REGIONAL DISTRICT
of Fraser-Fort George

INVITATION TO TENDER
ES-20-02

2020 LANDFILL GAS MAIN HEADER EXTENSION CONSTRUCTION PROJECT
FOOTHILLS BOULEVARD REGIONAL LANDFILL

Closing Date: Tuesday, February 18, 2020 at 2:00pm

XCG CONSULTANTS LTD.
Consulting Engineers
10455 84th Avenue
Edmonton, AB T6E 2H3

Regional District of Fraser Fort George
155 George Street, Prince George, BC V2L 1P8
Telephone 250-960-4400
Toll Free 1-800-667-1959 / Fax 250-562-8676
http://www.rdffg.bc.ca

TABLE OF CONTENTS

1.0 INVITATION AND INSTRUCTIONS

The Regional District of Fraser Fort George is inviting tenders from qualified contractors for the 2020 Landfill Gas Main Header Extension Construction Project at the Foothills Boulevard Regional Landfill. This is the final section of the current main header pipe to be installed at the site and upon completion will join the two existing sections of main header pipe into one continuous loop.

This project includes the following elements:

1. Clearing of minor vegetation
2. Supply and install landfill gas main header
3. Supply and install main header cleanouts;
4. Supply and install isolation valve, and sampling port;
5. Re-construction of perimeter road; and
6. Stormwater ditching

The purpose of the project is to undertake the construction of the 2020 Landfill Gas Main Header Extension Construction Project as per the Interim Phase 1 Landfill Gas Management Plan, issued November 2008 and the Short-Term Fill Plan Update, May 2016, for the Foothills Boulevard Regional Landfill, based upon the drawings and specifications included in the Invitation to Tender.

1.1 Tender Documents

A complete set of construction drawings for the entire project is included with the tender package and will be available in the following formats on, or after, Thursday, January 23, 2020 as follows:

a) in a PDF (public document format) file format from the Regional District's website at www.rdffg.bc.ca;
b) on the BC Bid® website at www.bcbid.gov.bc.ca;
c) in hard copy from the Regional District Service Centre, 155 George Street, Prince George, BC between 8:00 a.m. and 5:00 p.m., Monday to Friday, excluding statutory holidays. The cost for each hard copy tender package is twenty-five dollars ($25) (GST included) and is non-refundable.

All subsequent information regarding this Invitation to Tender (ITT), including amendments, addenda and answers to questions will also be available as above.

It is the sole responsibility of the Tenderer to ascertain that they have received a full set of the ITT documents. Upon submission of their tender document, the Tenderer will be deemed conclusively to have been in possession of a full set of the ITT documents.

Inquiries relating to this ITT must be made in writing by email to:

Technical Inquiries:

Chloe Stone
Senior Project Manager
XCG Consulting Limited
315 Parkland Way
Calgary, AB T2J 4L1
Phone: (403) 452-2885
Email: chloe.stone@xcg.com

General Inquiries:

Darwin Paton
Environmental Services Technician
Regional District of Fraser-Fort George
155 George Street
Prince George, BC V2L 1P8
Phone: (250) 960-4400
Email: dpaton@rdffg.bc.ca

1.2 Mandatory Site Visit

The Project Manager or delegate will provide an overview of the contract expectations and be available for questions pertaining to this ITT. The purpose of this meeting is for the Tenderer to satisfy themselves as to the nature of the work, in general, to clarify their understanding of the scope of work, determine dimensions and to have clarified any questions regarding the attached Drawings and Specifications forming part of this Tender, and any other circumstances which may influence their Tender submission.

The Regional District will not, under any circumstances, make accommodations for rescheduling, or holding any additional site visits or providing individuals access to the sites.

The mandatory site visit will be held for all prospective Tenderers. The meeting is scheduled for 1:00 p.m. on Thursday, January 30, 2020 at the Foothills Boulevard Regional Landfill, 6595 Foothills Boulevard, Prince George, BC.

Tender submissions received from any Tenderer who did not attend the mandatory site meeting will be rejected.

1.3 Tender Close and Opening

The Regional District will accept tenders submitted by direct delivery to the Regional District main office. All tenders must be submitted to the Regional District's General Manager of Financial Services by 2:00 p.m. (local time) on Tuesday, February 18, 2020. Tenders will be opened in public at 2:15 p.m. local time on Tuesday, February 18, 2020 at the Regional District Office.

Tenders submitted by fax electronically or not in original Regional District format will **NOT** be accepted. Any tender received after the closing date and time will be considered disqualified and will be returned to the Tenderer.

Three (3) complete copies of your Tender must be submitted in a sealed envelope with the following information written on the outside of the envelope containing the tender, as well as on the outside of the courier envelope/box (if sending by courier):

1. Attention: General Manager of Financial Services
   Regional District of Fraser-Fort George
   3rd Floor, 155 George Street
   Prince George, BC V2L 1P8

2. Invitation to Tender, ES-20-02
   2020 Landfill Gas Main Header Extension
   Construction Project - Foothills Boulevard Regional Landfill

3. Responding Tenderer's name and address.

To be considered, tenders must be signed by an authorized signatory of the tenderer. By signing the tender, the tenderer is bound to statements made in response to this ITT. Any tender received by the Regional District that is unsigned will be rejected.

Tenders not submitted in strict accordance with these instructions or not complying with the requirements in this ITT may be rejected.

The Regional District will not be responsible for any costs incurred by tenderers as a result of the preparation or submission of a tender pertaining to this ITT. The accuracy and completeness of the tender is the tenderer's responsibility. Should errors in a tender be discovered, the tenderer shall be solely responsible for any additional costs incurred by that tenderer in the performance of

the work and shall be solely responsible to correct any deficiencies or errors in that tender at their expense.

1.4 Acknowledgement Letter

Upon receipt of this ITT, a potential tenderer is requested to complete and sign the Acknowledgement Letter and mail or email the signed Acknowledgement Letter to Darwin Paton, at dpaton@rdffg.bc.ca.

A tenderer who signs and returns the Acknowledgement Letter is not obligated to submit a tender.

Any tenderer who does not submit the Acknowledgement Letter will not be sent any amendments, addenda, or answers to questions and their tender may be disqualified if it is incomplete or non-compliant as a result of the tenderer's failure to acknowledge receipt of an addendum in accordance with this ITT, or as a result of the tenderer's failure to comply with the requirements of an amendment or addendum to this ITT.

1.5 Regional District's Right to Reject Tender

The Regional District reserves the right, in its sole discretion, to waive informalities in tenders, reject any and all tenders, or accept the tender deemed most favourable in the interests of the Regional District. The lowest, or any tender, will not necessarily be awarded.

Tenders which contain qualifying conditions or otherwise fail to conform to the instructions contained in this ITT may be disqualified or rejected. The Regional District may, however, in its sole discretion, reject or retain for its consideration tenders which are non-conforming because they do not contain the content or form required by the ITT, or for failure to comply with the process for submission set out in this ITT, whether or not such non-compliance is material.

The Regional District reserves the right to reject a tender based on potential or perceived conflict of interest on the part of a tenderer. Without limitation, the Regional District reserves the discretion to reject any tender where:

a) one or more of the directors, officers, principals, partners, senior management employees, shareholders or owners of the tenderer, is an officer, employee or director of the Regional District, or is a member of the immediate family of an officer, employee or director of the Regional District; or

b) in the case of a tender submitted by a tenderer who is an individual person, where that individual is an officer, employee or director of the Regional District, or is a member of the immediate family of an officer, employee or director of the Regional District.

When submitting a tender, the respondent is required to complete, sign, and include with their proposal a Conflict of Interest Disclosure Statement (page 29).

The Regional District reserves the right to reject any tender submitted by a tenderer who is, or whose principals are, at the time of tendering, engaged in a lawsuit against the Regional District in relation to work similar to that being tendered.

1.6 Waiver of Claims for Compensation

Except for a claim for the reasonable cost of preparation of its tender, by submitting a tender, each tenderer irrevocably waives any claim, action, or proceeding against the Regional District including, without limitation, any judicial review or injunction application, and any claim against the Regional

District and its elected officials, officers and employees for damages, expenses or costs, loss of profits, loss of opportunity or any consequential loss for any reason, including any such claim, action or proceeding arising from:

1) any actual or alleged unfairness on the part of the Regional District at any stage of the tender process, including without limitation any alleged unfairness in the evaluation of a tender or award of a contract;

2) a decision by the Regional District not to award a contract to that tenderer; or

3) the Regional District's award of a contract to a tenderer whose tender does not conform to the requirements of this ITT.

1.7 Proof of Ability

Tenderers must be competent and capable of performing the work as described in the Scope of Work and Specifications. The tenderer is required to provide evidence of previous experience and financial responsibility before a contract is awarded.

A complete list of Sub-Contractors, which the Tenderer will make available for the completion of the contract, will be included with each Tender.

1.8 Sub-Contractors

The List of Sub-Contractors is to be completed by the tenderer and will form part of the contract documents. The sub-contractors named in the List of Sub-Contractors will not be changed nor will additional sub-contractors be employed except with the written approval of the Regional District.

The Contractor is responsible to the Regional District for the acts and omissions of their sub-contractors to the same extent that they are responsible for the acts and omissions of persons employed by them. Nothing in the contract documents will create any contractual relation between any sub-contractor and the Regional District. The Contractor will bind every sub-contractor to the terms of the contract documents.

1.9 Discrepancies or Omissions

Tenderers finding discrepancies, errors, or omissions in this ITT, or requiring clarification on the meaning or intent of any part therein, should immediately request in written form by Email, clarification from Chloe Stone, Senior Project Manager, XCG Consultants Ltd. Upon receipt of the written request for clarification, the Project Manager will send written instructions or explanations to all parties registered as having returned the Acknowledgement Letter. The Regional District will not accept responsibility for any damages, costs or expenses incurred by a tenderer in reliance on oral instructions. Any work done in preparation of a tender after discovery of discrepancies, errors or omissions in the ITT will be done at the tenderer's risk unless the discrepancy, error or omission is reported to the Project Manager in accordance with this provision.

NOTE: the last day that requests for clarification or inquiries may be made is Thursday, February 13, 2020 in order that addenda, if necessary, are issued in time for all tenderers to complete their submission and have it delivered to the Regional District office prior to the closing time and date of the ITT. After February 13, 2020, should changes be necessary to the work of this ITT, they will be addressed through Article 11.0, Changes in the Work.

1.10 Examination of Contract Documents and Site

The Contractor will satisfy themselves as to the practicability of executing the work in accordance with the Contract, and they will be held to have satisfied themselves in every particular before making up their Tender by inquiry, measurement, calculation and inspection of the site.

The Contractor will examine the site and its surroundings and, before submitting their Tender will satisfy themselves as to the nature of the site, the quantities and nature of the work and equipment necessary for the completion of the work, and the means of access to the site, the accommodation they may require, and in general, will obtain all relevant information as to risks, contingencies and other circumstances which may influence their Tender.

The Contractor will be deemed to have satisfied themselves as to the sufficiency of the Tender for the work and the prices stated in the Schedule of Prices. These prices will cover all their obligations under the Contract, and all matters necessary to the proper completion and maintenance of the work, and will include the Supply of all labour, equipment, material, supervision, services, taxes and assessments, together with the Contractor's overhead and profit, except where otherwise provided elsewhere in this Contract.

1.11 Site Locations and Facility Information

The Site is located in the northwest portion of the City of Prince George, British Columbia at 6595 Foothills Boulevard, northwest of the intersection with West Austin Road as shown on the Drawings included in Appendix B.

2.0 TENDER FORMAT

Tenderers are asked to respond in the manner outlined below and submit **three (3) complete copies** of their tender. The following format and sequence, with all pages consecutively numbered, is to be followed in order to provide consistency in tenders and to ensure each tender receives full and complete consideration.

a. Tenderers will complete pages 20 through 29:
   - Tender Form: to be completed, signed, and witnessed
   - Tender Form Summary
   - Schedule of Prices: the Schedule of Prices must be completed and included in the tender submission. All prices for the work shall be stated in Canadian dollars. Taxes are to be shown as separate line items on the Schedule of Prices. Any applicable Federal or Provincial taxes, or levies, must be included in the Total Contract Price
   - The Schedule of Additional Unit Prices
   - Preliminary Construction Schedule
   - Experience of Superintendent
   - List of Sub-Contractors: to include sub-contractor's legal name and the work to be performed by the sub-contractor
   - Tenderer’s Experience in Similar Work: a minimum of three references required, to include a brief description of projects similar in size and scope to this Invitation to Tender, along with the corresponding contact names and phone numbers for reference checks.
   - Goods and Services Tax Information
   - Conflict of Interest Disclosure Statement

b. A start to completion work plan: to include start of construction and completion dates and milestone dates for completion for the major components of this project.

c. Additional information that the tenderer may choose to provide.

d. All amendments and addenda, if any, issued for this ITT. Each amendment and addendum must be signed by the tenderer and included with the tender and will form part of the tender and contract documents.

3.0 TENDER EVALUATION

Evaluation of tenders will be by a committee formed by the Regional District in order to provide a recommended award of contract (the "Contract"). Tenders should be clear, concise, and complete.

The following criteria will be used to evaluate the Tenders received.

3.1 Tender Evaluation Methodology

(a)	Proven, successful experience in providing similar works	20%
(b)	Acceptability of reference checks	10%
(c)	Preliminary Construction Schedule	10%
(d)	Price	60%
	TOTAL	100%

3.2 Price evaluation shall include the sum of the "Schedule of Prices" and "Schedule of Additional Unit Prices" as per the "Tender Form Summary". Quantities associated with the "Schedule of Additional Unit Prices" shall be used to calculate the Total Bid Price in the "Tender Form Summary" only. The value of the contract will be the "Schedule of Prices" only.

3.3 The Contractor will have fourteen (14) calendar days to provide documentation verifying required Insurance coverage and WorkSafeBC coverage upon receiving notification that the Regional District has accepted its Tender.

Throughout the evaluation process, the Regional District, at its sole discretion, may request additional written clarification and/or supplemental information from selected tenderers as part of the evaluation process. Notwithstanding the results of the evaluation conducted by the committee, the Regional District reserves the right to select the tender that the Regional District considers provides best overall value.

4.0 CONTRACT

4.1 Form of Contract

The Contract Form and General Conditions which will be utilized will be CCDC 4-2011 Unit Price Contract, available at www.ccdc.org.

4.2 Award of Contract

A contract for ES-20-02 ("2020 Landfill Gas Main Header Extension - Construction Project - Foothills Boulevard Regional Landfill") is anticipated to be awarded no later than March 19, 2020. All tenderers will be advised, in writing, as to the awarding of the Contract.

The Regional District may, in its sole discretion, award the Contract for the 2020 Landfill Gas Main Header Extension - Construction Project - Foothills Boulevard Regional Landfill, or it may delay the date of awarding the Contract or cancel this ITT if deemed appropriate by the Regional District for any reason.

5.0 TERM OF CONTRACT

The term of the Contract will begin on April 15, 2020 at 12:01 a.m. and the Contract will remain in force until project completion. Construction will commence upon award and signing of the contract as laid out in Part 1 of the Tender.

A construction start date will be mutually agreed upon by the Regional District and the Contractor. Once construction works begin on-site, they will continue without interruption until project completion, on or before June 01, 2020 or later date as agreed upon by the Regional District and the Contractor.

6.0 INTENT OF CONTRACT DOCUMENTS

This Contract is not an agreement of employment. The Contractor is an independent contractor and nothing herein will be construed to create a partnership, joint venture, or agency and neither party will be responsible for the debts or obligations of the other.

7.0 ASSIGNMENT OF CONTRACT

The Contractor will not sublet, sell, transfer, assign, or otherwise dispose of the Contract or any portions thereof, or their right, title or interest therein, or their obligations thereunder without written consent of the Regional District, except for an assignment to a bank of the payments to be received hereunder.

8.0 BID PRICES

Tender prices must remain open for acceptance for a period of sixty (60) days from the time of Tender opening (Tuesday, February 18, 2020), unless otherwise stated by the Regional District.

Tenders will be evaluated on the ability of the Tenderer to comply with Contract requirements, the Tendered Price and experience as stated in Section 3: TENDER EVALUATION. Where bid prices are the same, the Regional District will consider experience in similar work beyond the minimum standards established in the Contract.

The Regional District of Fraser-Fort George will not be responsible for any costs incurred by the respondent which may result from the preparation or submission of documents pertaining to this Tender.

9.0 PAYMENT

a. Payment will be made within thirty (30) days of the Engineer approving the invoice.

b. Each progress payment claim is subject to a 10% hold back. All claims must be accompanied by supporting documentation as to its completion and proof of passing all required inspections.

c. The Regional District will inspect the work before making payment.

d. The Regional District will withhold 10% of the total payment due under the Contract as a performance assurance holdback. The holdback will be released to the Contractor once the following two conditions have been satisfied:

   1. The work has been completed to the satisfaction of the Regional District and Consultant.

   2. The Regional District has received notification from WorkSafeBC that all required WorkSafeBC assessments have been paid for the period covering the Contract term.

e. No payment will be made for materials supplied by the Regional District.

10.0 SECURITY DEPOSIT

A certified cheque, bank draft or money order in the amount of Forty Thousand Dollars ($40,000) in Canadian funds must accompany the Tender. This security deposit will be returned to all unsuccessful bidders within sixty (60) days of Tender opening and to the successful bidder when a contract has been executed. Failure of the successful bidder to execute the contract upon award by the Regional Board will result in forfeiture of the Forty Thousand Dollars ($40,000) Security Deposit.

11.0 CHANGES TO THE CONTRACT WORK

The Regional District, without invalidating the Contract, may make changes by altering, adding to, or deducting from the work. The Contractor will proceed with the work as changed and the work will be executed under the provisions of the Contract. No changes will be undertaken by the Contractor without written order of the Regional District, except in an emergency endangering life or property, and no claims for additional compensation will be valid unless the change was so ordered. The Regional District will entertain no payment for extra work or changes in the Contract unless a “Change Order” form is completed and signed by the Regional District, the Consultant and the Contractor.

12.0 INSURANCE

The Contractor shall, without limiting its obligations or liabilities, and at its own expense, provide and maintain throughout the Contract term, the following insurance with insurers licenced in the Province of British Columbia, in forms acceptable to the Regional District. All required insurance (except automobile insurance on vehicles owned by the Contractor) shall be endorsed to show the Regional District as additional insured and to require that the Regional District be provided with thirty (30) days’ advance written notice of cancellation or material change. The Contractor will provide the Regional District with evidence of the required insurance, in a form acceptable to the Regional District, upon notification of award and prior to the execution and delivery of the Contract:

i. Commercial General Liability (CGL) in an amount not less than $5,000,000 inclusive per occurrence insuring against bodily injury and property damage and including liability assumed under the Contract. Such CGL coverage shall include the following liability extensions: Contingent Employers Liability, Broad Form Products & Completed Operations, Personal Injury, Blanket Contractual, and Cross Liability. The Regional District is to be added as an additional insured.

ii. Where the Contractor requires the use of Automobiles to undertake the work of the Contract, the Contractor will have the following:

a. Automobile Liability on all vehicles owned, operated, or licenced in the name of the Contractor in an amount not less than $2,000,000 per occurrence.

b. Non-owned Automobile Liability insurance in an amount not less $2,000,000 per occurrence.

iii. Equipment insurance on all equipment owned or rented by the Contractor to its full insurable value.

The Contractor shall ensure that all sub-contractors forming from this Contract meet the insurance requirements outlined above.

It is the sole responsibility of the Contractor to determine if additional limits of liability insurance coverage are required to protect them from risk.

13.0 DAMAGE TO EXISTING PROPERTY

In the event of damage to the Regional District's property arising from actions of the Contractor the procedure will be as follows:

1. The Contractor will immediately advise the Regional District of any damage to the Regional District's property.
2. Upon investigation, the Regional District will notify the Contractor of damages to be repaired.
3. If the Contractor does not reply within Seventy-two (72) hours, the Regional District will repair, to the appropriate specifications or regulations, and deduct the cost of the repair from payment to the Contractor.

14.0 WORKSAFEBC

The Contractor will use due care and take all necessary precautions to assure the protection of persons and property while undertaking the Work and will comply with the *Workers Compensation Act* of the Province of British Columbia.

Prior to undertaking any of the Work in this Service Agreement, the Contractor will provide the Regional District with a Clearance Letter confirming they are in good standing with WorkSafeBC and will pay and keep current all assessments required by WorkSafeBC in relation to the Service Agreement amount.

Out of Province Contractors will be compliant with WorkSafeBC's registration requirements pertaining to out of Province firms. Where WorkSafeBC registration requirements allow for a Contractor to be registered with another Province's Worker's Compensation Board, or like organization, the Contractor will provide the Regional District with their registration number and written documentation confirming that the Contractor is in good standing with the appropriate Worker's Compensation Board, or like organization. The Contractor will pay and keep current all assessments required to maintain good standing in relation to the Service Agreement amount.

The Contractor will maintain an Occupational Health and Safety Plan (OHSP) and ensure that their employees and Sub-Service Providers are well trained and aware of the OHSP.

15.0 INDEMNITY AND RELEASE BY CONTRACTOR

Notwithstanding the compliance of the Contractor with all the clauses concerning insurance, the Contractor shall indemnify, protect, and save harmless the Regional District, its officials, officers, employees, volunteers, servants, and agents from and against any and all liabilities, damages, losses, claims, costs, expenses of any kind whatsoever (including legal costs, hereafter referred to

as “claims”), including any such claims brought by a third party against the Regional District for personal or bodily injury, including death, or for property damage, that arise out of or are connected with or caused by the negligence, breach of contract, or other error or omission in the performance of the work, on the part of the Contractor and its directors, officers, employees, agents and sub-contractors. If the Regional District pays, or is required to pay, any claims, or if the property of the Regional District is charged or encumbered by any liens, judgments or other charges as a result of any claims, then the Regional District shall be entitled to recover from the Contractor all damages, costs, fees or other charges incurred by the Regional District in satisfying such claims together with any costs or expenses incurred in so doing. The Contractor covenants and agrees that this clause shall survive the termination of the Contract herein granted.

16.0 OWNERSHIP AND FREEDOM OF INFORMATION

Tenders will be received and held in confidence by the Regional District, subject to the provisions of the *Freedom of Information and Protection of Privacy Act* and this ITT. Each tender should clearly identify any information that is considered to be confidential or propriety information. Tenderers are responsible to review the *Freedom of Information and Protection of Privacy Act* for further information.

