Public Works and Government Services Canada | Travaux publics et Services gouvernementaux Canada

RETURN BIDS TO:
RETOURNER LES SOUMISSIONS À:

Bid Receiving Public Works and Government Services Canada/Réception des soumissions Travaux publics et Services gouvernmentaux Canada
800 Burrard Street, Room 219
800, rue Burrard, pièce 219
Vancouver
British Columbia
V6Z 0B9
Bid Fax: (604) 775-9381

INVITATION TO TENDER
APPEL D'OFFRES

Tender To: Public Works and Government Services Canada

We hereby offer to sell to Her Majesty the Queen in right of Canada, in accordance with the terms and conditions set out herein, referred to herein or attached hereto, the goods, services, and construction listed herein and on any attached sheets at the price(s) set out therefor.

Soumission aux: Travaux Publics et Services Gouvernementaux Canada

Nous offrons par la présente de vendre à Sa Majesté la Reine du chef du Canada, aux conditions énoncées ou incluses par référence dans la présente et aux annexes ci-jointes, les biens, services et construction énumérés ici et sur toute feuille ci-annexée, au(x) prix indiqué(s).

Comments - Commentaires

Issuing Office - Bureau de distribution
Public Works and Government Services Canada - Pacific Region
800 Burrard Street, Room 219
800, rue Burrard, pièce 219
Vancouver
British C
V6Z 0B9

Title - Sujet Wall B Rejuvenation	
Solicitation No. - N° de l'invitation EZ897-171173/A	**Date** 2016-08-11
Client Reference No. - N° de référence du client	**GETS Ref. No. - N° de réf. de SEAG** PW-$PWY-022-7844
File No. - N° de dossier PWY-6-39120 (022)	**CCC No./N° CCC - FMS No./N° VME**
Solicitation Closes - L'invitation prend fin **at - à 02:00 PM** **on - le 2016-08-29**	**Time Zone** **Fuseau horaire** Pacific Daylight Saving Time PDT
F.O.B. - F.A.B. **Plant-Usine:** ☐ **Destination:** ☑ **Other-Autre:** ☐	
Address Enquiries to: - Adresser toutes questions à: Arthur (PWY), Carolyn	**Buyer Id - Id de l'acheteur** pwy022
Telephone No. - N° de téléphone (604) 364-2752 ( )	**FAX No. - N° de FAX** (604) 775-6633
Destination - of Goods, Services, and Construction: **Destination - des biens, services et construction:** PWGSC - PEC Site - West Vancouver, BC	

Instructions: See Herein

Instructions: Voir aux présentes

Vendor/Firm Name and Address
Raison sociale et adresse du fournisseur/de l'entrepreneur

Delivery Required - Livraison exigée See Herein	**Delivery Offered - Livraison proposée**
Vendor/Firm Name and Address **Raison sociale et adresse du fournisseur/de l'entrepreneur** **Telephone No. - N° de téléphone** **Facsimile No. - N° de télécopieur**	
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**	

Canada

Solicitation No. - N° de l'invitation	Amd. No. - N° de la modif.	Buyer ID - Id de l'acheteur
EZ899-171173/A		pwy022
Client Ref. No. - N° de réf. du client	File No. - N° du dossier	CCC No./N° CCC - FMS No./N° VME
	PWY-6-39120 (022)	

NOTE TO TENDERERS: Use the mailing label below and affix it securely to the outside of the envelope for package containing your tender. For revisions to tenders submitted by facsimile (fax #(604)775-9381), use this sheet as the cover sheet. Always ensure your company name, return address, tender number and closing date appear legibly on the outside of your bid

REAL PROPERTY CONTRACTING
Public Works & Government Services Canada
Room 219 - 800 Burrard Street
Vancouver, B.C. V6Z 0B9

Requisition No.: EZ899-171173/A
Tender Closing Date & Time: 29 August 2016 @ 1400 P.S.T.
Project Description: Pacific Environment Centre (PEC) Site Remediation
2016 Treatment Wall B Rejuvenation
Pacific Environment Centre (PEC) Site, West Vancouver, BC

CA

INVITATION TO TENDER

IMPORTANT NOTICE TO BIDDERS

SUPPORT THE USE OF APPRENTICES
Through Canada's Economic Action Plan 2013, the Government of Canada proposes to support the employment of apprentices in federal construction and maintenance projects. Refer to SI09.

INTEGRITY PROVISIONS - BID
Changes have been made to the Integrity Provisions - Bid as of 2016-04-04. See GI01, Integrity Provision-Bid of R2710T of the General Instructions for more information.

LISTING of SUBCONTRACTORS
As per GI07 of R2710T you should provide using Annex C at Bid closing a list of Subcontractors that have 20% or more of the tendered price value.

PWGSC UPDATE ON ASBESTOS USE
Effective April 1, 2016, all Public Works and Government Services Canada (PWGSC) contracts for new construction and major rehabilitation will prohibit the use of asbestos-containing materials. Further information can be found at http://www.tpsgc-pwgsc.gc.ca/comm/vedette-features/2016-04-19-00-eng.html

ADDITION OF PERFORMANCE EVALUATION-CONTRACT
Take note of the additional paragraph to be included in clause R2810D identified in SC02.

ADDITION OF TERMINOLOGY
Take note of the additional paragraph to be included in clause R2810D identified in SC03.

TABLE OF CONTENTS

ANNEX A - CERTIFICATE OF INSURANCE
ANNEX B - VOLUNTARY REPORTS FOR APPRENTICES EMPLOYED DURING THE CONTRACT
ANNEX C - LISTING OF SUBCONTRACTORS

SPECIAL INSTRUCTIONS TO BIDDERS (SI)

SI01 BID DOCUMENTS

1. The following are the bid documents:

   a. Invitation to Tender - Page 1;
   b. Special Instructions to Bidders;
   c. General Instructions - Construction Services - Bid Security Requirements R2710T (2016-04-04)
   d. Clauses & Conditions identified in “Contract Documents”;
   e. Drawings and Specifications;
   f. Bid and Acceptance Form and related Appendix(s); and
   g. Any amendment issued prior to solicitation closing.

   Submission of a bid constitutes acknowledgement that the Bidder has read and agrees to be bound by these documents.

2. General Instructions - Construction Services - Bid Security Requirements R2710T is incorporated by reference and is set out in the Standard Acquisition Clauses and Conditions (SACC) Manual, issued by Public Works and Government Services Canada (PWGSC). The SACC Manual is available on the PWGSC Web site: https://buyandsell.gc.ca/policy-and-guidelines/standard-acquisition-clauses-and-conditions-manual/5/R

SI02 ENQUIRIES DURING THE SOLICITATION PERIOD

1. Enquiries regarding this bid must be submitted in writing to the Contracting Officer named on the Invitation to Tender - Page 1 as early as possible within the solicitation period. Except for the approval of alternative materials as described in GI15 of R2710T, enquiries should be received no later than five (5) calendar days prior to the date set for solicitation closing to allow sufficient time to provide a response. Enquiries received after that time may not result in an answer being provided.

2. To ensure consistency and quality of the information provided to Bidders, the Contracting Officer shall examine the content of the enquiry and shall decide whether or not to issue an amendment.

3. All enquiries and other communications related to this bid sent throughout the solicitation period are to be directed ONLY to the Contracting Officer named on the Invitation to Tender - Page 1. Failure to comply with this requirement may result in the bid being declared non-responsive.

SI03 OPTIONAL SITE VISIT

Contractors are strongly recommended to visit the site prior to submitting a tender for this work and to make inquiries or investigations necessary to become thoroughly acquainted with the site as well as the nature and extent of the work.
A site visit is scheduled on Thursday, August 18, 2016 @ 10:00 am local time. Interested bidders are to meet at the Site Vehicle Gate of the Pacific Environment Centre Site in West Vancouver (as shown on Figure #2 in Specifications).
Bidders must wear personal protective equipment (hard hat, high visibility vest, and work boots) to the site visit.

SI04 REVISION OF BID

A bid may be revised by letter or facsimile in accordance with GI10 of R2710. The facsimile number for receipt of revisions is (604)775-9381.

SI05 BID RESULTS

1. A public bid opening will be held in the office designated on the Front Page “Invitation to Tender” for the receipt of bids shortly after the time set for solicitation closing.

2. Following solicitation closing, bid results may be obtained by calling at number. (604)775-9384

SI06 INSUFFICIENT FUNDING

In the event that the lowest compliant bid exceeds the amount of funding allocated for the Work, Canada in its sole discretion may

a. cancel the solicitation; or

b. obtain additional funding and award the Contract to the Bidder submitting the lowest compliant bid; and/or

c. negotiate a reduction in the bid price and/or scope of work of not more than 15% with the Bidder submitting the lowest compliant bid. Should an agreement satisfactory to Canada not be reached, Canada shall exercise option (a) or (b).

SI07 BID VALIDITY PERIOD

1. Canada reserves the right to seek an extension to the bid validity period prescribed in BA04 of the Bid and Acceptance Form. Upon notification in writing from Canada, Bidders shall have the option to either accept or reject the proposed extension.

2. If the extension referred to in paragraph 1.of SI07 is accepted, in writing, by all those who submitted bids, then Canada shall continue immediately with the evaluation of the bids and its approvals processes.

3. If the extension referred to in paragraph 1.of SI07 is not accepted in writing by all those who submitted bids then Canada shall, at its sole discretion, either

   a. continue to evaluate the bids of those who have accepted the proposed extension and seek the necessary approvals; or

   b. cancel the invitation to tender.

4. The provisions expressed herein do not in any manner limit Canada's rights in law or under GI11 of R2710T.

SI08 CONSTRUCTION DOCUMENTS

The successful Contractor will be provided with one paper copy of the sealed and signed drawings, the specifications and the amendments upon acceptance of the offer. Additional copies, up to a maximum two (2), will be provided free of charge upon request by the Contractor. Obtaining more copies shall be the responsibility of the Contractor including costs.

SI09 PUBLIC WORKS AND GOVERNMENT SERVICES CANADA APPRENTICE PROCUREMENT INITIATIVE

1. To encourage employers to participate in apprenticeship training, Contractors bidding on construction and maintenance contracts by Public Works and Government Services Canada (PWGSC) are being asked to sign a voluntary certification, signaling their commitment to hire and train apprentices.

2. Canada is facing skills shortages across various sectors and regions, especially in the skilled trades. Equipping Canadians with skills and training is a shared responsibility. In Economic Action Plan (EAP) 2013, the Government of Canada made a commitment to support the use of apprentices in federal construction and maintenance contracts. Contractors have an important role in supporting apprentices through hiring and training and are encouraged to certify that they are providing opportunities to apprentices as part of doing business with the Government of Canada.

3. Through the Economic Action Plan 2013 and support for training programs, the Government of Canada is encouraging apprenticeships and careers in the skilled trades. In addition, the government offers a tax credit to employers to encourage them to hire apprentices. Information on this tax measure administered by the Canada Revenue Agency can be found at: www.cra-arc.gc.ca. Employers are also encouraged to find out what additional information and supports are available from their respective provincial or territorial jurisdiction.

4. Signed certifications (Appendix 3) will be used to better understand contractor use of apprentices on Government of Canada maintenance and construction contracts and may inform future policy and program development.

5. The Contractor hereby certifies the following:

   In order to help meet demand for skilled trades people, the Contractor agrees to use, and require its subcontractors to use, reasonable commercial efforts to hire and train registered apprentices, to strive to fully utilize allowable apprenticeship ratios * and to respect any hiring requirements prescribed by provincial or territorial statutes

   The Contractor hereby consents to this information being collected and held by PWGSC, and Employment and Social Development Canada to support work to gather data on the hiring and training of apprentices in federal construction and maintenance contracts.

   To support this initiative, a voluntary certification signaling the Contractor's commitment to hire and train apprentices is available at Appendix 3.

   If you accept fill out and sign Appendix 3

   * *The journeyperson-apprentice ratio is defined as the number of qualified/certified journeypersons that an employer must employ in a designated trade or occupation in order to be eligible to register an apprentice as determined by provincial/territorial (P/T) legislation, regulation, policy directive or by law issued by the responsible authority or agency.*

SI11 WEB SITES

The connection to some of the Web sites in the solicitation documents is established by the use of hyperlinks. The following is a list of the addresses of the Web sites:

Treasury Board Appendix L, Acceptable Bonding Companies
http://www.tbs-sct.gc.ca/pol/doc-eng.aspx?id=14494&section=text#appL

Buy and Sell https://www.achatsetventes-buyandsell.gc.ca

Canadian economic sanctions http://www.international.gc.ca/sanctions/index.aspx?lang=eng

Contractor Performance Evaluation Report (Form PWGSC-TPSGC 2913)
http://www.tpsgc-pwgsc.gc.ca/app-acq/forms/documents/2913.pdf

Bid Bond (form PWGSC-TPSGC 504) http://www.tpsgc-pwgsc.gc.ca/app-acq/forms/documents/504.pdf

Performance Bond (form PWGSC-TPSGC 505) http://www.tpsgc-pwgsc.gc.ca/app-acq/forms/documents/505.pdf

Labour and Material Payment Bond (form PWGWSC-TPSGC 506)
http://www.tpsgc-pwgsc.gc.ca/app-acq/forms/documents/506.pdf

Standard Acquisition Clauses and Conditions (SACC) Manual
https://buyandsell.gc.ca/policy-and-guidelines/standard-acquisition-clauses-and-conditions-manual/5/R

PWGSC, Industrial Security Services http://ssi-iss.tpsgc-pwgsc.gc.ca/index-eng.html

PWGSC, Code of Conduct and Certifications
http://www.tpsgc-pwgsc.gc.ca/app-acq/cndt-cndct/contexte-context-eng.html

Construction and Consultant Services Contract Administration Forms Real Property Contracting
http://www.tpsgc-pwgsc.gc.ca/app-acq/forms/formulaires-forms-eng.html

Declaration Form
http://www.tpsgc-pwgsc.gc.ca/ci-if/formulaire-form-eng.html

SUPPLEMENTARY CONDITIONS (SC)

SC01 INSURANCE TERMS

1) Insurance Contracts

(a) The Contractor must, at the Contractor's expense, obtain and maintain insurance contracts in accordance with the requirements of the Certificate of Insurance. Coverage must be placed with an Insurer licensed to carry out business in Canada.

(b) Compliance with the insurance requirements does not release the Contractor from or reduce its liability under the Contract. The Contractor is responsible for deciding if additional insurance coverage is necessary to fulfill its obligation under the Contract and to ensure compliance with any applicable law. Any additional insurance coverage is at the Contractor's expense, and for its own benefit and protection.

2) Period of Insurance

(a) The policies required in the Certificate of Insurance must be in force from the date of contract award and be maintained throughout the duration of the Contract.

(b) The Contractor must be responsible to provide and maintain coverage for Products/Completed Operations hazards on its Commercial General Liability insurance policy, for a period of six (6) years beyond the date of the Certificate of Substantial Performance.

3) Proof of Insurance

(a) Before commencement of the Work, and no later than thirty (30) days after acceptance of its bid, the Contractor must deposit with Canada a Certificate of Insurance on the form attached herein.

(b) Upon request by Canada, the Contractor must provide originals or certified true copies of all contracts of insurance maintained by the Contractor pursuant to the Certificate of Insurance.

4) Insurance Proceeds

In the event of a claim, the Contractor must, without delay, do such things and execute such documents as are necessary to effect payment of the proceeds.

5) Deductible

The payment of monies up to the deductible amount made in satisfaction of a claim must be borne by the Contractor.

SC02 PERFORMANCE EVALUATION-CONTRACT

R2810D General Condition is modified to include the following GC1.22.

1. Contractors shall take note that the performance of the Contractor during and upon completion of the services shall be evaluated by Canada. The evaluation includes all or some of the following criteria:
   a. quality of workmanship
   b. time
   c. project management
   d. contract management
   e. health and safety

2. A weighting factor of 20 points will be assigned to each of the five criteria as follows:
   a. unacceptable: 0 to 5 points
   b. not satisfactory: 6 to 10 points
   c. satisfactory: 11 to 16 points
   d. superior: 17 to 20 points

3. The consequences resulting from the performance evaluation are as follows:
    a. For an overall rating of 85% or higher, a congratulation letter is sent to the Contractor.
    b. For an overall rating of between 51% and 84%, a standard “meets expectations”, letter is sent to the Contractor.
    c. For an overall rating of between 30% and 50%, a warning letter is sent to the Contractor indicating that if, within the next two (2) years, they receive 50% or less on another evaluation, the firm may be suspended from any new PWGSC solicitations for construction services, architectural and engineering services or facility maintenance services, of real property projects, for a period of one year.
    d. For an overall rating of less than 30%, a suspension letter is sent to the Contractor indicating that the firm is suspended from any new PWGSC solicitations for construction services, architectural and engineering services or facility maintenance services, of real property projects, for a period of one year.
    e. When general average is between 30% and 50% and one of the ratings is of 5 points or less on any one criterion, a suspension letter is sent to the Contractor indicating that the firm is suspended from any new PWGSC solicitations for construction services, architectural and engineering services or facility maintenance services, of real property projects, for a period of one year.

The form PWGSC-TPSGC 2913, Select - Contractor Performance Evaluation Report (CPERF), is used to record the performance.

SC03 INTERPRETATION

R2810D General Condition GC1.1.2 Terminology is modified to include the following,

“Architectural and Engineering Services ”:
means services to provide a range of investigation and recommendation reports, planning, design, preparation, or supervision of the construction, repair, renovation or restoration of a work and includes contract administration services for real property projects.

“Construction Services ”:
means construction, repair, renovation or restoration of any work except a vessel and includes; the supply and erection of a prefabricated structure; dredging; demolition; environmental services related to a real property; or, the hire of equipment to be used in or incidentally to the execution of any construction services referred to above.

“Facility Maintenance Services ”:
means services related to activities normally associated with the maintenance of a facility and keeping spaces, structures and infrastructure in proper operating condition in a routine, scheduled, or anticipated fashion to prevent failure and/or degradation including inspection, testing, servicing, classification as to serviceability,

repairs, rebuilding and reclamation, as well as cleaning, waste removal, snow removal, lawn care, replacement of flooring, lighting or plumbing fixtures, painting and other minor works.

CONTRACT DOCUMENTS (CD)

1. The following are the contract documents:

   a. Contract Page when signed by Canada;
   b. Duly completed Bid and Acceptance Form and any Appendices attached thereto;
   c. Drawings and Specifications;
   d. General Conditions and clauses

GC1	General Provisions – Construction Services	R2810D	(2016-04-04);
GC2	Administration of the Contract-	R2820D	(2016-01-28);
GC3	Execution and Control of the Work	R2830D	(2015-02-25);
GC4	Protective Measures	R2840D	(2008-05-12);
GC5	Terms of Payment	R2850D	(2016-01-28);
GC6	Delays and Changes in the Work	R2860D	(2016-01-28);
GC7	Default, Suspension or Termination of Contract	R2870D	(2008-05-12);
GC8	Dispute Resolution	R2880D	(2016-01-28);
GC9	Contract Security	R2890D	(2014-06-26);
GC10	Insurance	R2900D	(2008-05-12);
Allowable Costs for Contract Changes Under GC6.4.1		R2950D	(2015-02-25);
Supplementary Conditions			

   e. Any amendment issued or any allowable bid revision received before the date and time set for solicitation closing;
   f. Any amendment incorporated by mutual agreement between Canada and the Contractor before acceptance of the bid; and
   g. Any amendment or variation of the contract documents that is made in accordance with the General Conditions.

2. The documents identified by title, number and date above are incorporated by reference and are set out in the Standard Acquisition Clauses and Conditions (SACC) Manual, issued by Public Works and Government Services Canada (PWGSC). The SACC Manual is available on the PWGSC Web site: https://buyandsell.gc.ca/policy-and-guidelines/standard-acquisition-clauses-and-conditions-manual

3. The language of the contract documents is the language of the Bid and Acceptance Form submitted.

BID AND ACCEPTANCE FORM (BA)

BA01 IDENTIFICATION
Pacific Environment Centre (PEC) Site Remediation – 2016 Treatment Wall B Rejuvenation
Pacific Environment Centre (PEC) Site, West Vancouver, BC

BA02 BUSINESS NAME AND ADDRESS OF BIDDER

Name: _____

Address: _____

Telephone: _____ Fax: _____ PBN: _____

E-mail address: _____

Industrial Security Program Organisation Number (ISP ORG#)_____
(when required)

BA03 THE OFFER

The Bidder offers to Canada to perform and complete the Work for the above named project in accordance with the Bid Documents for the **TOTAL BID AMOUNT INDICATED IN APPENDIX 1**.

BA04 BID VALIDITY PERIOD
The bid shall not be withdrawn for a period of (thirty) [_30_] days following the date of solicitation closing.

BA05 ACCEPTANCE AND CONTRACT
Upon acceptance of the Contractor's offer by Canada, a binding Contract shall be formed between Canada and the Contractor. The documents forming the Contract shall be the contract documents identified in Contract Documents (CD).

BA06 CONSTRUCTION TIME

The work shall commence immediately upon official notification of acceptance of tender by the Contracting Authority and is to be completed by January 31, 2017.

BA07 BID SECURITY
The Bidder is enclosing bid security with its bid in accordance with GI08 - Bid Security Requirements of R2710T - General Instructions - Construction Services - Bid Security Requirements.

BA08 SIGNATURE

_____
Name and title of person authorized to sign on behalf of Bidder (Type or print)

_____ _____
Signature Date

APPENDIX 1 - COMBINED PRICE FORM (2 pages)

1) The prices per unit shall govern in establishing the Total Extended Amount. Any arithmetical errors in this Appendix will be corrected by Canada.

2) Canada may reject the bid if any of the prices submitted do not reasonably reflect the cost of performing the part of the work to which that price applies.

UNIT PRICE TABLE

The Unit Price Table designates Work to which a Unit Price Arrangement applies.
(a) Work included in each item is as described in the referenced specification section.
(b) The Price per Unit shall not include any amounts for Work that is not included in that unit price Item.

	Class of Labour, Plant or Material	Unit of Measure-ment	Estimated Quantity (EQ)	Price per Unit applicable taxes extra (PU)	Extended amount (EQ x PU) applicable taxes extra
1	Pre-Mobilization Submittals	Lump Sum	1		
2	Mobilization	Lump Sum	1		
3	Site Preparation	Lump Sum	1		
4	Site Facilities Provision	Lump Sum	1		
5	Site Facilities Operation	Week	17		
6	Standby Time	Day	5		
7	Treatment Media Supply	Lump Sum	1		
8	Wall B Excavation and Treatment Media Placement	Lump Sum	1		
9	Wall B Extension to the Eastern Property Boundary	Lump Sum	1		
10	Excavation, Management, and Stockpiling On site –Wall B, and Wall B Extension	m3	3,100		
11	Demobilization	Lump Sum	1		
12	Closeout Submittals	Lump Sum	1		
				BASE WORK (A): TOTAL EXTENDED AMOUNT Excluding applicable taxes	

OPTIONAL WORK (B)

Pricing described in OPTIONAL WORK (B) must be provided by the bidder.

The following work shall be considered an optional addition to this tender package. Any bid without the inclusion of the following lines will be considered non-compliant and therefore disqualified.

The Contractor grants to Canada the irrevocable option to acquire the goods and /or services described below as Optional Work and as described in the Specification and Drawings of the Contract under the same conditions and at the prices and/or rates stated in Contract. The exercise of any option will be at Canada's sole discretion, the options may only be exercised by the Contracting Authority and will be evidenced through a contract amendment for administrative purposes only.

The Contracting Authority may exercise the option during the period from contract award to contractor mobilization by sending a written notice to the Contractor.

OPTIONAL WORK (B)					
	Class of Labour, Plant or Material	Unit of Measurement	Estimated Quantity (EQ)	Price per Unit applicable taxes extra (PU)	Extended amount (EQ x PU) applicable taxes extra
13	Supply Treatment Media to Extend Wall B and Wall B Extension to -12.5 m NVD	Lump Sum	1		
14	Wall B Excavation and Treatment Media Placement for -10.5 to -12.5 mNVD Extension	Lump Sum	1		
15	Wall B Extension to the Eastern Property Boundary for -10.5 to -12.5 mNVD Extension	Lump Sum	1		
16	Excavation, Management, and Stockpiling On site for -10.5 to -12.5 mNVD Extension –Wall B, and Wall B Extension	m3	500		
OPTIONAL WORK (B): TOTAL EXTENDED AMOUNT Excluding applicable taxes					

TOTAL BID AMOUNT **Base Work (A) + Optional Work (B)** (Excluding applicable taxes)	

NOTE: The pricing for Optional Work (B) is included in the bid evaluation. Optional Work (B) may be requested in part or whole of Estimated Quantity.

APPENDIX 2 - INTEGRITY PROVISIONS

(Text copied from the Ineligibility and Suspension Policy http://www.tpsgc-pwgsc.gc.ca/ci-if/politique-policy-eng.html dated 2016-04-04)

List of names: All bidders, regardless of their status under the Policy, must submit the following information when participating in a procurement process or real property transaction:

- bidders that are corporate entities, including those bidding as joint ventures, must provide a complete list of the names of all current directors or, for a privately owned corporation, the names of the owners of the corporation;
- bidders bidding as sole proprietors, including sole proprietors bidding as joint ventures, must provide a complete list of the names of all owners; or
- bidders that are a partnership do not need to provide a list of names.

If the list of names has not been received in a procurement process or real property transaction by the time the evaluation of bids or offers is completed, or has not been received in a procurement process or real property transaction where no bid/offer will be submitted, the contracting authority will inform the bidder of a time within which to provide the information. Providing the required names is a mandatory requirement for award of a contract or real property agreement. Failure to provide the list of names within the time specified will render a bid or offer non-responsive, or the bidder otherwise disqualified for award of a contract or real property agreement.

APPENDIX 3 - VOLUNTARY CERTIFICATION TO SUPPORT THE USE OF APPRENTICES

Note; The contractor will be asked to fill out a report every six months or at project completion as per sample "Voluntary Reports for Apprentices Employed during the Contract" provided at Annex B

Name: _____

Signature: _____

Company Name: _____

Company Legal Name: _____

Solicitation Number: _____

Number of company employees: _____

Number of apprentices planned to be working on this contract: _____

Trades of those apprentices:

_____

_____

_____

_____

_____

_____

_____

To be completed and provided to the contractor at time of contract award.

APPENDIX 4 – DEPARTMENTAL REPRESENTATIVE'S AUTHORITY

TO BE PROVIDED AT CONTRACT AWARD.

Contracting Authority is :

Name : _____

Title : _____

Department :_____

Division : _____

Telephone : ____- ____- _____

e-mail : _____

Technical Authority is :

Name : _____

Title : _____

Department :_____

Division : _____

Telephone : ____- ____- _____

e-mail : _____

ANNEX A - CERTIFICATE OF INSURANCE (Not required at solicitation closing)

CERTIFICATE OF INSURANCE

Travaux publics et Services gouvernementaux Canada
Public Works and Government Services Canada

Description and Location of Work	Contract No.
PEC Site Wall B Rejuvenation Pacific Environmental Site, West Vancouver, BC	Project No. E897-171173/A

Name of Insurer, Broker or Agent	Address (No., Street)	City	Province	Postal Code
Name of Insured (Contractor)	**Address (No., Street)**	**City**	**Province**	**Postal Code**

Additional Insured
Her Majesty the Queen in Right of Canada as represented by the Minister of Public Works and Government Services

Type of Insurance	Insurer Name and Policy Number	Inception Date D / M / Y	Expiry Date D / M / Y	Limits of Liability		
				Per Occurrence	Annual General Aggregate	Completed Operations Aggregate
Commercial General Liability **Umbrella/Excess Liability**				**$** **$**	**$** **$**	**$** **$**
Builder's Risk / Installation Floater				**$**		

I certify that the above policies were issued by insurers in the course of their Insurance business in Canada, are currently in force and include the applicable insurance coverage's stated on page 2 of this Certificate of Insurance, including advance notice of cancellation / reduction in coverage.

Name of person authorized to sign on behalf of Insurer(s) (Officer, Agent, Broker)

Telephone number

Signature

Date D / M / Y

General

The insurance policies required on page 1 of the Certificate of Insurance must be in force and must include the insurance coverage listed under the corresponding type of insurance on this page.

The policies must insure the Contractor and must include Her Majesty the Queen in Right of Canada as represented by the Minister of Public Works and Government Services as an additional Insured.

The insurance policies must be endorsed to provide Canada with not less than thirty (30) days notice in writing in advance of a cancellation of insurance or any reduction in coverage.

Without increasing the limit of liability, the policies must protect all insured parties to the full extent of coverage provided. Further, the policies must apply to each Insured in the same manner and to the same extent as if a separate policy had been issued to each.

Commercial General Liability

The insurance coverage provided must not be substantially less than that provided by the latest edition of IBC Form 2100.
The policy must either include or be endorsed to include coverage for the following exposures or hazards if the Work is subject thereto:

(a) Blasting.
(b) Pile driving and caisson work.
(c) Underpinning.
(d) Removal or weakening of support of any structure or land whether such support be natural or otherwise if the work is performed by the insured contractor.

The policy must have the following minimum limits:

(a) **$5,000,000** Each Occurrence Limit;
(b) **$10,000,000** General Aggregate Limit per policy year if the policy contains a General Aggregate; and
(c) **$5,000,000** Products/Completed Operations Aggregate Limit.

