.
 - .1 The Marine Surveyor Report shall also document seaworthiness of each barge used for transport of 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 shall be submitted to and accepted by the Departmental Representative prior to transporting Backfill Material from off site.
- .2 Place the Backfill Material to meet the Required Minimum Placement Elevation, Required Minimum Placement Thickness, Targeted Placement Elevation, Targeted Placement Thickness as shown on the Drawings. No compaction is required.
- .3 When placing materials on slopes, all Backfill Material shall be placed from the bottom (toe) of the slope upward, with the exception of Underpier Cover placement. Materials shall be placed in such a way that allows for complete coverage of the designated area and minimizes disturbance to the existing dredge material surface.
- .4 The Contractor shall employ placement means and methods that will avoid resuspending sea bed sediment during placement activities, and prevent excessive

mixing of the placed materials with the sea bed sediment. The Contractor shall place Backfill Material by methods proposed in the Construction Work Plan, and accepted in writing by the Departmental Representative.

- .5 The Contractor shall not place Backfill Material by rapid dumping of a barge load; rather, it shall be placed in a controlled manner.
- .6 The Contractor shall not place barge and dredge derrick anchors or spuds or any other equipment into Structural Backfill Type A or B, and shall minimize to the extent practicable any anchoring or spudding within other backfill areas (i.e., Residuals Management Cover and General Backfill), unless accepted by the Departmental Representative.

3.3 Backfill Material Placement (Underpier Cover)

- .1 Comply with the requirements from Section 3.2 above. In addition to those requirements, additional requirements for placing Underpier Cover material are identified below.
- .2 Underpier access shall be from the water only through the piling bents on the north face of the D Jetty North Zone. No placement operations are allowed through the D Jetty deck.
- .3 D 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 shall protect all D Jetty structural items during Underpier Cover placement, and report any incidents that may cause damage to the D Jetty structure immediately to the Departmental Representative. The Contractor will be solely responsible for any corrective actions of damage caused by Contractor actions.
- .5 The Contractor shall carefully select their means and methods for placing Underpier Cover to account for the tidal variation over the construction duration and limited access to the underpier areas (both physical access and variable clearance), and to prevent damage to any portion of the existing D Jetty structure. If Contractor uses a high speed conveyor to place Underpier Cover materials, the placement operations shall not damage existing structures through direct impact of either the conveyor equipment or Underpier Cover material into the structure. As stated in Section 02 41 16.01 (Structure Demolition), the Contractor is required to protect existing structures during placement of Backfill Material.
- .6 For Underpier Cover placement, the Contractor may propose to place the material from the top of slope to the face of the D Jetty North Berth face. Contractor shall carefully control their placement methods to ensure that a uniform thickness of material is achieved. If top-to-bottom placement results in uneven thickness, raveling, or any deformation of the slope, Contractor shall modify their placement methods to the satisfaction of the Departmental Representative.

END OF SECTION