All documents, including tenders, submitted to the Regional District become the property of the Regional District. The Regional District will provide a debriefing for tenderers, upon request by a tenderer, subject to the *Freedom of Information and Protection of Privacy Act*.

Any material produced, received or provided by the Regional District to the Contractor as a result of this Contract and any equipment, machinery, or other property provided by the Regional District to the Contractor as a result of this Contract will:

- be the exclusive property of the Regional District; and
- forthwith be delivered by the Contractor to the Regional District, or the manager giving written notice to the Contractor requesting delivery of the same, or at the end date of this Contract.

Any material produced by the Contractor, including but not limited to, drawings, schematics, equipment logs, reports, manuals, and any and all documents created that relate to the landfill gas header extension, shall be provided by the Contractor to the Regional District in an amenable format (i.e. Word, Excel, AutoCAD) and will become the property of the Regional District and the Regional District shall not be limited by Contractor’s copyright or proprietary terms with regards to use by the Regional District.

17.0 CONFIDENTIALITY

In accordance with the *Freedom of Information and Protection of Privacy Act*, the Contractor will treat as confidential and will not, without the prior written consent of the Manager, publish, release or disclose or permit to be published, released or disclosed, any information supplied to, obtained by, or which comes to the knowledge of the Contractor as a result of this Contract except insofar as such publication, release or disclosure is necessary to enable the Contractor to fulfil his obligation under this Contract, or by the laws of British Columbia.

18.0 RIGHTS OF WAIVER

A waiver, or any breach of any provision of this ITT will not constitute or operate as a waiver, or any other breach, of any other provisions, nor will any failure to enforce any provision herein operate as a waiver of such provisions or of any other provisions.

19.0 SEVERABILITY

All paragraphs of the Contract are severable one from the other. Should a court of competent jurisdiction find that any one or more paragraphs herein are void or unenforceable, the validity of the remaining paragraphs hereof will not be affected.

20.0 SUPERVISOR AND LABOUR

The Contractor will keep a competent supervisor on the work site at all times and for the duration of the project. The Contractor will identify the person who will act as the supervisor, in writing, to the Regional District and the Engineering Consultant. The supervisor will represent the Contractor in their absence and directions given to them will be considered to have been given to the Contractor. The supervisor will have the ability to report to the Regional District and the Engineering Consultant and have the authority to act on contractual obligations on behalf of the Contractor. The Contractor shall employ at all times, qualified and experienced personnel to carry out the work.

The Contractor will comply with all federal and provincial legislation regarding wages and labour regulations including payment of any and all dues, levies, or charges made under or in relation to the Contract. The Contractor will make proof of payment available to the Manager when requested.

21.0 CHARACTER OF WORKERS

The Contractor and workers must have sufficient knowledge, skill and experience to perform properly the work assigned to them and to be tactful and courteous in dealing with the public and the Regional District's staff. Any supervisor or worker employed by the Contractor or Sub-Contractor who, in the opinion of the Owner does not perform their work in a competent manner, appears to act in a disorderly or intemperate manner, appears to be under the influence of drugs or alcohol, or is negligent, or willfully misconducts themselves will, at the written request of the Owner, be removed from the site of the work immediately and will not be employed again in any portion of the work without the approval of the General Manger of Environmental Services.

22.0 SUB-CONTRACTORS

The sub-contractors named in the Tender Form will not be changed nor will additional sub-contractors be employed except with the written approval of the Regional District. The Contractor is responsible to the Regional District for the acts and omissions of his sub-contractors and of their workers to the same extent that they are responsible for the acts or omissions of the Contractor's workers. Nothing in the Contract Documents will create any contractual relations between any sub-contractor and the Regional District. The Contractor will bind every sub-contractor to the terms of the Contract Documents.

23.0 REGIONAL DISTRICT'S TERMINATION OF CONTRACT

In the event of the breach or non-performance by the Contractor of any of the covenants, conditions, and agreements contained in the Contract to be performed, or stoppage under Clause 20.0, the Regional District reserves the right to terminate this Contract without notice. The Regional District may also deduct from the payments due to the Contractor any payments or expenditures it is required to make to remedy any such non-performance or breach hereof.

24.0 CONTRACTOR'S TERMINATION OF CONTRACT

The Contractor shall have the right to terminate the Contract in the event the Regional District fails to pay for the Work performed except as provided in the Contract Documents, within thirty (30)

days from the specified date of payment and fails to remedy such default within ten (10) days of the Contractor's written notice to do so.

25.0 REGIONAL DISTRICT'S RIGHT TO CORRECT DEFICIENCIES

The Regional District shall have and retain full authority to inspect the work of the Contractor to ensure that the requirements of the Contract are being fulfilled. Upon failure of the Contractor to perform the work in accordance with the Contract Documents, and after five (5) days written notice to the Contractor, or without notice if any emergency or danger to the work or public exists, the Regional District may, without prejudice to any other remedy they may have, correct such deficiencies. The cost of work performed by the Regional District in correcting deficiencies shall be paid by the Contractor or may be deducted from monies payable to the Contractor.

26.0 PERMIT AND REGULATIONS

The Contractor will, at their own expense, unless pre-approved in writing by the Regional District, procure all other permits, certificates, and licences required by law for the execution of the work and will comply with all federal, provincial, and local laws and regulations affecting the execution of the work, save in so far as the Contract Documents specifically provide otherwise.

27.0 SCOPE OF WORK

The scope of work includes:

1. Clearing of minor vegetation
2. Supply and install landfill gas main header
3. Supply and install main header cleanouts
4. Supply and install isolation valve, and sampling port
5. Re-construction of perimeter road and
6. Stormwater ditching

28.0 LOCAL CONDITIONS

The Contractor will, by personal inspection, examination, calculations or tests, or by any other means, satisfy themselves with respect to the local conditions to be encountered and the quantities, quality and practicability of the Work and of their methods of procedure. No verbal agreements or conversation with any officer, agent or employee of the Regional District, either before or after the execution of the Contract, will affect or modify any of the terms or obligations herein contained.

29.0 MANAGER'S STATUS

The Manager or their delegate will be the Regional District's representative during the period of operation and will observe the Work in progress on behalf of the Regional District for the purpose of ensuring that the Work has been satisfactorily carried out. The Manager will have the authority to stop the Work whenever such stoppage may be necessary, in their opinion, to ensure the proper execution of the Work in accordance with the provisions of the Contract.

If at any time the Manager is of the opinion that there exists a danger to life or to property, they may order the Contractor to stop Work or to take such remedial measures as is considered necessary.

The Contractor will comply with such an order immediately. Neither the giving, nor the carrying out of such orders thereby, entitles the Contractor to any extra payment and the Regional District will not be held liable for any damages or any breach of laws, bylaws or regulations that may result.

30.0 PROTECTION OF WORK AND PROPERTY

The Contractor shall take all reasonable precautions necessary to protect the Regional District's property from damage during the performance of the Contract and shall make good on any damage to the Regional District's property caused by the Contractor, its Sub-Contractor, employees, or agents during the performance of the Contract.

31.0 OCCUPATIONAL HEALTH AND SAFETY

The Foothills Boulevard Regional Landfill is a multi-employer Work site as defined in the provincial *Workers' Compensation Act*. The Regional District of Fraser-Fort George is recognized as the prime contractor and is responsible for coordinating the occupational health and safety programs of all employees working at the Landfill. The Contractor will ensure that they follow all occupational health and safety policies and procedures established by the Regional District. Contractors, their employees or agents not complying with the Regional District's health and safety expectations will be required to stop Work and will not be allowed to resume Work until the safety requirements are met.

The Contractor will use due care and take all necessary precautions to assure the protection of persons and property at the Facility, the Landfill and points in between and will comply with the *Workers' Compensation Act* of the Province of British Columbia.

32.0 GOODS AND SERVICES TAX (GST)

Federal law states that five percent (5%) tax be paid on all goods and services. If the Contractor does not qualify as a small supplier then the Contractor is required to identify the tax (GST/PST, as applicable) on all invoices and the Regional District is liable to pay this amount to the Contractor.

33.0 REMOVAL OF LIENS

The Contractor will forthwith remove at their own expense liens, filed or registered against the Landfill and Facility properties and the Contractor will indemnify and save harmless the Regional District from liability arising out of any such claims of lien.

34.0 DISPUTED WORK

If, in the opinion of the Contractor, he is being required to perform work beyond that which the Contract requires him to do, whether at the discretion of the Regional District or otherwise, he will within five (5) days deliver to the Project Manager a written notice of protest in the form prescribed herein prior to proceeding with any of the disputed work. The five (5) day time period commences from the time of direction given by the Manager or the time at which the Contractor determines that he is required to perform such work, whichever occurs first.

The Contractor will keep accurate and detailed cost records that should indicate the cost of the work done under protest. The Contractor will not be entitled to payment if he fails to keep and produce such records.

35.0 NOTICE OF PROTEST

TO: General Manager of Environmental Services
Regional District of Fraser-Fort George

FROM: (Contractor)

DATE:

SUBJECT: THE CONTRACT

Date of Direction:

You have required me to perform the following work that is beyond the scope of the Contract.
(Set out details of work).
(Include dates where applicable)

The additional costs and claim for this work is as follows:
(Set out details of cost)

All supporting documentation and invoices are attached.

I understand that I am required to keep accurate and detailed cost records which will indicate the cost of the work done under protest and failure to keep such records will be a bar to any recovery by me.

Signature of Contractor

36.0 ATTACHMENTS

The following Appendices are attached to the Invitation to Tender:

- Appendix A – Specifications
- Appendix B – Drawings
- Appendix C – Contract Agreement and General Conditions (Refer to CCDC 4 2011)
- Appendix D – Supplemental General Conditions

ACKNOWLEDGEMENT LETTER

The undersigned has received a full set of ITT ES-20-02 - 2020 Landfill Gas Main Header Extension – Construction Project - Foothills Boulevard Regional Landfill documents.

Authorized Signatory Signature	Name of Tenderer
Name (Please print)	Address
Title	City, Province, Postal Code
Phone Number	**Email**
Date	

I/We presently intend ☐ to provide ☐ not to provide a Tender.

Please return immediately by email to:

Darwin Paton Environmental Services Technician
Regional District of Fraser-Fort George
155 George Street
Prince George, BC V2L 1P8
Telephone: 250-960-4400
Fax: 250-562-8676

Email: dpaton@rdffg.bc.ca

TENDERER CHECKLIST

Before submitting your Tender, check the following points:

- ☐ Did you attend the Mandatory Site Meeting?
- ☐ Have you submitted the Acknowledgement Letter?
- ☐ Has the Tender Form been signed and witnessed?
- ☐ Has the Security Deposit been included?
- ☐ Has the Tender Form Summary been completed?
- ☐ Has the Schedule of Prices been completed?
- ☐ Has the Schedule of Additional Unit Prices been completed?
- ☐ Has the Preliminary Construction Schedule been completed?
- ☐ Has the Experience of Superintendent been completed?
- ☐ Has the List of Sub-Contractors been completed?
- ☐ Has the Tenderer's Experience in Similar Work been completed?
- ☐ Has the Goods and Services Tax Information been completed?
- ☐ Has the Conflict of Interest Disclosure Statement been completed?
- ☐ Are all amendments and/or addenda, if any, included and signed?
- ☐ Have you included three (3) complete copies of your tender submission?
- ☐ Is the submission enclosed in a fully labelled **sealed** envelope?
- ☐ Are the tender submission envelope and the courier envelope both labelled fully?

Note: Your tender may be disqualified if ANY of the applicable foregoing points have not been complied with.

Three (3) complete copies of your Tender must be submitted in a sealed envelope with the following information written on the outside of the envelope containing the tender, as well as on the outside of the courier envelope/box (if sending by courier):

- ☐ Attention: General Manager of Financial Services
  Regional District of Fraser-Fort George
  3rd Floor, 155 George Street
  Prince George, BC V2L 1P8

- ☐ Invitation to Tender ES-20-02
  2020 Landfill Gas Main Header Extension
  Construction Project - Foothills Boulevard Regional Landfill

- ☐ Tenderer's name and address

TENDER FORM

Date: _____

Regional District of Fraser-Fort George
3rd Floor, 155 George Street
Prince George, BC V2L 1P8

ATTENTION: General Manager of Financial Services

Dear Sir/Madam:

Having carefully examined the Instructions to Tenderers, Form of Tender, Security Deposit, Contract Agreement, General Conditions of Contract and Operational Specifications and subsequent written addenda (if any), and having visited the site(s) for purposes of examining site conditions and having satisfied myself/ourselves as to the sufficiency of the ITT, the undersigned agrees to furnish all labour, transportation, equipment, materials, supervision and services and to do all work necessary for and reasonably incidental, as specified in accordance with the ITT, to do the work.

I/We agree that in consideration of having my/our tender submission considered for the Total Contract Price as shown on the Schedule of Prices, this price is open for acceptance for sixty (60) days from the date of the tender opening and will not be withdrawn during that period of time.

It is understood that payment will be made for the work on the basis of the awarded Contract only and that any approved extras or refunds will be made by mutual agreement between the Regional District and me/us.

I/We agree that the sub-contractor(s) employed will be as listed on the List of Sub-Contractors and further agree that no changes or additions will be made to the list without written approval of the Regional District.

If I am/we are notified in writing of the acceptance of our tender, I/we agree that within fourteen (14) days of the date of the acceptance notice I/we will enter into a contract and execute an agreement for the stated sum in the form of the specimen submitted to guarantee completion of the contract in accordance with the contract documents and within the time stated in the Tender documents.

I/We agree that the Regional District reserves the right to waive informalities in tenders, reject any or all tenders, or accept the tender deemed most favourable in the interests of the Regional District.

I/We agree that tenders which contain qualifying conditions or otherwise fail to conform to the instructions contained in this ITT may be disqualified or rejected. I/We agree that the Regional District may, however, in its sole discretion, reject or retain for its consideration tenders which are non-conforming because they do not contain the content or form required by the ITT, or for failure to comply with the process for submission set out in the ITT, whether or not such non-compliance is material.

Accompanying this Tender please find our certified cheque, bank draft or money order as the security deposit in the amount of forty thousand dollars ($40,000).

I/We agree that except for a claim for the reasonable cost of preparation of this tender, by submitting a tender, I/We irrevocably waive any claim, action, or proceeding against the Regional District including, without limitation, any judicial review or injunction application, and any claim against the Regional District and its elected officials, officers and employees for damages, expenses or costs, loss of profits, loss of opportunity or any consequential loss for any reason, including any such claim, action or proceeding arising from:

1) any actual or alleged unfairness on the part of the Regional District at any stage of the tender process, including without limitation any alleged unfairness in the evaluation of a tender or award of a contract;

2) a decision by the Regional District not to award a contract to that tenderer; or

3) the Regional District's award of a contract to a tenderer whose tender does not conform to the requirements of this ITT.

I/We hereby acknowledge receipt and inclusion of the following addenda to the ITT Documents:

Addendum _____	No.	dated: _____	Addendum _____	No.	dated: _____
Addendum _____	No.	dated: _____	Addendum _____	No.	dated: _____
Addendum _____	No.	dated: _____	Addendum _____	No.	dated: _____

Signed and Delivered by:

Signature of Authorized Signatory	Name of Tenderer
Name of Authorized Signatory (Please print)	Address
Title	City, Province, Postal Code

Signed in the presence of:

Signature	Address
Name of Witness (Please print)	City, Province, Postal Code

TENDER FORM SUMMARY

TENDER FORM SUMMARY	Price (excluding taxes)
(A) Schedule of Prices	$ _____
(B) Schedule of Additional Unit Prices	$ _____
TENDER PRICE – EXCLUDING GST	$ _____
GST as applicable	$ _____
TOTAL TENDER PRICE – INCLUDING GST	**$** _____

SCHEDULE OF PRICES

DIVISION	Unit	Quantity	Unit Price	PRICE (excluding taxes)
Section 1 13 00/1 – Mobilization	L.S.		$_____	$ _____
Section 1 13 00/2 – Startup	L.S.		$_____	$ _____
Section 1 35 30/1 – Health and Safety Plan	L.S.		$_____	$ _____
Section 01 73 00/1 – Execution	L.S.		$_____	$ _____
Section 01 73 00/2 - Demobilization and Closeout	L.S.		$_____	$ _____
Section 03 41 00/1 – Landfill Gas Cleanout Vault Boxes	Per	2	$_____	$ _____
Section 31 11 00/1 – Clearing and Grubbing	L.S.		$_____	$ _____
Section 33 45 01.02/1 – Header STN 0+000 to 0+120	L.M	120	$_____	$ _____
Section 33 45 01.02/2 – Header STN 0+120 to 0+190	L.M.	70	$_____	$ _____
Section 33 45 01.02/3 – Header STN 0+190 to 0+235	L.M.	45	$_____	$_____
TENDER PRICE – EXCLUDING GST				$ _____
GST as applicable				**$** _____
TOTAL TENDER PRICE – INCLUDING GST				**$** _____

SCHEDULE OF ADDITIONAL UNIT PRICES

DIVISION	Unit	Quantity	Unit Price	PRICE (excluding taxes)
Section 31 05 16/1 – Additional Select Backfill	C.M.	100	$_____	$ _____
Section 31 05 16/2 – Additional Road Base	C.M.	100	$_____	$_____
Section 31 23 33/1 – Over Excavation	C.M.	100	$_____	$ _____
TOTAL TENDER PRICE – EXCLUDING GST				$ _____
GST as applicable				**$** _____
TOTAL TENDER PRICE – INCLUDING GST				**$**_____

PRELIMINARY CONSTRUCTION SCHEDULE

INDICATE SCHEDULE WITH BAR CHART WITH MAJOR ITEM DESCRIPTIONS AND TIME

MILESTONE DATES _____

ACTIVITY	CONSTRUCTION SCHEDULE									
	1	2	3	4	5	6	7	8	9	10

EXPERIENCE OF SUPERINTENDENT

Name: _____

Experience:

Dates: _____
Project Name: _____
Responsibility: _____
_____
_____
References: _____

Dates: _____
Project Name: _____
Responsibility: _____
_____
_____
References: _____

Dates: _____
Project Name: _____
Responsibility: _____
_____
_____
References: _____

LIST OF SUB-CONTRACTORS

The Contractor agrees that the Sub-contractors employed by them will be as listed below and further agrees that no changes or additions will be made to their list without the written approval of the Regional District.

Name of Sub-Contractor	Address of Sub-Contractor	Work to Be Performed by Sub-Contractor

TENDERER'S EXPERIENCE IN SIMILAR WORK

Year	Work Performed	Reference Contact (name and phone number)	Value

GOODS AND SERVICES TAX INFORMATION

Supplier: _____
Name

_____
Address

_____
City Province

_____
Postal Code Phone Number

Are you a GST Registrant? Yes _____ No _____

If YES, please indicate your registration number: _____

If NO, Please fill in the following (check appropriate box):

❑ Supplier qualifies as a small supplier under s.148 of the legislation

❑ Other: Specify_____

_____ _____
Signature of Authorized Person Print Name

_____ _____
Title Date

CONFLICT OF INTEREST DISCLOSURE STATEMENT

PROCUREMENT PROCESS

ES-20-02 2020 Landfill Gas Main Header Extension
Construction Project - Foothills Boulevard Regional Landfill

Bidder Name:_____

The Bidder, including its officers, employees, and any person or other entity working on behalf of or in conjunction with, the Bidder on this Procurement Process:

- ☐ is free of any conflict of interest that could be perceived to improperly influence the outcome of this procurement process.
- ☐ has not, and will not, participate in any improper procurement practices that can provide the Bidder with an unfair competitive advantage including obtaining and using insider type information to prepare a solicitation offer or participating in bid rigging.
- ☐ has an actual, perceived or potential conflict of interest regarding this procurement process as a result of:

State reason(s) for Conflict of Interest:

_____

_____

_____

_____

By signing below I certify that all statements made on this form are true and correct to the best of my knowledge.

_____
Print Name of Person Signing Disclosure

_____ _____
Signature of Person Making Disclosure Date Signed

APPENDICES

- Appendix A – Specifications
- Appendix B – Drawings
- Appendix C – Contract Agreement and General Conditions (Refer to CCDC 4 2011)
- Appendix D – Supplemental General Conditions

APPENDIX A - SPECIFICATIONS

SECTION 01 11 00

SUMMARY OF WORK

1.1 SECTION INCLUDES

A. Description of Project.

B. Location.

C. Scope of work.

D. Contract Times and Milestones.

E. Drawings.

F. CONTRACTOR use of Site.

G. OWNER occupancy.

H. Measurement and Payment.

1.2 DESCRIPTION OF PROJECT

A. The scope of work shall be the construction of the Landfill Gas (LFG) Main Header Extension at the Foothills Boulevard Regional Landfill.

1.3 LOCATION

A. The Site is located in the northwest portion of the City of Prince George, British Columbia at 6595 Foothills Boulevard, northwest of the intersection with West Austin Road.

1.4 SCOPE OF WORK

A. The Works to be performed under the Contract consist of the following elements:

1. Clearing of vegetation;

2. Supply and install landfill gas header;

3. Supply and install landfill gas header dual cleanout; and

4. Construct/restore riprap ditch.

1.5 CONTRACT TIMES AND MILESTONES

A. Perform the Works in accordance with the following Contract Times and Milestones:

1. The Works at the Site shall be commenced within 7 days after the date of the Notice to Proceed.

2. The Works shall be substantially performed on or before June 15, 2020. Substantial Performance shall mean completion of the Works as defined in the Builders Lien Act of the Province of British Columbia.

1.6 DRAWINGS

A. Drawings issued with and forming part of the Contract Documents are listed below:

Drawing	*Revision No.*	*Date of Drawing No. or Latest Revision*	*Title*
G-00		Oct 2019	Cover Sheet
C-01	0	Oct 2019	Existing Conditions
C-02	0	Oct 2019	Proposed Works
C-03	0	Oct 2019	Plan and Profile
D-01	0	Oct 2019	Details I

B. Perform the Works in accordance with the Drawings marked "Issued for Construction".

1.7 CONTRACTOR USE OF SITE

A. Limit use of the Site to allow OWNER and Site Operator's occupancy.

B. Construction Operations: Limited to areas noted on the Drawings.

C. Hours of Operation: Limit on-Site hours of operation to the hours of 7:00 a.m. to 5:00 p.m. (CONTRACTOR personnel must leave the Site by 5:30 p.m.), Monday to Friday. CONTRACTOR personnel shall report to the landfill scales prior to entering and departing the Site during landfill operating hours (7:00 a.m. to 5:00 p.m.).