Umbrella or excess liability insurance may be used to achieve the required limits.

Builder's Risk / Installation Floater

The insurance coverage provided must not be less than that provided by the latest edition of IBC Forms 4042 and 4047.
The policy must permit use and occupancy of any of the projects, or any part thereof, where such use and occupancy is for the purposes for which a project is intended upon completion.
The policy may exclude or be endorsed to exclude coverage for loss or damage caused by asbestos, fungi or spores, cyber and terrorism.
The policy must have a limit that is **not less than the sum of the contract value** plus the declared value (if any) set forth in the contract documents of all material and equipment supplied by Canada at the site of the project to be incorporated into and form part of the finished Work. If the value of the Work is changed, the policy must be changed to reflect the revised contract value.
The policy must provide that the proceeds thereof are payable to Canada or as Canada may direct in accordance with GC10.2, "Insurance Proceeds" (https://buyandsell.gc.ca/policy-and-guidelines/standard-acquisition-clauses-and-conditions-manual/5/R/R2900D/2).

ANNEX B - VOLUNTARY REPORT FOR APPRENTICES EMPLOYED DURING THE CONTRACT (Sample)

This report is not required at bid deposit)

The Contractor should compile and maintain records on the number of apprentices and their trade that were hired to work on the contract.

The Contractor should provide this data in accordance with the format below. If no apprentices were hired during the contract period, the Contractor should still provide a "nil" report.

The data should be submitted six months after the Contract award or at the end of the Contract, whichever comes first to the Contracting Authority.

Number of apprentices hired	Trade

(Add rows as needed)

ANNEX C - LISTING OF SUBCONTRACTORS

1) In accordance with GI07 - Listing of Subcontractors and Suppliers of R2710T- General Instructions - Construction Services - Bid Security Requirements, the Bidder should provide a list of Subcontractors with his Bid.

2) The Bidder should submit the list of Subcontractors and for any portion of the Work valued at 20% or greater of the submitted Bid Price.

	Subcontractor	Division	Estimated value of work
1			
2			
3			
4			
5			
6			
7			
8			
9			
10			
11			
12			
13			
14			
15			

Public Works and Government Services Canada

Requisition No.: EZ897-171173/A

Buy and Sell ID No.: _____

Specifications for

Title

Location

Project No. R.044582.008 Date

APPROVED BY:

_____ 2016-08-05
Regional Manager ES Date

_____ 2016-08-04
Construction Safety Coordinator Date

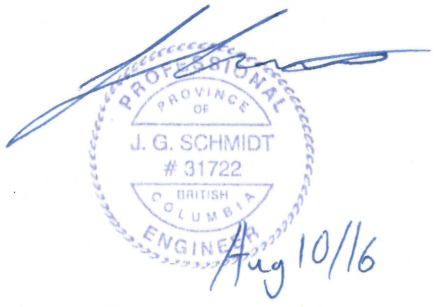
TENDER:

_____ 2016 Aug 04
Project Manager Date

Real Property Services Branch, Professional and Technical Services, Pacific Region
#219 – 800 Burrard Street, Vancouver, B.C. V6Z 0B9

Canada

00 01 10
SPECIFICATIONS INDEX



1. PART 1 - GENERAL

1.1. Measurement Procedures

1.1.1. Pre-mobilization Submittals will be paid in accordance with lump sum price established for all Preconstruction Meetings, final design, planning, health and safety, and other Submittals in accordance with the Contract or required and accepted by the Departmental Representative as in accordance with the Contract prior to mobilization to Site.

1.1.2. Mobilization will be paid in accordance with lump sum price established for mobilizing all necessary equipment, materials, supplies, facilities, and personnel associated with the Works to the Site. Includes initial insurance, bonding, and permits. Additional insurance, bonding, and permits due to changes in scope, cost, and schedule as accepted by the Departmental Representative will be included in Contract amendments.

1.1.3. Site Facilities Provision will be paid in accordance with lump sum price established to design, temporarily provide for duration of Work, and erect all infrastructure in accordance with the Contract. Includes temporary structures and facilities, temporary hoarding, security fencing, federal signage, sanitary facilities, stormwater management infrastructure, and utility installation.

1.1.4. Site Facilities Operation will be paid in accordance with unit rate price established for time to operate and maintain all infrastructure between mobilization and demobilization. Measurement as recorded time by Departmental Representative. Includes temporary structures and facilities including temporary hoarding, security fencing, federal signage, sanitary facilities, stormwater management infrastructure, and utility installation Also includes ongoing services including project management, security, surveying, noise monitoring, vibration monitoring, utilities, project meetings, inspections, progress Submittals, traffic control, health and safety, Environmental Protection and cleaning. Also, includes living out allowances, travel and room and board. Rate must not vary even if hours of work and/or days of work vary. Time will only be paid for duration in accordance with the Contract and changes in schedule as accepted by the Departmental Representative and included in Extension of Time on Contracts.

1.1.5. Standby Time will be paid in accordance with unit rate price established, for time when construction Work is unable to proceed, and that is directly attributable to any neglect or delay that occurs after the date of the Contract on the part of the Departmental Representative in providing any information or in doing any act that the Contract expressly requires the Departmental Representative. Measurement as recorded time by Departmental Representative. Includes machinery and labour standby costs. Does not include items covered by Site Facilities Operation. Standby Time may be pro-rated based on hours of work. Make all efforts to minimize impacts due to delays caused by the

Departmental Representative, including re-sequencing Work. Provide documentation of a sufficient description of the facts and circumstances of the occurrence to enable the Departmental Representative to determine whether or not the Standby Time is justified. Reviews, sampling, or other work conducted by the Departmental Representative with time allowances in accordance with the Contract will result in no increase to the Contract Amount nor Extension of Time for completion of the Work.

1.1.6. Treatment Media Supply

1.1.7. Wall B Excavation and Treatment Media Placement

1.1.8. Wall B Extension to the Eastern Property Boundary

1.1.9. Excavation, Management, and Stockpiling in Soil Storage Cells

1.1.10. Demobilization will be paid in accordance with lump sum price established for demobilizing all equipment and personnel associated with the Works from the Site. Includes decontaminating all equipment prior to removal from Site.

1.1.11. Closeout Submittals will be paid in accordance with lump sum price established for Final Site Inspection (for Certificate of Completion purposes), Closeout Meetings, provision of final as-built documents and completion documents as instructed by the Departmental Representative.

1.2. Definitions

1.2.1. Certificate of Completion: see General Conditions.

1.2.2. Change Order: PWGSC form issued by the Departmental Representative to the Contractor as per the relevant Contemplated Change Notice.

1.2.3. Confirmation Samples: soil and sediment samples collected from the base and walls of the excavation by the Departmental Representative to confirm that the remedial objectives for the Work have been met.

1.2.4. Contaminated Material: soil and other material where substances occur at concentrations that: (i) are above background levels and pose, or are likely to pose, an immediate or long-term hazard to human health or the environment, or (ii) exceed the levels specified in policies and regulations. Includes Hazardous Waste and Waste Quality; does not include Non-Contaminated Material or Waste. Relevant regulations, unless otherwise in accordance with the Contract or as instructed by the Departmental Representative, include:

1.2.4.1. For all sites: Canadian Council of Ministers of the Environment (CCME) *Canadian Environmental Quality Guidelines* and CCME *Canada-Wide Standards*.

1.2.4.2. For sites in BC: BC *Hazardous Waste Regulations*, BC *Approved Water Quality Guidelines*, BC *Contaminated Sites Regulation*.

1.2.5. Contaminated Water: liquid material where substances occur at concentrations that: (i) are above background levels and pose, or are likely to pose, an immediate or long-term hazard to human health or the environment, or (ii) meet or exceed the levels specified in policies and regulations. Includes Hazardous Waste and Waste Quality Water; does not include Non-Contaminated Water or

Sewage Wastewater. Relevant regulations, unless otherwise in accordance with the Contract or as instructed by the Departmental Representative, include:

1.2.5.1. For all sites: Canadian Council of Ministers of the Environment (CCME) *Canadian Environmental Quality Guideline*s and CCME *Canada-Wide Standards*.

1.2.5.2. For sites in BC: BC *Hazardous Waste Regulations*, BC *Approved Water Quality Guidelines*.

1.2.6. Contaminated Water Treatment Plant: a temporary onsite or existing offsite facility located in Canada that is designed, constructed and operated for the handling or processing of Contaminated Water in such a manner as to change the physical, chemical or biological character or composition of the water to lower than the site-specific remedial objective, Discharge Approval, and in compliance with all regulations.

1.2.7. Contemplated Change Notice: PWGSC form issued by the Departmental Representative to the Contractor requesting Contractor to provide a quote, which may result in a Change Order.

1.2.8. Contract: see General Conditions.

1.2.9. Contract Amount: see General Conditions.

1.2.10. Contractor: see General Conditions.

1.2.11. Departmental Representative: see General Conditions.

1.2.12. Discharge Approval: permit, certificate, approval, or any other form of authorization issued by appropriate federal agency, province, territory, or municipality having jurisdiction and authorizing offsite discharge.

1.2.13. Disposal Facility: a facility specifically used to introduce waste into the environment for the purpose of final burial.

1.2.14. Environmental Pollution and Damage: presence of chemical, physical, biological elements or agents which adversely affect human health and welfare; unfavourably alter ecological balances of importance to human life; affect other species of importance to humankind; or degrade environment aesthetically, culturally and/or historically.

1.2.15. Environmental Protection: prevention, control, mitigation, and restoration of pollution and habitat or environmental disruption during construction. Control of Environmental Pollution and Damage requires consideration of land, water, and air; biological and cultural resources; and includes management of visual aesthetics; vibrations; noise; solid, chemical, gaseous, and liquid waste; radiant energy and radioactive material as well as other pollutants.

1.2.16. Environmental Protection Plan: plan developed by the Contractor to ensure Environmental Protection and prevent Environmental Pollution and Damage identifying all environmental risks and mitigation measures, including: personnel requirements, emergency contacts, Environmental Protection methods, procedures, and equipment, and emergency response including a Spill Control Plan.

1.2.17. Extension of Time: see General Conditions.

1.2.18. Extension of Time on Contracts: PWGSC form requesting an Extension of Time.
1.2.19. Final Completion: see General Conditions.
1.2.20. Hazardous Waste: Contaminated Material which meets the regulatory definition of Hazardous Waste.
1.2.21. Land Surveyor: a person working for the Contractor who is a qualified, registered land surveyor licensed to practice in relevant jurisdiction.
1.2.22. Landfill: an existing offsite facility located in Canada that is designed, constructed and operated to prevent any pollution from being caused by the facility outside the area of the facility from waste placed in or on land within the facility.
1.2.23. Materials Source Separation Program: consists of a series of ongoing activities to separate reusable and recyclable waste into categories from other types of waste at point of generation.
1.2.24. Non-Contaminated Material: soil and other material which meets the BC *Contaminated Sites Regulation* Schedule 7 Column IV.
1.2.25. Non-Contaminated Water: liquids which are suitable for direct discharge to the environment after removal of sediment, and which is not Contaminated Water or Sewage Wastewater. Includes surface runoff, stormwater, and groundwater which has not come into contact with Contaminated Material.
1.2.26. On Site Instruction: instructions or other communications issued by the Departmental Representative to the Contractor.
1.2.27. On Site Notice: notice or other communication issued by the Contractor to the Departmental Representative.
1.2.28. Overburden: Non-Contaminated Material excavated incidentally that is not Topsoil.
1.2.29. Progress Payment: see General Conditions.
1.2.30. PWGSC: Public Works and Government Services Canada. Representative of Canada with control of the Site.
1.2.31. Qualified Professional: a person working for the Contractor who is registered in relevant jurisdiction with his or her appropriate professional association, acts under that professional association's code of ethics, and is subject to disciplinary action by that professional association, and through suitable education, experience, accreditation and knowledge can be reasonably relied on to provide advice within his or her area of expertise. Includes Geotechnical Engineers and Environmental Consultants.
1.2.32. Quote: Contractor’s cost estimate issued to the Departmental Representative as per the relevant Contemplated Change Notice via an On Site Notice.
1.2.33. Remediation by Excavation: complete excavation of Contaminated Material and incidental Non-Contaminated Material to the Site boundaries for the purpose of remediating the Site to meet numerical standards. Includes full treatment and disposal. Does not include risk assessment or risk management of material onsite. Does not include encapsulation or solidification in place.

1.2.34. Sewage Wastewater: liquid waste which is not suitable for direct discharge to the environment, and which must be either treated offsite or discharged to a sanitary sewer. Includes water from hand basin, shower, personal hygiene facilities, or other liquid waste from sanitary facilities.
1.2.35. Site: area shown on Drawings.
1.2.36. Subcontractor: see General Conditions.
1.2.37. Submit/Submittals: documents from the Contractor to the Departmental Representative as: required by Contract; stipulated in permit, certificate, approval, or any other form of authorization; by convention or industry practice. Submittals are final only after review and accepted in writing by Departmental Representative.
1.2.38. Substantial Performance: see General Conditions.
1.2.39. Superintendent: see General Conditions
1.2.40. Supplier: see General Conditions.
1.2.41. Topsoil: non-contaminated soil excavated incidentally that is a surface organic layer to facilitate vegetation growth.
1.2.42. Treatment Facility: a facility specifically used to treat Contaminated Material. May be Onsite (PWGSC provided) or Offsite (Contractor provided). Onsite facility is located on property under PWGSC control, but may be located at a different location than where construction work occurs.
1.2.43. Waste: Non-Contaminated Material that is not soil. Includes cleared and grubbed vegetation, litter, rubbish, debris, cobbles, boulders, excess construction material, lumber, steel, plastic, concrete, and asphalt.
1.2.44. Waste Oversize Debris: Waste that is required to be excavated and is: larger than 1 cubic metre or larger than 2 metres in one dimension, cannot be removed with a typical excavator with bucket, and requires the use of special equipment (e.g., saws, hydraulic cutters, excavator hammers, vibratory pile extractors). Includes bedrock, boulders, pilings, building structures, and concrete foundations.
1.2.45. Waste Quality: soil or other material that is not suitable for industrial, commercial, urban park, residential, agricultural, wildlands or any other land use specified in the BC *Contaminated Sites Regulation*.
1.2.46. Waste Reduction Plan: a written report which addresses opportunities for reduction, reuse or recycling of materials.
1.2.47. Work: see General Conditions.
1.2.48. Working Day: see General Conditions.

1.3. Action and Informational Submittals

1.3.1. After hours work: at least 5 Working Days prior to commencing after hours work Submit a schedule showing requested dates, times, and reasons for after hours work. Approval will only be granted for reasons valid in the opinion of the Departmental Representative and if request can be reasonably accommodated by other contracts.

1.4. Work Covered by Contract

1.4.1. Work under the Contract covers remediation of contaminated material by permeable reactive barrier wall.

1.4.2. Base Work to be performed under the Contract includes, but is not limited to, the following items covered further in the Contract:

1.4.2.1. Prime Contractor for health and safety and environmental protection at Site.

1.4.2.2. All required design activities to complete Work.

1.4.2.3. Pre-mobilization Submittals

1.4.2.4. Progress Submittals, including cash flow and forecasting.

1.4.2.5. Prepare Site for Work, including clearing site as required and provision of onsite temporary office facilities for Departmental Representative and consultants.

1.4.2.6. Supply and prepare wall treatment material as specified

1.4.2.7. Plan Wall B restoration, including geotechnical design as required.

1.4.2.8. Design and install temporary shoring support as required to allow removal of existing wall material and replacement with new wall material to extents as shown on Drawings.

1.4.2.9. Design and install temporary shoring support as required to allow eastern extension of existing wall material and placement of new wall material to extents as shown on Drawings.

1.4.2.10. Onsite management of excavated material.

1.4.2.11. Restore Site to pre-existing conditions.

1.4.2.12. As-built and closure Submittals.

1.4.2.13. All ancillary activities required to complete Work.

1.4.3. Optional Work that may be performed under the Contract includes, but is not limited to, the following items covered further in the Contract:

1.4.3.1. Supply and prepare additional wall treatment material as specified.

1.4.3.2. Design and install temporary shoring support as required to allow vertical extension of existing wall and eastern extension to extents as shown on Drawings.

1.4.3.3. Onsite management of additional excavated material.

1.4.3.4. All ancillary activities required to complete Work.

1.4.4. Green Requirements:

1.4.4.1. Use only environmentally responsible green materials/products with no Volatile Organic Compounds (VOC) emissions or minimum VOC emissions of indoor off-gassing contaminants for improved indoor air quality – subject of acceptance of Submittal of Materials Safety Data Sheet (MSDS) Product Data.

1.4.4.2. Use materials/products containing highest percentage of recycled and recovered materials practicable – consistent with maintaining cost effective satisfactory levels of competition.

1.4.4.3. Adhere to waste reduction requirement for reuse or recycling of waste materials, thus diverting materials from Landfill.

1.4.5. Work not included in the Contract comprises such work and services specifically listed as:
1.4.5.1. Not Used.

1.5. Location
1.5.1. The Site location is located in West Vancouver, BC, shown on Drawings.
1.5.2. There is no civic street address or PIN for the Site.

1.6. Project/Site Conditions
1.6.1. Work at Site will involve contact with contaminated materials, requiring appropriate health and safety and environmental protection procedures.
1.6.2. Complete list of anticipated contaminants and concentration levels on the Site available separately in assessment reports.
1.6.3. Existing condition on the Site is shown on Drawings.

1.7. Other Contracts
1.7.1. Other contracts are currently in progress at Site.
1.7.2. Other contracts are:
1.7.2.1. Environmental and other consultants.
1.7.2.2. Site users as identified in Contract.
1.7.3. Further contracts may be awarded while the Contract is in progress.
1.7.4. Cooperate with other contractors in carrying out their respective works and carry out instructions from Departmental Representative.
1.7.5. Coordinate Work with that of other contractors. If any part of Work under the Contract depends for its proper execution or result upon Work of another contractor, report promptly to Departmental Representative, in writing, any defects which can interfere with proper execution of this Work.

1.8. Products Supplied by the Departmental Representative
1.8.1. Not Used.

1.9. Contractor's Use of Site
1.9.1. Use of Site:
1.9.1.1. For the sole benefit of Canada.
1.9.1.2. Exclusive and only for completion of the execution of Work.
1.9.1.3. Assume responsibility for assigned premises for performance of this Work.
1.9.1.4. Be responsible for coordination of all Work activities onsite, including the Work of other contractors engaged by the Departmental Representative.
1.9.2. There are no pre-existing arrangements for encroachment on the neighbouring properties. Shoring designs accommodating no offsite encroachment, or arrangements for offsite encroachment, are the responsibility of the Contractor.

1.9.3. Perform Work in accordance with Contract. Ensure Work is carried out in accordance with schedule accepted by Departmental Representative.
1.9.4. Do not unreasonably encumber Site with material or equipment.

1.10. Existing Permits
1.10.1. Existing permits are:
1.10.1.1. None

1.11. Schedule Requirements
1.11.1. Work to be initiated: within 5 days of Contract Award.
1.11.2. Pre-Mobilization Submittals: within 10 days of Contract Award.
1.11.3. Mobilization: within 15 days of Contract Award.
1.11.4. Demobilization no later than: 2016Dec31.
1.11.5. Completion of the Work: no later than: 2017Jan31. Includes all final Submittals including as-built documents, the Certificate of Completion, and the Statutory Declaration at Final Completion.

1.12. Hours of Work
1.12.1. Restrictive as follows:
1.12.1.1. Working Day work hours are unrestricted.
1.12.2. Obtain consent from Departmental Representative for all after hours Work, including weekends and holidays.
1.12.2.1. Proceed only as instructed by the Departmental Representative.

1.13. Security Clearances
1.13.1. Not Used.

2. PART 2 - PRODUCTS

2.1. Not Used
2.1.1. Not Used.

3. PART 3 - EXECUTION

3.1. Not Used
3.1.1. Not Used.

END OF SECTION

1. PART 1 - GENERAL

1.1. Measurement Procedures

1.1.1. See 01 11 00.

1.2. Definitions

1.2.1. See 01 11 00.

1.3. Action and Informational Submittals

1.3.1. Utility Locations: at least 5 Working Days prior to commencing any subsurface disturbance, Submit drawings identifying all utilities on the Site. Update drawings as instructed by the Departmental Representative.

1.3.2. Breakdown of Lump Sum Prices: at least 5 Working Days prior to submitting the first Progress Payment, Submit a breakdown of the Contract lump sum prices including labour, material and time, in detail as instructed by the Departmental Representative and aggregating Contract Amount.

1.3.3. Daily Work Records: at the end of each shift Submit daily Work records, during onsite Work. Include:

1.3.3.1. Quantities for each Description of Work identified in the Unit Price Table and Change Orders.

1.3.3.2. Description of Work performed.

1.3.3.3. Current Site conditions.

1.3.3.4. General information including: date, time shift started and ended, Subcontractor(s) onsite, Health and Safety items, and Environmental Protection items.

1.3.3.5. Signature of Superintendent and Departmental Representative.

1.3.4. Cash Flow: with each Progress Payment, Submit a cash flow forecast. Include:

1.3.4.1. Calculation of planned cost versus actual cost and schedule forecasting and cash flow projections on a monthly basis, indicating anticipated value of future Progress Payments, for each Description of Work identified in the Unit Price Table.

1.3.4.2. Progress Payments will not be processed until cash flow has been accepted by the Departmental Representative.

1.3.5. Coordination Meeting Minutes and Drawings: at least 5 Working Days prior to relevant Work commencing, Submit final meeting minutes and drawings from coordination with Subcontractors.

1.3.6. Quality Management Plan: within 40 Working Days after Contract award, Submit a quality management plan. Include:

1.3.6.1. Details on planned review, inspection and testing to provide Quality Assurance and Quality Control for the Work.

1.3.6.2. Subcontractors responsible for review, inspection and testing.

1.3.6.3. Schedule of submittals of review, inspection and testing results.

1.3.7. Review, Inspection, and Testing Results: within 5 Working Days of receipt, Submit all results of reviews, inspection, and testing performed as part of the Work, including laboratory reports.

1.4. Division of Specifications

1.4.1. This specification is subdivided into Divisions and Sections in accordance with the six digit National Master Specifications System.

1.4.2. A Division or Section may consist of the Work of more than one Subcontractor. Responsibility for determining which Subcontractor provides the labour, material, equipment and services required to complete the Work rests solely with the Contractor.

1.5. Documents Required

1.5.1. Maintain 1 copy each of the following posted at the job Site:

1.5.1.1. General Conditions.
1.5.1.2. Drawings.
1.5.1.3. Specifications.
1.5.1.4. Addenda or other modifications to Contract.
1.5.1.5. Change orders.
1.5.1.6. Copy of current Work schedule.
1.5.1.7. Reviewed and final shop drawings Submittals.
1.5.1.8. One set of record drawings and Specifications for “as-built” purposes.
1.5.1.9. Field and laboratory test reports.
1.5.1.10. Reviewed and accepted Submittals.
1.5.1.11. Manufacturers’ installation and application instructions (as appropriate).
1.5.1.12. *National Building Code of Canada* (as appropriate).
1.5.1.13. Current construction standards of workmanship listed in technical Sections (as appropriate).
1.5.1.14. Health and Safety documents, including all daily toolbox meetings, Notice of Project, and utility clearances.
1.5.1.15. Environmental Protection Plan.
1.5.1.16. Quality Management Plan.
1.5.1.17. Final Meeting Minutes, Agendas and associated attachments.
1.5.1.18. Permits and other approvals.

1.6. Setting out of Work

1.6.1. Assume full responsibility for and execute complete layout of Work to locations, lines and elevations in accordance with the Contract.

1.6.2. Provide devices needed to layout and construct Work.

1.6.3. Supply such services and devices in accordance with the Contract to facilitate Departmental Representative’s inspection of Work.

1.7. Acceptance of Substrates

1.7.1. Each trade must examine surfaces prepared by others and job conditions which can affect his work, and must report defects to the Departmental Representative. Commencement of Work will imply acceptance of prepared Work or substrate surfaces.

1.8. Works Coordination

1.8.1. Coordinate Work of Subcontractors.

1.8.1.1. Designate one person to be responsible for review of Contract and shop drawings and managing coordination of Work.

1.8.2. Convene meetings between Subcontractors whose Work interfaces and ensure awareness of areas and extent of interface required.

1.8.2.1. Provide each Subcontractor with complete Drawings and Specifications for Contract, to assist them in planning and carrying out their respective work.

1.8.2.2. Develop coordination drawings when required, illustrating potential interference between Work of various trades and distribute to affected parties.

1.8.2.3. Facilitate meeting and review coordination drawings. Ensure Subcontractors agree and sign off on coordination drawings.

1.8.2.4. Publish minutes of each meeting.

1.8.2.5. Submit a copy of coordination drawings and meeting minutes as instructed by the Departmental Representative.

1.8.3. Submit shop drawings and order of prefabricated equipment or rebuilt components only after coordination meeting for such items has taken place.

1.8.4. Work coordination:

1.8.4.1. Ensure cooperation between trades in order to facilitate general progress of Work and avoid situations of spatial interference.

1.8.4.2. Ensure that each trade provides all other trades reasonable opportunity for Final Completion of Work and in such a way as to prevent unnecessary delays, cutting, patching and removal or replacement of completed Work.

1.8.4.3. Ensure disputes between Subcontractors are resolved.

1.8.5. Failure to coordinate Work is responsibility of Contractor.

1.9. Approvals of Shop Drawings, Product Data and Samples

1.9.1. The term "shop drawings" means drawings, figures, diagrams, illustrations, schedules, performance charts, brochures and other data which are Submittals by Contractor to illustrate details of a portion of Work.

1.9.2. Submit as instructed by the Departmental Representative the requested shop drawings, product data, MSDS sheets and samples in accordance with the Contract.

1.9.3. Allow sufficient time for the following:

1.9.3.1. Review of product data.

1.9.3.2. Acceptance of shop drawings.

1.9.3.3. Review of re-submission.

1.9.3.4. Ordering of accepted material and/or products.

1.10. Relics and Antiquities

1.10.1. See General Conditions.

1.11. Additional Drawings

1.11.1. The Departmental Representative may furnish additional Drawings for clarification. These additional Drawings have the same meaning and intent as if they were included with Drawings referred to in the Contract.

1.11.2. Upon request, Departmental Representative may furnish up to a maximum of 2 sets of Drawings for use by the Contractor at no additional cost. Should more than 2 sets of documents be required the Departmental Representative will provide them at additional cost.

1.12. Record Keeping

1.12.1. On Site Notifications: All correspondence from Contractor to the Departmental Representative, including Submittals, Quotes, and Extension Of Time On Contracts, must be as a sequentially numbered On Site Notifications. Include cross references to applicable On Site Instructions. The status of the Contractor, including the function of Prime Contractor, must not change by reason of any On Site Notifications.

1.12.2. On Site Instructions: All correspondence from the Departmental Representative to the Contractor, including Contemplated Change Notices, Change Orders, and Extension of Time on Contracts, will be as sequentially numbered On Site Instructions. Include cross references to applicable On Site Notifications. The status of the Contractor, including the function of Prime Contractor, must not change by reason of any On Site Instructions.

1.12.3. Maintain adequate records to support information provided to Departmental Representative.

1.12.4. Maintain asbestos waste shipment records or other Hazardous Waste Manifests for minimum of 3 years from date of shipment or longer period required by applicable law or regulation.

1.12.5. Maintain bills of ladings for minimum of 300 days from date of shipment or longer period required by applicable law or regulation.

1.13. Change Documents

1.13.1. Change Documents do not relieve Contractor of any obligation.

1.13.2. Change Documents do not change the Contractor's responsibility for sequencing, methods and means.

1.13.3. Change Documents do not change by any reason the status of the Contractor, including the function of Prime Contractor or as supervisor.

1.13.4. Change Documents include:

1.13.4.1. Change Order: There may be an increase to the Contract Amount by reason of any Change Order. No Extension of Time for completion of the Work by reason of any Change Order.

1.13.4.2. Contemplated Change Notice: No increase to the Contract Amount by reason of any Contemplated Change Notice. No Extension of Time for completion of the Work by reason of any Contemplated Change Notice.

1.13.4.3. Extension of Time on Contracts: No increase to the Contract Amount by reason of any Extension of Time on Contracts. There may be an Extension of Time for completion of the Work by reason of an Extension of Time on Contracts.

1.13.4.4. Quote: No increase to the Contract Amount by reason of any Quote. No Extension of Time for completion of the Work by reason of any Quote. The status of the Contractor, including the function of Prime Contractor, must not change by reason of any Quote.

1.14. System of Measurement

1.14.1. The metric system of measurement (SI) will be employed on the Contract.

2. PART 2 - PRODUCTS

2.1. Not Used

2.1.1. Not Used.

3. PART 3 - EXECUTION

3.1. Not Used

3.1.1. Not Used.

END OF SECTION

1. PART 1 - GENERAL

1.1. Measurement Procedures

1.1.1. See 01 11 00.

1.2. Definitions

1.2.1. See 01 11 00.

1.3. Action and Informational Submittals

1.3.1. Preconstruction Meeting Minutes: within 2 Working Days of the Preconstruction Meeting, Submit meeting minutes.

1.3.2. Progress Meeting Minutes: within 2 Working Days of a Progress Meeting, Submit meeting minutes.

1.3.3. Information for Progress Meetings: at least 2 Working Days prior to scheduled Progress Meetings, Submit all information in accordance with the Contract for Progress Meetings. Include:

1.3.3.1. Agenda for the proposed Progress Meeting.

1.3.3.2. Updated Project Schedule.

1.3.3.3. Copies of transport manifests and disposal receipts for all materials removed from Site.

1.3.3.4. Other information as instructed by the Departmental Representative or relevant to agenda for upcoming progress meeting.