D. When unfavorable weather, soil, drainage, or other unsuitable construction conditions exist, continue operations which will not be adversely affected by such conditions. Do not construct or cause to be constructed any portion of the Works under conditions which would adversely affect the quality of the Works, or result in slope instability, unless special means or precautions are taken to perform the Works in a proper and satisfactory manner.

1.8 OWNER OCCUPANCY

A. OWNER and Site Operator will occupy the Site during the entire period of construction for the conduct of normal operations.

B. Cooperate with OWNER to minimize conflict, and to facilitate OWNER's operations.

C. Schedule the Works to accommodate this requirement.

1.9 MEASUREMENT AND PAYMENT

A. No separate payment will be made for work under this Section.

END OF SECTION

SECTION 01 13 00

ADMINISTRATIVE REQUIREMENTS

1.1 DIVISION INCLUDES

A. Mobilization and startup.

B. Coordination.

C. Pre-construction meeting.

D. Measurement and payment.

1.2 MOBILIZATION AND STARTUP

A. CONTRACTOR shall not mobilize to the Site without ENGINEER's prior written authorization.

B. Perform planning and scheduling activities as necessary for the performance of the Works.

C. Purchase materials and mobilize equipment, supplies, and incidentals to the Site.

D. Site access will be by way of Foothills Boulevard, or as directed by ENGINEER.

E. Site temporary utilities and facilities in areas designated by ENGINEER. Obtain ENGINEER's approval prior to changing locations of temporary construction facilities. Do not use other areas without ENGINEER's prior approval. Provide additional land and access thereto not shown or described that may be required by CONTRACTOR for temporary construction facilities or storage of materials with no liability to OWNER or ENGINEER. Relocate construction equipment or other materials or equipment as required for the performance of the Works.

1.3 COORDINATION

A. Coordinate scheduling, submittals, and work of the various Sections of the Project Specifications and other requirements of the Contract Documents to assure efficient and orderly sequence of installation of interdependent construction elements, with provisions for accommodating items installed later.

B. Coordinate work of various Sections having interdependent responsibilities for installing, connecting to, and placing in service, such elements.

C. Coordinate completion and cleanup of work of separate Sections in preparation for Substantial Performance.

1.4 PRE-CONSTRUCTION MEETING

A. ENGINEER will schedule and administer a pre-construction meeting at the Site after the date of the Notice to Proceed and prior to start of construction at the Site.

B. ENGINEER will make arrangements for meeting, prepare agenda with copies for participants, and preside at meeting. Provide data required to ENGINEER and be prepared to discuss all items on the agenda.

C. Minimum Attendance Required: CONTRACTOR, CONTRACTOR's health and safety officer, and major Subcontractors.

D. Agenda will include, but will not necessarily be limited to, the following:

1. Designation of responsible personnel.

2. Lines of authority and communication.

3. Health and safety.

4. Submittal list and schedule.

5. Use of the Site for storage, vehicle parking, access routes, and other Site requirements.

6. Coordination with OWNER.

7. Procedures for processing field decisions, submittals, substitutions, applications for payments, proposal requests, Field Orders, Work Change Directives, Change Orders, and closeout procedures.

1.5 MEASUREMENT AND PAYMENT

A. Section 01 29 00 - Payment Procedures: Requirements for measurement and payment.

B. Mobilization

1. Schedule of Unit Prices Item No. 01 13 00/1.

2. Payment Basis: Lump sum price. Includes furnishing and maintaining insurance required by the Contract Documents; mobilization; and procuring necessary permits.

C. Startup

1. Schedule of Unit Prices Item No. 01 13 00/2.

2. Payment Basis: Lump sum price. Includes temporary controls; resource and material procurement activities; and meetings and communications between OWNER, ENGINEER, and CONTRACTOR.

END OF SECTION

SECTION 01 29 00

PAYMENT PROCEDURES

1.1 SECTION INCLUDES

A. Project Measurement and Payment.

B. Contract Modification Procedures.

C. Measurement and Payment.

1.2 PROJECT MEASUREMENT AND PAYMENT

A. Payment for the Works will be made based upon unit prices.

B. Measurement for Unit Price Work: As specified in individual Sections. Quantities indicated in the Schedule of Prices are for bidding and contract purposes only and are approximate. Quantities of material furnished and/or work performed as verified by ENGINEER determine payment.

C. Payment for Each Item Includes: Full compensation for furnishing labour, supervision, material, tools, equipment, plant, transportation, services, submittals, and incidentals for performance and completion of the Works in complete accordance with the Contract Documents; erection, application, installation, completion, or construction of an item of the Works; overhead and profit; and all other miscellaneous items for which separate payment is not provided under other Items of the Schedule of Prices. All work not specifically set forth as a separate pay Item in the Schedule of Prices shall be considered as a subsidiary obligation of CONTRACTOR and all costs in connection therewith shall be included in the amounts and prices stipulated in the Schedule of Prices. CONTRACTOR shall properly and fairly distribute indirect costs to each pay Item. Final payment for work governed by unit prices will be made on the basis of the actual measurements and quantities approved by ENGINEER multiplied by the unit price stipulated in the Schedule of Prices. Final payment for work governed by lump sum prices will be made on the basis of the applicable lump sum prices stipulated in the Schedule of Prices.

D. Non-payment for Rejected Products: Payment will not be made for any of the following:

1. Products wasted or disposed of in a manner that is not acceptable.

2. Products determined as unacceptable before or after placement.

3. Products not completely unloaded from the transporting vehicle.

4. Products placed beyond the lines and levels of the required Works.

5. Products remaining on hand after completion of the Works.

6. Loading, hauling, and disposing of rejected products.

1.3 CONTRACT MODIFICATION PROCEDURES

A. Changes in the Works or the requirement for extra work will be made by ENGINEER, with the change procedures as specified herein.

B. Field Order: ENGINEER will advise of minor changes in the Works not involving an adjustment to the Contract Price or the Contract Times by issuing supplemental instructions in the form of a Field Order. Promptly execute such minor changes and supplemental instructions.

C. Proposal Request: ENGINEER may issue a proposal request, which includes a detailed description of a proposed change with supplementary or revised Drawings and Specifications, and schedule for executing the change in the Works. Prepare and submit a written itemized quotation of changes in the Contract Price or the Contract Times that would result from the proposed change in the Project by the due date stipulated in the proposal request.

1.4 MEASUREMENT AND PAYMENT

A. No separate payment will be made for work under this Section.

END OF SECTION

SECTION 01 32 16.07

CONSTRUCTION PROGRESS SCHEDULES

1.1 SECTION INCLUDES

A. Requirements.

B. Submittals.

C. Master Plan.

D. Project schedule.

E. Project schedule reporting.

F. Project meetings.

G. Monthly Progress.

H. Measurement and payments.

1.2 DEFINITIONS

A. Activity: Element of Work performed during course of Project. Activity normally has expected duration, and expected cost and expected resource requirements. Activities can be subdivided into tasks.

B. Bar Chart (GANTT Chart): Graphic display of schedule-related information. In typical bar chart, activities or other Project elements are listed down left side of chart, dates are shown across top, and activity durations are shown as date-placed horizontal bars. Generally, Bar Chart should be derived from commercially available computerized project management system.

C. Baseline: Original approved plan (for project, work package, or activity), plus or minus approved scope changes.

D. Construction Work Week: Monday to Friday, inclusive, will provide five-day work week and define schedule calendar working days as part of Bar (GANTT) Chart submission.

E. Duration: Number of work periods (not including holidays or other non-working periods) required to complete activity or other project element. Usually expressed as workdays or workweeks.

F. Master Plan: Summary-level schedule that identifies major activities and key milestones.

G. Milestone: Significant event in project, usually completion of major deliverable.

H. Project Schedule: Planned dates for performing activities and the planned dates for accomplishing milestones. Dynamic, detailed record of tasks or activities that must be accomplished to satisfy Project objectives. Monitoring and control process involves using

Project Schedule in executing and controlling activities and is used as basis for decision making throughout project life cycle.

I. Project Planning: Monitoring and Control System: Overall system operated by Consultant to enable monitoring of project work in relation to establish milestones.

1.3 REQUIREMENTS

A. Ensure Master Plan and Detail Schedules are practical and remain within specified Contract duration.

B. Plan to complete Work in accordance with prescribed milestones and time frames.

C. Limit activity durations to allow for progress reporting.

D. 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 SUBMITTALS

A. Provide submittals in accordance with Section 01 33 00 – Submittal Procedures.

B. Submit to ENGINEER within 7 working days of Award of Contract Bar (GANTT) Chart as Master Plan for planning, monitoring and reporting of project progress.

C. Submit Project Schedule to ENGINEER within 5 working days of receipt of acceptance of Master Plan.

1.5 MASTER PLAN

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

B. ENGINEER will review and return revised schedules within 5 working days.

C. Revise impractical schedule and resubmit within 5 working days.

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

1.6 PROJECT SCHEDULE

A. Develop detailed Project Schedule derived from Master Plan.

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

1. Award.

2. Shop drawings, samples.

3. Mobilization.

4. Excavation of Header Pipe.

5. Road Closure.

6. Installation of Pipe works.

7. Demobilization.

1.7 PROJECT SCHEDULE REPORTING

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

B. 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

A. 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.

1.9 WEEKLY PROGRESS

A. The whole of the Work shall be inspected at least once a week by the CONTRACTOR and the ENGINEER and/or OWNER to establish progress on each current activity shown on the construction schedule and to complete a field progress report indicating changes in activity duration and start/finish dates.

B. The CONTRACTOR shall provide written explanation on activities that are over-running estimated time, and provide what corrective action will be taken to bring these activities back on schedule.

1.10 MEASUREMENT AND PAYMENT

A. No separate payment will be made for work under this Section.

END OF SECTION

SECTION 01 32 19

PROJECT MEETINGS

1.1 SECTION INCLUDES

A. Pre-construction meeting.

B. Progress meetings.

C. Measurement and Payment.

1.2 RELATED SECTIONS

A. Section 01 13 00 Administrative Requirements.

1.3 PRE-CONSTRUCTION MEETING

A. Refer to Section 01 13 00, Article 1.4.

1.4 PROGRESS MEETINGS

A. Progress Meetings will be held on a weekly basis at the Site.

B. The OWNER shall provide physical space for the Progress Meetings.

C. Minutes shall be taken by the ENGINEER and copies shall be distributed to attendees within five (5) working days.

D. The ENGINEER shall have in attendance the Project Manager and/or the Resident Engineer.

E. The CONTRACTOR shall have in attendance the Superintendent, the Project Manager, and representatives of the Subcontractors as requested by the ENGINEER.

F. The OWNER’s representative will be in attendance.

1.5 MEASUREMENT AND PAYMENT

A. No separate payment will be made for work under this Section.

END OF SECTION

SECTION 01 33 00

SUBMITTAL PROCEDURES

1.1 SUBMITTAL PROCEDURES

A. Unless directed otherwise, transmit submittals to ENGINEER.

B. Identify the Project, CONTRACTOR, Subcontractor, or Supplier; pertinent Drawing and detail number and Division number, as appropriate.

C. It is the responsibility of CONTRACTOR to review submittals made by Suppliers and Subcontractors before transmitting them to ENGINEER to assure proper coordination of the Works and to determine that each submittal is in accordance with CONTRACTOR's desires and that there is sufficient information about materials and equipment for ENGINEER to determine compliance with the Drawings and Specifications. Incomplete or inadequate submittals will be returned for revision without review.

D. Unless specified otherwise submit three (3) copies of submittals.

1.2 PRODUCT DATA

A. Submit the number of copies which CONTRACTOR requires, plus three (3) copies that will be retained by ENGINEER.

B. Mark each copy to identify applicable products, models, options, and other data. Supplement manufacturers' standard data to provide information unique to the Project.

1.3 MEASUREMENT AND PAYMENT

A. No separate payment will be made for work under this Section.

END OF SECTION

SECTION 01 35 30

HEALTH AND SAFETY

1.1 SECTION INCLUDES

A. General requirements.

B. Basis of program.

C. Site characterization.

D. Submittals.

E. Air monitoring.

F. Measurement and payment.

1.2 GENERAL REQUIREMENTS

A. Develop a written Site-specific Health and Safety Plan prior to commencing any on-Site work and continue to implement, maintain, and enforce the plan until final demobilization from the Site.

B. The health and safety guidelines contained herein are intended to provide for a safe and minimal risk working environment for on-Site personnel and to minimize the impact of activities involving contact with any hazardous materials or hazardous wastes on the general public and the surrounding environment.

C. Responsibility: Be responsible for the safety of persons and property on the Site and for the protection of persons off the Site and the environment to the extent that they may be affected by the conduct of the Works. Comply with and enforce compliance by CONTRACTOR employees and the employees of CONTRACTOR's Representatives with safety requirements of the Contract Documents, applicable federal, provincial, and local statutes, regulations, and ordinances, and with CONTRACTOR's Site-specific Health and Safety Plan. CONTRACTOR acknowledges that safety and environment protection obligations are of paramount importance regarding all of the work to be performed under the Contract Documents.

D. Hazard Communication Requirements: Comply with Occupational Health and Safety Regulation, B.C. Reg. 296, Part 5 - Chemical and Biological Substances, Workplace Hazardous Materials Information System (WHMIS).

E. Safety Officer: Designate a Safety Officer who shall be qualified and authorized to supervise and enforce compliance with the Safety Program.

F. Safety Meetings: Arrange regular safety meetings at CONTRACTOR’s expense. Such meetings shall occur no less frequently than once per week. Record the minutes of such meetings and maintain a complete file for review by the appropriate authorities.

G. Work Stoppage: CONTRACTOR shall give precedence to the safety and health of the public and on-Site personnel and the protection of the environment over cost and schedule considerations for all project work. The Health and Safety Officer shall be responsible for decisions regarding when work will be stopped or started for health or safety considerations and shall have the authority to stop or start the work for health or safety considerations. CONTRACTOR shall assign the responsibility and obligation to the Health and Safety Officer to stop or start the work when, in the Health and Safety Officer's discretion, it is necessary or advisable for reasons of health or safety. ENGINEER and/or OWNER shall have the right to stop work for health and safety considerations.

1.3 BASIS OF PROGRAM

A. Workers Compensation Act, Occupational Health and Safety Regulation, B.C. Reg. 296.

1.4 SITE CHARACTERIZATION

A. Work at the Site may involve contact with solid waste and associated contaminants including but not limited to landfill leachate and landfill gas.

B. Landfill Gas:

1. Landfill gas may be present in the soil adjacent to the landfill during excavation.

2. Landfill gas results from the decomposition of refuse and is primarily composed of 40 to 60 percent methane, and 30 to 50 percent carbon dioxide, less than 2 percent nitrogen, less than 1 percent oxygen, and trace gases including mercaptans, hydrocarbons, solvents, water vapor, and hydrogen sulfide.

3. Methane is explosive in concentrations between 5 and 15 percent by volume in air. Methane, carbon dioxide, and nitrogen are simple asphyxiants.

4. Trace gases in landfill gas may be toxic and odorous. Odorous gases cause nausea in some persons. Toxic gases may also be present at concentrations above or below the levels deemed safe for human exposure; there is always a potential for levels to be sufficient to cause permanent and irreversible damage and even death.

C. Leachate: Leachate is wastewater containing organic and inorganic compounds that is produced when water and other liquids seep through the landfilled waste. Leachate characteristics and rate of production vary based on waste type and climate. Leachate may be present in all excavations within, and immediately adjacent to, the landfilled waste. General safety considerations used for handling non-hazardous wastes should be used where there is the potential to come into contact with leachate.

D. Landfill Stability: Landfill waste must be considered prone to instability that may cause slope or sidewall failure due to the high void ratio, irregularity of material composing the waste, and a typically lesser degree of compaction than soil.

1.5 SUBMITTALS

A. CONTRACTOR's Site-specific Health and Safety Plan:

1. Within 7 days after the date of the Notice to Proceed and prior to mobilization to the Site, submit a Site-specific Health and Safety Plan. As a minimum, the Health and Safety Plan shall be compliant with the requirements of the British Columbia Occupational Health and Safety (OHS) Regulation, and shall include the following:

1. Personnel training requirements: The training shall cover the following:

1. Names of personnel and alternates responsible for Site safety and health.

2. Safety, health, and other hazards present on the Site.

3. Use of personal protective equipment.

4. Work practices by which personnel can minimize risks from hazards.

5. Safe use of engineering controls and equipment on the Site.

6. Medical surveillance requirements, including recognition of symptoms and signs which might indicate overexposure to hazards.

7. Elements of the Site-specific Health and Safety Plan.

2. A personal protective equipment (PPE) program which shall address the following elements:

1. Donning and doffing procedures.

2. PPE selection based upon Site hazards.

3. PPE use and limitations of the equipment.

4. Work mission duration.

5. PPE maintenance and storage.

6. PPE decontamination and disposal.

7. PPE training and proper fitting.

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

9. Evaluation of the effectiveness of the PPE program.

10. Limitations during temperature extremes, heat stress, and other appropriate medical considerations.

3. 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 to be used.

4. Site control measures to be employed at the Site. Site control measures shall include the following:

    1. Site map.

    2. Site work zones.

    3. Use of the "buddy system".

    4. Site communications including alerting means for emergencies.

    5. Standard operating procedures or safe work practices.

    6. Identification of the nearest medical assistance.

5. Emergency response requirements which shall address the following:

    1. Pre-emergency planning.

    2. Personnel roles, lines of authority, and communication.

    3. Emergency recognition and prevention.

    4. Evacuation routes and procedures.

    5. Emergency medical treatment and first aid.

    6. Emergency alerting and response procedures.

    7. Critique of response and follow-up.

    8. PPE and emergency equipment.

    9. Procedures for reporting incidents to local, provincial, or federal agencies.

1.6 AIR MONITORING

A. Air Monitoring Program:

1. Provide the required instruments for air monitoring including, as a minimum, an oxygen level meter, an H_2S meter, and a combustible gas meter (LEL meter). Provide sufficient numbers of each instrument to monitor the active work location(s) and to provide backup equipment in cases of equipment malfunction.

2. Operate, maintain and calibrate air monitoring equipment with personnel trained in the use of the specific equipment provided and under the control of Health and Safety Officer. Monitoring equipment used shall be intrinsically safe.

1.7 MEASUREMENT AND PAYMENT

A. Section 01 29 00 – Payment Procedures: Requirements for measurement and payment.

B. Health and Safety Plan

1. Schedule of Prices Item No. 01 35 30/1.

2. Payment Basis: Lump sum price. Includes development, submittal, and implementation of Health and Safety Plan.

END OF SECTION

SECTION 01 35 43

ENVIRONMENTAL PROCEDURES

1.1 SECTION INCLUDES

A. Fires.

B. Disposal of waste.

C. Drainage.

D. Site clearing and plant protection.

E. Work adjacent to waterways.

F. Pollution control.

G. Notification.

H. Measurement and Payment.

1.2 DEFINITIONS

A. 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, or historically.

B. Environmental Protection: Prevention/control of pollution and habitat or environment 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; noise; solid, chemical, gaseous, and liquid waste; radiant energy and radioactive material as well as other pollutants.

1.3 FIRES

A. Fires and burning of waste on-Site not permitted.

1.4 DISPOSAL OF WASTE

A. Do not bury waste on-Site unless approved by ENGINEER and/or OWNER.

B. Do not dispose of waste or volatile materials, such as mineral spirits, oil or paint thinner into waterways, storm or sanitary sewers.

1.5 DRAINAGE

A. Provide temporary drainage and pumping as necessary to keep excavations and Site free from water.

B. Do not pump water containing suspended materials into waterways, sewer or drainage systems.

C. Control disposal or run-off of water containing suspended materials or other harmful substances in accordance with local authorities, and the Site's Operational Certificate.

D. The CONTRACTOR shall provide erosion control devices such as silt fences as required to satisfy local authority requirements, or as directed by ENGINEER and/or OWNER.

E. Suspended sediment controls shall be applied to all water discharge from the Site, to the satisfaction of regulators and/or ENGINEER and/or OWNER.

1.6 SITE CLEARING AND PLANT PROTECTION

A. Protect trees and plants on-Site and adjacent properties.

B. 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.

C. Minimize stripping of topsoil and vegetation.

D. Restrict tree removal to areas indicated or designated by ENGINEER.

1.7 WORK ADJACENT TO WATERWAYS

A. Do not operate construction equipment in waterways.

B. Do not use waterway beds for borrow material.

C. Do not dump excavated fill, waste material, or debris in waterways.

1.8 POLLUTION CONTROL

A. Maintain temporary erosion and pollution control features installed under this Contract.

B. Control emissions from equipment to local authorities' emission requirements.

C. Cover or wet down dry material and rubbish to prevent blowing dust and debris. Provide dust control for temporary roads.

1.9 NOTIFICATION

A. ENGINEER will notify CONTRACTOR in writing of observed non-compliance with Federal, Provincial or Municipal environmental laws or regulations and permits. CONTRACTOR, after receipt of such notice, shall inform ENGINEER of proposed corrective action and take such action for approval by ENGINEER.

B. ENGINEER will issue stop order of work until satisfactory corrective action has been taken.

C. No time extensions granted or equitable adjustments allowed to CONTRACTOR for such suspensions.

1.10 MEASUREMENT AND PAYMENT

A. No separate payment will be made for work under this Section.

END OF SECTION

SECTION 01 45 00

QUALITY REQUIREMENTS

1.1 SECTION INCLUDES

A. Quality control.

B. Tolerances.

C. References.

D. Inspecting and testing services.

E. Measurement and payment.

1.2 QUALITY CONTROL

A. Monitor quality control over Suppliers, products, services, the Site conditions, and workmanship, to produce Works of specified quality.

B. Comply with manufacturers' instructions, including each step in sequence.

C. Should manufacturers' instructions conflict with the Contract Documents, request clarification from ENGINEER before proceeding.

D. Comply with specified standards as minimum quality for the Works except where more stringent tolerances, codes, or specified requirements indicate higher standards or more precise workmanship.

E. Perform work by persons qualified to produce workmanship of specified quality. Use persons licensed to perform the Works where required by these Specifications or Laws and Regulations.

1.3 TOLERANCES

A. Monitor tolerance control of installed products to produce acceptable Works.

B. Comply with manufacturers' tolerances. Should manufacturers' tolerances conflict with the Contract Documents, request clarification from ENGINEER before proceeding.

1.4 REFERENCES

A. For products or workmanship specified by association, trade, or other consensus standards, comply with requirements of the standard, except when more rigid requirements are specified or are required by applicable Laws and Regulations.

B. Conform to reference standard by date of issue current as of bid closing date, except where a specific date is established by Laws or Regulations or by an individual Section.

C. Specific provisions of Laws or Regulations may be referenced in the Project Specifications to assist CONTRACTOR and identify options selected by ENGINEER. Such references do not relieve CONTRACTOR from compliance with other applicable provisions of Laws or Regulations not specifically referenced.

D. No inference or provision of any reference document including but not limited to any standard specification, manual, or code shall be effective to change the relationships, duties, and responsibilities of OWNER, CONTRACTOR, or ENGINEER from those set forth in the Contract Documents, nor shall it be effective to assign to OWNER or ENGINEER any duty or authority to supervise or direct the furnishing or performance of the Works or any duty or authority to undertake responsibility inconsistent with the provisions of the Contract.

E. Publications referred to in these Specifications form part of the Specifications to the extent specified in individual Sections.

F. In case of conflict or discrepancy between a reference standard and the Project Specifications or with another reference standard, the more stringent requirements shall apply.

G. Should specified reference standards conflict with the Contract Documents, request clarification from ENGINEER before proceeding.

1.5 INSPECTING AND TESTING SERVICES

A. CONTRACTOR shall employ and pay for services of an independent inspecting company and testing laboratory to perform inspecting and testing services as specified in individual Sections.

B. Employment of inspecting company and testing laboratory and services performed by such inspecting company and testing laboratory in no way relieves CONTRACTOR of obligation to perform the Works in accordance with requirements of the Contract Documents.

C. Quality Assurance:

1. Comply with requirements of the following reference standards:

1. American Society for Testing and Materials (ASTM):

1. C802 - Standard Practice for Conducting an Interlaboratory Test Program to Determine the Precision of Test Methods for Construction Materials.

2. D3740 - Standard Practice for Minimum Requirements for Agencies Engaged in the Testing and/or Inspection of Soil and Rock as Used in Engineering Design and Construction.

3. E329 - Standard Specification for Agencies Engaged in the Testing and/or Inspection of Materials Used in Construction.

4. E543 - Standard Practice for Agencies Performing Nondestructive Testing.

2. Testing Equipment: Calibrated at reasonable intervals with devices of an accuracy traceable to either the National Institute of Standards and Technology or accepted values of natural physical constants.

1.6 MEASUREMENT AND PAYMENT

A. No separate payment will be made for work under this Section.

END OF SECTION

SECTION 01 52 00

FACILITIES AND CONTROLS

1.1 SECTION INCLUDES

A. Vehicular Access and Parking.

B. Temporary Utilities.

C. Temporary Controls.

D. Construction Facilities.

E. Removal of Temporary Facilities and Controls.

F. Measurement and Payment.

1.2 VEHICULAR ACCESS AND PARKING

A. Access Roads:

1. Existing Roads: Reasonable use of existing on-Site roads for construction traffic is permitted subject to the following conditions:

1. Do not interrupt or interfere with traffic on roads at any time except where open-trench crossings are specified on the Drawings and proper notice regarding open-trench crossings has been given to ENGINEER and/or OWNER.

2. Use Contractor's Entrance as indicated on Drawings.

3. Comply with weight and load size restrictions where applicable.

4. Tracked vehicles are not allowed on paved areas.

2. Maintenance and Use:

1. Maintain existing paved areas used for construction; promptly remove standing water and repair breaks, potholes, low areas, and other deficiencies, to maintain paving and drainage in original or specified condition.

2. Remove mud from vehicle wheels before entering public roads.

3. Removal and Repair:

1. Remove temporary materials and construction at Substantial Performance.

2. Repair existing facilities damaged by use to original condition.

B. Parking:

1. Arrange for surface parking areas to accommodate use of construction personnel.

2. Locate parking areas as directed by OWNER.

3. Do not allow tracked vehicles on pavement or concrete.

4. Existing Parking Areas:

    1. Use of existing parking areas not permitted by construction personnel.

C. Traffic Regulation:

1. Control construction vehicular parking to prevent interference with access by emergency vehicles, and OWNER's operations.

2. Monitor parking of construction personnel's vehicles. Maintain vehicular access to and through parking areas.

3. Prevent construction parking on or adjacent to access roads or in non-designated areas.

4. Provide trained and equipped flag persons to regulate traffic when construction operations or traffic encroach on public traffic lanes.

5. Provide all required traffic control permits and signage when construction operations or traffic encroach on public traffic lanes.

6. Provide signs, barricades, gate persons, and other measures required to control traffic on the Site.

7. Confine construction traffic to designated haul routes.

8. Remove equipment and devices at Substantial Performance.

9. Repair damage caused by installation and removal.

1.3 TEMPORARY UTILITIES

A. Temporary Sanitary Facilities:

1. CONTRACTOR shall provide on-Site toilet and wash-up facilities for the work force that comply with applicable laws, ordinances, and regulations pertaining to the public health and sanitation of dwellings and camps.

1.4 TEMPORARY CONTROLS

A. Water Control:

1. Maintain excavations free of water.

2. Protect the Site from puddling or running water. Grade the Site to drain. Provide water barriers as necessary to protect the Site from soil erosion.

3. Protect liner systems from surface water run-on.

4. Prevent surface water runoff from leaving work areas.

5. Prevent precipitation from infiltrating or from directly running off stockpiled materials. Cover stockpiled materials with an impermeable liner during periods of work stoppage including at the end of each working day and as directed by ENGINEER.

6. Direct surface waters that have not contacted potentially contaminated materials to existing surface drainage systems.

7. Dispose of water in a manner not injurious to public health or safety, to property, or to any part of the Works completed or under construction.

B. Guard rails and barricades

1. CONTRACTOR shall provide barriers to prevent unauthorized entry to construction areas and to protect existing facilities from damage during construction operations.

2. Provide secure, rigid guard rails and barricades around deep excavations.

1.5 CONSTRUCTION FACILITIES

A. Contractor's Office:

1. During the performance of this Contract, the CONTRACTOR shall maintain a suitable office near the Site of the work that shall be the headquarters of a CONTRACTOR's representative authorized to receive Drawings, instructions, or other communications or articles.

2. Communications given to the CONTRACTOR's representative or delivered to the Site office in the CONTRACTOR's absence shall be deemed to have been delivered to the CONTRACTOR.

3. The CONTRACTOR shall maintain copies of Drawings, specifications, material safety data sheets (MSDS) for all products to be used on Site, and other Contract documents, available for review and use at all times, at the Site office.

1.6 REMOVAL OF TEMPORARY FACILITIES AND CONTROLS

A. Remove equipment, facilities, and materials prior to the Substantial Performance.

B. Grade the Site as shown on the Drawings.

C. Clean and repair damage caused by installation or use of temporary work.

D. Restore existing facilities used during construction to original and functional condition.

1.7 MEASUREMENT AND PAYMENT

A. No separate payment will be made for work under this Section.

END OF SECTION

SECTION 01 61 00

COMMON PRODUCT REQUIREMENTS

1.1 SECTION INCLUDES

A. Basic product requirements.

B. Product options.

C. Product substitutions.

D. Product delivery and handling requirements.

E. Product storage and handling requirements.

F. Measurement and payment.

1.2 BASIC PRODUCT REQUIREMENTS

A. Do not use materials and equipment removed from existing premises, except as specifically permitted by the Contract Documents.

B. Provide interchangeable components of the same manufacturer for components being replaced.

C. Only new materials shall be used.

D. All applicable manufacturer’s standards shall be adhered to.

1.3 PRODUCT OPTIONS

A. Products Specified by Reference Standards or by Description Only: Any approved product meeting those standards or descriptions.

B. Products Specified by naming one or more manufacturers with a provision not prohibiting substitutions: Products of manufacturers named and meeting specifications; options or substitutions allowed. Submit a request for substitution for any manufacturer not named in accordance with the following Article.

C. Products Specified by naming one or more manufacturers with a provision prohibiting substitutions: Products of manufacturers named and meeting specifications, no options or substitutions allowed.

1.4 PRODUCT SUBSTITUTIONS

A. Document each request with complete data substantiating compliance of proposed substitution with the Contract Documents.

B. A request for substitution constitutes a representation that CONTRACTOR:

1. Has investigated proposed product and determined that it meets or exceeds the quality level of the specified product.

2. Will provide the same warranty for the substitution as for the specified product.

3. Will coordinate installation and make changes to other Works which may be required for the Works to be complete at CONTRACTOR's expense and at no additional cost to OWNER.

4. Waives claims for additional costs or time extension which may subsequently become apparent.

C. Substitutions will not be considered when they are indicated or implied on Shop Drawings or product data submittals without separate written request.

1.5 PRODUCT DELIVERY AND HANDLING REQUIREMENTS

A. Make all arrangements for transportation, delivery, and handling of products required for prosecution and completion of the Works.

B. Shipments of products to CONTRACTOR or Subcontractors shall be delivered to the Site only during regular working hours. Shipments shall be addressed and consigned to the proper party giving name of Project, street number, and city. Do not deliver shipments to OWNER except where otherwise directed in writing.

C. Provide advance notice of delivery of products to the Site as required in other Sections. Do not deliver products of any kind to the Site until approval in writing has been applied for and obtained by CONTRACTOR from ENGINEER.

D. Arrange delivery of products to the Site in accordance with work sequence and in ample time to facilitate inspection prior to installation. Schedule deliveries to limit requirement for storage at the Site to the practical minimum.

E. Coordinate deliveries to avoid conflict with the Works and conditions at the Site and to accommodate the following:

1. Work of Other Contractors, or OWNER.

2. Limitations of storage space.

3. Availability of equipment and personnel for handling products.

4. OWNER's use of the Site.

F. Do not have products delivered to the Site until related Shop Drawings or Samples have been approved by ENGINEER.

G. Do not have products delivered to the Site until required storage facilities have been provided.

H. Transport and handle products in accordance with manufacturers' instructions.

I. Immediately on delivery, inspect shipments to ensure that products comply with requirements of the Contract Documents and reviewed submittals, quantities are correct, and products are undamaged.

J. Provide equipment and personnel to handle products by methods to prevent soiling, disfigurement, or damage.

1.6 PRODUCT STORAGE AND HANDLING REQUIREMENTS

A. Limit on-Site storage of products to areas shown on the Drawings or otherwise approved by ENGINEER.

B. Make all arrangements and provisions necessary for storage of materials and equipment.

C. Place all excavated materials, construction equipment, and materials and equipment to be incorporated into the Works so as not to injure any part of the Works or existing facilities and so that free access can be had at all times to all parts of the Works and to all utility service company installations in the vicinity of the Works.

D. Store and protect products in accordance with manufacturers' recommendations and instructions and requirements of Specifications, with seals and labels intact and legible.

E. Store sensitive products in weathertight, climate-controlled enclosures. Protect products subject to ultraviolet degradation from direct exposure to sunlight.

F. For exterior storage of fabricated products, place on sloped supports, above ground.

G. Provide bonded off-Site storage and protection when the Site does not permit on-Site storage or protection.

H. Cover products subject to deterioration with impervious sheet covering. Provide ventilation to avoid condensation or potential degradation of product.

I. Store loose granular materials on solid flat surfaces in a well-drained area. Prevent mixing with foreign matter.

J. Furnish equipment and personnel to store products by methods to prevent soiling, disfigurement, or damage.

K. Arrange storage of products to permit easy access for inspection. Periodically inspect to verify products are undamaged and are maintained in acceptable condition.

L. Store materials and equipment neatly and compactly, and in locations that will cause a minimum of inconvenience to Other Contractors, public travel, adjoining owners, tenants, and occupants.

M. Protect delivered products from contamination or damage.

N. Do not use lawns, grass plots, or other private property for storage purposes without written permission of OWNER or other person in possession or control of such premises.

O. CONTRACTOR shall be fully responsible for loss or damage to stored products, materials, and equipment.

1.7 MEASUREMENT AND PAYMENT

A. No separate payment will be made for work under this Section.

END OF SECTION

SECTION 01 73 00

EXECUTION AND CLOSEOUT REQUIREMENTS

1.1 SECTION INCLUDES

A. Examination.

B. Field surveying.

C. Restoration.

D. Final cleaning.

E. Removal and disposal.

F. Protection of installed work.

G. Closeout procedures.

H. Project record documents.

I. Measurement and payment.

1.2 EXAMINATION

A. Prior to commencement of work at the Site, inspect the Site with ENGINEER to review and establish the condition of surface features including existing roads, parking areas, buildings, wells, trees and other plants, grassed areas, fencing, service poles, wires, paving, and survey bench marks or monuments on or adjacent to the Site which may be affected by the Works. This inventory shall be mutually agreed between ENGINEER and CONTRACTOR and shall not thereafter be subject to dispute. Such inventory as may be amended, from time to time, will be used by ENGINEER to check compliance by CONTRACTOR with the requirements of the Contract Documents.

B. Provide ongoing review, inspection, and attendance during performance of the Works to properly document conditions. Promptly inform ENGINEER of any existing condition at the Site affected by the Works which may require restoration, repair, or replacement. Do not cover up any of the Works without prior approval from ENGINEER.

C. Maintain and protect existing Site structures and facilities from damage which may be affected by the Works while work is in progress. Repair or replace damage resulting from the Works to ENGINEER's approval.

D. Verify that existing Site conditions and substrate surfaces are acceptable for subsequent work. Beginning new work means acceptance by CONTRACTOR of existing conditions.

E. Verify that existing substrate is capable of structural attachment of new work being applied or attached or that existing or previously constructed surfaces are ready to receive subsequent work.

F. Examine and verify specific conditions described in individual Sections.

1.3 FIELD SURVEYING

A. Quality Assurance:

1. Employ a land surveyor or Engineering Firm or Engineering Technology Firm registered in the Province of British Columbia and acceptable to ENGINEER to perform survey work of this article.

2. ENGINEER may, at any time, check CONTRACTOR's survey and layout work but this shall not relieve CONTRACTOR of any of its responsibilities to carry out the Works to the lines and grades set out in accordance with the Drawings and the Project Specifications or as otherwise necessary for performance of the Works in accordance with the Contract Documents.

3. CONTRACTOR shall be responsible for laying out the Works from established reference points.

B. Record Documents:

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

2. Prepare a certified survey illustrating dimensions, locations, angles, and elevations of construction, and the Site work.

3. Submit record documents prior to demobilization.

C. Survey Reference Points:

1. Locate, preserve, and protect survey control and reference points.

2. Promptly report to ENGINEER the loss or destruction of any reference point or relocation required because of changes in grades or other reasons.

3. Make good any errors entering into the Works through CONTRACTOR failure to notify ENGINEER concerning lack of preservation of such survey reference points.

4. Accurately replace or relocate disturbed reference or survey control points based on original survey control. Make no changes without prior written notice to and approval of ENGINEER.

D. Survey Requirements:

1. Utilize recognized engineering survey practices. Locate and lay out the Works using properly calibrated instrumentation.

2. Establish elevations, lines, and levels.

3. Periodically verify layouts by same means and methods.

4. Develop and make such additional detailed surveys as are needed for construction, such as bench marks, slope stakes, batterboards, stakes for establishing the design elevations of excavations and final grades, and other working points, lines, and elevations. Maintain bench marks and base lines established by ENGINEER, existing property boundaries, lines and grade hubs, and other references and construction or survey points.

E. Examination:

1. Verify locations of survey control points prior to starting work.

2. Verify set-backs, easements, and clearances, confirm Drawing dimensions and elevations.

3. Promptly notify ENGINEER of any discrepancies discovered.

1.4 RESTORATION

A. As a minimum, restoration shall mean replacement, repairs, or reconstruction to a condition at least as good as or better than the condition prior to commencement of the Works.

B. Except where specifically required otherwise by other Sections, restore areas of the Works and areas affected by the performance of the Works to conditions that existed prior to commencement of the Works and to match condition of similar adjacent, undisturbed areas.

C. Ensure that restored areas match existing grade and surface drainage characteristics, except as otherwise specified, and ensure a smooth transition from restored surfaces to existing surfaces.

D. Do not alter original conditions without prior written approval from ENGINEER.

E. Without limiting the generality of the foregoing or other requirements of the Contract Documents, preserve and protect existing features encountered at the Site during the performance of the Works including, but not limited to wells, structures, curbs and gutters, fences, pavement, manholes and catch basins, utilities, railroad sidings, roads, streets, walks, grassed areas, and other graded or improved areas.

F. Utilize construction methods and procedures during the performance of the Works which keeps disturbance and damage of whatever nature to existing conditions to the practical minimum. Where work necessitates root or branch cutting, do not proceed without ENGINEER's prior approval.

G. Ensure that quality, grades, elevations, and extent of bedding, cover, and other backfill materials including subgrades, finish grades, and thickness of pavements for roadways and parking areas are properly documented during their removal to ensure reconstruction to at least their original and functional condition.

H. Restoration Material: New, except as otherwise specified, not damaged or defective, and of the best quality for the purpose intended. Furnish evidence as to type, source, and quality of materials or products furnished when requested by ENGINEER or specified in other Sections.

I. Should any dispute arise as to the quality or fitness of materials, whether obtained on the Site or off the Site, whether previously inspected by ENGINEER prior to use or not, the decision to use any material or product in the finished Works will rest solely with ENGINEER.

J. Remove from the Site clean material not approved for reuse.

K. Handle and store products and materials in a manner to prevent damage, adulteration, deterioration, and soiling and in accordance with manufacturer's instructions when applicable.

L. Prior to commencement of restoration work, inform ENGINEER of proposed material, methods, and procedures to repair, replace, or reconstruct disturbed, damaged, or suspected damage to the Works.

M. Perform cutting, fitting, remedial, and coordination work to make the several parts of the Works fit together.

N. Except as specified otherwise, dismantle and salvage materials for reuse where practicable. Exercise due care when removing material for salvage. Repair or replace materials damaged through improper handling or through loss after removal.

O. Store and protect removed material approved for reuse in approved locations. Beginning of restoration work means acceptance of existing conditions.

1.5 FINAL CLEANING

A. Execute final cleaning prior to Substantial Performance of the Works.

B. Clean equipment and fixtures to a sanitary condition with cleaning materials appropriate to the surface and material being cleaned.

C. Clean debris from drainage systems.

D. Clean the Site; sweep paved areas, and rake clean landscaped surfaces.

E. Repair pavement, roads, sod, and all other areas affected by construction operations and restore them to original condition or to minimum condition specified.

F. Maintain cleaning until acceptance by OWNER.

1.6 REMOVAL AND DISPOSAL

A. Remove surplus materials and temporary facilities and controls from the Site.

B. Dispose of all non-contaminated waste materials, litter, debris, and rubbish in the active area of the on-Site landfill or as directed by ENGINEER. Weight waste materials prior to disposal.

C. Do not burn or bury rubbish and waste materials on the Site.

D. Do not dispose of volatile or hazardous wastes such as mineral spirits, oil, or paint thinner in storm or sanitary drains.

E. Do not discharge wastes into streams or waterways.

1.7 PROTECTION OF INSTALLED WORK

A. Protect installed work and provide special protection where specified in individual Sections.

B. Provide temporary and removable protection for installed products. Control activity in immediate work area to prevent damage.

C. Prohibit traffic upon landscaped areas.

D. Maintenance of Flow: Maintain the flow of water in the water distribution system and in existing sewers, drains, and watercourses. In the event that any emergency or situation should arise which requires interruption of normal operation of any existing systems, restore normal operation as soon as possible even though permission for such planned shutdown was obtained.

E. Flotation: Take necessary precautions against the flotation of any structures during construction. Make good any damage caused by flotation.

1.8 CLOSEOUT PROCEDURES

A. Submit written certification that the Contract Documents have been reviewed, the Works has been inspected, and that the Works is complete in accordance with the Contract Documents and in compliance with Laws and Regulations including, but not limited to, the provision of all applicable federal, provincial, and local health, safety, and environmental laws and regulations, and ready for ENGINEER's review.

B. Complete and furnish submittals to ENGINEER that are required by governing or other authorities and by the Contract Documents. Payment shall not become due and payable until all submittals have been made acceptable to ENGINEER.

1.9 PROJECT RECORD DOCUMENTS

A. Maintain 1 set of the following record documents on the Site; record actual revisions to the Works:

1. Drawings.

2. Specifications.

3. Change Orders and other modifications to the Contract.

4. Reviewed Shop Drawings, product data, and Samples.

5. Manufacturer's instruction for assembly, installation, adjusting, and warranties.

B. Ensure entries are complete and accurate, enabling future reference by OWNER.

C. Store record documents separate from documents used for construction.

D. Record information concurrent with construction progress.

E. Specifications: Legibly mark and record, at each Section of the Specifications, a description of actual products installed, including the following:

1. Manufacturer's name and product model and number.

2. Product substitutions or alternates utilized.

3. Changes made by modifications.

F. Record Documents and Shop Drawings: Legibly mark each item to record actual construction including:

1. Measured horizontal and vertical locations of underground utilities and appurtenances, referenced to permanent surface improvements.

2. Measured locations of internal utilities and appurtenances concealed in construction, referenced to visible and accessible features of the Works.

3. Field changes of dimension and detail.

4. Details not on original Drawings.

G. Submit documents to ENGINEER with claim for final payment. Documents shall include, but not limited to:

1. Project Record Documents and Shop Drawings.

2. Project Specifications.

3. Field survey data, including all installed works. Pipe installations shall be surveyed, prior to backfilling, at a minimum of one survey point every 10 metres, including all pipe junctions, tees, valves, and connections. Earthworks to be surveyed at minimum 10 metre intervals, and along toe of slope, top of bank, edge of road, road centerline, ditch centerline, and edge of ditch.