1.3.4. Final Site Inspection: within 2 Working Days of the Final Site Inspection, Submit meeting minutes.

1.3.5. Closeout Meetings: within 2 Working Days of the Closeout Meeting, Submit meeting minutes.

1.4. Administrative

1.4.1. Schedule and administer project meetings throughout the progress of the Work weekly and at the call of the Departmental Representative.

1.4.2. Prepare agenda for meetings.

1.4.3. Submit written notice with agenda of each meeting 2 Working Days in advance of meeting date as instructed by the Departmental Representative.

1.4.4. Provide physical space and make arrangements for meetings, or arrange for teleconference meetings, as instructed by Departmental Representative.

1.4.5. Preside at meetings.

1.4.6. Record the meeting minutes. Include significant proceedings and decisions. Identify actions by parties.

1.4.7. Maintain records of meeting minutes for a minimum of 2 years after Work is completed.

1.4.8. Representative of Contractor, Subcontractor(s) and Supplier(s) attending meetings must be qualified and authorized to act on behalf of party each represents.

1.5. Preconstruction Meeting

1.5.1. Within 5 Working Days after award of Contract, request a meeting of parties in Contract to discuss and resolve administrative procedures and responsibilities.
1.5.2. Departmental Representative, Contractor, Superintendent, major Subcontractor(s), field inspectors and supervisors must be in attendance.
1.5.3. Establish time and location of meeting subject to approval by Departmental Representative and notify parties concerned at least 3 Working Days before meeting.
1.5.4. Agenda to include:
1.5.4.1. Appointment of official representative of participants in the Work, including Contractor's Superintendent and Departmental Representative.
1.5.4.2. Schedule of Work.
1.5.4.3. Schedule of Submittals.
1.5.4.4. Requirements for temporary facilities.
1.5.4.5. Site security.
1.5.4.6. Change orders, procedures, approvals required, administrative requirements.
1.5.4.7. Monthly Progress Payments, administrative procedures, hold backs.
1.5.4.8. Appointment of inspection and testing agencies or firms.
1.5.4.9. List of Subcontractor(s).

1.6. Progress Meetings

1.6.1. During course of Work schedule progress meetings weekly subject to approval by Departmental Representative.
1.6.2. Contractor, Superintendent, major Subcontractor(s) involved in Work, and Departmental Representative are to be in attendance.
1.6.3. Agenda to include:
1.6.3.1. Review and acceptance of minutes of previous meeting.
1.6.3.2. Review health and safety, including incidents, near misses, and corrective measures.
1.6.3.3. Review Environmental Protection, including incidents, near misses, and corrective measures.
1.6.3.4. Review contractual compliance.
1.6.3.5. Review regulatory compliance.
1.6.3.6. Review communications, problems or concerns with community.
1.6.3.7. Review of Work progress since previous meeting.
1.6.3.8. Field observations, problems, conflicts.
1.6.3.9. Updated progress schedule detailing activities planned over next 2 week period. Include review of progress with respect to previously established dates for starting and stopping various stages of Work.

1.6.3.10. Problems which impede construction schedule.
1.6.3.11. Corrective measures and procedures to regain projected schedule.
1.6.3.12. Revision to construction schedule.
1.6.3.13. Progress schedule, during succeeding Work period.
1.6.3.14. Review submittal schedules: expedite as required.
1.6.3.15. Maintenance of quality standards.
1.6.3.16. Quantities of material transported, treated, and disposed.
1.6.3.17. Review proposed changes for affect on construction schedule and on Final Completion date.
1.6.3.18. Other business.

1.7. Toolbox Meetings

1.7.1. During the course of the Work, schedule daily toolbox meetings at the start of each Work shift. Multiple meetings are required if the Contractor works multiple shifts within a 24-hour period.
1.7.2. All on Site workers to attend, including Contractor, Superintendent, major Subcontractor(s), and environmental consultants. Departmental Representative may attend.
1.7.3. Agenda to include:
1.7.3.1. Planned Work activities and environmental considerations for that shift.
1.7.3.2. Coordination activities required between Contractor, Subcontractor(s), Departmental Representative, and other contractor(s) including environmental consultant.
1.7.3.3. Health and Safety items.
1.7.3.4. Environmental Protection items.

1.8. Final Site Inspection

1.8.1. Within 5 Working Days of completion of Site Works but prior to Demobilization, request a meeting on Site to review the Site.
1.8.2. Departmental Representative, Contractor, Superintendent, major Subcontractor(s), field inspectors and supervisors must be in attendance.
1.8.3. Establish time and location of meeting subject to approval by Departmental Representative and notify parties concerned at least 3 Working Days before meeting.
1.8.4. Agenda to include:
1.8.4.1. Inspect removal of all temporary equipment, materials, supplies, and facilities.
1.8.4.2. Inspect final surface grades.
1.8.4.3. Inspect final vegetation.
1.8.4.4. Inspect permanent facilities for performance and damage.
1.8.4.5. Document all damage, deficiencies, missing items, and non-conformance.

1.8.5. If required, and in the opinion of the Departmental Representative, perform another Final Site Inspection after resolving all documented damage, deficiencies, missing items, and non-conformance.

1.9. Closeout Meeting

1.9.1. Within 10 Working Days of completion of the Work, request a meeting to review the project.

1.9.2. Departmental Representative, Contractor, Superintendent, major Subcontractor(s), field inspectors and supervisors must be in attendance.

1.9.3. Establish time and location of meeting subject to approval by Departmental Representative and notify parties concerned at least 3 Working Days before meeting.

1.9.4. Agenda to include:

1.9.4.1. Review Certificate of Completion.

1.9.4.2. Review final payment.

1.9.4.3. Identify lessons learned.

1.9.4.4. Perform Contractor Performance Evaluation Report Form.

2. PART 2 - PRODUCTS

2.1. Not Used

2.1.1. Not Used.

3. PART 3 - EXECUTION

3.1. Not Used

3.1.1. Not Used.

END OF SECTION

1. PART 1 - GENERAL

1.1. Measurement Procedures

1.1.1. See 01 11 00.

1.2. Definitions

1.2.1. See 01 11 00.

1.3. Action and Informational Submittals

1.3.1. Schedule: within 10 Working Days after Contract award, Submit a Master Plan.

1.3.2. Schedule of Interruption of Services: at least 5 Working Days prior to any shutdown or closure of active utilities or facilities Submit a schedule identifying type of service and dates of shutdown or closure.

1.3.3. Project Schedule and Updates: with Progress Payment, Submit a Project Schedule updated as appropriate. Progress Payment submission is incomplete without an updated Project Schedule acceptable to Departmental Representative.

1.4. Requirements

1.4.1. Ensure Master Plan and detail Project Schedules are practical and remain within specified Contract duration.

1.4.2. Plan to complete Work in accordance with prescribed milestones and time frame.

1.4.3. Limit activity durations to maximum of approximately 10 Working Days, to allow for progress reporting.

1.4.4. Ensure that it is understood that Award of Contract or time of beginning, rate of progress, Interim Certificate and Final Certificate as defined times of completion are of essence of this contract.

1.4.5. Include Work sequencing description and schedule:

1.4.5.1. Work Sequencing description must describe sequence, methods and means to perform each major task.

1.4.5.2. Work Sequencing schedule must show on a Gantt chart, start, end and dependencies of each major task and also indicates Work to be performed in sequence and in parallel.

1.4.5.3. Major tasks includes all items identified on Unit Price Table.

1.5. Master Plan

1.5.1. Structure schedule to allow orderly planning, organizing and execution of Work as Bar Chart (GANTT).

1.5.2. Departmental Representative will review and return revised schedules within 5 Working Days.

1.5.3. Revise impractical schedule and resubmit within 5 Working Days.

1.5.4. Accepted revised schedule will become Master Plan and be used as baseline for updates.

1.6. Project Schedule

1.6.1. Develop detailed Project Schedule derived from Master Plan.

1.6.2. Ensure detailed Project Schedule includes as minimum milestone and activity types as follows:

1.6.2.1. Dates of commencement and completion of Work for each Description of Work identified on the Unit Price Table.

1.6.2.2. Dates of Submittals including shop drawings, product data, MSDS sheets and samples.

1.6.2.3. Dates of inspection and testing.

1.6.2.4. Final Completion date within the time period in accordance with the Contract, including Amendments.

1.7. Project Schedule Reporting

1.7.1. Update Project Schedule on monthly basis reflecting activity changes and completions, as well as activities in progress.

1.7.2. Include as part of Project Schedule, narrative report identifying Work status to date, comparing current progress to baseline, presenting current forecasts, defining problem areas, anticipated delays and impact with possible mitigation.

1.8. Project Meetings

1.8.1. Discuss Project Schedule at regular site meetings, identify activities that are behind schedule and provide measures to regain slippage. Activities considered behind schedule are those with projected start or completion dates later than current approved dates shown on baseline schedule.

1.8.2. Weather related delays with their remedial measures will be discussed and negotiated

2. PART 2 - PRODUCTS

2.1. Not Used

2.1.1. Not Used.

3. PART 3 - EXECUTION

3.1. Not Used

3.1.1. Not Used.

END OF SECTION

1. PART 1 - GENERAL

1.1. Measurement Procedures

1.1.1. See 01 11 00.

1.2. Definitions

1.2.1. See 01 11 00.

1.3. Action and Informational Submittals

1.3.1. Shop Drawings: at least 5 Working Days prior to commencing applicable Work, Submit Shop Drawings signed by a Qualified Professional.

1.4. General

1.4.1. This section specifies general requirements and procedures for the Contractor's Submittals of design drawings, shop drawings, product data, samples and other submittals in accordance with the Contract to Departmental Representative. Additional specific requirements for Submittals are identified in individual technical sections.

1.4.2. Present shop drawings, product data and samples in SI Metric units.

1.4.3. Where items or information is not produced in SI Metric units, converted values are acceptable.

1.4.4. Contractor's responsibility for errors and omissions in Submittals is not relieved by the Departmental Representative's review of Submittals.

1.4.5. Notify Departmental Representative in writing at time of Submittals, identifying deviations from requirements of Contract and stating reasons for deviations.

1.4.6. Contractor's responsibility for deviations in Submittals from requirements of Contract is not relieved by the Departmental Representative's review of Submittals unless Departmental Representative gives written acceptance of specific deviations.

1.4.7. Make any changes in Submittals which Departmental Representative requires to be in accordance with the Contract and resubmit as instructed by the Departmental Representative.

1.4.8. Notify Departmental Representative in writing, when resubmitting, of any revisions other than those instructed by the Departmental Representative.

1.4.9. Do not proceed with Work until relevant Submittals are finalized and have been accepted.

1.4.10. Submit to Departmental Representative submittals listed for review. Submit promptly and in orderly sequence to not cause delay in Work. Failure to Submit in ample time is responsibility of Contractor.

1.4.11. Review Submittals prior to submission to 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 Work and Contract. Submittals not stamped, signed, dated

and identified as to specific project will be returned without being examined and considered rejected.

1.4.12. Verify field measurements and affected adjacent Work are coordinated.

1.4.13. Adjustments made on Submittals by the Departmental Representative will not result in an increase the Contract Amount nor an Extension of Time for completion of the Work. If adjustments result in an increase to the Contract Amount or an Extension of Time for completion of the Work, notify Departmental Representative and receive approval prior to proceeding with Work.

1.4.14. Keep one final copy of each Submittal onsite.

1.5. Submission Requirements

1.5.1. Coordinate each Submittal with the requirements of the Work and the Contract. Individual Submittals will not be reviewed until:

1.5.1.1. Submittals are complete.

1.5.1.2. All related information is available.

1.5.2. Allow 10 Working Days for Departmental Representative's review of each Submittal, unless otherwise specified.

1.5.3. All Submittals are to be sent to Departmental Representative in duplicate as a hardcopy and in electronic format compatible with Departmental Representative's software.

1.5.4. Accompany Submittals with On Site Notification:

1.5.4.1. Date.

1.5.4.2. Project title and number.

1.5.4.3. Contractor's name and address.

1.5.4.4. Identification and quantity of each shop drawing, product data and sample.

1.5.4.5. Other pertinent data.

1.5.5. Submittals must include:

1.5.5.1. Date and revision dates.

1.5.5.2. Project title and number.

1.5.5.3. Name and address of:

1.5.5.3.1. Subcontractor.

1.5.5.3.2. Supplier.

1.5.5.3.3. Manufacturer.

1.5.5.4. Signature of Superintendent, certifying approval of Submittals, verification of field measurements and in accordance with the Contract.

1.5.5.5. Qualified Professional to sign and seal Submittals in accordance with the Contract. Submittals to include at a minimum 1 hard copy of original ink sealed document.

1.5.5.6. Details of appropriate portions of Work as applicable.

1.6. Shop Drawings

1.6.1. Shop drawings are drawings, figures, diagrams, illustrations, schedules, performance charts, brochures and other data intended to illustrate details of a portion of the Work which are provided by the Qualified Professional of record.

1.6.2. Maximum sheet size: ANSI E (864 x 1118 mm).

1.6.3. Submit, as instructed by the Departmental Representative, 2 copies of shop drawings for each requirement requested in the specification sections and/or as instructed by the Departmental Representative.

1.6.4. Cross-reference shop drawing information to applicable portions of the Contract.

1.6.5. Qualified Professional to sign and seal each individual shop drawing.

1.6.6. Qualified Professional to sign and seal final design drawings and submit as instructed by the Departmental Representative upon Final Completion of the construction project. Final design drawings are prepared by a Qualified Professional to reflect design changes made during the construction of the Remediation by Excavation project. Final design drawings are intended to incorporate addenda, change orders and other significant design changes, but not necessarily Site instructions.

1.6.7. Shop drawings must include:

1.6.7.1. The original date of issue.

1.6.7.2. The dates of all applicable revisions.

1.6.7.3. The project title.

1.6.7.4. The project address.

1.6.7.5. The project number.

1.6.7.6. Wherever applicable, the name(s) of the: Contractor, Subcontractor(s), Supplier(s), manufacturers, and separate detailers.

1.6.7.7. The sequence number for each shop drawing.

1.6.7.8. Identifications of all products and materials.

1.6.7.9. Relation to adjacent structures or materials.

1.6.7.10. Clearly identified field dimensions.

1.6.7.11. Applicable standards.

1.7. Shop Drawings Review

1.7.1. Departmental Representative's review of shop drawings is to determine if shop drawings are consistent with the general intent of the Contract and are in accordance with the Contract.

1.7.2. This review will not mean that Departmental Representative approves the detail design inherent in the shop drawings, responsibility for which will remain with Contractor submitting same.

1.7.3. This review will not relieve the Contractor of responsibility for errors or omissions in the shop drawings or of responsibility for meeting all requirements of the Contract.

1.7.4. Without restricting the generality of the foregoing, be responsible for:

1.7.4.1. Dimensions to be confirmed and correlated at the Site.

1.7.4.2. Information that pertains solely to fabrication processes or to techniques of construction and installation.
1.7.4.3. Coordination of the Work of all sub-trades.

2. PART 2 - PRODUCTS

2.1. Not Used
2.1.1. Not Used.

3. PART 3 - EXECUTION

3.1. Not Used
3.1.1. Not Used.

END OF SECTION

4. PART 1 - GENERAL

4.1. Measurement Procedures

4.1.1. See 01 11 00.

4.2. Definitions

4.2.1. See 01 11 00.

4.3. Action and Informational Submittals

4.3.1. List of Signs and Devices: within 40 Working Days after Contract award and prior to mobilization to Site Submit a list of signs and other devices required for the project.

4.4. Protection of Public Traffic

4.4.1. Comply with requirements of acts, regulations and bylaws in force for regulation of traffic or use of roadways upon or over which it is necessary to carry out Work or haul materials or equipment.

4.4.2. Comply with current version of BC Ministry of Transportation and Infrastructure *Traffic Control Manual for Work on Roadways*.

4.4.3. Provide and maintain road access and egress to property fronting Site and in other areas in accordance with the Contract, except where other means of road access exist that are accepted.

4.5. Informational and Warning Devices

4.5.1. Provide and maintain signs, flashing warning lights, and other devices required to indicate construction activities or other temporary and unusual conditions resulting from Work which requires road user response.

4.5.2. Supply and erect signs, delineators, barricades and miscellaneous warning devices to comply with current version of BC Ministry of Transportation and Infrastructure *Traffic Control Manual for Work on Roadways*.

4.5.3. Place signs and other devices in locations recommended in current version of BC Ministry of Transportation and Infrastructure *Traffic Control Manual for Work on Roadways*.

4.5.4. Meet with Departmental Representative prior to commencement of Work to prepare list of signs and other devices required for project. If situation onsite changes, revise list for approval.

4.5.5. Continually maintain traffic control devices in use:

4.5.5.1. Check signs daily for legibility, damage, suitability and location. Clean, repair or replace to ensure clarity and reflectance.

4.5.5.2. Remove or cover signs which do not apply to conditions existing from day to day.

4.6. Control of Public Traffic

4.6.1. Provide competent flag personnel, trained in accordance with, and properly equipped to, current version of BC Ministry of Transportation and Infrastructure *Traffic Control Manual for Work on Roadways* for situations as follows:

4.6.1.1. When public traffic is required to pass working vehicles or equipment that block all or part of travelled roadway.

4.6.1.2. In situations where complete protection for workers, working equipment and public traffic is not provided by other traffic control devices.

4.7. Operational Requirements

4.7.1. Maintain existing conditions for traffic throughout period of Contract except that, when required for construction in accordance with the Contract and when measures have been taken in accordance with the Contract and accepted by Departmental Representative to protect and control public traffic, existing conditions for traffic to be restricted as follows:

4.7.1.1. Maintain existing conditions for traffic crossing right-of-way.

5. PART 2 - PRODUCTS

5.1. Not Used

5.1.1. Not Used.

6. PART 3 - EXECUTION

6.1. Not Used

6.1.1. Not Used.

END OF SECTION

1. PART 1 - GENERAL

1.1. Measurement Procedures

1.1.1. See 01 11 00.

1.2. Definitions

1.2.1. See 01 11 00.

1.3. Action and Informational Submittals

1.3.1. Contaminated Material and Non-Contaminated Material Management Plan: within 10 Working Days after Contract award and prior to mobilization to Site, Submit plan detailing management of Contaminated Material and Non-Contaminated Material. Include:

1.3.1.1. Sequence, methods and means to ensure different categories of waste are segregated.

1.3.1.2. Sequence, methods and means to handle, transport, and store Contaminated Material and Non-Contaminated Material onsite.

1.4. Sequencing and Scheduling

1.4.1. Commence Work involving contact with Contaminated or potentially Contaminated Material or Wastewater after all applicable Environmental Protection procedures (including those identified in Contaminated Material and Non-Contaminated Material Management Plan and Environmental Protection Plan) and facilities (including those identified in Site Layout) are operational and accepted by Departmental Representative.

1.4.2. Plan work sequencing and traffic patterns to prevent contamination of clean areas due to traffic or debris.

1.5. Equipment Decontamination Facility

1.5.1. Prior to commencing Work involving equipment contact with potentially Contaminated Material, construct equipment decontamination facilities to accommodate the largest potentially contaminated equipment onsite.

1.5.2. Collect and contain equipment decontamination wastewater and sediment. Transfer collected wastewater and sediment to treatment facilities accepted by Departmental Representative.

1.6. Personnel Decontamination Facility

1.6.1. Provide an area or areas close to the workers' changing facilities to enable workers and other personnel leaving areas such as exclusion area to remove deleterious and contaminated materials from boots, clothing and skin surfaces.

1.6.2. Be responsible for ensuring that all materials, chemicals, protective clothing, wash water and deleterious materials are collected, treated and disposed of in accordance with applicable environmental standards and regulations.

1.6.3. Personnel Decontamination Facility to be available for use by persons other than the Contractor's workers and Subcontractors, including federal employees, other contractor(s), and environmental agencies. Provide use of facilities to other persons.

1.7. Drum Staging Pad

1.7.1. Provide, maintain, and operate drum staging pad as required.

1.7.2. Construct drum staging pad with sump capable of collecting leachate and rain runoff. Place impermeable liner that contours over top of berm, and collects leachate and runoff from staging pad which is conducted solely to sump on staging pad. Leachate is Contaminated Water.

1.8. Soil Stockpiling

1.8.1. Provide, maintain, and operate temporary storage/stockpiling facilities as per Contractor's Site Layout.

1.8.2. Segregate Contaminated Material from Non-Contaminated Material into separate stockpiles to prevent cross-contamination.

1.8.3. Prevent precipitation from infiltrating or from directly running off stockpiled materials. Cover stockpiled materials with an impermeable cover during periods of Work stoppage including at end of each Working Day and as instructed by the Departmental Representative.

1.8.4. Securely fasten covers over stockpiled material until material is loaded for offsite transport.

1.8.5. Store excavated Non-Contaminated Material only on non-contaminated surface areas. Ensure no contact between excavated Non-Contaminated Material and drainage of Contaminated Water or Contaminated Material.

1.8.6. Store excavated Contaminated Material in temporary stockpiles.

1.8.6.1. Install impermeable liner (eg asphalt or minimum 20 mil (0.5mm) polyethylene) below proposed stockpile locations to prevent contact between stockpile material and ground.

1.8.6.2. Cover stockpiled material when not being worked or sampled to prevent release of airborne dust, vapours, or odours, and to prevent saturation and leachate generation from material.

1.8.6.3. Prevent Non-Contaminated Water, such as surface water, from coming into contact with Contaminated Material stockpiles.

1.8.7. Segregate Contaminated Material into different treatment/disposal streams, including at a minimum:

1.8.7.1. Hazardous Waste

1.8.7.2. Waste Quality

1.8.8. Segregate different suspect material in discrete stockpiles to facilitate ex-situ characterization as instructed by the Departmental Representative.

1.8.9. Assist Departmental Representative in collection of stockpile samples for exsitu characterization. Ex-situ characterization may take up to 5 Working Days, not counting the day the sample is collected. No Standby Time charges or increases

to Contract Amount or Extension of Time for completion of the Work can be incurred for Confirmation Sample results provided within 5 Working Days, not counting the day the sample is collected.

1.8.10. Do not remove Contaminated Material from stockpiles until exsitu characterization completed and as instructed by Departmental Representative.

1.9. Equipment Decontamination

1.9.1. At minimum, perform following steps during equipment decontamination: 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.

1.9.2. If required, as instructed by the Departmental Representative, use high-pressure, low-volume, hot water or steam supplemented by detergents or solvents as appropriate. Pay particular attention to tire treads, equipment tracks, springs, joints, sprockets, and undercarriages. Scrub surfaces with long handle scrub brushes and cleaning agent. Rinse off and collect cleaning agent. Air dry equipment in clean area before removing from Site or travelling on clean areas. Perform assessment as instructed by the Departmental Representative to determine effectiveness of decontamination.

1.9.2.1. Take appropriate measures necessary to minimize drift of mist and spray during decontamination including provision of wind screens.

1.9.2.2. Collect decontamination wastewater and sediment which accumulate in decontamination location. Treat collected wastewater as Contaminated Water. Manage decontamination sediment as Hazardous Waste.

1.9.3. In the opinion of the Departmental Representative, each piece of equipment must be inspected by the Departmental Representative after decontamination and prior to travel on clean areas or demobilization from Site. Perform additional decontamination as required in the opinion of the Departmental Representative.

1.9.4. Furnish and equip personnel engaged in equipment decontamination with protective equipment including suitable disposable clothing, respiratory protection, and face shields.

1.10. Progress Decontamination

1.10.1. Decontaminate equipment after working in potentially contaminated Work areas and prior to subsequent Work or travel on clean areas.

1.11. Final Decontamination

1.11.1. Perform final decontamination of construction facilities, equipment, and materials which may have come in contact with potentially Contaminated Material prior to demobilization from Site.

1.12. Drums

1.12.1. Storage of liquid waste: 200 L steel drums meeting Transportation and Dangerous Goods Act, closable lids, complete with labels for marking contents and date filled.
1.12.2. Storage of solid waste: 200 L steel drums meeting Transportation and Dangerous Goods Act, closable lids, complete with labels for marking contents and date filled.

1.13. Contaminated Material Management

1.13.1. Remove all Contaminated Material within Work areas in accordance with the Contract and as instructed by the Departmental Representative.
1.13.2. Minimize generation of Contaminated Material to greatest extent practicable. Take necessary precautions to avoid mixing during excavation, handling, loading, stockpiling, and transport of Non-Contaminated Material with Contaminated Material, and Waste Quality with Hazardous Waste.
1.13.3. Segregate, excavate, handle, stockpile, load, transport, treat, and dispose Contaminated Material separately into the following classifications in accordance with the Contract or as instructed by the Departmental Representative based on insitu results, field observations, field measurements, and/or ex-situ characterization:
1.13.3.1. Hazardous Waste
1.13.3.2. Waste Quality
1.13.4. Handle, stockpile, load, and transport Contaminated Material from the Site separately from material from other sites.
1.13.5. Treat and dispose Contaminated Material from the Site separately from material from other sites to the extent practicable as acceptable to the Departmental Representative.
1.13.6. Material characterization additional to information provided in Contract required by transport, Treatment Facility or Disposal Facility responsibility of Contractor.

1.14. Contaminated Material Transport Onsite

1.14.1. Assume ownership of, and be responsible for, Contaminated Material once it is loaded on a vehicle, barge, or other vessel for transport.
1.14.2. Transport material as soon as practical. Do not unreasonably stockpile material onsite.
1.14.3. Cover material while being transported to prevent release of airborne dust, vapours, or odours, and to prevent saturation and leachate generation from material.
1.14.4. Excess water in soil or sediment must not be allowed to flow out of vehicle or vessel during transport.
1.14.5. Stabilize soil and sediment as necessary.
1.14.6. All vehicles, vessels and operators must be appropriately licensed and equipped to transport Hazardous Waste soil and sediment.
1.14.7. Transport material to location shown on Drawings.

1.14.8. Place in Owner Soil Treatment Facility in locations and thicknesses as shown on Drawings.
1.14.9. Be responsible for any damage to Owner Soil Treatment Facility caused by placement.

2. PART 2 - PRODUCTS

2.1. Not Used
2.1.1. Not Used.

3. PART 3 - EXECUTION

3.1. Not Used
3.1.1. Not Used.

END OF SECTION

1. PART 1 - GENERAL

1.1. Measurement Procedures

1.1.1. See 01 11 00.

1.2. Definitions

1.2.1. See 01 11 00.

1.3. Action and Informational Submittals

1.3.1. Submit to Departmental Representative Submittals listed for review.
1.3.2. Work affected by Submittal must not proceed until review is complete.
1.3.3. Submit the following:
1.3.3.1. Health and Safety Plan.
1.3.3.2. Copies of reports or directions issued by federal and provincial health and safety inspectors.
1.3.3.3. Copies of incident and accident reports.
1.3.3.4. Complete set of Material Safety Data Sheets (MSDS), and all other documentation required by Workplace Hazardous Materials Information System (WHMIS) requirements.
1.3.3.5. Emergency Procedures.
1.3.3.6. Notice of Project.
1.3.4. 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 5 Working Days after receipt of the plan.
1.3.5. If changes are required, revise the plan as appropriate and resubmit to Departmental Representative within 5 Working Days.
1.3.6. 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:
1.3.6.1. Be construed to imply approval by the Departmental Representative.
1.3.6.2. Be interpreted as a warranty of being complete, accurate and legislatively compliant.
1.3.6.3. Relieve the Contractor of his legal obligations for the provision of health and safety on the project.

1.4. References

1.4.1. Government of Canada:
1.4.1.1. Canada Labour Code - Part II.
1.4.1.2. Canada Occupational Health and Safety Regulations.
1.4.2. National Building Code of Canada (NBC):
1.4.2.1. Part 8, Safety Measures at Construction and Demolition Sites.
1.4.3. Canadian Standards Association (CSA) as amended:
1.4.3.1. CSA Z797-2009 Code of Practice for Access Scaffold.

1.4.3.2. CSA S269.1-1975 (R2003) Falsework for Construction Purposes.
1.4.3.3. CSA S350-M1980 (R2003) Code of Practice for Safety in Demolition of Structures.
1.4.4. National Fire Code of Canada 2010 (as amended):
1.4.4.1. Part 5 – Hazardous Processes and Operations and Division B as applicable and required.
1.4.4.2. FCC No. 302, Standard for Welding and Cutting.
1.4.5. American National Standards Institute (ANSI):
1.4.5.1. ANSI A10.3, Operations – Safety Requirements for Powder-Actuated Fastening Systems.
1.4.6. Province of British Columbia:
1.4.6.1. Workers Compensation Act Part 3-Occupational Health and Safety.
1.4.6.2. Occupational Health and Safety Regulation.

1.5. Regulatory Requirements

1.5.1. Comply with codes, acts, bylaws, standards and regulations applicable to the performance of the Work in accordance with the Contract to ensure safe operations at Site.
1.5.2. 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 instruct on the course of action to be followed.

1.6. Worker's Compensation Board Coverage

1.6.1. Comply fully with the Workers' Compensation Act, regulations and orders made pursuant thereto, and any amendments up to the Final Completion of the Work.
1.6.2. Maintain Workers' Compensation Board coverage during the term of the Contract, until and including the date that the Certificate of Final Completion is issued.

1.7. Compliance with Regulations

1.7.1. PWGSC may terminate the Contract without liability to PWGSC where the Contractor, in the opinion of PWGSC, refuses to comply with a requirement of the Workers' Compensation Act or the Occupational Health and Safety Regulations.
1.7.2. 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.

1.8. Responsibility

1.8.1. Assume responsibility as the Prime Contractor for Work under this Contract.
1.8.1.1. Be responsible for health and safety of persons onsite, safety of property onsite and for protection of persons adjacent to Site and environment to extent that they may be affected by conduct of Work.

1.8.1.2. 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.

1.9. Health and Safety Coordinator

1.9.1. The Health and Safety Coordinator must:

1.9.1.1. 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 Site to perform Work.

1.9.1.2. Be responsible for implementing, daily enforcing, and monitoring the site-specific Health and Safety Plan.

1.9.1.3. Be on Site during execution of Work.

1.10. General Conditions

1.10.1. Provide safety barricades and lights around Site as required to provide a safe working environment for workers and protection for pedestrian and vehicular traffic.

1.10.2. Ensure that non-authorized persons are not allowed to circulate in designated construction areas of the Site:

1.10.2.1. Provide appropriate means by use of barricades, fences, warning signs, traffic control personnel, and temporary lighting as required.

1.11. Project/Site Conditions

1.11.1. Work at Site will involve contact with contaminants identified in Specifications and environmental reports.

1.12. Work Permits

1.12.1. Obtain specialty permits related to project before start of Work.

1.13. Filing of Notice

1.13.1. The Prime Contractor is to complete and submit a Notice of Project as required by Provincial or Territorial authorities.

1.13.2. Provide copies of all notices to the Departmental Representative.

1.14. Health and Safety Plan

1.14.1. Conduct a site-specific hazard assessment based on review of Contract, required Work, and project Site. Identify any known and potential health risks and safety hazards.

1.14.2. Prepare and comply with a site-specific project Health and Safety Plan based on hazard assessment, including, but not limited to, the following:

1.14.2.1. Primary requirements:

1.14.2.1.1. Contractor's safety policy.

1.14.2.1.2. Identification of applicable compliance obligations.

1.14.2.1.3. Definition of responsibilities for project safety/organization chart for project.
1.14.2.1.4. General safety rules for project.
1.14.2.1.5. Job-specific safe work, procedures.
1.14.2.1.6. Inspection policy and procedures.
1.14.2.1.7. Incident reporting and investigation policy and procedures.
1.14.2.1.8. Occupational Health and Safety Committee/Representative procedures.
1.14.2.1.9. Occupational Health and Safety meetings.
1.14.2.1.10. Occupational Health and Safety communications and record keeping procedures.
1.14.2.2. Summary of health risks and safety hazards resulting from analysis of hazard assessment, with respect to site tasks and operations which must be performed as part of the Work.
1.14.2.3. List hazardous materials to be brought onsite as required by Work.
1.14.2.4. Indicate engineering and administrative control measures to be implemented at the Site for managing identified risks and hazards.
1.14.2.5. Identify personal protective equipment (PPE) to be used by workers.
1.14.2.6. Identify personnel and alternates responsible for site safety and health.
1.14.2.7. Identify personnel training requirements and training plan, including site orientation for new workers.
1.14.3. 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.
1.14.4. Revise and update Health and Safety Plan as required, and re-submit to the Departmental Representative.
1.14.5. Departmental Representative's review: the review of Health and Safety Plan by Public Service and Procurement Canada (PWGSC) 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

1.15.1. List standard operating procedures and measures to be taken in emergency situations. Include an evacuation plan and emergency contacts (ie names/telephone numbers) of:
1.15.1.1. Designated personnel from own company.
1.15.1.2. Regulatory agencies applicable to Work and as per legislated regulations.
1.15.1.3. Local emergency resources.
1.15.1.4. Departmental Representative and site staff.
1.15.2. Include the following provisions in the emergency procedures:
1.15.2.1. Notify workers and the first-aid attendant, of the nature and location of the emergency.
1.15.2.2. Evacuate all workers safely.
1.15.2.3. Check and confirm the safe evacuation of all workers.

1.15.2.4. Notify the fire department or other emergency responders.
1.15.2.5. Notify adjacent workplaces or residences which may be affected if the risk extends beyond the workplace.
1.15.2.6. Notify Departmental Representative and Site staff.
1.15.3. Provide written rescue/evacuation procedures as required for, but not limited to:
1.15.3.1. Work at high angles.
1.15.3.2. Work in confined spaces or where there is a risk of entrapment.
1.15.3.3. Work with hazardous substances.
1.15.3.4. Underground work.
1.15.3.5. Work on, over, under and adjacent to water.
1.15.3.6. Workplaces where there are persons who require physical assistance to be moved.
1.15.4. Design and mark emergency exit routes to provide quick and unimpeded exit.
1.15.5. Revise and update emergency procedures as required, and re-submit to the Departmental Representative.

1.16. Hazardous Products

1.16.1. Comply with requirements of Workplace Hazardous Materials Information System (WHMIS) regarding use, handling, storage and disposal of hazardous materials, and regarding labelling and provision of Material Safety Data Sheets (MSDS) acceptable to the Departmental Representative and in accordance with the Canada Labour Code.
1.16.2. Where use of hazardous and toxic products cannot be avoided:
1.16.2.1. Notify Departmental Representative beforehand of the product(s) intended for use. Submit applicable MSDS and WHMIS documents as required.
1.16.2.2. In conjunction with Departmental Representative, schedule to carry out Work during "off hours" when tenants have left the building.
1.16.2.3. Provide adequate means of ventilation as required.

1.17. Unforeseen Hazards

1.17.1. 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

1.18.1. Post legible versions of the following documents onsite:
1.18.1.1. Health and Safety Plan.
1.18.1.2. Sequence of Work.
1.18.1.3. Emergency procedures.
1.18.1.4. Site drawing showing project layout, locations of the first-aid station, evacuation route and marshalling station, and the emergency transportation provisions.
1.18.1.5. Notice of Project.
1.18.1.6. Floor plans or Site plans.

1.18.1.7. Notice as to where a copy of the Workers' Compensation Act and Regulations are available on the Site for review by employees and workers.
1.18.1.8. Workplace Hazardous Materials Information System (WHMIS) documents.
1.18.1.9. Material Safety Data Sheets (MSDS).
1.18.1.10. List of names of Joint Health and Safety Committee members, or Health and Safety Representative, as applicable.
1.18.2. Post all Material Safety Data Sheets (MSDS) onsite, 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.
1.18.3. 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
1.19.1. Attend health and safety preconstruction meeting and all subsequent meetings called by the Departmental Representative.
1.19.2. Ensure all site personnel attend a health and safety toolbox meeting at the beginning of each shift, which must include:
1.19.2.1. Sign-in of all attendees.
1.19.2.2. Planned Work activities and environmental considerations for that shift.
1.19.2.3. Hazards associated with these Work activities, including environmental hazards (eg potential for hypothermia, heat exhaustion, heat stroke).
1.19.2.4. Appropriate job-specific safe work procedures.
1.19.2.5. Required personal protective equipment (PPE).
1.19.2.6. Appropriate emergency procedures.
1.19.2.7. Review recent accidents on Site, including near misses.
1.19.3. Retain records of all health and safety meetings onsite during Work, and retain as corporate records for a minimum of 7 years after Work is completed.

1.20. Correction of Non-Compliance
1.20.1. Immediately address health and safety non-compliance issues identified by the Departmental Representative.
1.20.2. Provide Departmental Representative with written report of action taken to correct non-compliance with health and safety issues identified.
1.20.3. 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.
1.20.4. Correct non-compliance.

1.21. Hazardous Occurrence Investigation and Reporting
1.21.1. Hazard includes:
1.21.1.1. 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.

1.21.2. Hazardous Occurrence includes:

1.21.2.1. An event occurring at a PWGSC 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.

1.21.3. Hazardous Occurrence Investigation and Reporting Procedures:

1.21.3.1. Includes information regarding the person involved and the basic circumstances surrounding the hazardous occurrence.

1.21.3.2. Provides a detailed and thorough description of the hazardous occurrence and the sequence of events.

1.21.3.3. Indicates corrective measures that have been taken since the occurrence.

1.21.3.4. Requires the appointment of a qualified investigator.

1.21.3.5. Provides recommendations for additional corrective measures, if required.

1.21.4. Fatal or Serious Accidents Procedures:

1.21.4.1. Call 911 to advise the police organization having jurisdiction to secure the scene and investigate the matter.

1.21.4.2. Advise the Departmental Representative of the fatality or serious accident within 1 hour.

1.21.4.3. No investigation will be conducted at the scene until the police service having jurisdiction has released the scene.

1.21.4.4. No person shall, unless authorized to do so, 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

1.22.1. The Contractor is solely responsible for utility clearance.

1.22.2. The Contractor will not rely upon Drawings or other information provided with utility locations.

1.23. Personal Protective Equipment Program

1.23.1. Submit Personal Protective Equipment (PPE) program to the Departmental Representative addressing:

1.23.1.1. Donning and doffing procedures.

1.23.1.2. PPE selection based upon Site hazards.

1.23.1.3. PPE use and limitations of equipment.

1.23.1.4. Work mission duration, PPE maintenance and storage.

1.23.1.5. PPE decontamination and disposal.

1.23.1.6. PPE inspection procedures prior to, during, and after use.

1.23.1.7. Evaluation of effectiveness of PPE program, and limitations during temperature extremes, and other appropriate medical considerations.

1.23.1.8. Medical surveillance requirements for personnel assigned to work at Site.

1.23.1.9. 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.

1.23.1.10. Site control measures employed at 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.

1.23.1.11. Decontamination procedures for both personnel and equipment.

1.23.1.12. 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.

1.23.1.13. Written respiratory protection program for project activities.

1.23.1.14. Procedures dealing with heat and/or cold stress.

1.23.1.15. Spill containment program if waste material is generated, excavated, stored, or managed onsite.

1.24. Offsite Contingency and Emergency Response Plan

1.24.1. Prior to commencing Work involving handling of hazardous materials, develop offsite Contingency and Emergency Response Plan.

1.24.2. Plan must provide immediate response to serious site occurrence such as explosion, fire, or migration of significant quantities of toxic or hazardous material from Site.

1.25. Personnel Health, Safety, and Hygiene

1.25.1. Training: ensure personnel entering Site are trained in accordance with specified personnel training requirements. Training session must be completed by Health and Safety Officer.

1.25.2. Levels of Protection: establish levels of protection for each Work area based on planned activity and location of activity.

1.25.3. Personal Protective Equipment:

1.25.3.1. Furnish site personnel with appropriate PPE as specified above. Ensure that safety equipment and protective clothing is kept clean and maintained.

1.25.4. Develop protective equipment usage procedures and ensure that procedures are strictly followed by site personnel; include following procedures as minimum:

1.25.4.1. Ensure prescription eyeglasses worn are safety glasses and do not permit contact lenses onsite within work zones.

1.25.4.2. Ensure footwear is steel-toed safety shoes or boots and is covered by rubber overshoes when entering or working in potentially contaminated work areas.

1.25.4.3. Dispose of or decontaminate PPE worn onsite at end of each workday.

1.25.4.4. Decontaminate reusable PPE before reissuing.

1.25.4.5. Ensure site personnel have passed respirator fit test prior to entering potentially contaminated work areas.

1.25.4.6. Ensure facial hair does not interfere with proper respirator fit.

1.25.5. Respiratory Protection:

1.25.5.1. 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.

1.25.5.2. Develop, implement, and maintain respirator program.

1.25.5.3. Monitor, evaluate, and provide respiratory protection for site personnel.

1.25.5.4. Ensure levels of protection as listed have been chosen consistent with site-specific potential airborne hazards associated with major contaminants identified onsite.

1.25.5.5. In absence of additional air monitoring information or substance identification, retain an industrial hygiene specialist to determine minimum levels of respiratory protection required.

1.25.5.6. Immediately notify Departmental Representative when level of respiratory protection required increases.

1.25.5.7. Ensure appropriate respiratory protection during Work activities. As minimum requirement, ensure that persons entering potentially contaminated work areas are supplied with and use appropriate respiratory protection.

1.25.6. Heat Stress/Cold Stress: implement heat stress or cold stress monitoring program as applicable and include in site-specific Health and Safety Plan.

1.25.7. Personnel Hygiene and Personnel Decontamination Procedures. Provide minimum as follows:

1.25.7.1. Suitable containers for storage and disposal of used disposable PPE.

1.25.7.2. Potable water and suitable sanitation facility.

1.25.8. Emergency and First-Aid Equipment:

1.25.8.1. Locate and maintain emergency and first-aid equipment in appropriate location onsite including first-aid kit to accommodate number of site personnel; portable emergency eye wash; two 9 kg ABC type dry chemical fire extinguishers.

1.25.9. Site Communications:

1.25.9.1. Post emergency numbers near site telephones.

1.25.9.2. Ensure personnel use of "buddy" system and develop hand signal system appropriate for site activities.

1.25.9.3. Provide employee alarm system to notify employees of site emergency situations or to stop Work activities if necessary.

1.25.9.4. Furnish selected personnel with 2-way radios.

1.25.9.5. 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

2.1. Not Used

2.1.1. Not Used.

3. PART 3 - EXECUTION

3.1. Not Used

3.1.1. Not Used.

END OF SECTION

1. PART 1 - GENERAL

1.1. Measurement Procedures

1.1.1. See 01 11 00.

1.2. Definitions

1.2.1. See 01 11 00.

1.3. Action and Informational Submittals

1.3.1. Environmental Protection Plan: within 10 Working Days after Contract award and prior to mobilization to Site, Submit a plan detailing protection of the environment. Include:

1.3.1.1. Comprehensive overview of known or potential environmental issues to be addressed during Work.

1.3.1.2. Identify requirements that plan complies with. Includes: permits, certificates, approvals, or any other form of authorizations; other federal, provincial, or municipal requirements; and in accordance with the Contract.

1.3.1.3. Names and qualifications of persons responsible for ensuring adherence to Environmental Protection Plan.

1.3.1.4. Names and qualifications of persons responsible for manifesting material to be removed from Site.

1.3.1.5. Names and qualifications of persons responsible for training Site personnel.

1.3.1.6. Description of Environmental Protection personnel training program.

1.3.1.7. Work Area Plan showing proposed activity in each portion of areas, such as exclusion zone(s), decontamination zone(s) and clean zone(s), and identifying areas of limited use or non-use. Ensure plan includes measures for marking limits of use areas and methods for protection of features to be preserved within authorized Work areas.

1.3.1.8. Drawings showing locations of proposed temporary excavations or embankments for haul roads, material storage areas, structures, sanitary facilities, and stockpiles of excess or spoil materials including methods to control runoff and to contain materials onsite.

1.3.1.9. Historical, Archaeological, Cultural Resources, Biological Resources and Wetlands Plan that defines procedures for identifying and protecting historical, archaeological, cultural resources, biological resources and wetlands. Include procedures if previously unknown historical, archaeological, cultural, and biological resources are discovered during Work.

1.3.1.10. Noise Control Plan identifying methods and procedures for preventing, monitoring, and controlling noise for compliance with: applicable permits, certificates, approvals, or any other form of authorizations; other federal, provincial, or municipal requirements; and in accordance with the Contract.

Include thresholds and procedures if: noise does not comply with appropriate levels, or if there are public complaints.

1.3.1.11. Vibration Control Plan identifying methods and procedures for preventing, monitoring, and controlling vibration for compliance with: applicable permits, certificates, approvals, or any other form of authorizations; other federal, provincial, or municipal requirements; and in accordance with the Contract. Include thresholds and procedures if: vibration does not comply with appropriate levels, there are public complaints, or if onsite or offsite damage occurs

1.3.1.12. Traffic Control Plans including measures to reduce erosion of temporary roadbeds by construction traffic, especially during wet weather. Ensure plans include measures to prevent mud transported onto public roads by vehicles or runoff, and mitigation measures if mud is transported onto public roads by vehicles or runoff. Vehicles and vehicle traffic must comply with all federal, provincial, and municipal laws and regulations.

1.3.1.13. Contamination Prevention Plan identifying hazardous, deleterious or regulated substances to be used onsite; intended actions to prevent introduction of such materials into air, water, or ground; and detailing provisions for compliance with federal, provincial, and municipal laws and regulations for storage and handling of these materials.

1.3.1.14. Spill Control Plan including procedures, instructions, and reports to be used in event of spill of hazardous, deleterious or regulated substances. Identify locations and contents of spill kits.

1.3.1.15. Communications Plan identifying emergency contact list and conditions for implementing emergency contact. Emergency contact to include: Contractor emergency response team including Superintendent; Departmental Representative and alternate, and other contractor(s) and individuals as instructed by the Departmental Representative; and federal, provincial, and municipal emergency contacts.

1.3.1.16. Air Pollution Control Plan detailing provisions to assure that contaminants, dust, debris, materials, and trash, are contained onsite. Include procedures, in accordance with the Contract, if air pollution does not comply with appropriate levels, there are public complaints, or if onsite or offsite damage occurs.

1.3.1.17. Non-Contaminated Material Disposal Plan identifying methods and locations for solid waste disposal including clearing waste. Include name, location, provincial or territorial authorizations, and evidence of compliance with municipal zoning and bylaws of Landfill.

1.3.1.18. Wastewater Management Plan identifying methods and procedures for management and discharge of Contaminated and Non-Contaminated Water including surface waters and wastewater which are directly derived from construction activities, such as concrete curing water, clean-up water, dewatering of groundwater, disinfection water, hydrostatic test water, and water used in flushing of lines. Include method of treatment and disposal.

1.3.1.19. Wastewater Disposal Plan identifying methods and locations for solid waste disposal including clearing waste. Include name, location, provincial or territorial authorizations, and evidence of compliance with Municipal zoning and bylaws of Disposal Facility and/or copy of municipal permit to discharge to sewer system

1.3.1.20. Erosion and Sediment Control Plan identifying type and location of erosion and sediment controls to be provided including monitoring and reporting requirements to assure that control measures are in compliance with erosion and sediment control plan, federal, provincial, and municipal laws and regulations.

1.3.2. Pollution Control Procedures Modification: immediately when pollution control procedures are inadequate, as instructed by the Departmental Representative, Submit modified procedures to resolve problem.

1.3.3. Pollution Control Remediation: immediately when soil, sediment or water contaminated by Contractor's activities are inadequate as instructed by the Departmental Representative, Submit remediation procedures.

1.3.4. Dust and Particulate Control Procedures Modification: immediately when dust and particulate control measures are inadequate as instructed by the Departmental Representative, Submit modified procedures to resolve problem.

1.4. Fires

1.4.1. Fires and burning of rubbish onsite not permitted.

1.5. Cleaning

1.5.1. Maintain cleanliness of Work and surrounding Site to comply with federal, provincial, and municipal fire and safety laws, ordinances, codes, and regulations applicable to the performance of the Work.

1.5.2. Coordinate cleaning operations with disposal operations to prevent accumulation of dust, dirt, debris, rubbish, and waste materials.

1.5.3. Ensure cleanup of the Work areas each day after Final Completion of Work.

1.6. Site Clearing and Plant Protection

1.6.1. Minimize stripping of Topsoil and vegetation.

1.6.2. Restrict tree and plant removal to areas in accordance with the Contract or as instructed by the Departmental Representative. Protect all other trees and plants onsite and offsite.

1.6.3. Salvage all trees and plants to be removed in accordance with the Contract or as instructed by the Departmental Representative.

1.6.4. Wrap in burlap, trees and shrubs adjacent to construction Work, storage areas and trucking lanes, and encase with protective wood framework from grade level to height of 2 m minimum.

1.6.5. Protect roots of designated trees to dripline during excavation and site grading to prevent disturbance or damage. Avoid unnecessary traffic, dumping and storage of materials over root zones.

1.7. Vibration

1.7.1. Maintain acceptable vibration levels as to not damage structures adjacent to the Site as a result of the Work.

1.8. Maintenance of Public Roads

1.8.1. Prevent tracking or spilling of debris or material onto public roads.
1.8.2. Immediately sweep or scrape up debris or material on public roads.
1.8.3. Clean public roads within a 200 m radius of the Site entrance at least once per shift.

1.9. Pollution Control

1.9.1. Pollution includes spills or other releases from Contractor's activities that could potentially contaminate soil, sediment, water, and atmosphere from discharge of hazardous, deleterious or regulated substances, including from equipment and material handling.
1.9.2. Provide sequence, methods and means, and facilities to prevent spills or releases.
1.9.2.1. Maintain temporary erosion and pollution control features.
1.9.2.2. Do not store fuel onsite other than tanks forming part of the equipment.
1.9.2.3. Control emissions from equipment and plant to meet applicable authorities' emission requirements.
1.9.2.4. Contractor to regularly inspect all machinery on the Site to ensure it is in good repair and free of leaks.
1.9.3. Inadequate procedures:
1.9.3.1. Stop relevant Work if procedures are inadequate to prevent spills or other releases, or when monitoring indicates that release equals or exceeds regulated or levels in accordance with the Contract.
1.9.3.2. Submit procedures proposed to resolve problem.
1.9.3.3. Make necessary changes to operations prior to resuming excavation, handling, processing, or other Work that can cause spills or other releases.
1.9.3.4. Departmental Representative can stop relevant Work at any time when Contractor's Work procedures are inadequate to prevent spills or other releases, or when monitoring indicates that release equals or exceeds regulated or levels in accordance with the Contract. Do not proceed with stopped Work until corrections accepted by Departmental Representative.
1.9.4. Be prepared to intercept, cleanup, and dispose of spills or other releases that can occur whether on land or water.
1.9.5. Spill kits and containment are to be maintained onsite and ready for deployment in the event of spills or other releases.
1.9.5.1. Spill kits are to include sufficient quantities of absorbent material, containers, booms, shovels and other tools, and personal protective equipment.
1.9.5.2. Spill response materials must be compatible with type of equipment being used or type of material being handled.
1.9.5.3. Spill kits are to be in close proximity to machinery.

1.9.5.4. During the Work there are to be trained and qualified personnel available that are ready to deploy spill kits when necessary.
1.9.6. Take immediate action using available resources to contain and mitigate effects on environment and persons from spill or release.
1.9.7. Promptly report spills and releases potentially causing damage to environment to:
1.9.7.1. Authority having jurisdiction or interest in spill or other release including conservation authority, water supply authorities, drainage authority, road authority, and fire department.
1.9.7.2. Contractor emergency response team including Superintendent
1.9.7.3. Departmental Representative and other contractor(s) and individuals as instructed by the Departmental Representative.
1.9.8. Departmental Representative can collect samples for chemical analyses prior to, during, and upon Final Completion of Work to monitor potential pollution caused by Contractor's activities. Assist Departmental Representative in collection of samples.
1.9.9. Remediation of soil, sediment or water contaminated by Contractor's activities.
1.9.9.1. Remediate all soil, sediment or water contaminated by Contractor's activities associated with the Work onsite and offsite.
1.9.9.2. Remediation includes excavation, pumping, testing, transport, treatment and disposal as appropriate for the type of contamination incurred, and at a minimum in accordance with the Contract.
1.9.9.3. Submit procedures for remediating soil, sediment or water contaminated by Contractor's activities.
1.9.9.4. Remediate as instructed by the Departmental Representative.
1.9.9.5. Contractor is responsible for any additional investigation, testing, and assessments required as acceptable to the Departmental Representative.

1.10. Dust and Particulate Control

1.10.1. Execute Work by methods to minimize raising dust from construction operations.
1.10.2. Prevent fugitive dust from the Site from interfering with onsite and offsite uses.
1.10.3. Prevent dust from spreading to neighbouring properties.
1.10.4. Cover or wet down dry materials and rubbish to prevent blowing dust and debris. Provide dust control for temporary roads, excavations, and stockpiles.
1.10.5. Implement and maintain dust and particulate control measures immediately as instructed by the Departmental Representative during Work and in accordance with regulations and in accordance with the Contract.
1.10.6. Provide positive means to prevent airborne dust from dispersing into atmosphere. Use fresh (non-saline) water for dust and particulate control.
1.10.7. As minimum, use appropriate covers on vehicles, including trucks, barges, and trains, hauling fine or dusty material. Use watertight vehicles to haul wet materials.
1.10.8. Inadequate procedures:

1.10.8.1. Stop relevant Work if dust and particulate control is not sufficient for controlling dusts and particulates into atmosphere, or when monitoring indicates that dust or particulate levels equal or exceed regulated or levels in accordance with the Contract.
1.10.8.2. Submit procedures proposed to resolve problem.
1.10.8.3. Make necessary changes to operations prior to resuming excavation, handling, processing, or other Work that can cause release of dusts or particulates.
1.10.8.4. Departmental Representative can stop relevant Work at any time when Contractor's Work procedures are inadequate to prevent release of dusts or particulates, or when monitoring indicates that dust or particulate levels equal or exceed regulated or levels in accordance with the Contract. Do not proceed with stopped Work until corrections accepted by Departmental Representative.

1.11. Non-Contaminated Material Removal

1.11.1. Remove all Non-Contaminated Material within Work areas in accordance with the Contract and as instructed by the Departmental Representative.
1.11.2. Assume ownership of, and be responsible for, Non-Contaminated Material once it is loaded on a vehicle, barge, or other vessel for transport offsite.
1.11.3. Remove surplus materials and temporary facilities from Site.
1.11.4. Dispose waste offsite.
1.11.5. Do not burn or bury any waste onsite.
1.11.6. Do not discharge wastes into streams or waterways.
1.11.7. Do not dispose of volatile or hazardous materials such as mineral spirits, oil, or paint thinner in storm or sanitary drains.
1.11.8. Dispose of following materials at appropriate Landfill provided by Contractor and accepted by Departmental Representative:
1.11.8.1. Non-Contaminated Material.
1.11.8.2. Disposable PPE.

1.12. Sewage Wastewater

1.12.1. Store Sewage Wastewater from toilet facilities with wastewater from handbasins, and/or showers, for ultimate disposal.
1.12.2. Provide, operate, and maintain Sewage Wastewater storage tanks to store Sewage Wastewater.
1.12.3. Transport and dispose of Sewage Wastewater at a Disposal Facility, or discharge to municipal sanitary sewer system in compliance with Municipal requirements, as accepted by Departmental Representative.
1.12.4. Discharges: comply with applicable discharge limitations and requirements; do not discharge Sewage Wastewater to Site sewer systems that do not conform to or are in violation of such limitations or requirements; and obtain approval prior to discharge of Sewage Wastewater.

1.13. Wastewater Control

1.13.1. Dewater various parts of Work including, without limitation, excavations, structures, foundations, and Work areas.

1.13.2. Employ construction methods, plant procedures, and precautions that ensure Work, including excavations, are stable, free from disturbance, and dry.

1.13.3. Direct surface waters that have not contacted potentially Contaminated Materials to surface drainage systems.

1.13.4. Control surface drainage including ensuring that gutters are kept open, wastewater is not allowed across or over pavements or sidewalks except through accepted pipes or properly constructed troughs, and runoff from unstabilized areas is intercepted and diverted to suitable outlet.

1.14. Non-Contaminated Water Disposal

1.14.1. Dispose of Non-Contaminated Water in manner not injurious to public health or safety, to property, or to any part of Work completed or under construction.

1.14.2. Control disposal or runoff of Non-Contaminated Water containing suspended materials or other harmful substances in accordance with local authority requirements.

1.14.3. Ensure pumped Non-Contaminated Water into waterways, sewer or drainage systems is free of suspended materials. Provide flocculation tanks, settling basins, or other treatment facilities to remove suspended solids or other materials before discharging to storm sewers, watercourses or drainage areas

1.14.4. Obtain permits to discharge Non-Contaminated Water to environment or Municipal sewers.

1.14.5. Do not discharge water which may have come in contact with potentially Contaminated Material or otherwise be Contaminated directly offsite to the environment or to municipal sewers.

1.15. Erosion and Sediment Control

1.15.1. Plan and execute construction by methods to control surface drainage from cuts and fills, from borrow and waste disposal areas, from stockpiles, staging areas, and other Work areas. Prevent erosion and sedimentation.

1.15.2. Minimize amount of bare soil or sediment exposed at one time. Stabilize disturbed soil or sediment 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 instructed by the Departmental Representative.

1.15.3. Provide and maintain temporary erosion and sediment control measures.

1.15.3.1. Temporary erosion and sediment control measures are required to prevent erosion and migration of silt, mud, sediment, and other debris offsite or to other areas of Site where damage might result, or that might otherwise be required by laws and regulations.

1.15.3.2. Temporary erosion and sediment control measures include: silt fences, hay or straw bales, ditches, geotextiles, drains, berms, terracing, riprap, temporary drainage piping, vegetative cover, dikes, mulching, sediment traps, detention and retention basins, grading, planting, retaining walls, culverts, pipes, guardrails, temporary roads, and other measures appropriate to specific condition.

1.15.3.3. Temporary improvements must remain in place and in operation as necessary or until otherwise instructed by the Departmental Representative

1.15.3.4. Place silt fences and/or hay or straw bales in ditches to prevent sediment from escaping from ditch terminations.