1.10 MEASUREMENT AND PAYMENT

A. Section 01 29 00 - Payment Procedures: Requirements for measurement and payment.

B. Execution:

1. Schedule of Prices Item No. 01 73 00/1.

2. Payment Basis: Lump sum price. Includes examination, and field surveying to lay out works.

C. Demobilization and Closeout:

1. Schedule of Prices Item No. 01 73 00/2.

2. Payment Basis: Lump sum price. Includes final cleaning of equipment, construction facilities, and materials to be removed from the Site; removal of temporary construction and support facilities provided by CONTRACTOR; final Site cleanup; final grading; adjusting; field surveying; restoration; and record documents.

END OF SECTION

SECTION 03 41 00

PRE-CAST CONCRETE

PART 1 GENERAL

1.1 SECTION INCLUDES

A. Supply and install Landfill Gas Cleanout Access Chambers.

B. Measurement and Payment.

1.2 RELATED SECTIONS

A. Section 31 05 16 – FILL

B. Section 31 23 33.01 – EXCAVATION, TRENCHING AND BACKFILL

1.3 REFERENCES

A. Section 01 45 00 - Quality Requirements: Requirements for references.

B. Canadian Standards Association (CSA):

1. A23.1/A23.2 – Concrete Materials and Methods for Concrete Construction/Methods of Test for Concrete.

2. A23.4 – Pre-cast Concrete-Materials and Construction.

3. G30.5 – Weld Steel Wire Fabric for Concrete Reinforcement.

4. G30.15 – Welded Deformed Steel Wire Fabric for Concrete Reinforcement.

5. G40.21 – Structural Quality Steel.

6. W186-M1997 – Welding of Reinforcing Bars in Reinforced Concrete Construction.

C. American Society for Testing and Materials (ASTM):

1. A775/A 775M [94d] – Specification for Epoxy-Coated Reinforcing Steel Bars.

1.4 SUBMITTALS

A. Section 01 33 00 – Submittal Procedures: Requirements for submittals.

B. Product Data: Pre-cast concrete dimensions including test reports and material property sheets.

C. Manufacturer's Certificate: Quality control certificates pertaining to each pre-cast concrete item produced.

D. Manufacturer's Instructions: Indicate special instructions required to install products specified.

1.5 QUALITY ASSURANCE

A. Fabrication

1. Pre-cast concrete units shall be fabricated in accordance with CSA A23.4.

2. Anchors, lifting hooks, shear bars, spacers and other inserts or fittings shall be as recommended and/or designed by manufacturer for a complete and rigid installation. Each shall conform to requirements of local building by-laws. Lift hooks shall be adequately sized to safely handle panels according to member dimension and weight. Anchors/inserts shall be concealed where practical.

3. Burn off lift cables paint and fill in recesses if required.

B. Finishes

1. Finish units in accordance with CSA A23.4.

1.6 DELIVERY, STORAGE, AND HANDLING

A. Section 01 61 00 – Common Product Requirements: Requirements for delivery, storage, and handling.

B. Deliver and store pre-cast concrete with labeling in place.

C. Deliver, store, and handle pre-cast concrete with applicable requirements of the specified references, the manufacturer's instructions, and as specified herein.

D. Use every precaution not to damage the pre-cast concrete.

PART 2 PRODUCTS

2.1 LANDFILL GAS CLEANOUT VAULT BOXES

A. Manufacturer: Lombard Concrete, Type 67 Water Meter Box or approved equivalent.

B. Lid: Cast Iron, no label, no reading hole.

C. Quantity: 2.

PART 3 EXECUTION

3.1 EXAMINATION

A. Section 01 73 00 – Execution and Closeout Requirements: Requirements for examination of existing conditions before starting work.

B. Verify that filled and compacted area is ready to receive work, and dimensions and elevations are as shown on Drawings.

3.2 GENERAL

A. Erect pre-cast work in accordance with CSA A23.4.

3.3 LANDFILL GAS CLEANOUT VAULT BOXES

A. Compact foundations as per Section 31 05 16.

B. Install cleanout vault boxes as indicated on Drawings.

C. Set pre-cast concrete units straight, level and square.

D. Backfill around pre-cast units.

3.4 HANDLING AND ERECTION

A. Pre-cast components shall be handled and erected in accordance with CSA A23.4 and as per the manufacturer’s instructions.

B. Pre-cast components shall be delivered and handled in such a manner as to avoid warpage.

C. Holes and reglets shall be protected from forming of ice during freezing weather.

D. Welding of the pre-cast units shall be performed by certified welders in accordance with CSA A23.4, Clause 32.

E. Units shall be set plumb and true with joints parallel and uniform.

F. All necessary precautions shall be taken to prevent weld burn or splatter on to exposed surfaces.

G. Patch damaged, or chipped components as required.

3.5 CLEANING

A. If required, clean exposed work face by washing and brushing only, as pre-cast is erected. Use approved masonry cleaner if washing and brushing fails to achieve required finish. Remove immediately materials that may set up or harden.

3.6 FIELD QUALITY CONTROL

A. Section 01 45 00 - Quality Requirements: Requirements for inspection and testing.

3.7 PROTECTION OF FINISHED WORK

A. Section 01 73 00 - Execution and Closeout Requirements: Requirements for protection of installed work.

PART 4 MEASUREMENT AND PAYMENT

4.1 GENERAL

A. Section 01 29 00 - Payment Procedures: Requirements for project measurement and payment.

4.2 LANDFILL GAS CLEANOUT VAULT BOXES

A. Schedule of Prices Item No. 03 41 00/1.

B. Measurement Basis: Per Unit.

C. Payment Basis: Unit price. Includes supply and installations of the Landfill Gas Cleanout Vault Boxes.

END OF SECTION

SECTION 23 05 23

VALVES

PART 1 GENERAL

1.1 SECTION INCLUDES

A. Supply and installation of Header Isolation Valve.

B. Supply and installation of Header Sample Port.

1.2 RELATED SECTIONS

A. Section 31 05 16 – FILL

B. Section 33 45 01.02 – PIPEWORKS

1.3 REFERENCES

A. Section 01 45 00 - Quality Requirements: Requirements for references.

B. American Society for Testing and Materials (ASTM):

1. ASTM D1248-16 – Standard Specification for Polyethylene Plastics Extrusion Materials for Wire and Cable.

2. ASTM D2321-18 – Standard Practice for Underground Installation of Thermoplastic Pipe for Sewers and Other Gravity-Flow Applications.

3. ASTM D2837-13e1 – Standard Test Method for Obtaining Hydrostatic Design Basis for Thermoplastic Pipe Materials or Pressure Design Basis for Thermoplastic Pipe Products.

4. ASTM D3212-07(2013) – Standard Specification for Joints for Drain and Sewer Plastic Pipes Using Flexible Elastomeric Seals.

5. ASTM D3350-14 – Standard Specification for Polyethylene Plastics Pipe and Fittings Materials.

6. ASTM D4976-12a – Standard Specification for Polyethylene Plastics Molding and Extrusion Materials.

7. ASTM F667/F667M-16 – Standard Specification for 3 through 24 in. Corrugated Polyethylene and Fittings.

8. ASTM F714-13(2019) – Standard Specification for Polyethylene (PE) Plastic Pipe (DR-PR) Based on Outside Diameter.

9. ASTM F2306/F2306M-19 – Standard Specification for 12 to 60 in. [300 to 1500 mm] Annular Corrugated Profile-Wall Polyethylene (PE) Pipe and Fittings for Gravity-Flow Storm Sewer and Subsurface Drainage Applications.

C. Canadian Standards Association (CSA):

1. CSA B137.3-13 – Rigid Polyvinylchloride (PVC) Pipe and Fittings for Pressure Applications.

2. CSA B182.8-02 – Profile Polyethylene Storm Sewer and Drainage Pipe and Fittings.

1.4 DEFINITIONS

A. HDPE: High Density Polyethylene.

B. PE: Polyethylene.

C. PVC: Polyvinyl Chloride.

1.5 PROGRESS SUBMITTALS

A. Section 01 33 00 - Submittal Procedures: Requirements for progress submittals.

B. Product Data: Specifications and dimensions including test reports and material property sheets.

C. Manufacturer's Instructions: Indicate special procedures required to install products specified.

1.6 DELIVERY, STORAGE, AND HANDLING

A. Section 01 61 00 – Common Product Requirements: Requirements for delivery, storage, and handling.

B. Deliver and store products with labeling in place.

C. Use every precaution not to damage products.

PART 2 PRODUCTS

2.1 HEADER ISOLATION VALVE

A. Valve: Chemline 200 mm diameter PVC High Capacity (HC) ball valve with flanged ends, viton seal, and municipal operating nut, or approved equivalent.

B. PVC Riser: 100 mm diameter Schedule 80 PVC pipe.

C. Municipal Extension Rod: steel, with square nut.

D. Bolt Sets: Stainless Steel unless otherwise indicated in Drawings.

E. Nelson box and valve marker.

2.2 HEADER SAMPLE PORT

A. Quantity: 1

B. Valve: Chemline, 12 mm diameter compact ball valve, Teflon seat, female threads both ends, 6 mm diameter stainless steel hose barb end, or approved equivalent.

C. Inlet Fitting: Swagelok stainless steel, Tubefit to male NPT.

D. Valve Fitting: Swagelok stainless steel Tubefit bulkhead fitting.

E. Tubing: 12 mm diameter PE tubing.

F. PVC Casing: 100 mm diameter Schedule 80 PVC.

G. Royer aluminum locking well cap or approved equivalent.

PART 3 EXECUTION

3.1 EXAMINATION

A. Section 01 73 00 – Execution and Closeout Requirements: Requirements for examination of existing conditions before starting work.

B. Verify that filled and compacted area is ready to receive work, and dimensions and elevations are as shown on Drawings.

3.2 INSTALLATION OF HEADER ISOLATION VALVE

A. Confirm location of Header Isolation Valve with ENGINEER prior to commencement of work.

B. Install Valve as indicated in Drawings.

C. Conduct pressure testing prior to backfilling.

3.3 INSTALLATION OF SAMPLE PORTS

A. Confirm location of sample port with ENGINEER prior to commencement of work.

B. Install sample port as indicated in Drawings.

3.4 FIELD QUALITY CONTROL

A. Section 01 45 00 - Quality Requirements: Requirements for inspection and testing.

3.5 PROTECTION OF FINISHED WORK

A. Section 01 73 00 - Execution and Closeout Requirements: Requirements for protection of installed work.

PART 4 MEASUREMENT AND PAYMENT

4.1 GENERAL

A. Section 01 29 00 - Payment Procedures: Requirements for project measurement and payment.

4.2 HEADER ISOLATION VALVE

A. Measurement Basis: No separate measurement will be made for the supply and installation of the header isolation valve.

B. Payment Basis: Payment for the supply and installation of the header isolation valve to be included in Schedule of Prices Item No. 33 45 01.02/2.

4.3 HEADER SAMPLE PORT

A. Measurement Basis: No separate measurement will be made for the supply and installation of the header sample port.

B. Payment Basis: Payment for the supply and installation of the header sample port to be included in Schedule of Prices Item No. 33 45 01.02/2.

END OF SECTION

SECTION 31 05 16

FILL

PART 1 GENERAL

1.1 SECTION INCLUDES

A. Select Backfill.

B. Road Base.

C. Sand.

D. Riprap.

E. General filling and backfilling.

F. Compaction schedule.

G. Measurement and Payment.

1.2 RELATED SECTIONS

A. Section 03 41 00 – PRE-CAST CONCRETE

B. Section 23 05 23 – VALVES

C. Section 33 45 01.02 – PIPEWORK

1.3 REFERENCES

A. Section 01 45 00 - Quality Requirements: Requirements for references.

B. American Society for Testing and Materials (ASTM):

1. C117-17 - Standard Test Method for Materials Finer than 75-μm (No. 200) Sieve in Mineral Aggregates by Washing.

2. C136/C136M-14 - Standard Test Method for Sieve Analysis of Fine and Coarse Aggregates.

3. D698-12e2 - Standard Test Methods for Laboratory Compaction Characteristics of Soil Using Standard Effort (12,400 ft-lbf/ft^3 (600 kN-m/m^3)).

4. D1140-17 - Standard Test Methods for Determining the Amount of Material Finer Than 75-um (No.200) Sieve in Soils by Washing.

5. D1556/D1556M-15e1 - Standard Test Method for Density and Unit Weight of Soil in Place by the Sand-Cone Method.

6. D1557-12e1 – Standard Test Methods for Laboratory Compaction Characteristics of Soil Using Modified Effort (56,000 ft-1bf/ft^3 (2,700 kN-m/m^3)).

7. D2167-15 - Standard Test Method for Density and Unit Weight of Soil in Place by the Rubber Balloon Method.

8. D2216-19 - Standard Test Method for Laboratory Determination of Water (Moisture) Content of Soil and Rock by Mass.

9. D2487-17 - Standard Practice for Classification of Soils for Engineering Purposes (Unified Soil Classification System).

10. D2974-14 - Standard Test Methods for Moisture, Ash and Organic Matter of Peat and Other Organic Soils.

11. D4253-16 - Standard Test Methods for Maximum Index Density and Unit Weight of Soils Using a Vibratory Table.

12. D4254-16 - Standard Test Methods for Minimum Index Density and Unit Weight of Soils and Calculation of Relative Density.

13. D4318-17e1 - Standard Test Methods for Liquid Limit, Plastic Limit, and Plasticity Index of Soils.

14. D4972-19 – Standard Test Methods for pH of Soils.

15. D5084-16a – Standard Test Methods for Measurement of Hydraulic Conductivity of Saturated Porous Materials Using a Flexible Wall Permeameter.

16. D6938-17a – Standard Test Methods for In-Place Density and Water Content of Soil and Soil-Aggregate by Nuclear Methods (Shallow Depth).

17. D7928-17 – Standard Test Method for Particle-Size Distribution (Gradation) of Fine-Grained Soils Using the Sedimentation (Hydrometer) Analysis.

C. BC Ministry of Transportation Standard Specifications for Riprap.

1.4 DEFINITIONS

A. BC WCB: British Columbia Worker's Compensation Board.

B. SMDD: Standard Maximum Dry Density and in the context of this Contract means the maximum dry unit weight determined in accordance with ASTM D698-12e2.

1.5 PROGRESS SUBMITTALS

A. Section 01 33 00 - Submittal Procedures: Requirements for progress submittals.

B. Source: Submit to ENGINEER the location of the proposed source of materials to be incorporated into the Works at least 14 days prior to commencing production, including change in material source during performance of work.

C. Geotechnical Data: Submit to ENGINEER grain size distribution curves for each classification of material prior to commencing production. Submit to ENGINEER at least 14 days prior to delivery to the Site.

1.6 ENVIRONMENTAL REQUIREMENTS

A. Section 01 35 43 – Environmental Procedures.

1.7 SEQUENCING AND SCHEDULING

A. Section 01 13 00 - Administrative Requirements: Requirements for coordination.

B. Do not allow or cause any of work performed to be covered up or enclosed prior to required inspections, tests, or approvals.

PART 2 PRODUCTS

2.1 GENERAL

A. Imported from an approved source.

B. Free of unsuitable materials including:

1. Frozen material or material containing snow or ice.

2. Trees, stumps, branches, roots, or other wood or lumber.

3. Wire, steel, cast iron, cans, drums, or other foreign material.

4. Materials containing hazardous or toxic constituents at hazardous or toxic concentrations.

C. Compactable to specified density.

2.2 SELECT BACKFILL

A. Native soil (silt/clay till/sand/gravel) excavated to construct the Works on the Site, free of unsuitable materials.

B. Unsuitable Materials: Materials not approved for use as determined by ENGINEER and include the following:

1. Material containing loam, roots, or organic matter.

2. Clays which are classified as inorganic clays of high plasticity in accordance with ASTM D2487-17.

3. Soft and/or organic clays and silts of low strength.

4. Rock and lumps of material with dimensions greater than specified layer thickness before compaction.

2.3 ROAD BASE

A. Gradation: In accordance with British Columbia Ministry of Transportation Standard Specifications for highway construction for “Granular Surfacing, Base and Sub-bases,” Table 202-B High Fines Surfacing Aggregate (HFSA), or approved by ENGINEER.

B. Unsuitable Materials: Materials not approved for use as determined by ENGINEER and include the following:

1. Materials containing loam, roots, or other organic matter.

2. Clays which are classified as inorganic clays of high plasticity in accordance with ASTM D2487-17.

3. Soft and/or organic clays and silts of low strength.

4. Rock and lumps of material with dimensions greater than specified layer thickness before compaction.

2.4 SAND

A. Sand shall be washed sand.

B. Gradation: 100 percent passing the No. 4 sieve opening and retained on the No. 200 sieve.

C. Free of clay and other deleterious material.

2.5 RIPRAP

A. Riprap shall be hard, durable rock material free of unsuitable materials including high porosity rock, weathered rock, will not break down under placement, will not disintegrate on exposure to water or the atmosphere.

B. Rocks shall be generally evenly graded.

C. The gradation shall meet the following specifications:

ASTM Sieve Size	Percent Passing by Weight
150 mm	100
125 mm	50
50 mm	0

2.6 SOURCE QUALITY CONTROL

A. Section 01 45 00 – Quality Requirements: Requirements for source testing and analysis of soil material.

PART 3 EXECUTION

3.1 EXAMINATION

A. Section 01 73 00 - Execution and Closeout Requirements: Verification of existing conditions before starting work.

B. Verify that survey bench marks and intended elevations for the Works are as indicated.

C. Ensure that all grades and elevations are as per Drawings.

D. Suspend operations whenever climatic conditions, as determined by ENGINEER, are unsatisfactory for placing fill to the requirements of this Section.

E. After occurrence of heavy rains, do not operate equipment on approved excavations until the material has dried sufficiently to prevent occurrence of excessive rutting.

F. Verify subdrainage, dampproofing, or waterproofing installation has been inspected.

G. Verify structural ability of unsupported walls to support loads imposed by the fill.

H. Do not allow or cause any of the work performed or installed to be covered up or enclosed by work of this Section prior to required inspections, measurements, tests, or approvals.

I. Obtain approval from ENGINEER for completed excavations and previously placed material prior to placement of successive lifts.

J. Obtain approval from ENGINEER prior to placing fill against structures or around exposed buried utilities.

K. Ensure areas to be backfilled are free from debris or water.

L. Do not permit traffic in restored/repaired area without approval from ENGINEER.

3.2 PREPARATION

A. Identify required lines, levels, contours, and datum locations.

B. Locate, identify, and protect utilities that remain from damage. Confirm locations of buried utilities and structures by careful test excavations or other suitable means.

C. Protect plant life, lawns, and other features remaining as a portion of final landscaping.

D. Protect bench marks, survey control points, existing structures, fences, paving and curbs from excavating equipment and vehicular traffic.

E. Maintain and protect from damage wells, utilities, and structures encountered. In the event of disturbance of or damage to any well, utility, or structure, immediately notify ENGINEER. Repair or replace any well, utility, or structure damaged by CONTRACTOR operations.

F. Protect existing surface features which may be affected while work is in progress.

G. Protect existing structures where temporary unbalanced earth pressures are liable to develop on walls or other structures utilizing bracing, shoring, or other approved methods to counteract unbalance.

H. Protect excavations and trenches from contamination.

I. Obtain direction from ENGINEER before moving or otherwise disturbing utilities or structures.

J. Compact sub-grade to density requirements for subsequent backfill materials.

K. Cut out soft areas of sub-grade not capable of compaction in place. Backfill with approved native fill and compact to density equal to or greater than requirements for subsequent fill material.

L. Remove debris or water from areas to be backfilled.

M. Proof roll sub-grade surface to identify soft spots; fill and compact to density equal to or greater than requirements for subsequent fill material.

3.3 FILLING - GENERAL

A. Select Backfill: Place and compact Select Backfill layer in equal continuous layers not exceeding 300 mm compacted depth, free of unsuitable material.

B. Road Base: Place and compact material in equal continuous layers not exceeding 150 mm compacted depth.

C. Sand: Place and compact material in equal continuous layers not exceeding 150 mm compacted depth.

D. Riprap: Pace material, free of unsuitable material.

E. Fill areas to grades and elevations shown on the Drawings.

F. Employ a placement method that does not disturb or damage other work.

G. Maintain optimum moisture content of backfill materials to attain required compaction density.

H. Backfill around installations as follows:

1. Do not dump directly against installations.

2. Place layers simultaneously on both sides of installed work to equalize loading and minimize movement.

3. Where temporary unbalanced earth pressures are liable to develop on walls or other structures:

   a. If approved by ENGINEER, erect bracing or shoring to counteract unbalance, and leave in place until removal is approved by ENGINEER.

   b. Place material under, around, and over installations until 600 mm of cover is provided.

I. Make gradual grade changes. Blend slope into level areas.

J. Use fill types as specified.

K. Do not use fill material which is determined unsuitable by ENGINEER.

L. Backfill around exposed utilities by placing layers simultaneously on all sides to equalize loading. Do not dump directly against monitoring wells, utilities, or foundations.

M. Do not operate heavy compaction equipment closer than 1 meter to foundations, underground utilities, monitoring wells, or landfill gas extraction wells.

N. Except as specified otherwise, place backfill continuously and in uniform layers not exceeding specified compacted thickness up to grades shown on the Drawings.

O. Compact each layer to the density specified in Article 3.10 before placing succeeding layers.

3.4 COMPACTION - GENERAL

A. Apply potable water as necessary during compaction to obtain the specified density. If the material to be compacted is excessively moist, aerate with suitable equipment and methods until the moisture content is corrected. In areas not accessible to rolling equipment, compact material to specified density with mechanical tampers.

B. When fill material is wetted by sprinkling, do not direct jets of water at fill with such force that finer materials will be washed out.

C. Compaction Equipment: The type, size, and efficiency of compaction equipment shall be capable of achieving specified degree of compaction. When operating equipment adjacent to and immediately above structures, exercise care so as not to cause damage or displacement of the structure.

3.5 TOLERANCES

A. Correct surface irregularities by loosening and adding or removing material until the surface is within the specified tolerances.

B. Payment will not be made for material placed outside the tolerance limits unless directed by ENGINEER.

3.6 FIELD QUALITY CONTROL

A. Section 01 45 00 - Quality Requirements: Field inspection and testing.

B. Test installed materials to confirm compliance with Specifications.

C. Submit copies of test reports to ENGINEER.

D. Verification Testing by ENGINEER:

1. ENGINEER may select samples of uncompacted fill intended for the Works and samples of compacted fill in the Works.

2. ENGINEER may perform tests in the field and in the laboratory on samples of backfill and imported fill to determine if materials meet specification. Testing of imported fill will include analysis for the presence of contaminants, grain size analysis, moisture content determination, bulk wet density, maximum dry density, and permeability. Testing for backfill will include moisture content determination, maximum dry density, and bulk wet density. Copies of test reports will be supplied to CONTRACTOR on request.

3. Testing by ENGINEER will in no way relieve CONTRACTOR of his responsibility to test all material prior to notifying ENGINEER of the materials' suitability for the work involved.

E. Methods of Testing:

1. Particle size analysis shall be performed by CONTRACTOR in accordance with ASTM D1140-17, C117-17, C136/136M-14, D7928-17, or whichever is appropriate to material.

2. Standard Proctor Density testing shall be undertaken by CONTRACTOR for a minimum of three samples of each material listed in Article 3.6(G) accordance with ASTM Standard D698-12e2.

3. Field compaction density analysis shall be performed by CONTRACTOR in accordance with ASTM D6938-17a.

F. Failure to Meet Specified Requirements: If tests indicate that material specifications have not been achieved or cannot be obtained with equipment in use, the procedure being followed, or the material being incorporated, remove and replace work and modify operations so that the equipment, procedures, and materials will produce the required results. Additional testing required by ENGINEER will be to CONTRACTOR's account.

G. The CONTRACTOR shall test compaction density as follows:

1. Select Backfill - 1 test per 20 linear metres per lift.

2. Road Base – 1 test per 20 linear metres on final lift.

3. Sand – 1 test per 20 linear metres per lift.

3.7 ADJUSTING

A. Section 01 73 00 – Execution Requirements: Requirements for adjusting installed work.

B. Finish compacted soil surfaces to within 25 mm of grades shown on the Drawings but not uniformly high or low. Correct surface irregularities by loosening and adding or removing material until the surface is within specified grade.

C. Leave work areas in a properly graded condition sloped as required to permit proper drainage and free of depressions that will pond or collect water or debris that will restrict flow.

3.8 CLEANING

A. Section 01 73 00 - Execution Requirements: Requirements for cleaning installed work.

B. Clean and reinstate work areas and areas affected by equipment outside areas specified to be excavated, to specified restoration condition.

C. Upon completion of backfilling, remove excess material and debris from work areas and travel routes.

3.9 PROTECTION OF FINISHED WORK

A. Section 01 73 00 - Execution Requirements: Requirements for protecting installed work.

3.10 SCHEDULE - COMPACTION

A. Select Backfill: Compacted to 95 percent SMDD. Moisture +/- 2% of optimal.

B. Road Base: Compact to 98 percent SMDD. Moisture +/- 2% of optimal.

C. Sand: Compact to 95 percent SMDD. Moisture +/- 2% of optimal.

PART 4 MEASUREMENT AND PAYMENT

4.1 GENERAL

A. Section 01 29 00 - Payment Procedures: Requirements for measurement and payment.

4.2 SELECT BACKFILL

A. Measurement Basis: No separate payment will be made for Select Backfill for construction of the Works.

B. Payment Basis: Payment for the excavation, hauling, temporary stockpiling, placing, compacting of Select Backfill included in Schedule of Prices Items No. 33 45 01.02/1, No. 33 45 01.02/2, and No. 33 45 01.02/3.

4.3 ROAD BASE

A. Measurement Basis: No separate payment will be made for Select Backfill for construction of the Works.

B. Payment Basis: Payment for the excavation, hauling, temporary stockpiling, placing, compacting of Road Base included in Schedule of Prices Items No. 33 45 01.02/1, No. 33 45 01.02/2, and No. 33 45 01.02/3.

4.4 RIPRAP

A. Measurement Basis: No separate measurement will be made for the supply and placement of the Riprap in the perimeter road ditch.

B. Payment Basis: Payment for the supply and placement of the Riprap to be included in Schedule of Prices Items No. 33 45 01.02/1 and No. 33 45 01.02/2.

4.5 SAND

A. Measurement Basis: No separate measurement will be made for the supply and placement of the Sand.

B. Payment Basis: Payment for the supply and placement of the sand to be included in Schedule of Prices Items No. 33 45 01.02/1, No. 33 45 01.02/2, and No. 33 45 01.02/3.

4.6 ADDITIONAL SELECT BACKFILL

A. Schedule of Additional Unit Prices Item No. 31 05 16/1.

B. Measurement Basis: By the cubic metre measured in place.

C. Payment Basis: Unit price. Includes excavation from on-Site source, haul, place, grade and compact, and on-Site disposal of unsuitable or excess excavated material.

4.7 ADDITIONAL ROAD BASE

A. Schedule of Additional Unit Prices Item No. 31 05 16/2.

B. Measurement Basis: By the cubic metre measured in place.

C. Payment Basis: Unit price. Includes excavation from on-Site source, haul, place, grade and compact, and on-Site disposal of unsuitable or excess excavated material.

END OF SECTION

SECTION 31 11 00

CLEARING AND GRUBBING

PART 1 GENERAL

1.1 SECTION INCLUDES

A. Clearing and Grubbing.

B. Measurement and Payment.

1.2 REFERENCES

A. Section 01 45 00 - Quality Requirements: Requirements for references.

1.3 DEFINITIONS

A. Clearing: Satisfactory disposal of vegetation designated for removal, including down timber, snags, brush, and rubbish occurring in the areas to be cleared.

1.4 ENVIRONMENTAL REQUIREMENTS

A. Section 01 35 43 – Environmental Procedures.

PART 2 PRODUCTS (NOT USED)

PART 3 EXECUTION

3.1 EXAMINATION

A. Section 01 73 00 - Execution and Closeout Requirements: Verification of existing conditions before starting work.

B. Verify that existing plant life or other surface features designated to remain are tagged or identified.

3.2 PREPARATION

A. Protect utilities and surface features designated to remain from damage incident to clearing, grubbing, and construction operations by the erection of barriers or by such other means as circumstances require.

3.3 CLEARING

A. Clear areas required for access to the Site and execution of the Works.

B. Remove and dispose of structures that obtrude, encroach upon, or otherwise obstruct work.

C. Strip cover soil and vegetation from area being cleared and stockpile on site as directed by ENGINEER.

PART 4 MEASUREMENT AND PAYMENT

4.1 GENERAL

A. Section 01 29 00 - Payment Procedures: Requirements for measurement and payment.

4.2 CLEARING AND GRUBBING

A. Schedule of Prices Item No. 31 11 00/1.

B. Payment Basis: Lump sum price. Includes clearing and stockpiling of recoverable interim cover material, and on-site disposal as directed by ENGINEER of vegetation, excess excavated or unsuitable materials.

END OF SECTION

SECTION 31 23 33.01

EXCAVATION, TRENCHING AND BACKFILLING

PART 1 GENERAL

1.1 SECTION INCLUDES

A. Excavation of overburden and waste for construction of the works.

B. Measurement and Payment.

1.2 REFERENCES

A. Section 01 45 00 – Quality Requirements: Requirements for references.

B. American Society of Testing and Materials (ASTM):

1. C117-17 – Standard Test Method for Materials Finer than 75-μm (No. 200) Sieve in Mineral Aggregates by Washing.

2. C136/C136M-14 – Standard Test Method for Sieve Analysis of Fine and Coarse Aggregates.

3. D698-12e2 – Standard Test Methods for Laboratory Compaction Characteristics of Soil Using Standard Effort (12,400 ft-lbf/ft3 (600 kN-m/m3)).

4. D1140-17 - Standard Test Methods for Determining the Amount of Material in Finer Than 75-μm (No. 200) Sieve in Soils by Washing.

5. D1556/D1556M-15e1 - Standard Test Method for Density and Unit Weight of Soil in Place by the Sand-Cone Method.

6. D1557-12e1 – Standard Test Methods for Laboratory Compaction Characteristics of Soil Using Modified Effort (56,000 ft-lbf/ft3 (2,700 kN-m/m3)).

7. D2167-15 - Standard Test Method for Density and Unit Weight of Soil in Place by the Rubber Balloon Method.

8. D2216-19 - Standard Test Methods for Laboratory Determination of Water (Moisture) Content of Soil and Rock.

9. D3740-12a - Standard Practice for Minimum Requirements for Agencies Engaged in the Testing and/or Inspection of Soil and Rock as Used in Engineering Design and Construction.

10. D4253-16 - Standard Test Methods for Maximum Index Density and Unit Weight of Soils Using a Vibratory Table.

11. D4318-17e1 - Standard Test Methods for Liquid Limit, Plastic Limit, and Plasticity Index of Soils.

12. D6938-17a – Standard Test Methods for In-Place Density and Water Content of Soil and Soil-Aggregate by Nuclear Methods (Shallow Depth).

1.3 DEFINITIONS

A. Excavation: Removal of materials of whatever nature encountered, whether wet, frozen, or otherwise, including dense tills, hardpan, frozen materials, cemented materials, concrete fragments, asphalt pavement, boulders or rock fragments less than 1 cubic metres in volume, and weathered rock which can be removed by ripping or excavating with heavy-duty mechanical construction equipment without drilling and blasting.

B. Excavation Limits: Areal excavation limits shown on the Drawings to specified depth or as directed by ENGINEER and does not include areas shown as being on hold pending further sampling and analysis by ENGINEER.

C. Additional Excavation: Excavation beyond initial excavation limits either areally or in depth, as directed by ENGINEER following sampling and analysis.

D. Waste: Anthropogenic waste material, municipal solid waste, and construction and demolition material.

E. SMDD: Standard Maximum Dry Density and in the context of this Contract means the maximum dry unit weight determined in accordance with ASTM D698-12e2.

1.4 PROGRESS SUBMITTALS

A. Section 01 33 00 - Submittal Procedures: Requirements for progress submittals.

1.5 ENVIRONMENTAL REQUIREMENTS

A. Section 01 35 43 – Environmental Procedures.

1.6 SEQUENCING AND SCHEDULING

A. Section 01 13 00 - Administrative Requirements: Requirements for coordination.

B. Do not commence excavation operations until the Site-specific Health and Safety Plan has been reviewed by ENGINEER.

C. Coordinate interruptions of utility services to existing and adjacent buildings or facilities which become necessary either directly or indirectly due to work required under this Contract through ENGINEER. Down time for service disruptions may be limited as to duration and time (weekend, nights, or holidays). Perform work during the period designated.

D. Coordinate and sequence excavation operations to minimize the need for temporary stockpiling of excavated materials until required for backfilling. Make reasonable effort to balance cut and fill operations and to ensure that excavated material designated for

backfill is immediately placed as backfill in the Works. Keep the time during which excavations remain open to the minimum.

E. Excavations shall not be left open over night unless approved by ENGINEER.

F. Do not allow or cause any of work performed to be covered up or enclosed prior to required inspections, tests, or approvals.

PART 2 PRODUCTS (NOT USED)

PART 3 EXECUTION

3.1 EXAMINATION

A. Section 01 73 00 - Execution and Closeout Requirements: Verification of existing conditions before starting work.

B. Verify that survey bench marks and existing and intended elevations for the Works are as shown on the Drawings.

C. Undertake pre-excavation survey.

3.2 PREPARATION

A. Identify required lines, levels, contours, and datum locations.

B. Locate, identify, and protect utilities from damage.

C. Arrange for utility company to identify utilities.

D. Maintain and protect from damage wells, environmental monitoring wells, soil gas monitoring probe installations, utilities, buildings, building foundations, surface features, and structures encountered, and not designated for demolition or removal. In the event of disturbance of or damage to any such well, utility, buildings, building foundations, surface features, or structures, immediately notify ENGINEER. Repair or replace, as directed by ENGINEER, any well, utility, building, building foundation, surface feature, or structure damaged by CONTRACTOR operations unless specified for demolition or removal.

E. Protect existing buildings, wells, environmental monitoring wells, soil gas monitoring probe installations, facilities, surface features, tanks, and structures where temporary unbalanced earth pressures or uplift are liable to develop utilizing bracing, shoring, or other approved methods to counteract unbalance.

F. Employ procedures for excavation such that disturbance of wells, utilities, buildings, building foundations, surface features, and structures is avoided.

G. Protect excavations from contamination.

H. Obtain direction from ENGINEER before moving or otherwise disturbing wells, utilities, building, building foundations, surface features, and structures.

I. Remove surface features or obstructions including, but not necessarily limited to, trees, shrubs, bush, and other vegetation from surfaces to be excavated, within the limits shown on the Drawings or as required to construct the finished work. Dispose of such obstructions to an on-Site spoil area as directed by ENGINEER.

3.3 EXCAVATING

A. Excavations shall not be left open over night unless approved by ENGINEER.

B. Excavate to lines, grades, elevations, and dimensions shown on the Drawings or as directed by ENGINEER.

C. Slope banks with machine to angle of repose or shallower, as required by Laws and Regulations.

D. Grade top perimeter of excavation to prevent surface water from draining into excavation.

E. Preserve existing Berm Road Riprap Ditch LDPE geomembrane, Non-woven Geotextile, and Riprap.

F. Remove debris and other obstructions encountered.

G. Remove boulders and fragments that may slide or roll into excavated areas.

H. Notify ENGINEER of unexpected subsurface conditions and discontinue affected work in area until notified to resume work.

I. Hand trim, make firm, and remove loose material and debris from excavations. Where natural or fill material at bottom of excavation is disturbed, compact disturbed soil to density at least equal to undisturbed soil or to the density specified for the succeeding layer of backfill, whichever is greater, or remove disturbed soil and refill the space as directed by ENGINEER.

J. Do not disturb soil within the branch spread of trees or shrubs that are to remain. If excavating through roots, excavate by hand and cut roots with sharp axe or saw. Seal cuts with approved tree wound dressing.

K. Open excavations shall be CONTRACTOR's sole responsibility.

L. Stockpile excavated material in area designated on the Site in accordance with Article 3.6.

3.4 DISPOSAL OF UNSUITABLE OR EXCESS EXCAVATED MATERIAL

A. Unsuitable Excavated Materials: Soil containing rocks larger than 150 mm measured through any axis, roots, organic matter, very soft clays, fine uniform sands, soils which are not compactable to the specified density, and waste.

B. Dispose of excavated material determined by ENGINEER as unsuitable for backfill or excess excavated material, in a designated on-Site spoil area as directed by ENGINEER.

3.5 OVER-EXCAVATING

A. Notify ENGINEER when soil at the bottom of the excavation appears unsuitable and proceed as directed by ENGINEER. Where, in ENGINEER's opinion, the undisturbed condition of the soils is inadequate for the support of installations, over-excavate to adequate supporting soils as directed by ENGINEER and refill the excavated space with approved material to the proper elevation in accordance with the procedure specified for backfill. Where so directed by ENGINEER and except as otherwise specified, the excavation and removal of inadequate material as specified, supply and installation of such material in excess of quantities shown on the Drawings will be paid for under the appropriate item of the Schedule of Additional Unit Prices. Use such over-excavated material in the Works or stockpile on the Site as approved by ENGINEER.

B. Backfill in accordance with Section 31 05 16.

C. Should unauthorized excavation be carried below the lines and grades shown on the Drawings and in excess of specified limits and tolerance because of CONTRACTOR's operations including errors, methods of construction, or to suit his convenience, correct unauthorized excavation as follows:

1. Fill under unauthorized over-excavation areas by extending the indicated bottom elevation of the base of the material specified to be placed to the unauthorized excavation bottom without altering the required top elevation and compact in accordance with Section 31 05 16 unless otherwise directed by ENGINEER.

D. Additional excavation to remove weakened or disturbed soil or any additional activity caused by CONTRACTOR's error, unsuitable construction methods or procedures, or to suit CONTRACTOR's convenience and subsequent additional backfill and compaction to correct deficiencies shall be at no additional cost to OWNER.

3.6 TEMPORARY STOCKPILING

A. Stockpile excavated materials on the Site at locations designated by ENGINEER.

B. Construct stockpile sites so that they are well drained, free of foreign materials, and of adequate bearing capacity to support the weight of materials to be placed thereon.

C. Where necessary, strip existing interim cover and temporarily stockpile.

D. Provide and maintain access to stockpiles.

E. Separate differing materials with substantial dividers or stockpile apart to prevent mixing.

F. Prevent contamination or segregation of soil types.

G. Direct surface water away from stockpile sites to prevent erosion or deterioration of materials.

H. Stockpiling of excavated materials must be located so that the toe of the stockpile is located at a location defined by a 1H:1V slope line extended from the bottom of the excavation trench or 3 m from top of excavation slope, whichever is more

I. Maintain area surrounding stockpiles in neat and tidy condition.

J. Cover stockpiled material with robust tarpaulin to withstand adverse weather, wind, and other detrimental forces. Provide total protection of stockpiled material from rain and other adverse weather effects.

3.7 TOLERANCES

A. Excavation Depth: Within 50 mm or less than specified depth but not uniformly greater or less.

B. Trench Depth: Within 25 mm greater or less than specified depth but not uniformly greater or less.

C. Trench Width: Within 100 mm greater or less than specified width but not uniformly greater or less.

3.8 FIELD QUALITY CONTROL

A. Section 01 45 00 - Quality Requirements.

B. ENGINEER will provide for visual inspection of bearing surfaces.

3.9 CLEANING

A. Section 01 73 00 - Execution and Closeout Requirements: Requirements for cleaning installed work.

B. Clean and reinstate work areas and areas affected by equipment outside areas specified to be excavated.

3.10 PROTECTION OF FINISHED WORK

A. Section 01 73 00 - Execution and Closeout Requirements: Requirements for protecting installed work.

B. Protect bottom of excavations from freezing and disturbance.

PART 4 MEASUREMENT AND PAYMENT

4.1 GENERAL

A. Section 01 29 00 - Payment Procedures: Requirements for measurement and payment.

4.2 EXCAVATION AND TRENCHING

A. No separate payment will be made for excavation and trenching for construction of the header.

B. Payment Basis: Payment for excavation and trenching of the header to be included in Schedule of Prices Items No. 33 45 01.02/1, No. 33 45 01.02/2, and No. 33 45 01.02/3.

4.3 OVER EXCAVATION

A. Schedule of Additional Unit Prices Item No. 31 23 33/1.

B. Measurement Basis: By the cubic metre measured in place.

C. Payment Basis: Unit price. Includes, excavation of unsuitable or excess material as directed by the ENGINEER, hauling materials to temporary stockpiles, temporary stockpiling, and disposal of unsuitable or excess excavated materials.

END OF SECTION

SECTION 31 32 19.01

GEOTEXTILES

PART 1 GENERAL

1.1 SECTION INCLUDES

A. Supply and installation of non-woven geotextile.

B. Measurement and Payment.

1.2 RELATED SECTIONS

A. Section 31 23 33.02 – FILL

1.3 REFERENCES

A. Section 01 45 00 - Quality Requirements: Requirements for references.

B. American Society for Testing and Materials (ASTM):

1. D3786/D3786M-18 – Standard Test Method for Bursting Strength of Textile Fabrics – Diaphragm Bursting Strength Tester Method.

2. D4355/D4355M-14 – Standard Test Method for Deterioration of Geotextiles by Exposure to Light, Moisture and Heat in Xenon-Arc Type Apparatus.

3. D4491/D4491M-17 – Standard Test Methods for Water Permeability of Geotextiles by Permittivity.

4. D4533/D4533M-15 – Standard Test Method for Trapezoid Tearing Strength of Geotextiles.

5. D4632/D4632M-15a – Standard Test Method for Grab Breaking Load and Elongation of Geotextiles.

6. D4751-16 – Standard Test Methods for Determining Apparent Opening Size of a Geotextile.

7. D4833/D4833M-07 – Standard Test Method for Index Puncture Resistance of Geomembranes and Related Products.

8. D4873/D4873M-17 – Standard Guide for Identification, Storage, and Handling of Geosynthetic Rolls and Samples.

9. D5199-12 – Standard Test Method for Measuring Nominal Thickness of Geosynthetics.

10. D5261-10 – Standard Test Method for Measuring Mass Per Unit Area of Geotextiles.

1.4 DEFINITIONS

A. AOS: Apparent Opening Size.

B. Geotextile: Synthetic fabric for use in geotechnical filter, separation, stabilization, or erosion control applications.

C. Minimum Average Roll Value: Average value for a specified parameter less 2 standard deviations.

1.5 PROGRESS SUBMITTALS

A. Section 01 33 00 - Submittal Procedures: Requirements for progress submittals.

B. Product Data: Submit no later than 10 days prior to ordering.

C. Manufacturer's Installation Instructions: Submit at least 14 days prior to installation. Include installation, handling, storage, and repair instructions.

D. Manufacturer's Certificates: Certificates pertaining to the rolls of material delivered to the Site shall accompany the rolls. Each roll shall be identified by a unique manufacturing number. The quality control certificate shall include results of at least the following tests: unit weight, tensile strength, elongation at break, tear strength, puncture strength, permittivity, apparent opening size, ultraviolet stability, and manufacturer's records for storage, handling, and shipping of geotextile. The quality control certificates shall be signed by a responsible party employed by the manufacturer and shall be notarized. Materials and rolls which are in non-compliance with the minimum required properties will be rejected.

1.6 DELIVERY, STORAGE, AND HANDLING

A. Section 01 61 00 – Common Product Requirements: Product delivery, storage, and handling requirements.

B. Deliver geotextile bearing manufacturer's seals and labels intact. Clearly label each roll to show geotextile identification, date of manufacture, lot number, analysis of contents, and special instructions.

C. Store and handle geotextile in accordance with manufacturer's recommendations and ASTM D4873/D4873M-17, in manufacturer's original covers, and protect from moisture, dust, light, and heat.

D. Notify ENGINEER 3 days in advance of delivery to the Site. Perform joint inspection with ENGINEER upon delivery. Defects or damage from shipping and handling will be grounds for rejection of a portion of geotextile or of the entire geotextile roll at the discretion of ENGINEER. Remove roll from the Site and replace with new material.