1.15.3.5. Do not construct bale barriers and silt fence in flowing streams or in swales.

1.15.3.6. Check erosion and sediment control measures weekly after each rainfall; during prolonged rainfall check daily.

1.15.3.7. Bales and/or silt fence can be removed at beginning of Working Day, replace at end of Working Day.

1.15.3.8. Repair damaged bales, end runs, and undercutting beneath bales.

1.15.3.9. Unless instructed by the Departmental Representative, remove temporary erosion and sediment control devices upon Final Completion of Work. Temporary erosion and sediment control devices once removed become property of Contractor.

1.15.4. 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.

1.15.5. Construct fill areas to prevent erosion.

1.15.6. Do not disturb existing embankments or embankment protection in accordance with the Contract.

1.15.7. Periodically inspect earthwork to detect evidence of erosion and sedimentation; promptly apply corrective measures.

1.15.8. If soil, sediment and debris from Site accumulate in low areas, storm sewers, roadways, gutters, ditches, or other areas where it is undesirable, remove accumulation and restore area to original condition, as instructed by the Departmental Representative.

1.16. Work In or Adjacent to Waterways

1.16.1. Approvals and Practices:

1.16.1.1. Obtain Discharge Approval prior to commencing work which may impact waterways.

1.16.1.2. Comply with Fisheries Act Authorization and other relevant authorizations and in accordance with the Contract.

1.16.1.3. Follow practices described in Fisheries and Oceans Canada (September 1993) *Land Development Guidelines for the Protection of Aquatic Habitat*.

1.16.1.4. Follow practices described in BC Ministry of Environment (March 2004) *Standards and Best Practices for Instream Works*.

1.16.2. Timing

1.16.2.1. Time work in water to respect timing windows to protect fish, including their eggs, juveniles, spawning adults and/or the organisms upon which they feed.
1.16.2.2. Minimize duration of in-water work.
1.16.2.3. Conduct instream work during periods of low flow, or at low tide, to further reduce the risk to fish and their habitat or to allow work in water to be isolated from flows.
1.16.2.4. Schedule work to avoid wet, windy and rainy periods that may increase erosion and sedimentation.
1.16.3. Site Selection
1.16.3.1. Design and plan activities and works in waterbody such that loss or disturbance to aquatic habitat is minimized and sensitive spawning habitats are avoided.
1.16.3.2. Design and construct approaches to the waterbody such that they are perpendicular to the watercourse to minimize loss or disturbance to riparian vegetation.
1.16.3.3. Avoid building structures on meander bends, braided streams, alluvial fans, active floodplains or any other area that is inherently unstable and may result in erosion and scouring of the stream bed or the built structures.
1.16.3.4. Undertake all instream activities in isolation of open or flowing water to maintain the natural flow of water downstream and avoid introducing sediment into the watercourse.
1.16.4. Contaminant and Spill Management
1.16.4.1. Plan activities near water such that materials such as paint, primers, blasting abrasives, rust solvents, degreasers, grout, poured concrete or other chemicals do not enter the watercourse.
1.16.4.2. Develop a response plan that is to be implemented immediately in the event of a sediment release or spill of a deleterious substance and keep an emergency spill kit on site.
1.16.4.3. Ensure that building material used in a watercourse has been handled and treated in a manner to prevent the release or leaching of substances into the water that may be deleterious to fish.
1.16.5. Erosion and Sediment Control
1.16.5.1. Develop and implement an Erosion and Sediment Control Plan for the site that minimizes risk of sedimentation of the waterbody during all phases of the project. Maintain erosion and sediment control measures until all disturbed ground has been permanently stabilized, suspended sediment has resettled to the bed of the waterbody or settling basin and runoff water is clear.
1.16.6. Erosion and Sediment Control Plan includes:
1.16.6.1. Installation of effective erosion and sediment control measures before starting work to prevent sediment from entering the water body.
1.16.6.2. Measures for managing water flowing onto the site, as well as water being pumped/diverted from the site such that sediment is filtered out prior to the water entering a waterbody. This includes pumping/diversion of water to a vegetated area, construction of a settling basin or other filtration system.

1.16.6.3. Site isolation measures (e.g., silt boom or silt curtain) for containing suspended sediment where in-water work is required (e.g., dredging, underwater cable installation).

1.16.6.4. Measures for containing and stabilizing waste material (e.g., dredging spoils, construction waste and materials, commercial logging waste, uprooted or cut aquatic plants, accumulated debris) above the high water mark of nearby waterbodies to prevent re-entry.

1.16.6.5. Regular inspection and maintenance of erosion and sediment control measures and structures during the course of construction.

1.16.6.6. Repairs to erosion and sediment control measures and structures if damage occurs.

1.16.6.7. Removal of non-biodegradable erosion and sediment control materials once site is stabilized.

1.16.7. Shoreline/Bank Re-vegetation and Stabilization

1.16.7.1. Clearing of riparian vegetation should be kept to a minimum: use existing trails, roads or cut lines wherever possible to avoid disturbance to the riparian vegetation and prevent soil compaction.

1.16.7.2. When practicable, prune or top the vegetation instead of grubbing/uprooting.

1.16.7.3. Minimize the removal of natural woody debris, rocks, sand or other materials from the banks, the shoreline or the bed of the waterbody below the ordinary high water mark. If material is removed from the waterbody, set it aside and return it to the original location once construction activities are completed.

1.16.7.4. Immediately stabilize shoreline or banks disturbed by any activity associated with the project to prevent erosion and/or sedimentation, preferably through re-vegetation with native species suitable for the site.

1.16.7.5. Restore bed and banks of the waterbody to their original contour and gradient; if the original gradient cannot be restored due to instability, a stable gradient that does not obstruct fish passage should be restored.

1.16.7.6. If replacement rock reinforcement/armouring is required to stabilize eroding or exposed areas, then ensure that appropriately-sized, clean rock is used; and that rock is installed at a similar slope to maintain a uniform bank/shoreline and natural stream/shoreline alignment.

1.16.7.7. Remove all construction materials from site upon project completion.

1.16.8. Fish Protection

1.16.8.1. Ensure that all in-water activities, or associated in-water structures, do not interfere with fish passage, constrict the channel width, or reduce flows.

1.16.8.2. Retain a qualified environmental professional to ensure applicable permits for relocating fish are obtained and to capture any fish trapped within an isolated/enclosed area at the work site and safely relocate them to an appropriate location in the same waters. Fish may need to be relocated again, should flooding occur on the site.

1.16.8.3. Screen any water intakes or outlet pipes to prevent entrainment or impingement of fish. Entrainment occurs when a fish is drawn into a water

intake and cannot escape. Impingement occurs when an entrapped fish is held in contact with the intake screen and is unable to free itself.

1.16.8.4. Avoid using explosives in or near water. Use of explosives in or near water produces shock waves that can damage a fish swim bladder and rupture internal organs. Blasting vibrations may also kill or damage fish eggs or larvae.

1.16.9. Operation of Machinery

1.16.9.1. Ensure that machinery arrives on site in a clean condition and is maintained free of fluid leaks, invasive species and noxious weeds.

1.16.9.2. Whenever possible, operate machinery on land above the high water mark, on ice, or from a floating barge in a manner that minimizes disturbance to the banks and bed of the waterbody.

1.16.9.3. Limit machinery fording of the watercourse to a one-time event (i.e., over and back), and only if no alternative crossing method is available. If repeated crossings of the watercourse are required, construct a temporary crossing structure.

1.16.9.4. Use temporary crossing structures or other practices to cross streams or waterbodies with steep and highly erodible (e.g., dominated by organic materials and silts) banks and beds. For fording equipment without a temporary crossing structure, use stream bank and bed protection methods (e.g., swamp mats, pads) if minor rutting is likely to occur during fording.

1.16.9.5. Wash, refuel and service machinery and store fuel and other materials for the machinery in such a way as to prevent any deleterious substances from entering the water

1.17. Noncompliance

1.17.1. Departmental Representative will inform Contractor in writing of observed noncompliance with federal, provincial or municipal environmental laws, regulations, permits, or other environmental procedure violations.

1.17.2. After receipt of notice, inform the Departmental Representative of the proposed corrective action. Corrective action will be subject to acceptance of Departmental Representative.

1.17.2.1. Do not take action until after receipt of written acceptance.

1.17.3. Departmental Representative will issue stop order of Work until satisfactory corrective action has been taken.

2. PART 2 - PRODUCTS

2.1. Not Used

2.1.1. Not Used.

3. PART 3 - EXECUTION

3.1. Not Used

3.1.1. Not Used.

END OF SECTION

1. PART 1 - GENERAL

1.1. Measurement Procedures

1.1.1. See 01 11 00.

1.2. Definitions

1.2.1. See 01 11 00.

1.3. Action and Informational Submittals

1.3.1. Not Used.

1.4. Laws, Regulations, Permits

1.4.1. Generally, provincial and municipal laws, regulations, bylaws and other requirements do not apply on federal lands, activities or undertakings. Soil and other materials that are removed from federal lands may become subject to provincial or municipal laws and regulations.

1.4.2. 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, activities or undertakings.

1.4.3. Comply with certificates, licenses and other permits enforced at the location concerned required by regulatory federal, provincial or municipal authorities to complete the Work that have already been obtained.

1.4.4. Obtain and pay for certificates, licenses and other permits enforced at the location concerned required by regulatory federal, provincial or municipal authorities to complete the Work that have not already been obtained or that are required to be amended.

1.4.5. Provide applicable authorities with plans and information required for issue of acceptance certificates.

1.4.6. Furnish inspection certificates in evidence that the Work installed conforms with the requirements of the authority having jurisdiction.

1.5. Codes, Bylaws, Standards

1.5.1. Meet or exceed requirements of Contract, standards, and codes applicable to the performance of the Work and referenced documents.

1.5.2. In any case of conflict or discrepancy, the most stringent requirements will apply.

1.5.3. Perform Work in accordance with the *National Building Code* of Canada (NBC), and other requirements or codes in accordance with the Contract, construction standards and/or any other code or bylaw applicable to the performance of the Work.

1.5.4. Certificates, licenses and other permits enforced at the location concerned required by regulatory federal, provincial or municipal authorities to complete the Work: see 01 11 00.

1.5.5. Comply with all attachments, references, and reports relevant to Work, including environmental protection.

1.6. Smoking Environment

1.6.1. Smoking on the Site is not permitted.

2. PART 2 - PRODUCTS

2.1. Not Used

2.1.1. Not Used.

3. PART 3 - EXECUTION

3.1. Not Used

3.1.1. Not Used.

END OF SECTION

01 45 00
QUALITY CONTROL

1. PART 1 - GENERAL

1.1. Measurement Procedures
1.1.1. See 01 11 00.

1.2. Definitions
1.2.1. See 01 11 00.

1.3. Action and Informational Submittals
1.3.1. Not Used.

1.4. Quality of Work
1.4.1. Ensure that quality workmanship is performed through use of skilled tradesmen, under supervision of qualified journeyman, or Qualified Professional.

1.4.2. Meet or exceed standards set out in the National Building Code of Canada as applicable for workmanship, erection methods and procedures.

1.4.3. In cases of dispute, perform Work to standard or quality in accordance with any decisions by the Departmental Representative.

1.4.4. Follow Departmental Representative's instructions to meet the Quality of Work in accordance with the Contract at no increase to the Contract Amount and no increase to Extension of Time for completion of the Work. Quality of Work includes addressing comments on Submittals, modifying environmental procedures, and preventing or remediating contaminated material spills.

1.5. Quality Management
1.5.1. Be responsible for all Quality Assurance and Quality Control during the performance of the Work.

1.5.2. Quality Assurance and Quality Control includes monitoring, inspecting, testing, documenting and reporting the means, methods, materials, workmanship, processes, and products of all aspects of the Work, including design, construction, and management as necessary to ensure conformance with the Contract.

1.5.3. Assist Departmental Representative in quality audit inspections and submit all indicated information within 5 Working Days of collection or as instructed.

1.6. Inspection
1.6.1. Allow Departmental Representative access to Work. If part of Work is in preparation at locations other than Site, allow access to such Work whenever it is in progress. Work at locations other than Site includes offsite Transportation (eg transfer stations), Treatment, and Disposal Facilities.

1.6.2. Give timely notice requesting inspection if Work is designated for special tests, inspections or approvals by Departmental Representative instructions, or law of Site.

1.6.3. If Contractor covers or permits to be covered Work that has been designated for special tests, inspections or approvals before such is made, uncover such Work, have inspections or tests satisfactorily completed and make good such Work.

1.6.4. Departmental Representative will order part of Work to be examined if Work is suspected to be not in accordance with Contract Documents. If, upon examination such work is found not in accordance with Contract Documents, correct such Work and pay cost of examination and correction.

1.7. Independent Inspection Agencies

1.7.1. Independent Inspection/Testing Agencies will be engaged by Departmental Representative for purpose of inspecting and/or testing portions of Work. Cost of such services will be borne by Departmental Representative.

1.7.2. Provide equipment required for executing inspection and testing by appointed agencies.

1.7.3. Employment of inspection/testing agencies does not relax responsibility to perform Work in accordance with Contract Documents.

1.7.4. If defects are revealed during inspection and/or testing, appointed agency will request additional inspection and/or testing to ascertain full degree of defect. Correct defect and irregularities as advised by Departmental Representative at no cost to Departmental Representative. Pay costs for retesting and reinspection.

1.8. Access to Work

1.8.1. Allow inspection/testing agencies access to Work, off site manufacturing and fabrication plants.

1.8.2. Co-operate to provide reasonable facilities for such access.

1.9. Procedures

1.9.1. Notify appropriate agency and Departmental Representative in advance of requirement for tests, in order that attendance arrangements can be made.

1.9.2. Submit samples and/or materials required for testing, as specifically requested in specifications. Submit with reasonable promptness and in orderly sequence to not cause delays in Work.

1.9.3. Provide labour and facilities to obtain and handle samples and materials on site. Provide sufficient space to store and cure test samples.

1.10. Rejected Work

1.10.1. 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 Departmental Representative as failing to conform to Contract Documents. Replace or re-execute in accordance with Contract Documents.

1.10.2. Make good other Contractor's work damaged by such removals or replacements promptly.

1.10.3. If in opinion of Departmental Representative it is not expedient to correct defective Work or Work not performed in accordance with Contract Documents, PWGSC will deduct from Contract Price difference in value between Work performed and that called for by Contract Documents, amount of which will be determined by Departmental Representative.

1.11. Reports

1.11.1. Submit 2 copies of inspection and test reports to [Departmental Representative.

1.11.2. Provide copies to subcontractor of work being inspected or tested.

1.12. Tests and Mix Designs

1.12.1. Furnish test results and mix designs as requested.

1.12.2. Test results must be signed by Qualified Professional.

1.12.3. The Departmental Representative may require, and pay for, additional inspection and testing services not included above.

2. PART 2 - PRODUCTS

2.1. Not Used

2.1.1. Not Used.

3. PART 3 - EXECUTION

3.1. Not Used

3.1.1. Not Used.

END OF SECTION

01 52 00
CONSTRUCTION FACILITIES

1. PART 1 - GENERAL

1.1. Measurement Procedures
1.1.1. See 01 11 00.

1.2. Definitions
1.2.1. See 01 11 00.

1.3. Action and Informational Submittals
1.3.1. Site Layout: within 10 Working Days after Contract award and prior to mobilization to Site, Submit Site Layout drawings showing existing conditions and facilities, construction facilities and temporary controls provided by Contractor. Include:

1.3.1.1. Equipment and personnel decontamination areas.

1.3.1.2. Means of ingress, egress and temporary traffic control.

1.3.1.3. Equipment and material staging areas.

1.3.1.4. Stockpile areas and construction details, including base preparation and water control features.

1.3.1.5. Exclusion areas, contaminant handling areas, and other areas identified in Contractor's site-specific Health and Safety Plan and Environmental Protection Plan.

1.3.1.6. Grading, including contours, required to construct temporary facilities.

1.3.1.7. Location of all temporary facilities including: Contaminated Water Treatment Plant, truck wash and decontamination units, office trailers, parking, storage, environmental monitoring stations, above ground and underground utilities, and temporary facilities and roads.

1.3.2. Signs: at least 5 Working Days prior to posting, Submit any signs viewable by public.

1.4. Utilities
1.4.1. Power is not available at existing Site and must be supplied at the Contractor’s expense.

1.4.2. Water supply is not available at existing Site and must be supplied at the Contractor’s expense.

1.5. Fire Protection
1.5.1. Provide and maintain temporary fire protection equipment during performance of Work required by governing codes, regulations and bylaws.

1.6. Access and Delivery
1.6.1. Only the designated entrance in accordance with the Contract can be used for access to Site.

1.6.1.1. Maintain for duration of Contract.
1.6.1.2. Make good damage resulting from Contractor's use.
1.6.2. Use of the Site will be granted to the Contractor through the Departmental Representative.

1.7. Installation and Removal
1.7.1. Prepare site plan indicating proposed location and dimensions of area to be fenced and used by Contractor, number of trailers to be used, avenues of ingress/egress to fenced area and details of fence installation.
1.7.2. Identify areas which have to be gravelled to prevent tracking of mud.
1.7.3. Indicate use of supplemental or other staging area.
1.7.4. Provide construction facilities in order to execute work expeditiously.
1.7.5. Provide temporary utilities in order to execute Work expeditiously.
1.7.6. Remove from Site all such Work after use.

1.8. Site Storage/Loading
1.8.1. Confine work and operations of employees in accordance with the Contract. Do not unreasonably encumber premises with products.
1.8.2. Storage space must be limited to the Site.
1.8.3. Do not load or permit to load any part of Work with weight or force that will endanger Work.

1.9. Construction Parking
1.9.1. Parking of private vehicles will not be permitted on Site.
1.9.2. Provide and maintain adequate access to project site.

1.10. Security
1.10.1. Provide and pay for responsible security personnel to guard site and contents of site after working hours and during holidays.
1.10.2. Control access to Site and maintain a log of all personnel onsite. No non-Work visitors allowed without prior written consent of Departmental Representative

1.11. Departmental Representative and Consultant Offices
1.11.1. Provide office facilities for the exclusive use of the Departmental Representative and their consultants with the following:
1.11.1.1. Two work stations within the Factory fabricated modular double wide units in accordance with the Contract.
1.11.1.2. Work stations must include; 1 desk (minimum size 120 cm x 50 cm, minimum height 70 cm), 1 swivel desk chair (minimum load requirement 100 kg), 1 bookshelf (minimum 3 shelves with a minimum shelf height of 32 cm), 1 locking filing cabinet (minimum dimensions 50 cm x 39 cm x 60 cm), 1 garbage can, and 1 recycling bin.
1.11.1.3. Building envelope: watertight construction.

1.11.1.4. Completed building: exterior to interior minimum sound attenuation of STC 30.
1.11.1.5. Building interior environment: heated and cooled to maintain temperature of 20 degrees C minimum to 25 degrees C maximum with relative humidity of 35% to 60%.
1.11.1.6. Provide ventilation and outdoor air as per ASHRAE 62.1 – 2010 Standard.
1.11.1.7. Building lighting: maintain measured lighting level of 200 lx at 1500 mm above finished floor, after building finishes and painting complete.
1.11.1.8. Thermal performance of window units: Maximum heat transfer rate (U-value) not to exceed 2.0 W/m2K.
1.11.1.9. Regularly collect refuse and recyclables and keep the office clean and properly maintained with heat and light.
1.11.1.10. Provide private washroom facilities in offices in accordance with the Contract, complete with flush or chemical type toilet, lavatory and mirror and maintain supply of paper towels and toilet tissue.
1.11.1.11. Furnish offices in accordance with the Contract.
1.11.1.12. Work stations must include; 1 desk (minimum size 120 cm x 50 cm, minimum height 70 cm), 1 swivel desk chair (minimum load requirement 100 kg), 1 bookshelf (minimum 3 shelves with a minimum shelf height of 32 cm), 1 locking filing cabinet (minimum dimensions 50 cm x 39 cm x 60 cm), 1 garbage can, and 1 recycling bin.
1.11.1.13. The work stations and contents must be for the sole use of the Departmental Representative and their consultant(s) for the duration of the Work and may, if necessary, be used concurrently with other inspection agencies.
1.11.2. Installation:
1.11.2.1. Install stable timber foundation as shown on Contractor's Site Layout.
1.11.2.2. Install level and plumb.
1.11.2.3. Install skirting and stairs.
1.11.2.4. Adjust doors and windows for smooth operation.
1.11.2.5. Install personnel decontamination facility immediately adjacent to stairs.
1.11.3. Provide a minimum of 2 parking spaces for Departmental Representatives and their consultants adjacent to offices.

1.12. Equipment, Tools and Materials Storage

1.12.1. Provide and maintain, in clean and orderly condition, lockable weatherproof sheds for storage of tools, equipment and materials.
1.12.2. Locate materials not required to be stored in weatherproof sheds on site in manner to cause least interference with work activities.

1.13. Sanitary Facilities

1.13.1. Provide sanitary facilities for work force in accordance with governing regulations and ordinances.

1.13.2. Post notices and take precautions as required by local health authorities. Keep area and premises in sanitary condition.

1.14. Construction Signage

1.14.1. Provide and erect project signs within 10 Working Days of mobilization in a location designated by Departmental Representative.

1.14.2. Provide project identification site sign comprising foundation, framing, and one 1200 x 2400 mm signboard as detailed and as described below.

1.14.2.1. Foundations: 15 MPa concrete to CSA-A23.1 minimum 200 mm x 900 mm deep.

1.14.2.2. Framework and battens: SPF, pressure treated minimum 89 x 89 mm.

1.14.2.3. Signboard: 19 mm Medium Density Overlaid Douglas Fir Plywood to CSA O121.

1.14.2.4. Paint: alkyd enamel to CAN/CGSB-1.59 over exterior alkyd primer to CAN/CGSB 1.189.

1.14.2.5. Fasteners: hot-dip galvanized steel nails and carriage bolts.

1.14.2.6. Vinyl sign face: printed project identification, self adhesive, vinyl film overlay, supplied by Departmental Representative.

1.14.3. Locate project identification sign as directed by Departmental Representative and construct as follows:

1.14.3.1. Build concrete foundation, erect framework, and attach signboard to framing.

1.14.3.2. Paint surfaces of signboard and framing with one coat primer and two coats enamel. Colour white on signboard face, black on other surfaces.

1.14.3.3. Apply vinyl sign face overlay to painted signboard face in accordance with installation instruction supplied.

1.14.4. Direct requests for approval to erect Contractor signboard to Departmental Representative. For consideration general appearance of Contractor signboard must conform to project identification site sign. Wording in both official languages.

1.14.5. Signs and notices for safety and instruction in both official languages Graphic symbols to CAN/CSA-Z321.

1.14.6. Maintain approved signs and notices in good condition for duration of project, and dispose of off site on completion of project or earlier if directed by Departmental Representative.

1.15. Protection and Maintenance of Traffic

1.15.1. Provide access and temporary relocated roads as necessary to maintain traffic.

1.15.2. Maintain and protect traffic on affected roads during construction period except as otherwise specifically directed by Departmental Representative.

1.15.3. Provide measures for protection and diversion of traffic, including provision of watch-persons and flag-persons, erection of barricades, placing of lights around

and in front of equipment and work, and erection and maintenance of adequate warning, danger, and direction signs.

1.15.4. Protect travelling public from damage to person and property.

1.15.5. Contractor's traffic on roads selected for hauling material to and from site to interfere as little as possible with public traffic.

1.15.6. Verify adequacy of existing roads and allowable load limit on these roads. Contractor: responsible for repair of damage to roads caused by construction operations.

1.15.7. Construct access and haul roads necessary.

1.15.8. Haul roads: constructed with suitable grades and widths; sharp curves, blind corners, and dangerous cross traffic shall be avoided.

1.15.9. Provide necessary lighting, signs, barricades, and distinctive markings for safe movement of traffic.

1.15.10. Dust control: adequate to ensure safe operation at all times.

1.15.11. Location, grade, width, and alignment of construction and hauling roads: subject to approval by Departmental Representative.

1.15.12. Lighting: to assure full and clear visibility for full width of haul road and work areas during night work operations.

1.15.13. Provide snow removal during period of Work.

1.15.14. Remove, upon completion of work, haul roads designated by Departmental Representative.

1.16. Truck Wash and Decontamination Units

1.16.1. Supply, install and operate the truck wash, including the installation of a water supply.

1.16.1.1. No vehicles which have come in contact with Contaminated Material must leave the Site without passing through the truck wash.

1.16.1.2. The truck wash must provide, at a minimum, the ability to wash truck tires and load boxes to a minimum height of 1.7 m.

1.16.1.3. Truck wash must have a solid separation tank and all solids collected must be classified as Contaminated Material and disposed of at a Disposal Facility.

1.16.1.4. Recycle or treated as Contaminated Water water used in the truck wash.

1.16.2. Supply personnel decontamination units (minimum of 2) for use by hazardous material, testing and inspection personnel working in areas of hazardous materials and for general clean-up of personal protective equipment to remove Contaminated Material.

1.16.2.1. At least one personnel decontamination unit must have overhead shower capability.

1.16.2.2. The personnel decontamination units to be available to Departmental Representative and their consultants.

1.16.2.3. The personnel decontamination units are subject to acceptance of Departmental Representative.

1.16.3. The truck wash and personnel decontamination units must be maintained in good working order during onsite Work.
1.16.4. The truck wash and personnel decontamination units must be removed from the Site during Site Decommissioning.

1.17. Clean-Up
1.17.1. Remove construction debris, waste materials, packaging material from work site daily.
1.17.2. Clean dirt or mud tracked onto paved or surfaced roadways.
1.17.3. Store materials resulting from demolition activities that are salvageable.
1.17.4. Stack stored new or salvaged material not in construction facilities.

2. PART 2 - PRODUCTS

2.1. Not Used
2.1.1. Not Used.

3. PART 3 - EXECUTION

3.1. Not Used
3.1.1. Not Used.

END OF SECTION

1. PART 1 - GENERAL

1.1. Measurement Procedures

1.1.1. See 01 11 00.

1.2. Definitions

1.2.1. See 01 11 00.

1.3. Action and Informational Submittals

1.3.1. Product Data: at least 5 Working Days prior to use, Submit data on products to be used in Work. Include:

1.3.1.1. Manufacturers' catalogue sheets, MSDS sheets, brochures, literature, performance charts and diagrams, used to illustrate standard manufactured products or any other information in accordance with the Contract.

1.3.1.2. Delete information not applicable to project.

1.3.1.3. Supplement standard information to provide details applicable to project.

1.3.1.4. Cross-reference product data information to applicable portions of Contract.

1.3.2. Substitution: at least 5 Working Days prior to use and after Contract award, Submit proposals for substituting products, if required. Include statements of respective costs of items originally in accordance with the Contract and the proposed substitution.

1.3.3. Quality of Work: at least 5 Working Days prior to Work, Submit alternate means to meet or correct quality of work, if required.

1.4. Products, Material and Equipment

1.4.1. Use new products, material and equipment in accordance with the Contract. The term "products" is referred to throughout the specifications.

1.4.2. Use products of one manufacturer for material and equipment of the same type or classification in accordance with the Contract.

1.4.3. Unless otherwise specified, comply with manufacturer's latest printed instructions for materials and installation method in accordance with the Contract s.

1.4.4. Notify Departmental Representative in writing of any conflict between Contract and manufacturer's instructions. Departmental Representative will instruct which document is to be followed.

1.4.5. Deliver, store and maintain packaged material and equipment with manufacturer's seals and labels intact.

1.4.6. Prevent damage, adulteration and soiling of products during delivery, handling and storage. Immediately remove rejected products from Site.

1.4.7. Store products in accordance with Suppliers' instructions.

1.5. Quality of Products

1.5.1. Products, materials and equipment (referred to as products) incorporated into Work must be new, not damaged or defective, and of the best quality (compatible with the specifications) for the purpose intended. As instructed by the Departmental Representative, furnish evidence as to type, source, and quality of the products provided.

1.5.2. Defective products will be rejected regardless of previous inspections.

1.5.2.1. Inspection does not relieve responsibility, but is precaution against oversight or error.

1.5.2.2. Remove and replace defective products.

1.5.3. Retain purchase orders, invoices and other documents to prove that all products utilized in the Work meet the requirements of the Contract. Produce documents as instructed by the Departmental Representative.

1.5.4. Should any dispute arise as to quality or fitness of products, the decision rests strictly with the Departmental Representative in accordance with the Contract.

1.5.5. Permanent labels, trademarks and nameplates on products are not acceptable in prominent locations, except where required for operating instructions, or when located in mechanical or electrical rooms.

1.6. Availability of Products

1.6.1. Immediately upon signing the Contract, review product delivery requirements and anticipate foreseeable supply delays for any items.

1.6.2. If delays in supply of products are foreseeable, Notify Departmental Representative of such in order that substitutions or other remedial action may be authorized in ample time to prevent delay in performance of the Work.

1.6.3. In event of failure to Notify Departmental Representative at the start of Work and should it subsequently appear that the Work may be delayed for such reason, the Departmental Representative reserves the right to substitute more readily available products of similar character.

1.7. Manufacturer’s Instructions

1.7.1. Install or erect products in accordance with the manufacturer’s instructions in accordance with the Contract.

1.7.1.1. Do not rely on labels or enclosures provided with products.

1.7.1.2. Obtain written instructions directly from the manufacturer.

1.7.2. Notify Departmental Representative in writing of any conflict between Contract and manufacturer’s instructions. Departmental Representative will instruct which document is to be followed.