1.7 ENVIRONMENTAL REQUIREMENTS

A. Section 01 35 43 – Environmental Procedures.

1.8 SEQUENCING AND SCHEDULING

A. Section 01 13 00 - Administrative Requirements: Requirements for coordination.

B. Coordinate installation of geotextile with surface preparation.

C. Sequence work with work of other Sections.

PART 2 PRODUCTS

2.1 NON-WOVEN GEOTEXTILE

A. GSE NW10, or approved equivalent.

B. Properties:

1. Minimum Mass per Unit Area – 335 g/m^2.
2. Minimum Grab Tensile Strength – 1,100 N.
3. Minimum Grab Elongation – 50 %.
4. Minimum Puncture Strength – 3,000 N.
5. Trapezoidal Tear Strength – 440 N.

PART 3 EXECUTION

3.1 EXAMINATION

A. Section 01 73 00 - Execution and Closeout Requirements: Verification of existing conditions before starting work.

B. Verify that surfaces and the Site conditions are ready to receive work.

3.2 PREPARATION

A. Prior to geotextile placement, where possible roll the surface with a smooth drum steel or pneumatic roller so as to be free of irregularities, loose earth, and abrupt changes in grade. Provide the necessary equipment and personnel to maintain an acceptable supporting surface during fabric installation.

B. Examine geotextile for defects including rips, holes, flaws, deterioration, or damage incurred during manufacture, transportation, or handling.

C. Remove defective or damaged geotextile from the Site.

3.3 INSTALLATION

A. Notify ENGINEER at least 24 hours in advance of intention to commence placement of geotextile.

B. Obtain approval of ENGINEER prior to installation of geotextile.

C. Place the geotextile on a prepared base as shown on the Drawings.

D. Unfold or unroll geotextile in accordance with manufacturer's instructions, directly on the prepared base, in conditions which will prevent damage to both the geotextile and the base grade. Unsuitable conditions include, but are not limited to moderate to high wind conditions.

E. The geotextile shall be rolled down the slope in such a manner as to continuously keep the geotextile in tension by self weight. The geotextile shall be securely anchored in an anchor trench where applicable, or by other approved or specified methods.

F. Overlap dimensions and the method of joining adjacent sheets shall, as a minimum, be in conformance with manufacturer's instructions but shall not be less than 0.3 m. Secure geotextile to the base grade in accordance with manufacturer's instructions.

G. During placement of the geotextile, care shall be taken to not entrap soil, stones, or excessive moisture that could hamper subsequent seaming of the geotextile as judged by the ENGINEER.

H. Do not expose geotextile to sunlight for more than 14 days, or less if recommended by manufacturer.

I. Position and deploy geotextile to minimize handling. Lay smooth and free of tension, stress, folds, or creases. Protect properly placed geotextile from displacement, contamination by surface runoff, or damage, until and during placement of overlaid materials.

J. Place geotextile on sloping surfaces in one continuous length.

K. The geotextile shall be seemed using heat seaming or stitching methods as recommended by the manufacturer and approved by the ENGINEER. Sewn seams shall be made using polymeric thread with chemical resistance equal to or exceeding that of the geotextile. All sewn seams shall be continuous. Seams shall be oriented down slopes perpendicular to grading contours unless otherwise specified. For heat seaming, fusion welding techniques recommended by the manufacturer shall be used.

L. Do not permit passage of vehicular traffic directly on geotextile at any time.

M. Place geotextile by unrolling onto graded surface and retain in position as specified.

N. Do not permit placement of overlay materials until ENGINEER has inspected and approved installation of geotextile.

O. Remove and replace damaged or deteriorated geotextile as directed by ENGINEER.

3.4 FIELD QUALITY CONTROL

A. Section 01 45 00 - Quality Requirements: Field inspection and testing.

B. ENGINEER will inspect geotextile in place for tears, overlaps, and consistency before placing materials thereon. Damaged sections, as judged by ENGINEER, will be marked and their removal from the work area recorded. Repair minor damage and minor defects as specified in manufacturer's procedures when approved by ENGINEER to ENGINEER's satisfaction.

C. ENGINEER will verify that weather conditions are acceptable for panel placement.

PART 4 MEASUREMENT AND PAYMENT

4.1 GENERAL

A. Section 01 29 00 - Payment Procedures: Requirements for measurement and payment.

4.3 NON-WOVEN GEOTEXITLE

A. Measurement Basis: No separate measurement will be made for the supply and installation of the non-woven geotextile.

B. Payment Basis: Payment for the supply and installation of the non-woven geotextile to be included in Schedule of Prices Items No. 33 45 01.02/1 and No. 33 45 01.02/2.

END OF SECTION

SECTION 33 45 01.02

PIPEWORK

PART 1 GENERAL

1.1 SECTION INCLUDES

A. Supply and installation of Header.

B. Measurement and Payment.

1.2 RELATED SECTIONS

A. Section 03 41 00 – PRE-CST CONCRETE

B. Section 23 05 23 – VALVES

C. Section 31 05 16 – FILL

D. Section 31 23 33.01 – EXCAVATION, TRENCHING AND BACKFILLING

1.3 REFERENCES

A. Section 01 45 00 - Quality Requirements: Requirements for references.

B. American Society for Testing and Materials (ASTM):

1. ASTM A536-84 – Standard Specification for Ductile Iron Castings.

2. ASTM D1248-16 – Standard Specification for Polyethylene Plastics Extrusion Materials for Wire and Cable.

3. ASTM D2321-18 – Standard Practice for Underground Installation of Thermoplastic Pipe for Sewers and Other Gravity-Flow Applications.

4. ASTM D2837-13e1 – Standard Test Method for Obtaining Hydrostatic Design Basis for Thermoplastic Pipe Materials or Pressure Design Basis for Thermoplastic Pipe Products.

5. ASTM D3212-07 – Standard Specification for Joints for Drain and Sewer Plastic Pipes Using Flexible Elastomeric Seals.

6. ASTM D3350-14 – Standard Specification for Polyethylene Plastics Pipe and Fittings Materials.

7. ASTM D4976-12a – Standard Specification for Polyethylene Plastics Molding and Extrusion Materials.

8. ASTM D698-12e2 - Standard Test Methods for Laboratory Compaction Characteristics of Soil Using Standard Effort (12 400 ft-lfb/ft^3 (600 kN-m/m^3)).

9. ASTM F667/F667M-16 – Standard Specification for 3 through 24 in. Corrugated Polyethylene Pipe and Fittings.

10. ASTM F714-13 – Standard Specification for Polyethylene (PE) Plastic Pipe (DR-PR) Based on Outside Diameter.

11. ASTM F2306/F2306M-19 – Standard Specification for 12 to 60 in. (300 to 1500 mm) Annular Corrugated Profile-Wall Polyethylene (PE) Pipe and Fittings for Gravity-Flow Storm Sewer and Subsurface Drainage Applications.

C. Canadian Standards Association (CSA):

1. CSA B1373.3 – Rigid Polyvinyl Chloride Pipe.

2. CSA B182.8-02 – Profile Polyethylene Storm Sewer and Drainage Pipe and Fittings.

1.4 DEFINITIONS

A. HDPE: High Density Polyethylene.

B. PVC: Polyvinyl Chloride.

C. Header Cover: Select Backfill and Sand.

D. SMDD: Standard Maximum Dry Density and in the context of this Contract means maximum dry unit weight determined in accordance with ASTM D698-12e2.

1.5 PROGRESS SUBMITTALS

A. Section 01 33 00 - Submittal Procedures: Requirements for progress submittals.

B. Product Data: Piping and fitting dimensions including test reports and material property sheets. Submit 10 days prior to ordering.

C. Manufacturer's Certificate: Quality control certificates pertaining to each lot of pipe produced.

D. Manufacturer's Instructions: Indicate special procedures required to install products specified.

1.6 QUALITY ASSURANCE

A. HDPE Pipe:

1. Pipe Resin: ASTM D1248-16 for material indicating a Type 3, Category 5, Class C, Grade PE4710 (ASTM D3350-14 Cell Classification 3453C).

2. Raw Material: Containing a minimum 2 percent carbon black, well dispersed by recompounding to protect the pipe from degradation by ultraviolet light.

3. Pipe shall not contain any recycled compound except that generated in the manufacturer's own plant from resin of the same specification from the same raw material supplier.

4. Pipe Sizes: ASTM F714-13. Pipe sizes are specified in metric units; however, equivalent IPS pipe sizes shall be used to avoid fitting problems.

1.7 DELIVERY, STORAGE, AND HANDLING

A. Section 01 61 00 – Common Product Requirements: Product delivery, storage, and handling requirements.

B. Deliver and store piping with labeling in place.

C. Deliver, store, and handle pipe in accordance with applicable requirements of the specified references, the manufacturer's instructions, and as specified herein.

D. CONTRACTOR is responsible for conducting an inspection at the time of delivery to verify that the correct products and the expected quantities are received. Pipes and accessories should be visually inspected for damage such as cuts, gouges, delamination, bulges, flat areas and ovality that may have occurred during shipment.

E. Use every precaution to prevent damage to the pipe. Do not permit metal tools or heavy objects to unnecessarily come in contact with the pipe.

F. All pipe shall be lifted off trailer to avoid any damage while unloading.

G. CONTRACTOR is responsible each pipe shipment to ensure that there has been no loss or damage.

H. Pipe shall be stored on level surfaces to avoid deformation. Supports shall be spaced to prevent bending and deformation to the ends of the pipe. When stacked, the weight of upper units shall not cause deformation to pipe in the lower units.

PART 2 PRODUCTS

2.1 HEADER

A. HDPE pipe: DR17, 200 mm diameter.

B. Accessories:

1. Joints: Thermal butt fusion except flanged connections.

2. Flanges: ASTM A536-84 ductile iron backing flanges with Class 150 ANSI B 16.5 standard drilling and corrosion resistant coatings. Complete with 1-piece molded polyethylene stub ends and stainless steel bolt sets, unless otherwise indicated on drawings. Connections shall have same or greater pressure rating as pipe.

3. Blind Flange: SCH80 PVC.

4. Gaskets: Neoprene.

5. Long-Sweep Wye: DR17 200 mm diameter.

6. Bolt Sets: Stainless Steel unless otherwise indicated in Drawings.

7. Warning Tape

8. Tracer Wire

2.2 WARNING TAPE

A. Standard, 4-mil polyethylene 76 mm (3 inch) wide tape, detectable type, yellow with black letters, and imprinted with “BURRIED GAS LINE BELOW”. Tape will be installed as shown on drawings.

2.3 TRACER WIRE

A. TWU No. 12 Gage Solid Copper Wire: 3.2 mm diameter.

B. Minimum Roll Length: 300 m.

C. Wire Connectors: 3M DBR water tight connectors for No. 12 gage wire, or approved equivalent.

PART 3 EXECUTION

3.1 EXAMINATION

A. Section 01 73 00 - Execution and Closeout Requirements: Verification of existing conditions before starting work.

B. Verify that excavation foundation is ready to receive work and excavations, dimensions, and elevations are as shown on the Drawings.

C. Verify items provided by other Sections are properly sized and located.

3.2 PREPARATION

A. Excavate to grades as shown on Drawings, as per Section 31 23 33.01.

B. Hand trim excavations to required elevations.

C. Ensure that the excavation remains dry and groundwater elevation remains below the based excavation elevation until adequate backfill is placed to ensure that the installed pipe will not be dislodged.

D. Ensure that excavation foundation is suitable for pipe bedding placement. Excavation foundation should be free of large stones, clumps of soil, frozen soil and debris.

E. Trench width shall be sufficiently wide to allow compaction of pipe bedding in the haunches and adjacent to the sides of the pipe.

F. Remove large stones or other hard matter which could damage piping or impede consistent backfilling or compaction.

G. Unsuitable materials and waste excavated from trench alignments shall be disposed of on-Site as directed by ENGINEER.

3.3 HEADER

A. Prevent debris and water from entering inside of pipe.

B. Do not bend in a radius smaller than recommended by manufacturer when staged on Site or installed in the trench.

C. Perform thermal fusion in sheltered areas with temperature maintained in accordance with manufacturer's instructions.

D. Avoid excessive transportation and possible damage to the pipe.

E. Prior to initiating thermal fusion in the field on any pipe on a given day, provide a test weld and operating data to ENGINEER including welding temperature, machine number, date of last service, and clearance certificate.

F. Install pipe, fittings, and accessories in accordance with manufacturer's instructions.

G Lay pipe to slope gradients shown on the Drawings with maximum variation from true slope of 1 cm in 3 m. Maintain positive drainage for all pipe sections.

H. Use laser equipment for controlling grade of pipe installation.

I. Fasten tracer wire to pipe and risers.

J. Backfill to lines and grades indicated on Drawings.

K. Place buried pipe warning tape as shown on Drawings.

L. Place, grade, and compact existing road base to restore perimeter road and stormwater ditch to original conditions.

3.4 FIELD QUALITY CONTROL

A. Section 01 45 00 - Quality Requirements: Field inspection and testing.

B. Request inspection prior to placing aggregate cover over pipe.

C. Compaction testing will be performed in accordance with Section 31 05 16.

D. Hydrostatic Pressure and Leakage Test for header: Test as follows:

1. Provide labor, equipment, and materials required to perform hydrostatic and leakage tests herein specified; notify ENGINEER at least 24 hours in advance of all proposed tests; perform tests in the presence of ENGINEER.

2. Test at one time as much of the piping system as practical and authorized by ENGINEER.

3. Test all landfill gas piping at a pressure rating of 27 kPa. Utilize air or nitrogen to charge the pipelines and maintain pressure for adequate period to allow for expansion of the piping. Fittings, valves, and expansion joints shall be accessible for inspection during the pressure test. A pressure test will be deemed successful if the designed pressure is maintained for a period of not less than 1 hour with no measureable pressure drop during the term of the test. The temperature must be constant to within 1 degree Celcius during this period or adjusted with the appropriate correction factor.

4. Cap and seal testing ports at the termination of the pressure test.

5. Examine joints for leakage and remove any joints showing leakage from the pipeline, rejoin and retest the system.

6. Ensure that normal safety precautions are observed for exposed piping.

7. Locate and repair defects if leakage occurs.

8. Repeat test until pressure drop is within specified allowance for full length of line.

E. If tests indicated Works do not meet specified requirements, remove Works, replace, and retest.

3.5 PROTECTION OF FINISHED WORK

A. Section 01 73 001 - Execution Requirements: Requirements for protecting installed work.

B. Protect pipe and cover from damage or displacement prior to and during backfilling operations.

C. Prevent debris from entering system.

PART 4 MEASUREMENT AND PAYMENT

4.1 GENERAL

A. Section 01 29 00 - Payment Procedures: Requirements for measurement and payment.

4.2 HEADER STN 0+000 TO 0+120

A. Schedule of Prices Item No. 33 45 01.02/1.

B. Measurement Basis: By the linear metre measured along the centerline of the pipe.

C. Payment Basis: Unit price. Includes excavation, transporting suitable materials (Road Base and Select Backfill) to temporary stockpiles, temporary stockpiling, and disposal of unsuitable or excess excavated material in active landfill area, supply and installation of sand, header pipe, blind flanges, gaskets, bolt sets, warning tape, and tracer wire, hauling, placing, compacting of Select Backfill and Road Base, reconstructing existing perimeter road riprap ditch, supply and installation of non-woven geotextile and Riprap, restore existing interim cover, regrading to grades shown on Drawings, and testing.

4.3 HEADER STN 0+120 TO 0+190

A. Schedule of Prices Item No. 33 45 01.02/2.

B. Measurement Basis: By the linear metre measured along the centerline of the pipe.

C. Payment Basis: Unit price. Includes excavation, transporting suitable materials (Road Base, and Select Backfill) to temporary stockpiles, temporary stockpiling, and disposal of unsuitable or excess excavated material in active landfill area, supply and installation of sand, header pipe including cleanouts and long sweeping wyes; header isolation valve, blind flanges, gaskets, bolt sets, warning tape, and tracer wire, PVC riser, slip cap, extension rod, nelson box, valve marker; supply and installation of header sample port including fittings, tubing, sample port, PVC casing, slip cap; hauling, placing, compacting of Select Backfill and Road Base, constructing perimeter ditch including supply and installation of non-woven geotextile and Riprap, restoring interim cover, regrading to grades shown on Drawings, and testing.

4.4 HEADER STN 0+190 TO 0+235

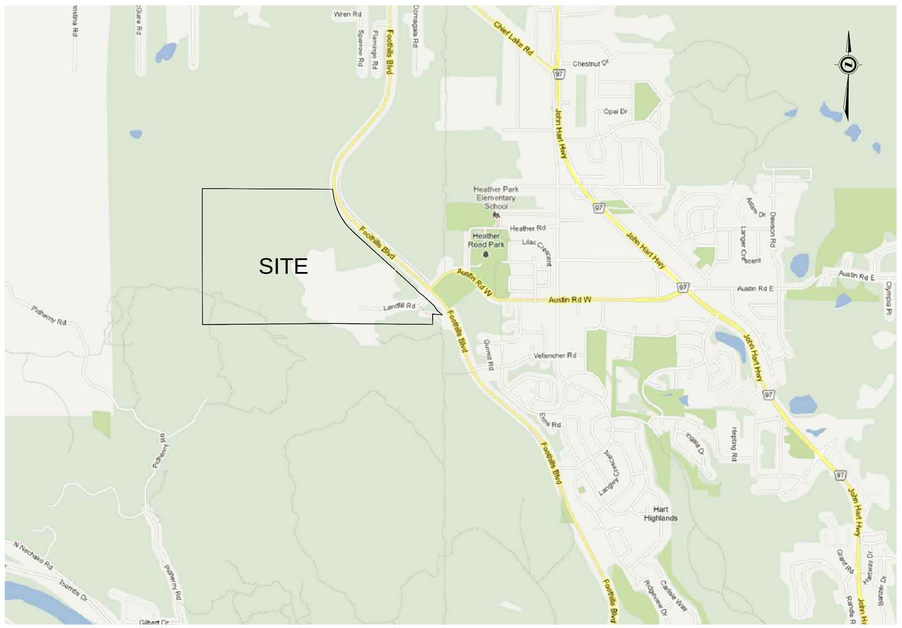
A. Schedule of Prices Item No. 33 45 01.02/3.

B. Measurement Basis: By the linear metre measured along the centerline of the pipe.

C. Payment Basis: Unit price. Includes excavation, transporting suitable materials (Road Base, Select Backfill, Riprap) to temporary stockpiles, temporary stockpiling, and disposal of unsuitable or excess excavated material in active landfill area, preserving existing LDPE geomembrane berm road riprap ditch liner and non-woven geotextile, supply and installation of sand, header pipe, blind flanges, gaskets, bolt sets, warning tape, and tracer wire, hauling, placing, compacting of Select Backfill and Road Base, reconstructing existing berm road riprap ditch including placement of preserved LDPE geomembrane, non-woven geotextile, and salvaged Riprap, regrading to grades shown on Drawings, and testing.

END OF SECTION

APPENDIX B - DRAWINGS



KEY MAP

DRAWING INDEX

SHEET	REV. #	DATE	TITLE
C-01	1	DEC 2019	EXISTING CONDITIONS
C-02	1	DEC 2019	PROPOSED WORKS
C-03	1	DEC 2019	PLAN AND PROFILE
D-01	1	DEC 2019	DETAILS I

2020 LANDFILL GAS MAIN HEADER EXTENSION

FOOTHILLS BOULEVARD REGIONAL LANDFILL PRINCE GEORGE, BRITISH COLUMBIA

REGIONAL DISTRICT OF FRASER-FORT GEORGE

XCG
Environmental Engineers & Scientists

REGIONAL DISTRICT
of Fraser-Fort George

(file: TND24280168001G01.DWG)

0 20 40 m

1 : 1500

LEGEND

- PROPERTY BOUNDARY
- EXISTING CONTOURS
- EXISTING ASPHALT ROAD
- EXISTING GRAVEL ROAD
- EXISTING BUILDING
- EXISTING SURFACE WATERCOURSE
- EXISTING CULVERT
- EXISTING LFG HEADER
- EXISTING LFG HORIZONTAL
- EXISTING LFG LATERAL
- EW5 — EXISTING LFG EXTRACTION WELL
- EW5T — EXISTING TEMPORARY LFG EXTRACTION WELL
- CT — EXISTING LFG CONDENSATE TRAP
- EXISTING LFG VALVE

(file: TND242801680001C01.DWG)

NOTE: EXISTING CONDITIONS AS OF MAY 8, 2019

REVISIONS

REV	DESCRIPTION	DATE	APPROVED
0	ISSUED FOR REVIEW	OCT 2019	P. AUCLAIR
1	ISSUED FOR TENDER	DEC 2019	P. AUCLAIR

2020 LFG MAIN HEADER EXTENSION

FOOTHILLS BOULEVARD REGIONAL LANDFILL

REGIONAL DISTRICT OF FRASER-FORT GEORGE

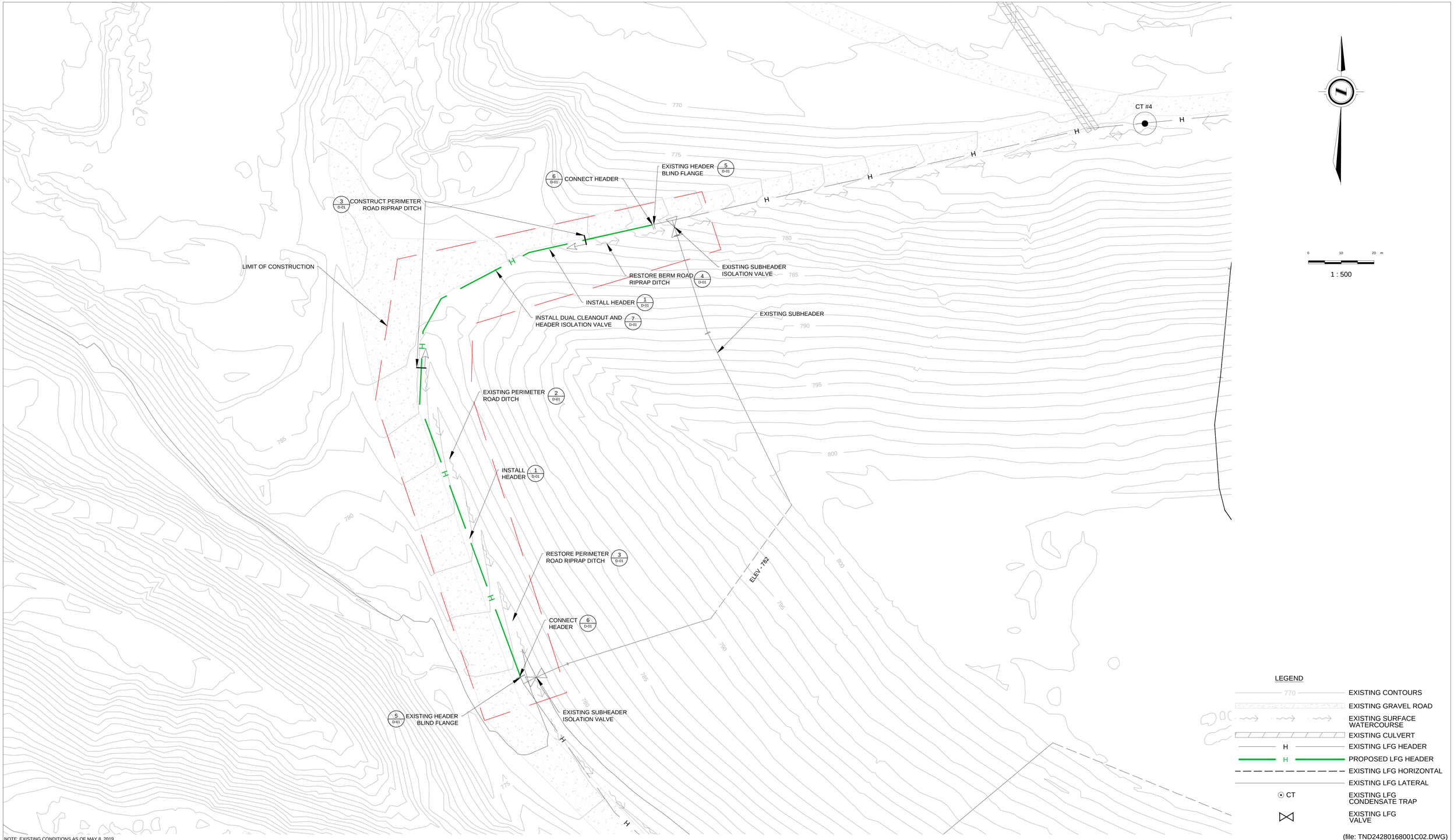
VERIFY SCALE

BAR IS 20 mm ON ORIGINAL DRAWING.
0 ——— 20 mm
IF NOT 20 mm ON THIS SHEET, ADJUST SCALES ACCORDINGLY.