1.7.3. Improper installation or erection of products, due to failure in complying with these requirements, authorizes the Departmental Representative to instruct the removal and re-installation.

1.8. Contractor's Options for Selection of Products for Tendering

1.8.1. Products specified by "Prescriptive" specifications: select any product meeting or exceeding requirements in accordance with the Contract.

1.8.2. Products specified by performance and referenced standard: select any product meeting or exceeding the referenced standard.

1.8.3. Products specified to meet particular design requirements or to match existing materials: use only material in accordance with the Contract.

1.8.4. When products are specified by a referenced standard or by performance specifications, as instructed by the Departmental Representative obtain from manufacturer and independent laboratory report showing that the product meets or exceeds the requirements in accordance with the Contract.

1.9. Storage, Handling and Protection

1.9.1. Handle and store products in manner to prevent damage, adulteration, deterioration and soiling and in accordance with manufacturer's instructions.

1.9.2. Store packaged or bundled products in original and undamaged condition with manufacturer's seals and labels intact. Do not remove from packaging or bundling until required in Work.

1.9.3. Store products subject to damage from weather in weatherproof enclosures.

1.9.4. Remove and replace damaged products as instructed by the Departmental Representative.

1.10. Transportation

1.10.1. Pay costs of transportation of products required in performance of Work.

1.10.2. Transport products in manner to prevent damage, adulteration, deterioration and soiling and in accordance with manufacturer's instructions when applicable.

1.10.3. Transport products subject to damage from weather in weatherproof enclosures.

1.10.4. Transport in an efficient manner that does not cause delays to the Work schedule.

1.11. Quality of Work

1.11.1. Ensure quality of Work is of highest standard, executed by workers experienced and skilled in respective duties for which they are employed. Immediately Notify Departmental Representative if required Work is such as to make it impractical to produce results in accordance with the Contract. Provide alternate means to meet or correct quality of work, as accepted by the Departmental Representative.

1.11.2. Do not employ anyone unskilled in their required duties.

1.11.3. Perform Work to standard of fitness of Quality of Work in accordance with any decision by the Departmental Representative.

1.12. Coordination

1.12.1. Ensure cooperation of workers in laying out Work. Maintain efficient and continuous supervision.

1.13. Remedial Work

1.13.1. Perform remedial Work required to repair or replace parts or portions of Work as instructed by the Departmental Representative as defective or unacceptable. Coordinate adjacent affected Work as required.

1.13.2. Perform remedial Work by specialists familiar with materials affected. Perform in a manner to neither damage nor put at risk any portion of Work.

1.14. Storage Tanks

1.14.1. 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.

1.14.2. Temporary storage tanks subject to the regulations must be registered with Environment Canada.

1.14.3. Mobile tanks subject to the regulations must be certified to be mobile.

1.14.4. Storage tanks to meet the following minimum requirements:

1.14.4.1. Corrosion protection.

1.14.4.2. Secondary containment.

1.14.4.3. Containment sumps, if applicable.

1.14.4.4. Overfill protection.

1.14.5. All components of tank system must bear certification marks indicating that they conform to the standards set out in the regulations.

1.14.6. Product transfer area must be designed to contain spills.

1.14.7. Prepare an emergency plan.

1.14.8. Prior to first filling, storage tanks must:

1.14.8.1. Be registered.

1.14.8.2. Be certified and marked.

1.14.8.3. Transfer area be constructed.

1.14.8.4. Emergency plan in place.

2. PART 2 - PRODUCTS

2.1. Asbestos Containing Materials Prohibition

2.1.1. 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. Not Used

3.1.1. Not Used.

END OF SECTION

1. PART 1 - GENERAL

1.1. Measurement Procedures
1.1.1. See 01 11 00.

1.2. Definitions
1.2.1. See 01 11 00.

1.3. Action and Informational Submittals
1.3.1. Preconstruction Condition Survey: within 10 Working Days prior to mobilization to Site, Submit Preconstruction Condition Survey of existing structures, utilities and surface features.
1.3.2. Preconstruction As-Built Documents: at least 5 Working Days prior to mobilization to Site, Submit preconstruction as-built documents prepared by a Land Surveyor.

1.4. Qualifications of Surveyor
1.4.1. A Land Surveyor registered in BC.

1.5. Survey Reference Points
1.5.1. Locate, confirm and protect control points prior to starting site work. Preserve permanent reference points during construction.
1.5.2. Make no changes or relocations without prior written notice to Departmental Representative.
1.5.3. Report to Departmental Representative when reference point is lost or destroyed, or requires relocation because of necessary changes in grades or locations.
1.5.4. Require surveyor to replace control points in accordance with original survey control.

1.6. Survey Requirements
1.6.1. Establish permanent bench marks on site, referenced to established bench marks by survey control points. Record locations, with horizontal and vertical data in Project Record Documents.
1.6.2. Establish lines and levels, locate and lay out, by instrumentation.
1.6.3. Stake for grading, fill.

1.7. Existing Services
1.7.1. Size, depth and location of existing utilities and structures as specified are for guidance only. Completeness and accuracy are not guaranteed.
1.7.2. Before commencing work, establish location and extent of service lines in area of Work and notify Departmental Representative. All utilities entering Site must be confirmed prior to subsurface disturbance (ie do not rely on as-built

documents). As appropriate, confirm locations of buried utilities by independent utility locator and using hand test excavations or hydrovac methods

1.7.3. Remove abandoned service lines within 2m of structures. Cap or otherwise seal lines at cut-off points as directed by Departmental Representative.

1.7.4. Maintain and protect from damage all utilities and structures encountered, unless Work involves temporarily breaking, rerouting, or connecting into existing utilities.

1.7.5. Where Work involves temporarily breaking, rerouting, or connecting into existing utilities, obtain permission from utility companies of intended interruption of services, and carry out Work at times determined by the authorities having jurisdiction.

1.7.6. Submit schedule to and obtain approval for any shutdown or closure of active service. Adhere to schedule accepted by Departmental Representative and provide notice to affected parties.

1.7.7. Provide temporary services as required to maintain critical building and tenant systems.

1.7.8. Where unknown utilities are encountered, immediately verbally notify Departmental Representative and confirm findings in writing.

1.8. Examination

1.8.1. Examine Site and Contract and be familiar and conversant with existing conditions likely to affect Work, including Contaminated Material.

1.9. Records

1.9.1. Land Surveyor to prepare preconstruction as-built drawings of all utilities.

1.9.2. Land Surveyor to prepare postconstruction as-built drawings of all utilities, including existing, reinstated, rerouted, and abandoned.

1.9.3. Maintain a complete, accurate log of control and survey work as it progresses.

1.9.4. Preconstruction Condition Survey:

1.9.4.1. Conduct Preconstruction Condition Survey of existing structures and other features which can be affected by Work, both onsite and offsite. Includes: buildings, trees and other plants, lawns, fencing, service poles, wires, rail tracks, pavement, roads, survey bench marks, monuments and other features.

1.9.4.2. Survey to include detailed photographic documentation of any preconstruction damage, and measurements where appropriate, including crack width and length, angles out of true. Record written notices to owners of features that have existing damage.

1.9.4.3. Record written notices of offsite owners which refused entry to conduct Preconstruction Condition Survey.

2. PART 2 - PRODUCTS

2.1. Not Used
2.1.1. Not Used.

3. PART 3 - EXECUTION

3.1. Not Used
3.1.1. Not Used.

END OF SECTION

1. PART 1 - GENERAL

1.1. Measurement Procedures

1.1.1. See 01 11 00.

1.2. Definitions

1.2.1. See 01 11 00.

1.3. Action and Informational Submittals

1.3.1. Waste Reduction Plan: within 10 Working Days after Contract award and prior to mobilization to Site, Submit a plan detailing material separation. Include:

1.3.1.1. List of materials to be reused or recycled.

1.3.1.2. Sequence, methods and means to dispose Waste offsite. Include name, location, provincial or territorial authorizations, and evidence of compliance with municipal zoning and bylaws of Disposal Facilities.

1.3.2. Landfill Receipts: within 5 Working Days of transport offsite, Submit receiving facility receipts indicating quantity and type of material delivered to Landfill.

1.3.3. Recycling Receipts: within 5 Working Days of transport offsite, Submit receiving facility receipts indicating quantity and type of materials sent for recycling.

1.4. Waste Disposal

1.4.1. Waste and Non-Contaminated Material Disposal:

1.4.1.1. Divert materials other than soil which can be practically reused or recycled from Landfill as approved by Departmental Representative.

1.4.1.2. Dispose all other Waste in Landfill.

1.4.1.3. Dispose all soil in Landfill.

1.4.2. Landfill must:

3.1.1.1. Be an existing offsite facility located in Canada.

3.1.1.2. Conform with the BC Ministry of Environment *Landfill Criteria For Municipal Solid Waste*.

1.4.2.1. Hold a valid and subsisting permit, certificate, approval, or any other form of authorization issued by a province or territory for the disposal of Non-Contaminated Material.

1.4.3. Dispose material as soon as practical and within 100 Working Days of leaving Site unless otherwise accepted by Departmental Representative.

1.4.4. Material sent to a Landfill must be permanently stored at that facility.

1.4.5. If proposed Landfill is not acceptable to Departmental Representative, identify an alternate Landfill that is acceptable.

1.4.6. Submit recycling receipts or landfill receipts for all material disposed offsite.

1.5. Materials Source Separation

1.5.1. Provide separate containers for reusable and/or recyclable materials of the following:
1.5.1.1. Metals.
1.5.1.2. Wood.
1.5.1.3. Plastics.
1.5.1.4. Paper.
1.5.1.5. Glass.
1.5.1.6. Other materials in accordance with the Contract.
1.5.2. Implement Materials Source Separation Program for waste generated on project in compliance with methods accepted by the Departmental Representative.
1.5.3. Locate containers in locations, to facilitate deposit of materials without hindering daily operations.
1.5.4. Locate separated materials in areas which minimize material damage.

1.6. Diversion of Materials

1.6.1. Create a list of materials to be separated from the general waste stream and stockpiled in separate containers, as accepted by the Departmental Representative and consistent with applicable fire regulations.
1.6.1.1. Mark containers.
1.6.1.2. Provide instruction on disposal practices.

1.7. Storage, Handling and Application

1.7.1. Do Work in compliance with Waste Reduction Plan.
1.7.2. Handle waste materials not reused, salvaged, or recycled in accordance with appropriate regulations and codes, and dispose at Landfill weekly.
1.7.3. Materials in separated condition: collect, handle, store onsite, and transport offsite to an authorized recycling facility accepted by the Departmental Representative, and remove from Site weekly.
1.7.4. Materials must be immediately separated into specified categories for reuse or recycling.
1.7.5. Unless otherwise in accordance with the Contract, materials for removal become the Contractor’s property.
1.7.6. Onsite sale of salvaged/recyclable material is not permitted.
1.7.7. Submit as instructed by the Departmental Representative receiving facility weigh scale receipts indicating quantity of material delivered to Landfill.
1.7.8. Submit as instructed by the Departmental Representative receiving facility weigh scale receipts indicating quantity and type of materials sent for recycling.

2. PART 2 - PRODUCTS

2.1. Not Used

2.1.1. Not Used.

3. PART 3 - EXECUTION

3.1. Not Used

3.1.1. Not Used.

END OF SECTION

1. PART 1 - GENERAL

1.1. Measurement Procedures

1.1.1. See 01 11 00.

1.2. Definitions

1.2.1. See 01 11 00.

1.3. Action and Informational Submittals

1.3.1. Product Instructions: at least 10 Working Days before Substantial Performance of the Work is completed, Submit instructions and data by personnel experienced in maintenance and operation of products and equipment constructed and remaining onsite, if required.

1.3.2. Closeout Documents: within 20 Working Days of Final Completion of Site Restoration, Submit completion documents and as-built documents.

1.4. As-Built Documents

1.4.1. The Departmental Representative will provide 2 sets of Drawings, 2 sets of Specifications, and 2 copies of the original AutoCAD files for “as-built” purposes.

1.4.2. As Work progresses, maintain accurate records to show all deviations from the Contract. Note changes as they occur on as-built Specifications, Drawings and shop drawings.

1.4.3. Drawings and shop drawings: legibly mark each item to record actual construction, including:

1.4.3.1. Measured locations of internal utilities and appurtenances, referenced to visible and accessible features of construction.

1.4.3.2. Field changes of dimension and detail.

1.4.3.3. Changes made by change orders.

1.4.3.4. Details not on original Drawings.

1.4.3.5. References to related shop drawings and modifications.

1.4.4. Contract Specifications: legibly mark each item to record actual workmanship of construction, including:

1.4.4.1. Manufacturer, trade name, and catalogue number of each product actually installed, particularly optional items and substitute items.

1.4.4.2. Changes made by addenda and change orders.

1.4.5. As-built information:

1.4.5.1. Record changes in red ink.

1.4.5.2. Mark on 1 set of Drawings, Specifications and shop drawings at Final Completion of project and, before final inspection, neatly transfer notations to second set.

1.4.5.3. Submit 1 set in editable AutoCAD 14 file format with all as-built information.

1.4.5.4. Submit all sets as instructed by the Departmental Representative.
1.4.6. As required, surveying to be completed by a Land Surveyor for as-built documents.

1.5. Completion Documents
1.5.1. Submit as instructed by the Departmental Representative, a written certificate that the following have been performed:
1.5.1.1. Work has been completed and inspected by the Departmental Representative in accordance with the Contract.
1.5.1.2. Treatment and disposal of treatable soils have been completed and disposal of all other soils has been completed.
1.5.1.3. Damage has been repaired, deficiencies have been completed, missing items have been provided, and non-conformance has been corrected, in the opinion of the Departmental Representative.
1.5.1.4. Equipment and systems have been tested, adjusted and balanced, and are fully operational, as applicable.
1.5.1.5. Certificates required by the Fire Commissioner of Canada, and utility companies have been submitted, as applicable.
1.5.1.6. Operation of systems has been demonstrated to the personnel as instructed by the Departmental Representative, as applicable.
1.5.1.7. Qualified Professional report documenting backfilling has met all requirements of the Contract.
1.5.1.8. Work is complete and ready for Final Site Inspection.
1.5.2. Defective products will be rejected, regardless of previous inspections. Replace defective products.
1.5.3. Prepare all documentation required as part of any permits or other authorizations obtained or otherwise the responsibility of the Contractor.

2. PART 2 - PRODUCTS

2.1. Not Used
2.1.1. Not Used.

3. PART 3 - EXECUTION

3.1. Not Used
3.1.1. Not Used.

END OF SECTION

02 61 00.04
SOIL REMEDIATION PRB WALL CONSTRUCTION

1. PART 1 - GENERAL

1.1. Measurement Procedures
1.1.1. See 01 11 00.

1.2. Definitions
1.2.1. See 01 11 00.

1.3. Action and Informational Submittals
1.3.1. Permeable Reactive Barrier Wall Plan: within 10 Working Days after Contract award and prior to construction of Permeable Reactive Barrier Wall, Submit documentation describing plan. Include:
1.3.1.1. Methods, means, and sequence for mixing of wall media.
1.3.1.2. Methods, means, and sequence for excavation of existing wall.
1.3.1.3. Methods, means, and sequence for extending existing wall from 10.5m below ground surface to 12.5m below ground surface.
1.3.1.4. Methods, means, and sequence for extending existing wall to the eastern property boundary at 12.5m depth.
1.3.1.5. Monitoring and inspection requirements, including frequency or milestones when a Qualified Professional must inspect Works.
1.3.1.6. PRB Wall Plan must be signed and sealed by a Qualified Professional.

2. PART 2 - PRODUCTS

2.1. Wall Media
2.1.1. Wall replacement material requirements are described in Appendices.
2.1.2. Grout requirements are described in the Appendices.

3. PART 3 - EXECUTION

3.1. Wall Media Preparation
3.1.1. Supply and prepare new wall media as described in Appendices.
3.1.2. Stockpile and mix wall media as shown in Drawings or instructed by Departmental Representative.
3.1.3. Wall media must be mixed in stockpiles less than 500 m^3.
3.1.4. Assist in collecting representative wall media mixture target samples of mixed stockpiles by Departmental Representative:
3.1.4.1. Sampling, analysis, and assessment may take up to 5 Working Days. No Standby Time charges or increases to Contract Amount or Extension of Time

for completion of the Work can be incurred for wall media mixture target samples provided within 5 Working Days, not including day of sample collection.

3.1.5. Mix stockpiles homogeneously.

3.1.6. Mix stockpiles to keep free of contaminants (eg topsoil).

3.1.7. Place mixed wall media in rejuvenated wall within 10 calendar days of notification that Wall Media Samples are acceptable.

3.1.8. Ensure wall media do not aggregate (clump).

3.1.9. Wall media that do not comply with Contract requirements must be amended, re-mixed, and re-sampled/analysed/assessed. Noncompliance includes:

3.1.9.1. Wall media mixture not meeting target.

3.1.9.2. Wall media heterogeneous.

3.1.9.3. Wall media contamination.

3.1.9.4. Wall media mixed stockpiles exceeding surface stockpile duration.

3.1.9.5. Wall media mixed stockpiles aggregates.

3.2. Wall Excavation

3.2.1. Notify Departmental Representative at least 5 Working Days in advance of excavation operations.

3.2.2. Segregate overburden from existing wall media.

3.2.3. Confirm depth of excavation meets Contract requirements. At a minimum survey 3m intervals referenced to onsite benchmark.

3.2.4. Place excavated existing wall media as shown on Drawings and as instructed by Departmental Representative.

3.3. Wall Media Placement

3.3.1. Notify Departmental Representative at least 5 Working Days in advance of media placement.

3.3.2. Place wall media as shown on Drawings and as instructed by Departmental Representative.

3.3.3. Ensure placed wall media does not settle or stratify.

3.3.4. Assist in collecting representative insitu placed wall media samples by Departmental Representative.

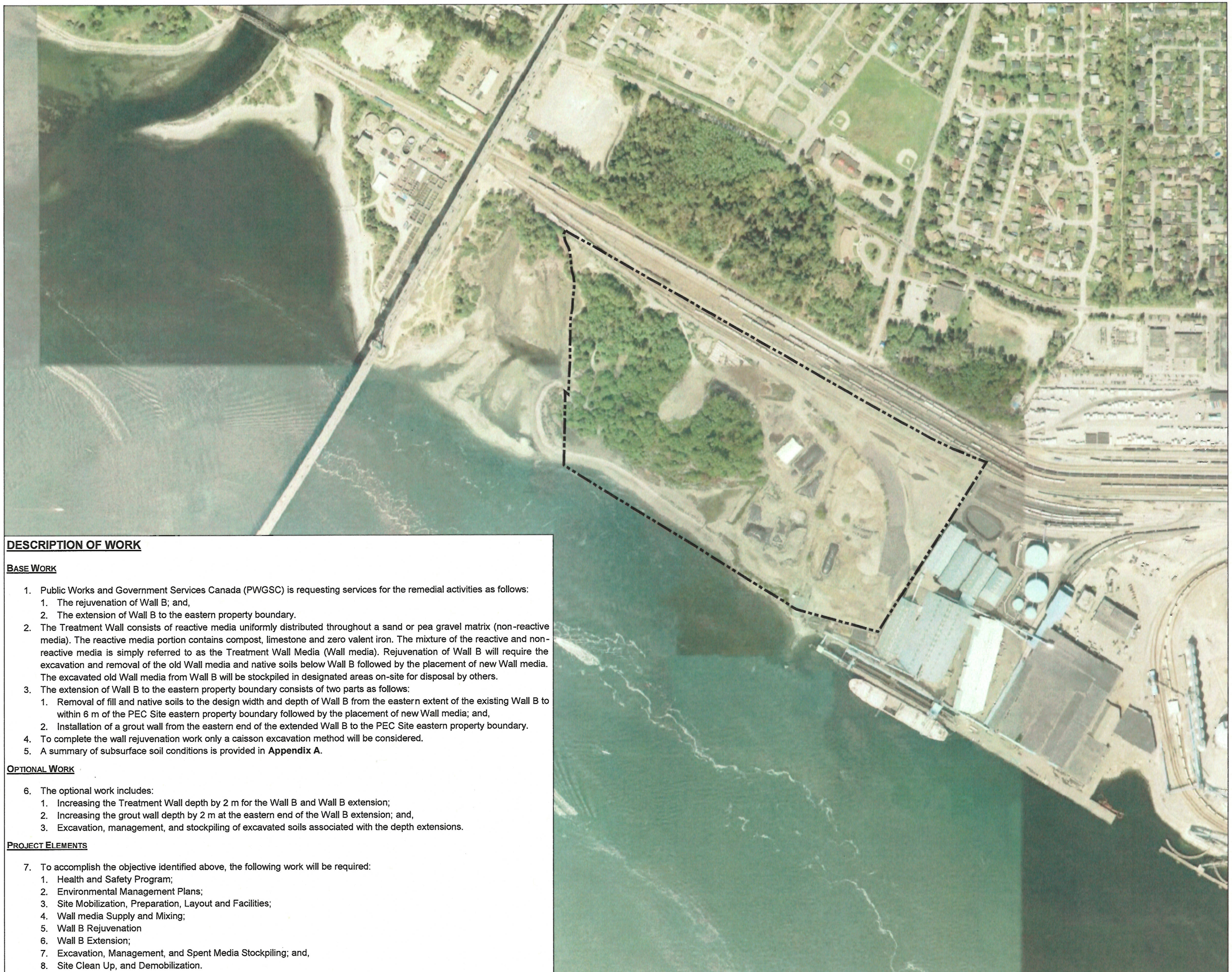
3.3.4.1. Departmental Representative may use under a separate contract a drill to collect insitu placed wall media samples; drill is not responsibility of Contractor. Allow up to 8 hours at each location for drilling.

3.3.5. Placed wall media that settles or stratifies must be excavated and replaced.

3.3.6. Restore Wall B to pre-project elevations. Stripped overburden must be reused.

END OF SECTION

DRAWINGS



DESCRIPTION OF WORK

BASE WORK

1. Public Works and Government Services Canada (PWGSC) is requesting services for the remedial activities as follows:
   1. The rejuvenation of Wall B; and,
   2. The extension of Wall B to the eastern property boundary.
2. The Treatment Wall consists of reactive media uniformly distributed throughout a sand or pea gravel matrix (non-reactive media). The reactive media portion contains compost, limestone and zero valent iron. The mixture of the reactive and non-reactive media is simply referred to as the Treatment Wall Media (Wall media). Rejuvenation of Wall B will require the excavation and removal of the old Wall media and native soils below Wall B followed by the placement of new Wall media. The excavated old Wall media from Wall B will be stockpiled in designated areas on-site for disposal by others.
3. The extension of Wall B to the eastern property boundary consists of two parts as follows:
   1. Removal of fill and native soils to the design width and depth of Wall B from the eastern extent of the existing Wall B to within 6 m of the PEC Site eastern property boundary followed by the placement of new Wall media; and,
   2. Installation of a grout wall from the eastern end of the extended Wall B to the PEC Site eastern property boundary.
4. To complete the wall rejuvenation work only a caisson excavation method will be considered.
5. A summary of subsurface soil conditions is provided in **Appendix A**.

OPTIONAL WORK

6. The optional work includes:
   1. Increasing the Treatment Wall depth by 2 m for the Wall B and Wall B extension;
   2. Increasing the grout wall depth by 2 m at the eastern end of the Wall B extension; and,
   3. Excavation, management, and stockpiling of excavated soils associated with the depth extensions.

PROJECT ELEMENTS

7. To accomplish the objective identified above, the following work will be required:
   1. Health and Safety Program;
   2. Environmental Management Plans;
   3. Site Mobilization, Preparation, Layout and Facilities;
   4. Wall media Supply and Mixing;
   5. Wall B Rejuvenation
   6. Wall B Extension;
   7. Excavation, Management, and Spent Media Stockpiling; and,
   8. Site Clean Up, and Demobilization.

2016 Treatment Wall Rejuvenation
Pacific Environment Centre Site
West Vancouver, BC

Site Location

Legend

Site Location

Aug 3/16

Notes

1. This map is not intended to be a "stand-alone" document, but a visual aid of the information contained within the referenced Report. It is intended to be used in conjunction with the scope of services and limitations described therein.

Sources

- ESRI World Imagery

N

1:6,000

0 100 200 300

Metres

NAD 1983 UTM Zone 10N

Page Size: 11" x 17"

457-002.48	Production Date: Aug 2, 2016	Figure 1

HEMMERA

Environment Canada

2016 Treatment Wall Rejuvenation
Pacific Environment Centre Site
West Vancouver, BC

Site Plan

1. There are two right-of-ways crossing the PEC Site. A Metro Vancouver Right-of-Way (ROW) containing two water mains is present from the northern property boundary to the southern shoreline along Burrard Inlet. A District of North Vancouver (DNV) ROW, containing one water main runs from the Metro Vancouver water main to the eastern property boundary. To mitigate potential damage to the water main pipes, heavy equipment movement is limited across the ROWs, parking or storage of materials over top of the ROWs is prohibited, and excavations anywhere within or across the ROWs are prohibited. The Contractor shall also maintain 24 hour access to the Metro Vancouver ROW. The Contractor is to ascertain and abide by all DNV and Metro Vancouver requirements for work in and around the ROWs. This project shall not include any excavation within the Metro Vancouver or DNV right of ways.
2. Wherever possible, the access roads shall be constructed around the existing stockpiles to minimize relocation of existing stockpiles. Should the Contractor want to move a stockpile on site, the cost to relocate the pile is solely the cost of the Contractors and must be approved in writing before movement by the Departmental Representative.

Legend

- Site Location
- Empty storage cell
- Filled storage cell
- Transfer facility
- Site Support Zone
- Lysimeter Pad
- Wheel wash
- Water holding cell
- Access road
- Gravel, Cobble, Soil, and Debris Stockpiles
- Weather Station
- Fence

PROFESSIONAL ENGINEER
PROVINCE OF BRITISH COLUMBIA
J. G. SCHMIDT
31722
Aug 3/16

Notes

1. Aerial image used for general reference only - may not be representative of post remediation phase.
2. This map is not intended to be a "stand-alone" document, but a visual aid of the information contained within the referenced Report. It is intended to be used in conjunction with the scope of services and limitations described

Sources

- Trevita Survey orthophoto - March 2015
- ESRI World Imagery - Vancouver 2011, North Vancouver 2009

N

1:2,500

0 25 50 75

Metres

NAD 1983 UTM Zone 10N

Page Size: 11" x 17"

457-002.48	Production Date: Aug 2, 2016	Figure 2

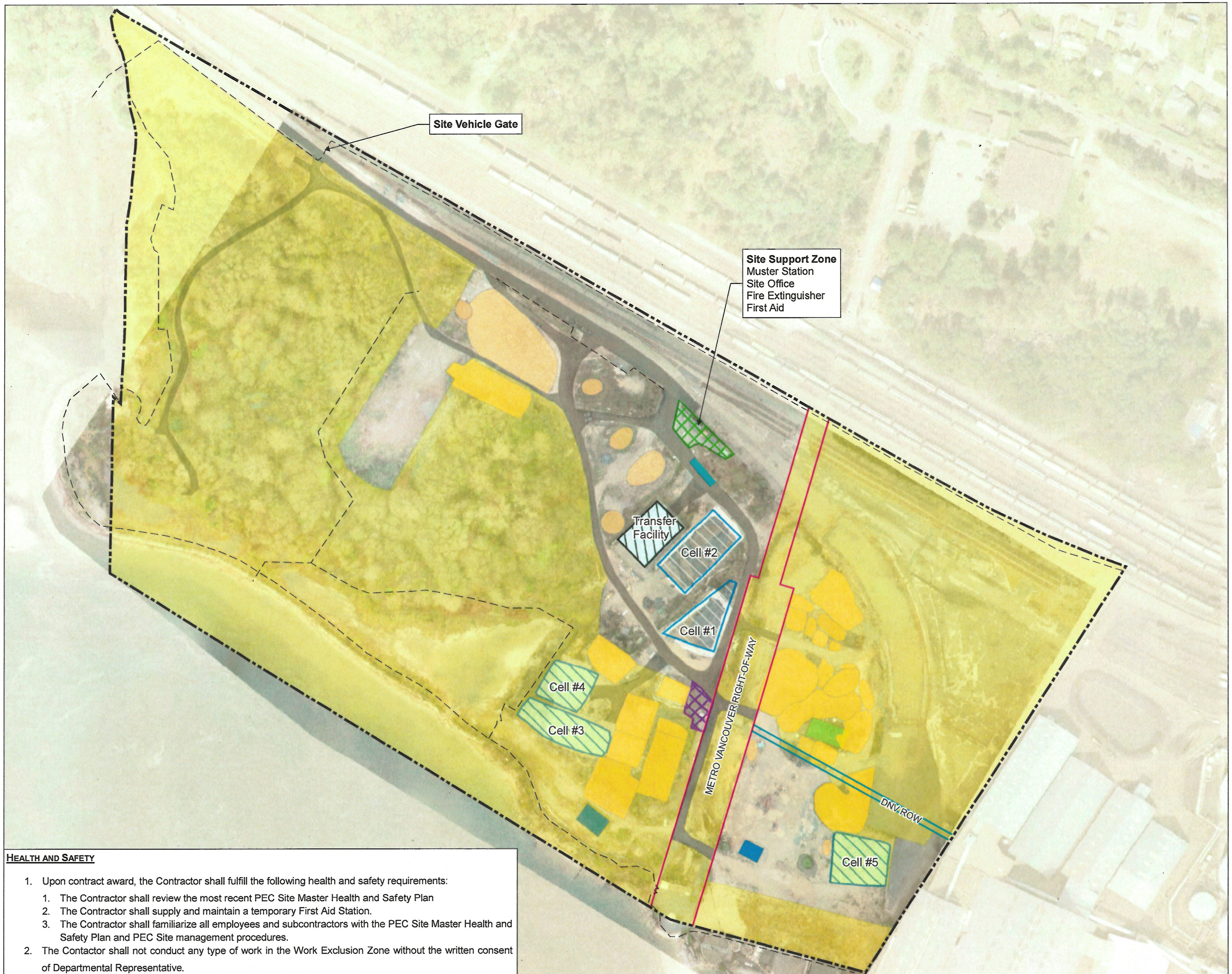
HEMMERA

Environment Canada

Path: O:\457\Environment\Canada\002\Mxd\arcmap\48\rev\d\2016\treatment_Wall_Rejuvenation\Fig02_457_002_48_SitePlan_160802.mxd

2016 Treatment Wall Rejuvenation
Pacific Environment Centre Site
West Vancouver, BC

Site Zones



Legend

- Site Location
- Empty storage cell
- Filled storage cell
- Transfer facility
- Site Support Zone
- Proposed Contractor Support Zone
- Lysimeter Pad
- Wheel wash
- Water holding cell
- Access road
- Gravel, Cobble, Soil, and Debris Stockpiles
- Fence
- No Entry Zone

PROFESSIONAL ENGINEER, PROVINCE OF BRITISH COLUMBIA, J. G. SCHMIDT # 31722

Aug 3/16

Notes

1. Aerial image used for general reference only - may not be representative of post remediation phase.
2. This map is not intended to be a "stand-alone" document, but a visual aid of the information contained within the referenced Report. It is intended to be used in conjunction with the scope of services and limitations described

Sources

- Trevita Survey orthophoto - March 2015
- ESRI World Imagery - Vancouver 2011, North Vancouver 2009

N

1:2,500

0 25 50 75

Metres

NAD 1983 UTM Zone 10N

Page Size: 11" x 17"

457-002.48	Production Date: Aug 2, 2016	Figure 3

HEMMERA

Environment Canada

HEALTH AND SAFETY

1. Upon contract award, the Contractor shall fulfill the following health and safety requirements:
   1. The Contractor shall review the most recent PEC Site Master Health and Safety Plan
   2. The Contractor shall supply and maintain a temporary First Aid Station.
   3. The Contractor shall familiarize all employees and subcontractors with the PEC Site Master Health and Safety Plan and PEC Site management procedures.
2. The Contactor shall not conduct any type of work in the Work Exclusion Zone without the written consent of Departmental Representative.

2016 Treatment Wall Rejuvenation
Pacific Environment Centre Site
West Vancouver, BC

Location of Monitoring Wells

1. More than 100 groundwater-monitoring wells (MWs) have been installed on-site, including within and near the work areas. The Contractor must make all reasonable efforts to maintain the integrity of the MWs located outside of the Wall B footprint. If necessary, the Contractor may cut and cap the MWs polyvinyl chloride (PVC) well pipes as the work progresses. The Contractor is responsible for the cost of repairs necessary to the MWs located outside of the Wall B footprint in the event they are damaged during their activities. An effort has been made to identify and mark the MWs on-site; however, extreme caution must be exercised during the moving of equipment, placing of materials, foot traffic, etc.

Legend

- Site Location
- Monitoring Well
- Transfer facility
- Site Support Zone
- Lysimeter Pad
- Wheel wash
- Water holding cell
- Access road
- Treatment Wall
- Hydraulic Barrier Wall
- Grout Wall

Notes

1. This map is not intended to be a "stand-alone" document, but a visual aid of the information contained within the referenced Report. It is intended to be used in conjunction with the scope of services and limitations described therein.

Sources

- Trevita Survey orthophoto - March 2015
- ESRI World Imagery - Vancouver 2011, North Vancouver 2009

N

1:2,500

0 25 50 75

Metres

NAD 1983 UTM Zone 10N

Page Size: 11" x 17"

457-002.48	Production Date: Aug 2, 2016	Figure 4

HEMMERA

Environment Canada

SUPPLY OF TREATMENT MEDIA

1. The Contractor is required to supply the new Wall media materials required for the Wall B Excavation, and the Wall B Extension. The Contractor must provide written documentation that Wall media materials meet the material specifications listed in **Appendix B** prior to delivering the materials to the PEC Site.
2. Media materials may be trucked to the PEC Site as determined by the Contractor. Due to work area space constraints on-site, it is anticipated the media materials will be delivered on an intermittent basis throughout the project duration. The Contractor is required to schedule media material shipments.
3. The Wall media materials must be stockpiled in staging areas on-site as designated by the Departmental Representative.

MIXING OF WALL MEDIA

4. The Contractor must mix the various media materials in stockpiles not exceeding 500 m^3 in order to meet the Wall media specifications listed in **Appendix B**. The Contractor must mix the media stockpiles according to the average target mixtures specified. The contractor should understand that mixed media stockpile volumes will be less than the total volume of individual stockpile materials.
5. The Contractor may use standard excavation equipment such as loaders to measure media material quantities and excavators to mix the Wall media.
6. The M-1 treatment media is subject to clumping and the contractor is responsible for breaking apart clumping media prior to placement in the Treatment Wall caissons.

WORK BY OTHERS

7. The Departmental Representative will review the media material documentation to verify that the media materials comply with the applicable media material specifications.
8. The Departmental Representative will sample the mixed Wall media stockpiles and coordinate sample testing. The Departmental Representative will review the sample testing results to determine if the mixed media stockpiles comply with the applicable Wall media specifications.

WALL B EXCAVATION AND WALL MEDIA PLACEMENT

EXCAVATION OF WALL B WALL MEDIA

9. The Contractor shall excavate and remove overburden and depleted Wall media, and native soils from Wall B to the design depth, width, and length as shown on **Figures 5** and **6**.
10. The overburden soils along the Wall B alignment vary in thickness from approximately 1.5 m to 2.0 m.
11. The neat Wall media excavation volume for the Wall B design is 2,658 m^3.
12. The Contractor must segregate overburden soils from the excavated Wall media and stockpile the overburden soils in a designated on-site area approved by the Departmental Representative. The segregated overburden must be re-used to restore the Wall B alignment to pre-project elevations.
13. The depleted Wall B media and excavated native soils must be placed in in a designated on-site area approved by the Departmental Representative.
14. The Contractor's caisson layout pattern used to excavate the Wall B media must be as follows:
    1. The total unexcavated volume of Wall B depleted Wall media must be less than 6% of the 2016 design neat volume of 2,658 m^3.
15. The Contractor must confirm that the depleted Wall media and native soils have been removed to the design depth at 3.0 metre intervals along the entire Wall B alignment. The excavation depths must be surveyed and referenced to an on-site benchmark.

PLACEMENT OF NEW WALL MEDIA

16. The Contractor is to supply new Wall media as per the Wall media specifications M-1 or M-2, as appropriate (see **Figure 6**).
17. Placement of the new Wall media in excavated portions of Wall B shall not proceed until approved by the Departmental Representative.
18. Placement of new Wall media in excavated portions of Wall B must be done in a manner that minimizes settlement or stratification of the media constituents. Utilizing a clamshell bucket to place the media is an acceptable method provided that the clamshell bucket is grounded at the bottom of the excavation prior to releasing the media. This requirement will be strictly enforced.
19. Placement elevations of the new Wall media must meet the design tolerance as follows:
    1. The lower elevation for media specification M-1 must be at or below the design elevations indicated on **Figure 6**.
    2. The upper elevation for media specification M-1 must be -1.0 m NVD +/- 0.25 m.
    3. The lower elevation for media specification M-2 must be -1.0 m NVD +/- 0.25 m.
    4. The upper elevation for media specification M-2 must be at or above the design elevation indicated on **Figure 6**.
20. The Contractor is responsible for any placed media settlement that occurs during the project. Based on the media placement method used by the Contractor media settlement may occur. During treatment media placement activities the Contractor will be required to place additional treatment media above the design elevations if any placed media settlement is observed during the installation work.
21. Placed Wall B Wall media will be drilled and sampled to confirm that the installed Wall media complies with the performance specification (See **Appendix C**). The Contractor must allow for access by others to conduct this work. Up to three locations of Wall B will be drilled and the Contractor must allow for 8 hours of drilling time at each location.
22. Upon completing Wall B backfilling with new Wall media to the design elevations as per **Figure 6** the Contractor must restore the Wall B alignment to the pre-project elevations. Over burden soils removed for the excavation of the Wall B must be re-used for this purpose.

WORK BY OTHERS

23. The Departmental Representative will provide an on-site benchmark for surveying the excavation depths and media placement elevations.
24. The Departmental Representative will conduct spot checks to confirm excavation depths and media placement elevations are within the design tolerance indicated in **Note 19**.
25. The Departmental Representative will coordinate the drilling and sampling of the placed Wall media to confirm that the installed Wall media complies with the performance specification (See **Appendix C**).

WALL B EXTENSION EXCAVATION AND MEDIA PLACEMENT

SUMMARY OF WORK

26. The extension of Wall B to the eastern property boundary consists of two parts as follows:
    1. Removal of fill and native soils to the design width and depth of Wall B from the eastern extent of the existing Wall B to within 6 m of the PEC Site eastern property boundary (Station 0+00 Station 0+15.4, see **Figures 5** and **6**) followed by the placement of new Wall media; and,
    2. Installation of a grout wall from the eastern end of the extended Wall B to the PEC Site eastern property boundary (Station 0+00 Station 0-6.0, see **Figures 5** and **6**)

EXCAVATION OF THE WALL B EXTENSION

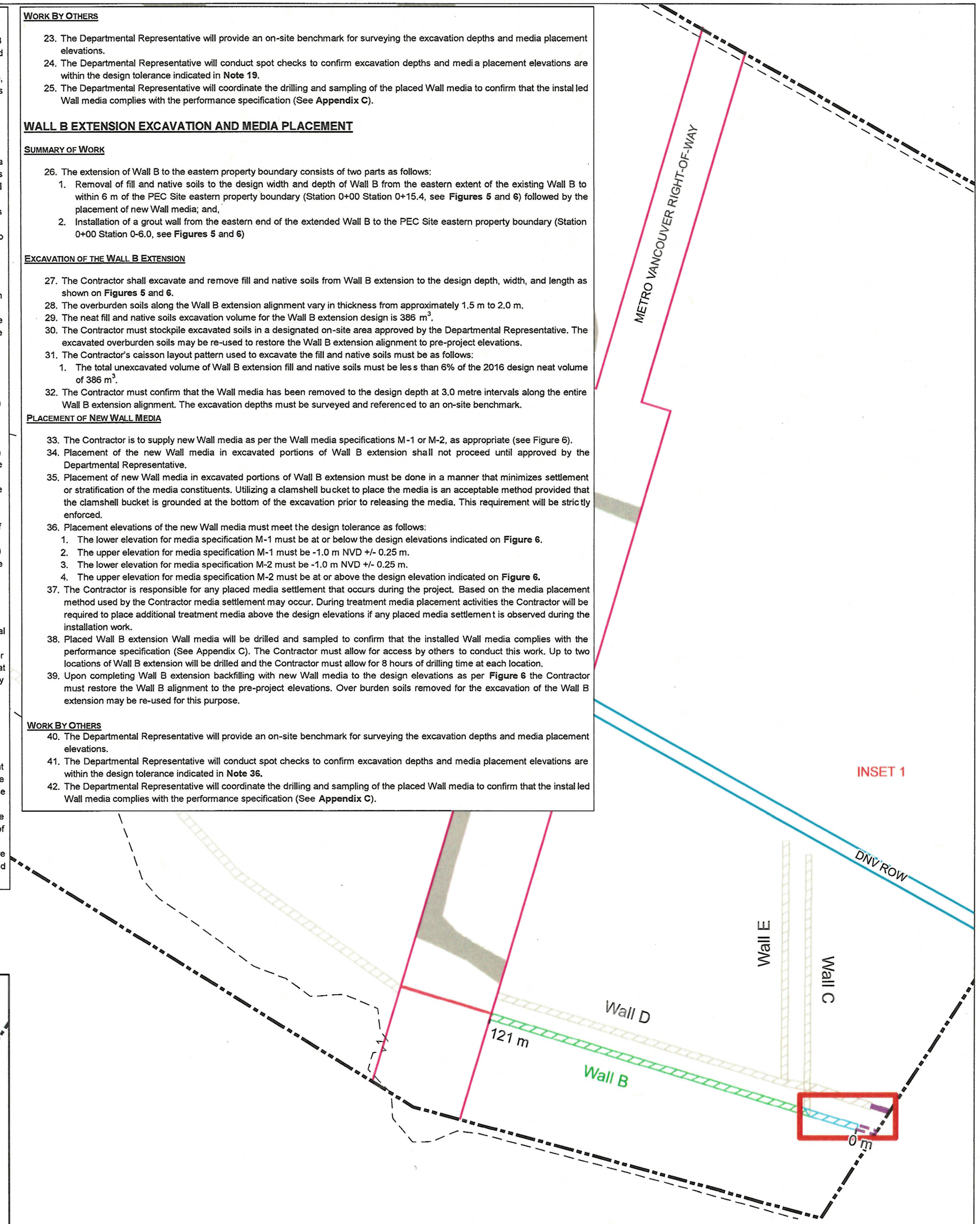
27. The Contractor shall excavate and remove fill and native soils from Wall B extension to the design depth, width, and length as shown on **Figures 5** and **6**.
28. The overburden soils along the Wall B extension alignment vary in thickness from approximately 1.5 m to 2.0 m.
29. The neat fill and native soils excavation volume for the Wall B extension design is 386 m^3.
30. The Contractor must stockpile excavated soils in a designated on-site area approved by the Departmental Representative. The excavated overburden soils may be re-used to restore the Wall B extension alignment to pre-project elevations.
31. The Contractor's caisson layout pattern used to excavate the fill and native soils must be as follows:
    1. The total unexcavated volume of Wall B extension fill and native soils must be less than 6% of the 2016 design neat volume of 386 m^3.
32. The Contractor must confirm that the Wall media has been removed to the design depth at 3.0 metre intervals along the entire Wall B extension alignment. The excavation depths must be surveyed and referenced to an on-site benchmark.

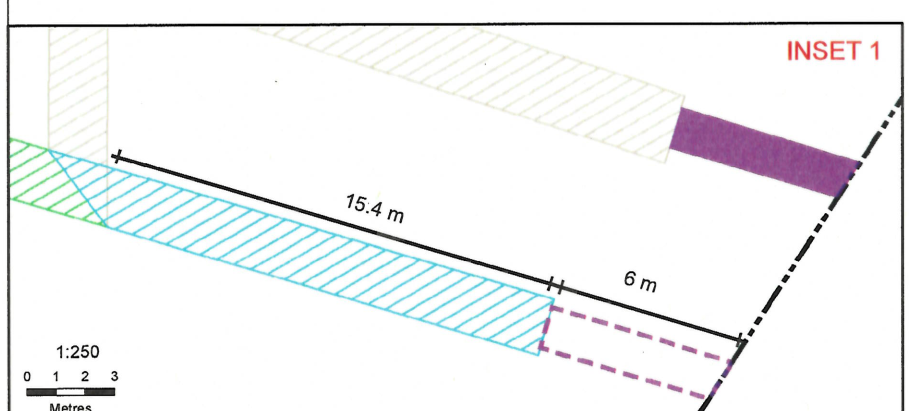
PLACEMENT OF NEW WALL MEDIA

33. The Contractor is to supply new Wall media as per the Wall media specifications M-1 or M-2, as appropriate (see Figure 6).
34. Placement of the new Wall media in excavated portions of Wall B extension shall not proceed until approved by the Departmental Representative.
35. Placement of new Wall media in excavated portions of Wall B extension must be done in a manner that minimizes settlement or stratification of the media constituents. Utilizing a clamshell bucket to place the media is an acceptable method provided that the clamshell bucket is grounded at the bottom of the excavation prior to releasing the media. This requirement will be strictly enforced.
36. Placement elevations of the new Wall media must meet the design tolerance as follows:
    1. The lower elevation for media specification M-1 must be at or below the design elevations indicated on **Figure 6**.
    2. The upper elevation for media specification M-1 must be -1.0 m NVD +/- 0.25 m.
    3. The lower elevation for media specification M-2 must be -1.0 m NVD +/- 0.25 m.
    4. The upper elevation for media specification M-2 must be at or above the design elevation indicated on **Figure 6**.
37. The Contractor is responsible for any placed media settlement that occurs during the project. Based on the media placement method used by the Contractor media settlement may occur. During treatment media placement activities the Contractor will be required to place additional treatment media above the design elevations if any placed media settlement is observed during the installation work.
38. Placed Wall B extension Wall media will be drilled and sampled to confirm that the installed Wall media complies with the performance specification (See Appendix C). The Contractor must allow for access by others to conduct this work. Up to two locations of Wall B extension will be drilled and the Contractor must allow for 8 hours of drilling time at each location.
39. Upon completing Wall B extension backfilling with new Wall media to the design elevations as per **Figure 6** the Contractor must restore the Wall B alignment to the pre-project elevations. Over burden soils removed for the excavation of the Wall B extension may be re-used for this purpose.

WORK BY OTHERS

40. The Departmental Representative will provide an on-site benchmark for surveying the excavation depths and media placement elevations.
41. The Departmental Representative will conduct spot checks to confirm excavation depths and media placement elevations are within the design tolerance indicated in **Note 36**.
42. The Departmental Representative will coordinate the drilling and sampling of the placed Wall media to confirm that the installed Wall media complies with the performance specification (See **Appendix C**).





2016 Treatment Wall Rejuvenation
Pacific Environment Centre Site
West Vancouver, BC

Treatment Wall Alignment (Plan View)

Legend

- Site Location
- Access road
- Hydraulic Barrier Wall
- Treatment Wall A/C/D/E
- Treatment Wall B
- Treatment Wall B Extension
- Grout Wall
- Proposed Grout Wall

PROFESSIONAL PROVINCE OF BRITISH COLUMBIA J. G. SCHMIDT # 31722 ENGINEER

Aug 3/16

Notes

1. This map is not intended to be a "stand-alone" document, but a visual aid of the information contained within the referenced Report. It is intended to be used in conjunction with the scope of services and limitations described therein.
2. Wall dimensions shown are approximate.

Sources

- Trevita Survey orthophoto - March 2015
- ESRI World Imagery - Vancouver 2011, North Vancouver 2009

N

1:1,500

0 10 20 30

Metres

NAD 1983 UTM Zone 10N

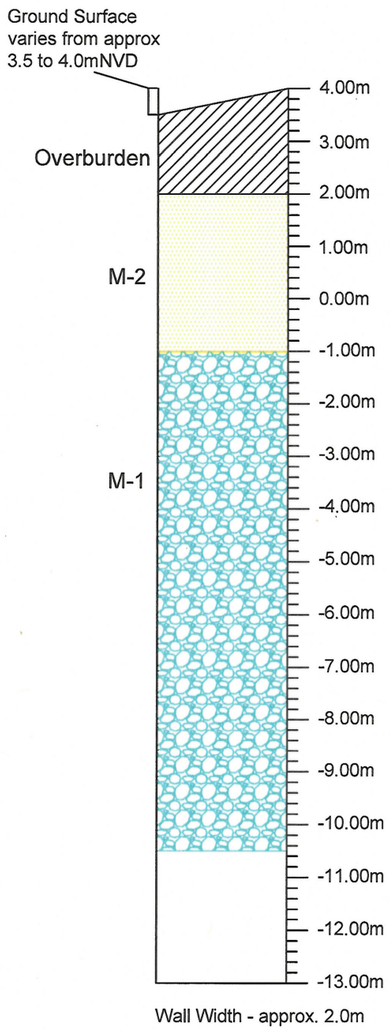
Page Size: 11" x 17"

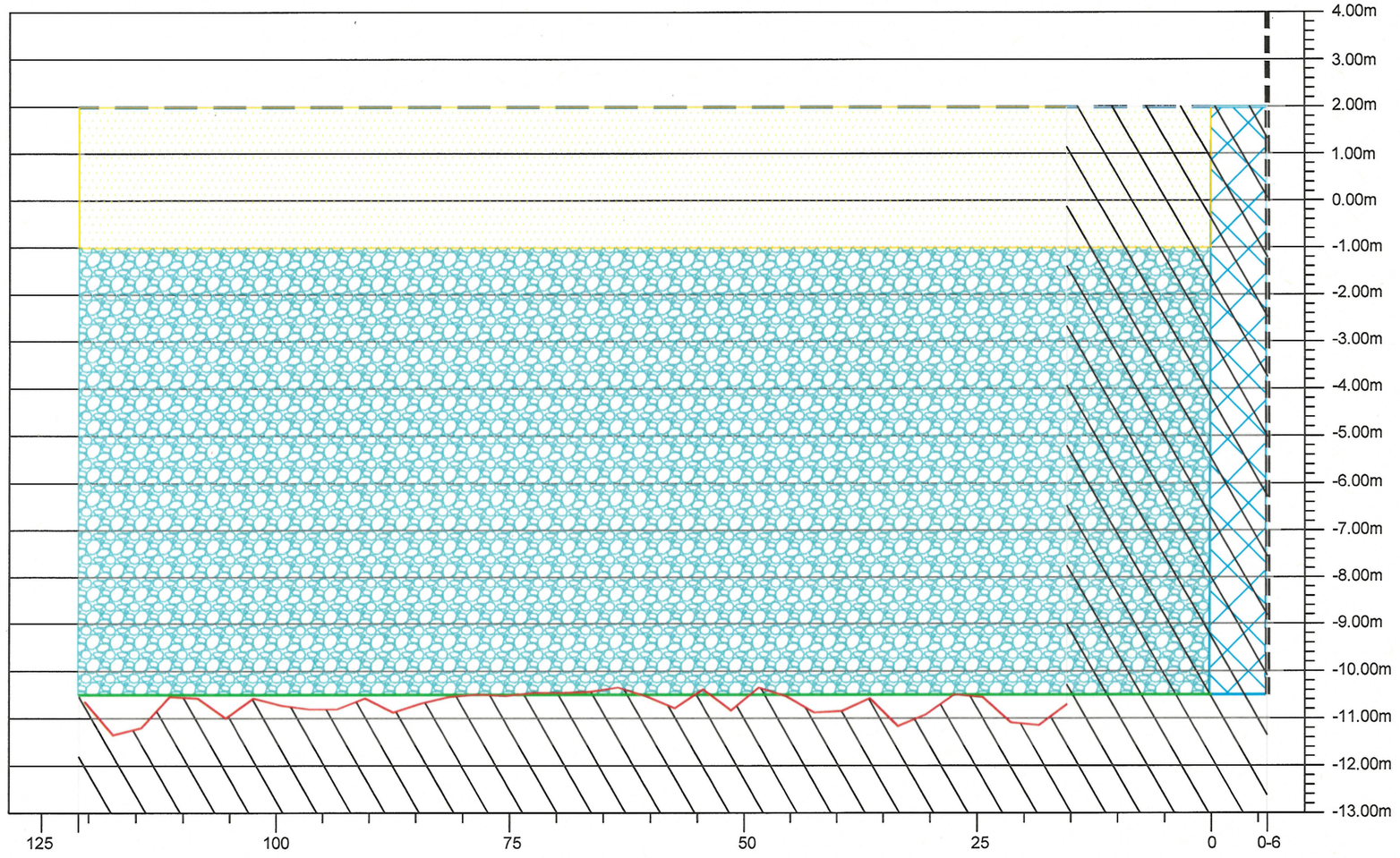
457-002.48	Production Date: Aug 2, 2016	Figure 5

HEMMERA

Environment Canada

Path: O:\457\EnvironmentCanada\002\PilotSampling\Attempt\2016Treatment_Wall_Rejuvenation\Fig05_457_002_48_TreatmentWall_160802.mxd





NOTES:

GROUT WALL INSTALLATION

1. The details and design specifications for the grout wall installation are provided in **Appendix D**.

0m 25m
HORIZONTAL SCALE 1:750

0m 5m
VERTICAL SCALE 1:150

LEGEND

- Approx Final Graded Treatment Media Surface
- 2016 Design Trench Depth
- 2001 As-Built Trench Depth
- Property Line
- Previously Unexcavated Area
- Grout Wall
- Overburden
- M-2 Media
- M-1 Media

PROFESSIONAL ENGINEER
PROVINCE OF BRITISH COLUMBIA
J. G. SCHMIDT
31722
Aug 3/16

NVD - North Vancouver Datum

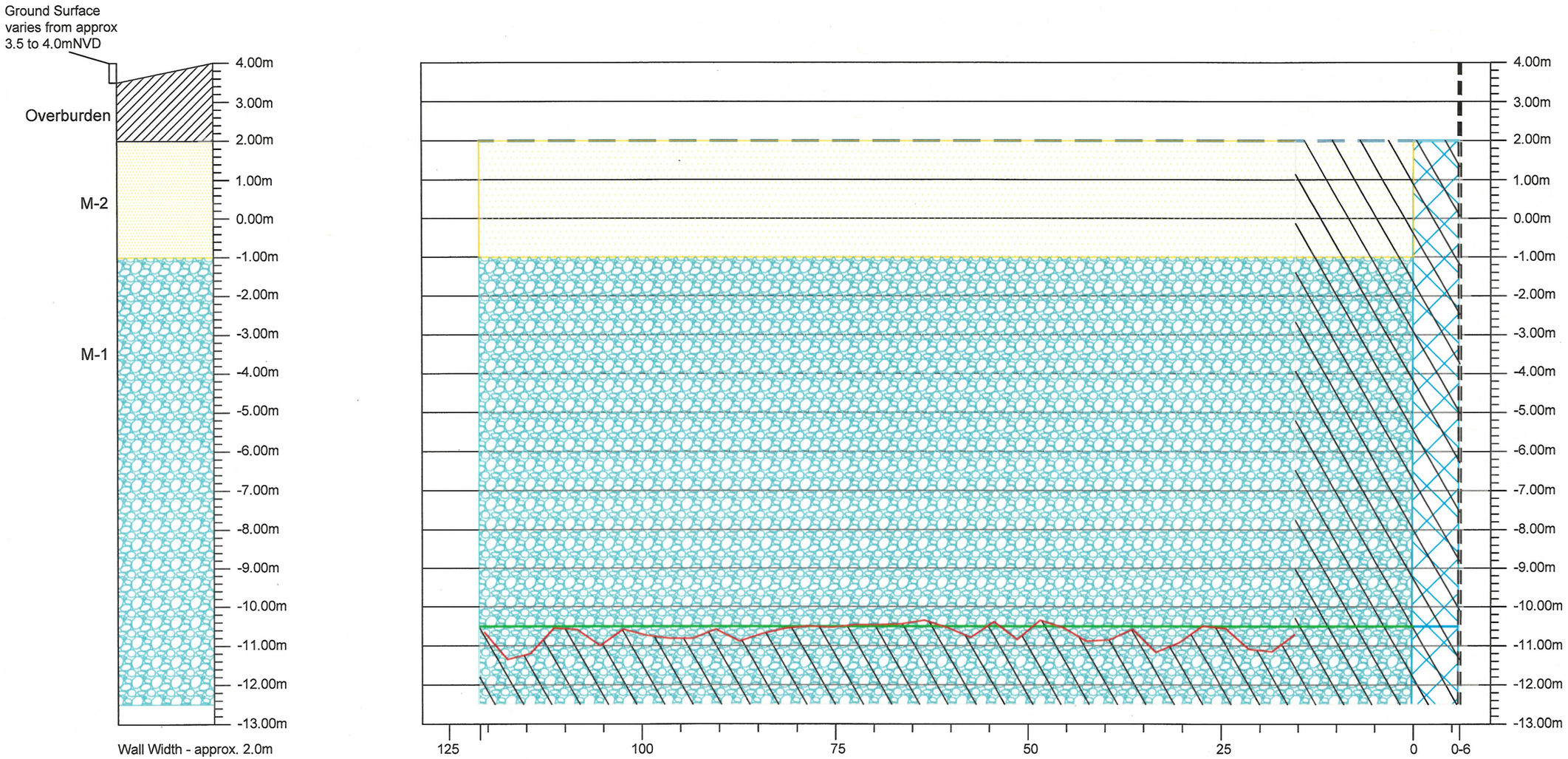
HEMMERA

CLIENT: ENVIRONMENT CANADA

2016 Treatment Wall Rejuvenation
Pacific Environment Centre Site, West Vancouver, BC

Treatment Wall Section B

PROJECT No.		
457-002.48	August 2016	Figure 6



NOTES

1. The neat depleted Wall B media and native soils excavation volume for the Wall B optional work is 425 m^3.
   1. The total unexcavated volume of Wall B Wall media must be less than 6% of the 2016 neat design neat volume of 425 m^3.
2. The neat fill and native soils excavation volume for the Wall B extension optional work is design is 62 m^3.
   1. The total unexcavated volume of Wall B extension native soils must be less than 6% of the 2016 design neat volume of 62 m^3.
3. All other requirements, as noted for the base work, also apply to the optional work.