EXISTING CONDITIONS

XCG Environmental Engineers & Scientists

Date:	Location:	Rev.
DEC 2019	PRINCE GEORGE, B.C.	1
Scale: 1:1500	4-2428-01-68	Sheet: C-01



NOTE: EXISTING CONDITIONS AS OF MAY 8, 2019

(file: TND242801680001C02.DWG)

REVISIONS

REV	DESCRIPTION	DATE	APPROVED
0	ISSUED FOR REVIEW	OCT 2019	P. AUCLAIR
1	ISSUED FOR TENDER	DEC 2019	P. AUCLAIR

2020 LFG MAIN HEADER EXTENSION

FOOTHILLS BOULEVARD REGIONAL LANDFILL

REGIONAL DISTRICT OF FRASER-FORT GEORGE

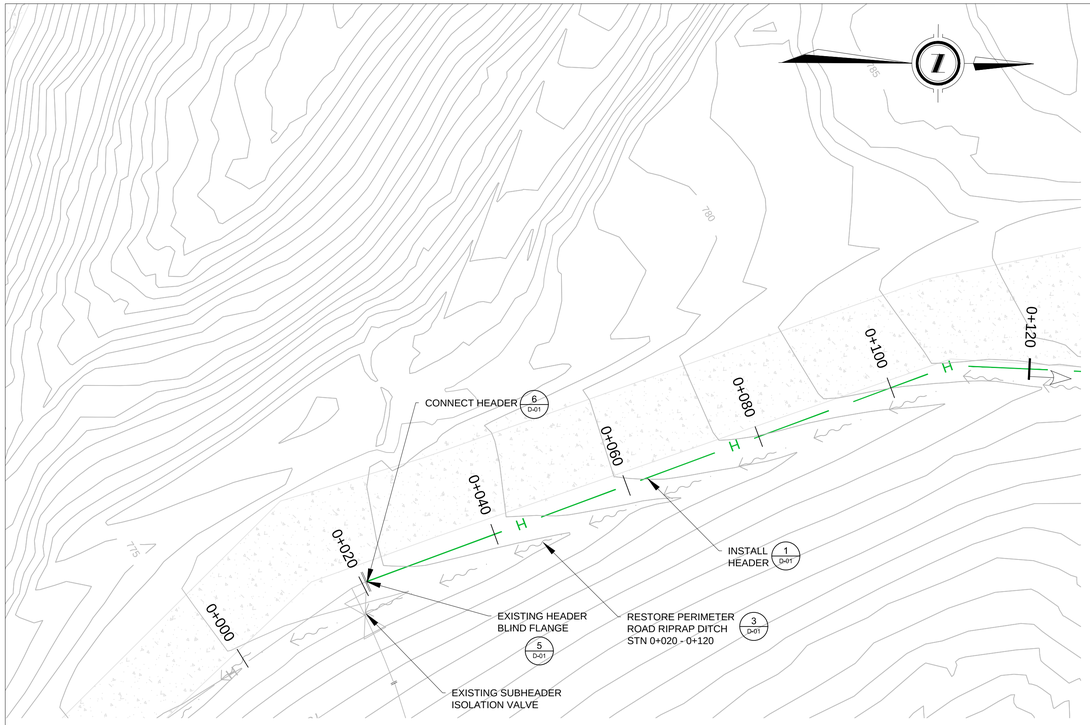
VERIFY SCALE

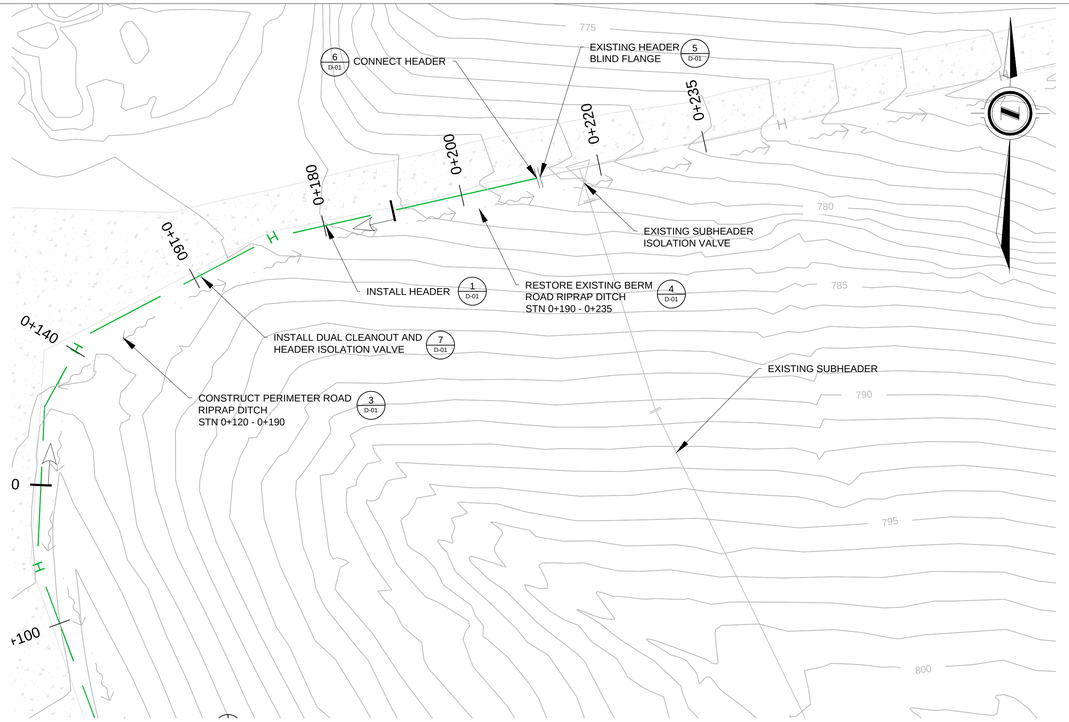
BAR IS 20 mm ON ORIGINAL DRAWING.
0 20 mm
IF NOT 20 mm ON THIS SHEET, ADJUST SCALES ACCORDINGLY.

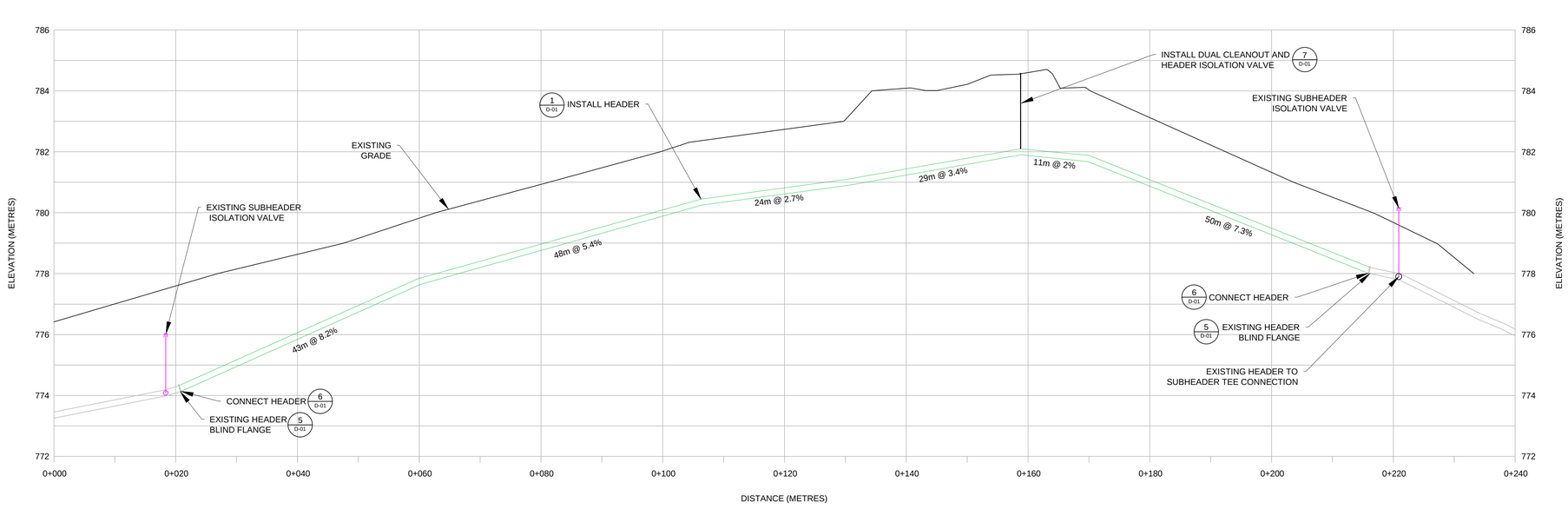
PROPOSED WORKS

XCG Environmental Engineers & Scientists

Date:	Location:	Rev.
DEC 2019	PRINCE GEORGE, B.C.	1
Scale: 1:500	4-2428-01-68	Sheet: C-02







0 10 20 m

1 : 400

(file: TND24280168001C03.DWG)

REVISIONS

REV	DESCRIPTION	DATE	APPROVED
0	ISSUED FOR REVIEW	OCT 2019	P. AUCLAIR
1	ISSUED FOR TENDER	DEC 2019	P. AUCLAIR

2020 LFG MAIN HEADER EXTENSION

FOOTHILLS BOULEVARD REGIONAL LANDFILL

REGIONAL DISTRICT OF FRASER-FORT GEORGE

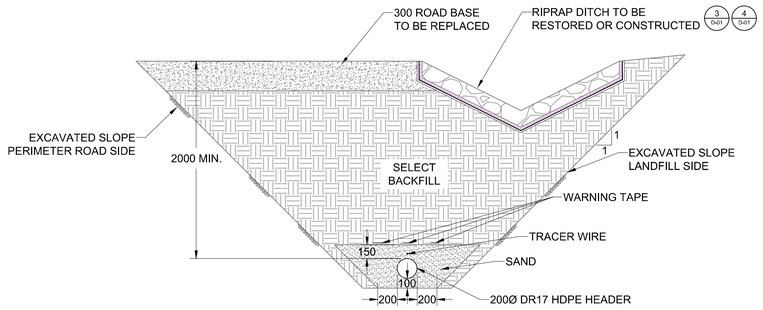
VERIFY SCALE

BAR IS 20 mm ON ORIGINAL DRAWING.
0 ——— 20 mm
IF NOT 20 mm ON THIS SHEET, ADJUST SCALES ACCORDINGLY.

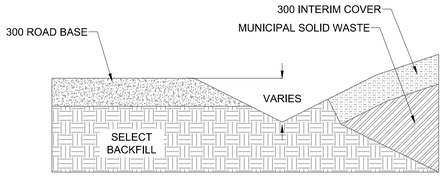
PLAN AND PROFILE

XCG Environmental Engineers & Scientists

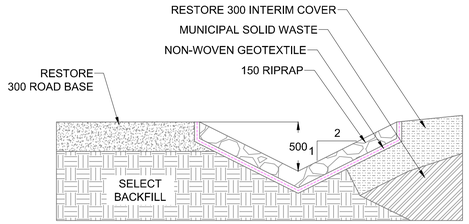
Date: DEC 2019
Location: PRINCE GEORGE, B.C.
Rev. 1
Scale: 1:400H 1:80V
4-2428-01-68
Sheet: C-03



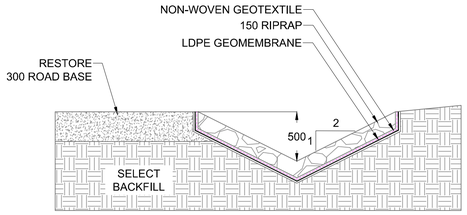
DETAIL 1 HEADER
N.T.S. C-02



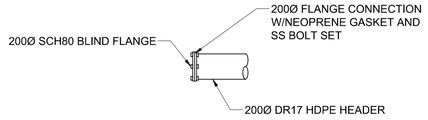
DETAIL 2 EXISTING PERIMETER ROAD DITCH
N.T.S. C-02



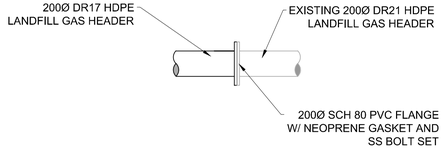
DETAIL 3 PERIMETER ROAD RIPRAP DITCH
N.T.S. C-02



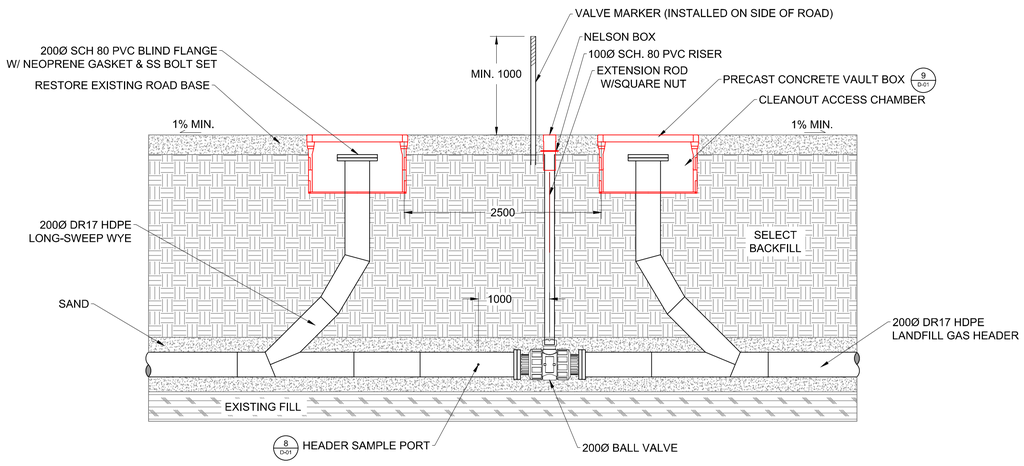
DETAIL 4 BERM ROAD RIPRAP DITCH
N.T.S. C-02



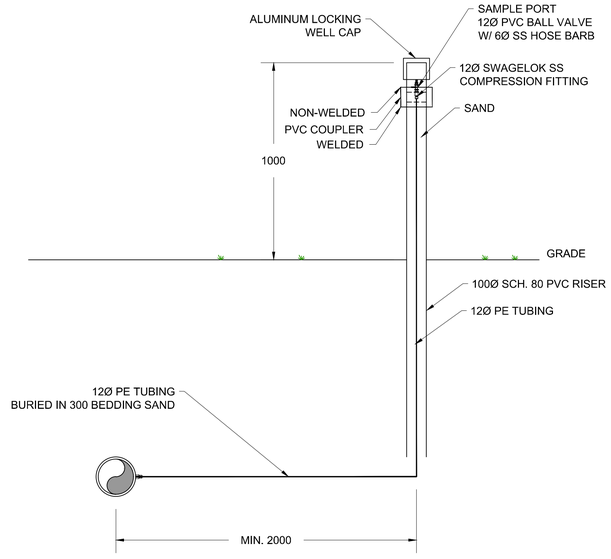
DETAIL 5 HEADER BLIND FLANGE
N.T.S. C-02



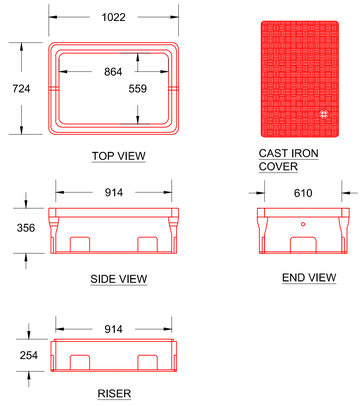
DETAIL 6 HEADER CONNECTION
N.T.S. C-02



DETAIL 7 DUAL CLEANOUT AND HEADER ISOLATION VALVE
N.T.S. C-02



DETAIL 8 HEADER SAMPLE PORT
N.T.S. D-01



DETAIL 9 PRE-CAST CONCRETE VAULT BOX
N.T.S. D-01

NOTE: ALL UNITS IN MILLIMETRES UNLESS OTHERWISE NOTED.

(file: TND24280168001D01.DWG

REVISIONS

REV	DESCRIPTION	DATE	APPROVED
0	ISSUED FOR REVIEW	DEC 2019	P. AUCLAIR
1	ISSUED FOR TENDER	DEC 2019	P. AUCLAIR

2020 LFG MAIN HEADER EXTENSION

FOOTHILLS BOULEVARD REGIONAL LANDFILL

REGIONAL DISTRICT OF FRASER-FORT GEORGE

VERIFY SCALE

BAR IS 20 mm ON ORIGINAL DRAWING.
0 20 mm
IF NOT 20 mm ON THIS SHEET, ADJUST SCALES ACCORDINGLY.

DETAILS I

XCG Environmental Engineers & Scientists

Date:	Location:	Rev.
DEC 2019	PRINCE GEORGE, B.C.	1
Scale: AS NOTED	4-2428-01-68	Sheet: D-01

APPENDIX C - CONTRACT AGREEMENT AND GENERAL CONDITIONS

APPENDIX D - SUPPLEMENTAL GENERAL CONDITIONS

REGIONAL DISTRICT OF FRASER-FORT GEORGE

2020 LANDFILL GAS MAIN HEADER EXTENSION
CONSTRUCTION PROJECT

FOOTHILLS BOULEVARD REGIONAL LANDFILL
PRINCE GEORGE, BRITISH COLUMBIA

SUPPLEMENTARY GENERAL CONDITIONS

SGC 1 General

.1 These Supplementary General Conditions modify, delete or add to the General Conditions of the Contract. In the event of a conflict between the General Conditions and the Supplementary General Conditions, the Supplementary General Conditions take precedence. Clauses of the General Conditions that have not been specifically modified shall remain in effect.

SGC 2 Definitions

.1 Owner - means the Regional District of Fraser-Fort George.

.2 Engineer or Consultant - means XCG Consulting Limited.

SGC 3 Documents

.1 In addition to the signed copy of the contract, the Owner shall furnish to the Contractor, without charge, four (4) copies of the drawings and specifications.

SGC 4 Time is of the Essence

.1 Time is of the essence in the performance of this Contract. In the event of schedule delay greater than one week, as determined by the Engineer, the Owner shall have the right to require the Contractor:

.1 To increase the manpower or have existing manpower work overtime for work done by his own forces or for work done by his Subcontractor to complete the work on schedule, at the Contractor’s expense;

.2 To arrange for the work of his suppliers to be accelerated through an increase in manpower or through overtime work, or both, or pay additional premiums as necessary to have manufactured components arrive and be installed at the site on schedule, at the Contractor’s expense;

.3 To remove the Subcontractor that is the cause of the delay and replace with another Subcontractor acceptable to the Owner;

.4 To provide additional supervision as necessary.

.2 The Contractor shall comply with such direction and shall bear any additional costs associated by compliance.

.3 The provision of such direction to take corrective action shall not diminish the Owner's rights and remedies under other provisions of the Contract.

SGC 5 Work Schedule

.1 At the time of Tender, the Contractor shall indicate that it can complete the work on or before the completion date indicated. Following the Contract Award, a detailed schedule as per Section 01 32 16.07 of the specifications shall be provided to the Consultant.

SGC 6 Documents

.1 The specifications are arranged in Divisions and Sections for convenience and clarity only. The Contractor is responsible for all work required to complete the contract. Such divisions and sections do not obligate the Owner or Consultant to establish limits of any contract between the Contractor and any Subcontractor.

.2 The intention and meaning of specifications and drawings are to be taken as a whole. The work shown on the drawings, if not fully described in specifications, or vice versa, which is reasonably implied and is evidently necessary for the complete finish of each branch of the work, is to be done by the Contractor as though both shown and specified.

SGC 7 Statutory Declaration

.1 The Contractor shall, prior to receiving payment on each progress certificate except the first one, provide to the Owner a Statutory Declaration stating that all employees, sub contractors and suppliers used in connection with the work have been fully paid and satisfied and there is no claim outstanding or pending in respect of the work carried out and that no lien has been filed against the Owner's lands or against any materials or equipment for work done or materials supplied under the Contract.

SGC 8 Payment

.1 The Owner shall make payment to the Contractor no later than thirty (30) days after the issuance of a certificate of payment by the Engineer.