GROUT WALL INSTALLATION:

4. The details and design specifications for the grout wall installation are provided in **Appendix D**.

0m 25m
HORIZONTAL SCALE 1:750

0m 5m
VERTICAL SCALE 1:150

LEGEND

- Approx Final Graded Treatment Media Surface
- 2016 Design Trench Depth - Optional Work
- 2001 As-Built Trench Depth
- Property Line
- Previously Unexcavated Area
- Grout Wall
- Overburden
- M-2 Media
- M-1 Media

NVD - North Vancouver Datum

PROFESSIONAL ENGINEER
PROVINCE OF BRITISH COLUMBIA
J. G. SCHMIDT
31722
Aug 3/16

HEMMERA

CLIENT: ENVIRONMENT CANADA

2016 Treatment Wall Rejuvenation
Pacific Environment Centre Site, West Vancouver, BC

Treatment Wall Section B - Optional Work

PROJECT No.		
457-002.48	August 2016	Figure 7

APPENDIX A

Summary of Subsurface Soil Conditions

Summary of Subsurface Soil Conditions

1.1 BACKGROUND

A geotechnical site investigation conducted prior to the 2001 Treatment Wall installation indicated the following subsoil conditions along the Treatment Wall alignment:

"…the site is underlain by well-graded sand and gravel fill, typically 1.2 m to 4.6 m thick. Beneath the fill lies a native organic layer, which contains traces of gravel, cobbles and fine sand lenses. The silt layer varies from 0 m to 2.1 m thick. Coarse sand and gravel, with occasional sand beds and varying cobble and boulder contents, underlie the native silt layer."

The 2001 Treatment Wall was installed with a cut and fill excavation method. A bio-degradable slurry was used to maintain excavation trench stability. The 2001 Treatment Wall installation was believed to have achieved the design dimensions. However, the contractor must consider that deviations to the actual Treatment Wall width, depth, and vertical and horizontal alignment are likely. In 2011 Treatment Wall D, located upgradient of Wall B (see **Figure 5**), was successfully extended and deepened to approximately -8.0 mNVD using a caisson excavation method. It is anticipated that cobbles between 64 and 256 mm in diameter will be encountered below the existing 2001 approximate lower elevation.

2001 Treatment Wall installation dimensions are provided in **Table 1** below.

Table 1: 2001 Treatment Wall Design Dimensions

Wall	Approximate Upper Elevation	Approximate Lower Elevation	Approximate Width	Approximate Length
B	2.35 mNVD	-10.5 mNVD	2.0 m	106 m

Notes:
1. NVD is North Vancouver Datum
2. Ground elevation along Treatment wall alignment is approximately 3.5 mNVD to 4.0 mNVD
3. All dimensions are approximate.

1.2 TREATMENT WALL B ALIGNMENT

Treatment Wall B is typically overlain with a combination of sand and gravel fill, and sand fill. Portions of the overburden also contain silt fill and trace to some cobbles. The depleted Wall B media typically consists of unconsolidated pea gravel with trace amounts sand and depleted reactive media (compost and limestone). The 2016 Treatment Wall rejuvenation includes an option to extend the lower design elevation for Wall B and the Wall B extension to -12.5 mNVD. The 2001 lower design elevation for Wall B was -10.5.0 mNVD and therefore the rejuvenation of Wall B below -10.5 mNVD and the Wall B Extension will consist of the excavation of native and fill soils to the design depth and width. Borehole logs from wells installed several meters south of the Wall B alignment are attached for reference.

1.3 WOOD WASTE AND DEBRIS

Wood waste and debris may be encountered during the excavation of the Wall B Extension and along the previously installed Treatment Wall B alignment if the excavation extends beyond the width of the previously installed Treatment Walls. To date wood waste and debris encountered in the area of the Treatment Wall has been typically encountered within 4 m of the current ground surface. The wood waste has consisted of processed and non-processed wood and the debris has typically consisted of plastic sheeting.

HEMMERA ENVIROCHEM

LOG OF MONITORING WELL

Monitoring Well MW146C

Page 1 of 1

Client: Environment Canada | Project: PEC Full Scale Post-Installation Drilling

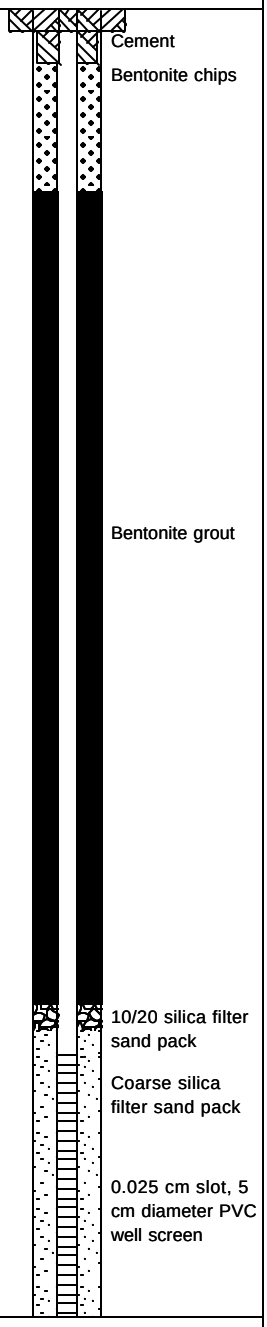
Project No.: 457-002.01 | Location: PEC Site | Supervised by: R. Arellano

Drilling Co.: Beck Drilling and Environmental Services Ltd. | Drilling Method: Becker Hammer

Monitoring Well Location: See Site Plan | Date Completed: 21 Apr 01

SAMPLE Interval	SAMPLE I.D.	Depth Scale (ft)	Depth Scale (m)	Graphic Log	Stratigraphic Description	Elev. Depth (m)
					Top of Pipe Elevation (mNVD): 3.85 Surface Elevation (mNVD): 3.91	
					BERM MATERIAL	3.0
		5	1		SAND and GRAVEL (native) - brown, trace silt, trace cobble, compact	0.9
		10	2			
			3			
		15	4			
			5			-1.6
					SANDY SILT - grey, dense at 6.4m	5.5
	MW146C-1	20	6			-2.5
	Cadmium: <0.5 Copper: 1140 Lead: 51 Nickel: 16 Zinc: 77	25	7		SAND and GRAVEL (native) - brown, trace silt, trace cobble, compact	6.4
			8			
	MW146C-2	30	9			-5.5
	Cadmium: <0.5 Copper: 48 Lead: <50 Nickel: 8 Zinc: 39	35	10		SAND and GRAVEL - grey brown, some cobbles	9.4
			11			
		40	12			
			13			
	MW146C-3	45	14			
	Cadmium: <0.5 Copper: 16 Lead: <50	50	15			-11.3
	Nickel: 7 Zinc: 33					15.2

Type 3 Well Diagram



SAMPLE TYPE: WC Wash Cuttings

BRID2 45701.GPJ 37753

HEMMERA ENVIROCHEM

LOG OF MONITORING WELL

Monitoring Well MW156C

Client: Environment Canada | Project: PEC Full Scale Post-Installation Drilling

Project No.: 457-002.01 | Location: PEC Site | Supervised by: R. Arellano

Drilling Co.: Beck Drilling and Environmental Services Ltd. | Drilling Method: Becker Hammer

Monitoring Well Location: See Site Plan | Date Completed: 20 Apr 01

SAMPLE Interval	Sample I.D.	Depth Scale (ft)	Depth Scale (m)	Graphic Log	Stratigraphic Description (Top of Pipe Elevation (mNVD): 3.87; Surface Elevation (mNVD): 3.98)	Elev. Depth (m)	Type 3 Well Diagram
					BERM MATERIAL	3.1	Cement
		5	1		SAND and GRAVEL - brown, some cobble, compact, wet, soft at 3.4m - 4.3m	0.9	Bentonite chips
		10	2				
			3				
		15	4				
			5				
WC	MW156C-1	20	6				Bentonite grout
	Cadmium: <0.5 Copper: 801 Lead: <50 Nickel: 8 Zinc: 106	25	7				
			8			-4.6	
WC	MW156C-2	30	9		SAND - grey/brown, some gravel, trace silt, loose	8.5 -5.2	
	Cadmium: <0.5 Copper: 19 Lead: <50 Nickel: 9 Zinc: 39	35	10		SILTY SAND	9.1 -7.0	
WC	MW156C 36'-37'		11		SAND and SILT - brown, loose	11.0	
WC	MW156C 37'-38'					-7.6	
		40	12		SILTY SAND - dark grey, some gravel, loose, organic odour, trace cobbles, soft at 11.6m - 11.9m	11.6	10/20 silica filter sand pack
			13				Coarse silica filter sand pack
		45				-9.7	
WC	MW156C-3		14		SILTY SAND - very dark grey, some gravel	13.7	0.025 cm slot, 5 cm diameter PVC well screen
	Cadmium: <0.5 Copper: 17 Lead: <50	50	15			-11.3	
	Nickel: 6 Zinc: 27					15.2	

SAMPLE TYPE: WC Wash Cuttings

BRID2 45701.GPJ 37753

HEMMERA ENVIROCHEM

LOG OF MONITORING WELL

Monitoring Well MW166C

Client: Environment Canada | Project: PEC Full Scale Post-Installation Drilling

Project No.: 457-002.01 | Location: PEC Site | Supervised by: R. Arellano

Drilling Co.: Beck Drilling and Environmental Services Ltd. | Drilling Method: Becker Hammer

Monitoring Well Location: See Site Plan | Date Completed: 20 Apr 01

SAMPLE Interval	Sample I.D.	Stratigraphic Description (Top of Pipe Elevation (mNVD): 3.68; Surface Elevation (mNVD): 3.81)	Elev. Depth (m)
		SAND - overlying some media and liner	2.3
		SAND - brown, fine to coarse grained, gravelly, compact, moist, some cobble	1.5
			-0.8
		SAND and GRAVEL - brown to grey, some cobble	4.6
		- orange brown with some silt at 5.5m - 6.1m	
		- brown at 6.1m	
S	MW166C-1		
	Cadmium: 0.5 Copper: 156 Lead: <50 Nickel: 12 Zinc: 138		-4.1
		SAND - some gravel	7.9
		- orange brown at 9.4m - 10.1m	
S	MW166C-2		
	Cadmium: <0.5 Copper: 15 Lead: <50 Nickel: 12 Zinc: 72		-6.9
		SILTY SAND - soft	10.7
		SAND - some gravel	-7.2
			11.0
		- cobbles at 11.9m	
		- brown silt at 12.8m - 13.4m	
		- grey at 13.4m	
S	MW166C-3		
	Cadmium: <0.5 Copper: <50 Lead: <50 Nickel: 5 Zinc: 28		-11.4 15.2

Depth Scale: (ft) 5, 10, 15, 20, 25, 30, 35, 40, 45, 50 / (m) 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15

Type 3 Well Diagram: Cement; Bentonite chips; Bentonite grout; 10/20 silica filter sand pack; Coarse silica filter sand pack; 0.025 cm slot, 5 cm diameter PVC well screen

SAMPLE TYPE: WC Wash Cuttings

BRID2 45701.GPJ 37753

APPENDIX B

Material and Media Specifications

1 MATERIAL AGE AND SIZE DISTRUBUTION

The compost shall be an unscreened organic material composed of shredded leaf and branch fragments, grass clippings and plant material from yard and garden waste. The material shall be aged for a minimum 20 weeks and a maximum of 1 year. The material must not contain any food or food processing waste.

2 MATERIAL SAMPLING AND TESTING

The Departmental Representative will also sample as required to determine that the material supplied meets or exceeds the criteria stated below The Departmental Representative reserve the right to reject any materials supplied that fail to meet these standards.

2.1 SAMPLING METHOD

The method of sampling for compost shall be random grab samples. The grab samples shall be a minimum size of 250 grams based on dry weight. The number of samples shall be 1 sample per 250 m^3 compost. Any deviations from this sampling procedure must be identified in advance of sampling and agreed to by the PWGSC Representative.

2.2 TEST METHOD

The method of analysis for compost grade is plant nutrients in soil for available nitrate (NO3) and phosphorous (P).

2.3 TARGET GRADE

The target grade and suitability of the compost shall be based on a nitrate to phosphorus ratio of 15:1 to 25:1.

1 APPROVED MATERIALS

The following materials and suppliers have been pre-approved:

1. ETI CC-1004 provided by Connelly – GPM, Inc.

Equivalent materials may be substituted but all materials will be required to undergo subsequent testing and approval by the Departmental Representative. The cost for this testing for alternative materials will be borne by the Contractor.

1 MATERIAL SIZE DISTRIBUTION

The limestone shall be a crushed granular material composed of fragments of uniform size, free from excess flatness, elongation or disintegrated pieces.

2 MATERIAL SAMPLING AND TESTING

The Departmental Representative will also sample as required to determine that the material supplied meets or exceeds the criteria stated below The Departmenl Representative reserves the right to reject any materials supplied that fail to meet these standards.

2.1 SAMPLING METHOD

The method of sampling for limestone for gradation shall be according to ASTM D75. Any deviations from this sampling procedure must be identified in advance of sampling and agreed to by the Departmentalal Representative.

The method of sampling for limestone for purity shall be according to a modified ASTM D75 procedure. Section 4 of ASTM D75 is applied with the following noted changes to Subsection 4.4. Any deviations from this sampling procedure must be identified in advance of sampling and agreed to by the PWGSC Representative.

The minimum number of representative samples to be taken are based on total tonnage as follows:

Minimum Number of Samples for Specification Sampling and Testing	
Material Tonnage (metric tonnes)	**Minimum Number of Samples**
< 10,000	3
< 100,0000	8
< 1,000,000	26
< 10,000,000	80

(Based on Minimum Number of Samples for Preliminary Static Testing: Price and Errington, 1997)

The minimum sample mass required is as described in Subsection 4.4, based on the dominant size fraction for coarse aggregate.

2.2 TARGET GRADATION

The target gradation for the limestone is given below:

Sieve Size (mm)	**Total Passing (%)**	
25.0	100	
19.0	90	100
12.5	60	90
9.5	5	60
4.75	0	5

2.3 TEST METHOD

The method of analysis for limestone purity is whole rock oxide by lithium metaborate fusion preparation followed by multi-element ICP scan that includes and reports SiO_2, Al_2O_3, Fe_2O_3, CaO, MgO, Na_2O, K_2O, SO_3, Cl, P_2O_5, TiO_2, H_2O, LOI and conversion of CaO to $CaCO_3$.

The method of sampling for limestone gradation is according to ASTM C136. Any deviations from this sampling procedure must be identified in advance of sampling and agreed to by the Departmental Representative.

2.4 TARGET PURITY

The target purity for the limestone is 95 % $CaCO_3$ or higher (53 % CaO).

1 MATERIAL SIZE DISTRIBUTION

The pea gravel, compost, iron, and limestone used to create a homogeneous permeable reactive wall mixture (Wall media) shall meet specifications PG-1, C-1, I-1, and L-1, respectively. These materials must be tested according to their respective specifications and approved by the Departmental Representative **prior to commencement of material mixing.**

1.1 MIXING METHOD

The pea gravel, compost, iron, and limestone are to be mixed to create a homogeneous Wall Media. The materials are to be mixed in a manner such that:

1. A homogeneous mixture is obtained;
2. Material degradation (physical breakdown) is minimized during the mixing process; and,
3. Material handling prior to placement in the wall excavation is minimized to prevent material segregation.

1.2 TARGET MIXTURE

Pea gravel, compost, iron, and limestone are to be mixed in the following proportions based on % volumes.

Wall Material	Target Mixture	
	Average (% volume)	Standard Deviation (% volume)
Pea Gravel	72	± 5.0
Compost	20	± 4.0
Iron	4	± 1.0
Limestone	4	± 1.0

Verification that the Wall media is homogeneously mixed will also be provided from the results of the permeability testing.

1.3 TARGET PERMEABILITY

Pea gravel, compost, iron, and limestone are to be mixed to a target permeability of 2.0 cm/sec to 10.0 cm/sec.

2 MATERIAL SAMPLING AND TESTING

The Departmental Representative will also sample as required to determine that the Wall media meets or exceeds the criteria stated below. The Departmental Representative reserves the right to reject any materials supplied that fail to meet these standards.

2.1 MIXTURE SAMPLING METHOD

The method of sampling the Wall media shall be 4 grab samples of approximately equal size from each quadrant of the treatment media stockpile, to form a minimum of one 20-litre composite sample per 500 m^3 of treatment media. Any deviations from this sampling procedure must be identified in advance of sampling and agreed to by the Departmental Representative.

2.2 MIXTURE TEST METHOD

Each 20 litre Wall media sample shall be tested according to the procedure determined by laboratory bench-scale testing for the Treatment Media containing 72% pea gravel, 20% compost, 4% iron, and 4% limestone.

2.3 PERMEABILITY TEST METHOD

A minimum of three Wall media samples (approximately 5 litres each) from each Wall media stockpile will be tested as per ASTM D2434-68 (1994) E1 Standard Test Method for Permeability of Granular Soils (Constant Head). Compare and report the differences between each sample and the allowable standard deviation.

1 MATERIAL SIZE DISTRIBUTION

The pea gravel, sand, compost and limestone used to create a homogeneous permeable reactive wall mixture (Wall media) shall meet specifications PG-1, S-1, C-1, and L-1, respectively. These materials must be tested according to their respective specifications and approved by the Departmental Representative **prior to commencement of material mixing.**

1.1 MIXING METHOD

The pea gravel, compost, iron, and limestone are to be mixed to create a homogeneous Wall media. The materials are to be mixed in a manner such that:

1. A homogeneous mixture is obtained;
2. Material degradation (physical breakdown) is minimized during the mixing process; and,
3. Material handling prior to placement in the wall excavation is minimized to prevent material segregation.

1.2 TARGET MIXTURE

Pea gravel, compost, iron, and limestone are to be mixed in the following proportions based on % volumes.

Wall Material	Target Mixture	
	Average (% volume)	Standard Deviation (% volume)
Pea Gravel	57	± 5.0
Sand	19	± 5.0
Compost	20	± 4.0
Limestone	4	± 1.0

Verification that the Wall media is homogeneously mixed will also be provided from the results of the permeability testing.

1.3 TARGET PERMEABILITY

Pea gravel, sand, compost, and limestone are to be mixed to a target permeability of 1.0 cm/sec to 8.0 cm/sec.

2 MATERIAL SAMPLING AND TESTING

The Departmental Representative will sample as required to determine that the Wall media meets or exceeds the criteria stated above. The Departmental Representative reserves the right to reject any materials supplied that fail to meet these standards.

2.1 MIXTURE SAMPLING METHOD

The method of sampling the Wall media shall be 4 grab samples of approximately equal size from each quadrant of the Wall media stockpile, to form a minimum of one 20-litre composite sample per 500 m^3 of treatment media. Any deviations from this sampling procedure must be identified in advance of sampling and agreed to by the Departmental Representative.

2.2 MIXTURE TEST METHOD

Each 20 litre Wall media sample shall be tested according to the procedure determined by laboratory bench-scale testing for the Wall media containing 57% pea gravel, 19% sand, 20% compost and 4% limestone.

2.3 PERMEABILITY TEST METHOD

A minimum of three Wall media samples (approximately 5 litres each) from each Treatment Media stockpile will be tested as per ASTM D2434-68 (1994) E1 Standard Test Method for Permeability of Granular Soils (Constant Head). Compare and report the differences between each sample and the allowable standard deviation.

1 MATERIAL SIZE DISTRIBUTION

The material shall be an uncrushed natural stone composed of inert, tough, durable stones of uniform size, free from excess flatness, elongation or disintegrated pieces. The material shall be washed to remove any fines may be present.

2 MATERIAL SAMPLING AND TESTING

The Departmental Representative will sample as required to determine that the material supplied meets or exceeds the criteria stated below The Departmental Representative reserves the right to reject any materials supplied that fail to meet these standards.

2.1 SAMPLING METHOD

The method of sampling for aggregate shall be according to ASTM D75. Any deviations from this sampling procedure must be identified in advance of sampling and agreed to by the Departmental Representative.

2.2 TEST METHOD

The method of sampling for aggregate gradation is according to ASTM C136. Any deviations from this sampling procedure must be identified in advance of sampling and agreed to by the Departmental Representative.

2.3 TARGET GRADATION

The target gradation for the aggregate material is given below:

Sieve Size (mm)	**Total Passing (%)**	
	Low	High
20.0	100	100
14.0	95	100
10.0	50	75
5.00	0	5
0.08	0.5	1

1 MATERIAL SIZE DISTRIBUTION

The material shall be an uncrushed natural stone composed of inert, tough, durable stones of uniform size, free from excess flatness, elongation or disintegrated pieces.

2 MATERIAL SAMPLING AND TESTING

The Departmental Representative will also sample as required to determine that the material supplied meets or exceeds the criteria stated below. The Departmental Representative reserve the right to reject any materials supplied that fail to meet these standards.

2.1 SAMPLING METHOD

The method of sampling for aggregate shall be according to ASTM D75. Any deviations from this sampling procedure must be identified in advance of sampling and agreed to by the Departmental Representative.

2.2 TEST METHOD

The method of sampling for aggregate gradation is according to ASTM C136. Any deviations from this sampling procedure must be identified in advance of sampling and agreed to by the Departmental Representative.

2.3 TARGET GRADATION

The target gradation for the aggregate material is given below:

Sieve Size (mm)	**Total Passing (%)**	
	Low	High
10.0	100	100
5.0	60	100
2.5	1	6
1.25	0.5	2.5

APPENDIX C

Installed Wall Media Sampling and Performance Specifications

Installed Wall Media Sampling and Performance Specifications

1.1 DRILLING AND SAMPLING OF INSTALLED WALL MEDIA

1.1.1 Purpose

The purpose of the drilling and sampling of the placed Wall media is to confirm that the Wall media constituents have not settled or stratified during the installation process. The drilling and sampling will be coordinated and conducted by the Department Representative.

1.1.2 Sampling

Drilling will be conducted with a truck or track mounted rig equipped with either a three inch hollow stem auger, or approved equivalent. Up to three locations of Wall B and up to two locations of the Wall B extension may be drilled and sampled. Representative samples at each drilling location will be collected at three elevations. The upper most sample will be collected in the M-2 Wall media and the lower two samples will be collected in the M-1 Wall media. Sample recoveries must meet or exceed 80% to be deemed a valid sample. The sampling interval must not be conducted within 0.5 m of the upper and lower design elevations for the various wall media.

1.1.3 Sample Analysis

Samples collected at each location will be analyzed for the volume of Wall media constituents using the same analytical procedure used for the Wall media stockpiles. For the analysis of samples collected from within rejuvenated Wall media the surrounding soils contained within the Wall media sample will be considered as non reactive media in the volume calculation.

1.2 PERFORMANCE SPECIFICATIONS

The performance specifications for the installed M-1 and M-2 wall media are provided in **Table 1**, below.

Table 1: Performance Specifications for Installed M-1 and M-2 Wall Media

Wall Media Specification M-1 Target Mixture and Allowable Standard Deviation for Installed Wall Media		
Media	**Average (% volume)**	**Standard Deviation (% volume)**
Non Reactive Media (Pea Gravel)	72	± 10.0
Compost	20	± 8.0
Iron	4	± 2.0
Limestone	4	± 2.0
Wall Media Specification M-2 Target Mixture and Allowable Standard Deviation for Installed Wall Media		
Media	**Average (% volume)**	**Standard Deviation (% volume)**
Non-Reactive Media (Pea Gravel, Sand)	76	± 10.0
Compost	20	± 8.0
Limestone	4	± 2.0

1.3 SAMPLES RESULTS AND COMPLIANCE WITH PERFORMANCE SPECIFICATIONS

If a sample result does not comply with the applicable performance specification then a second sample must be obtained from the same Wall media at the same elevation within 2 lateral meters of the noncompliant sample. If the second sample also does not comply with the performance specification then a portion of the Treatment Wall will be considered to be noncompliant with the performance specification. Additional drilling and sampling will be conducted at 5 m intervals along the Treatment Wall alignment to determine the extent of the noncompliant wall section.

The Contractor will be responsible for all costs associated with remedying the section(s) of the Treatment Wall deemed noncompliant.

APPENDIX D

Grout Cut-Off Wall Specifications

Grout Cut-Off Wall Specification

(Pacific Environmental Site, West Vancouver, BC)

1) Scope of work:

The work includes furnishing a grout wall to create a barrier between the east end of the proposed reactive barrier wall and the adjacent property.
This is a performance type specification. The Contractor shall be responsible for both design and construction of the grout wall at the location shown on the drawings prepared by Hemmera included with these specifications.

The wall shall have a hydraulic conductivity of less than 10-7 cm/s.

The dimension of hte grout wall are shown on the drawings prepared by Hemmera. The grout shall have a minimum compressive strength of 6 MPa.

2) Contractor's Experience Requirement

The Contractor shall be experienced in the construction of grout barrier walls of the type proposed and shall have successfully completed at least five (3) projects in the last five (5) years involving construction of walls of similar or greater scope; preferably in mixed fill soils and preferably in B.C.

4) References

API (American Petroleum Institute)-RP 13B-1-Recommended Practice Standard Procedure for Field Testing Water-Based Drilling Fluids.
CAN/CSA A5-M Portland Cement
CAN/CSA-A23.2 Methods of Test for Concrete

5) Submittals

Provide working drawings, methods, and descriptions, including computations for proposed technique showing the the following information:

5.1) Plant, equipment and material descriptions.
5.2) Arrangement of grout mixing and injection equipment, location and orientation activity to complete the volume of soil in the contract plans, and other necessary details and calculations.
5.3) Sequence of work and verification operations.
5.4) Layout and procedures for a test program to establish optimum grouting parameters.
5.5) Grout mix design, source of mix materials, and material data demonstrating compliance with requirements.
5.6) Daily grouting report form(s) in an electronic format (see article 10)
5.7) Verification program(s) location and means to verify acceptable grout installation.

6) Materials

Use materials meeting the requirements of the following Sections of the Standard Specifications and this special provision:

6.1) Cement - Portland Cement Type I, Type II or Type III cement
6.2) Water - The water shall be free of oil, or chemical and organic impurities, or any other substances harmful to Portland cement, and shall comply with CAN/CSA-A23.1
6.3) Admixtures - Other materials and/or admixtures may be used in the mix, provided they are shown necessary in order to satisfy strength, permeability, or other technical requirements and are approved by the Owner or his representative.
6.4) Grout Mix - The grout mix utilized shall be as required to provide the completion of the work as defined by these specifications, and as verified by test of the cement grout program results. The specific gravity shall be not less than 1.5.

7) Equipment

7.1) General
Spare parts and/or equipment and/or accessories shall be available on site to maintain the equipment in satisfactory operating conditions at all times during execution of the work so as to not cause delays to the project schedule.

7.2) The drilling equipment shall be equipped with sensors able to record as necessary: depth, speed, pressure, torque and rpm.

7.3) The grout mixers, holding tanks, pumps, and associated equipment shall be of a type and capacity for continuously producing a uniform grout mixture at the times, and in the quantities, required for timely execution of the work.

8) Design

The grout wall design shall satisfy the requirements of these specifications. Further information may be requested by the owner or the owners representateive.
The proposed design shall be presented in such manner that it can be reviewed by the owner or owners representative.

9) Test Program

9.1) Prior to production work, test program shall be conducted by the Contractor in accordance with the accepted work plan. The test program shall be used to optimize the various parameters including grout mix, grout pressures, rotational speed, lifting rate, grout flow rate, number and size of grout jet nozzles, and drilling methods. The test program and its results will be observed and reviewed by the Owner or his representative.
9.2) Execute test program in accordance with the procedures submitted and accepted by the Owner or his representative.
9.3) To verify the results of the test program, the grout wall shall be excavated to allow for visual inspection.
9.4) Subject to the results of the test program, the owner's Engineer may require modification to the grout wall production to achieve satisfactory results.
9.5) The contractor shall submit at least 3 test cylinders for testing of grout density and compressive strength.

10) Quality Control

10.1) Uniformity of grout mixture shall be measured by the Contractor by taking unit weight (density) measurements of the mixed grout by mud balance, taken at the mix plant. Frequency shall be at least one measurement per 5 m3 of grout mixed and pumped. Appropriate records shall be kept by the Contractor and submitted to the Engineer to verify that grout mixture(s) are as accepted.

11) Daily Reports

Submit daily reports during the work including the information listed below. A sample report form shall be submitted for approval in accordance with section 4.

a) Daily description of work completed (#'s, Areas, etc.)
b) Time and date of beginning and completion of drilling and grouting (if applicable)
c) Grout mix data, including mix proportions and specific gravity measurements.
d) Grout pumping pressures used.
e) Grout flow rates (if applicable).
f) Total grout quantity used (daily)

ORIGINAL PAPER SIZE 11"x17"

REFERENCE:	#215–1200 West 73–rd Ave. Vancouver, B.C. Canada V6P 6G5 Ph. (604) 439–0922 Fax (604) 439–9189 GeoPacific Consultants Ltd.	DATE: AUGUST 29, 2010 DRN. BY: – APP'D. S.M.F. SCALE: AS SHOWN	PROPOSED GROUT CUT–OFF WALL PACIFIC ENVIRONMENT CENTRE, WEST VANCOUVER, B.C. SPECIFICATIONS	FILE NO.: 8740 DWG. NO.: N–1	REVISIONS: A. B. C.