REGIONAL DISTRICT
of Fraser-Fort George

INVITATION TO TENDER
ES-21-01

Construction Services - Cummings Road
Regional Transfer Station Redevelopment

Date Issued:	January 28, 2021
Closing Location:	Regional District Office 3rd Floor, 155 George Street, Prince George, BC V2L 1P8
Mandatory Site Meeting:	**Tuesday, February 9, 2021** 1:00 pm (Pacific Standard Time) Cummings Road Regional Transfer Station
Closing Date and Time:	**Monday, February 22, 2021** **2:00 pm (Pacific Standard Time)** **No Public Opening**
General Inquiries:	Email Laura Zapotichny at lzapotichny@rdffg.bc.ca
Technical Inquiries:	Email Curtis Jung at CJung@morrisonhershfield.com
Note:	Late submissions will not be considered

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1.0 INVITATION AND INSTRUCTIONS

The Regional District of Fraser Fort George is inviting tenders from qualified contractors for the 2021 Construction Project for the redevelopment of the Cummings Road Regional Transfer Station.

This project includes the following elements:

a. Removal of existing onsite structures and lock block walls, offsite disposal of any damaged lock blocks, clearing, grubbing, and excavating, offsite disposal of municipal solid waste, reuse of onsite soils, import of site fill, backfilling, compacting materials, and grading and stock piling soils.
b. Provision of lock blocks for retaining wall, concrete curbs, french drain, ditches and swales, riprap, chain link fence and gates.
c. Traffic control.
d. Construct concrete pads and landscaping.
e. Provide site electrical supply including electric fencing, lighting, poles, connections to the attendant booth and a new gate arm and kiosk, and coordination with BC Hydro.
f. Relocation of existing attendant booth.
g. General clean up and demobilization.

The purpose of the project is to complete the redevelopment of the Cummings Road Regional Transfer Station based upon the drawings and specifications included in the Invitation to Tender.

This project has a strict construction schedule, with limited flexibility on the Actual Facility-In-Use Date.

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 28, 2021 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 **by appointment only,** 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:

General Inquiries:

Laura Zapotichny
Manager of Waste Diversion Programs
Regional District of Fraser-Fort George
155 George Street
Prince George, BC V2L 1P8
Phone: (250) 960-4400
Email: lzapotichny@rdffg.bc.ca

Technical Inquiries:

Curtis Jung, P.Eng
Morrison Hershfield Limited
#310 – 4321 Still Creek Dr.
Burnaby, BC V5C 6S7
Phone: (604) 454-0402
Email: CJung@morrisonhershfield.com

1.2 Mandatory Site Visit

The Project Manager or delegate will provide an overview of the contract expectations and be available for general 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 Tuesday, February 9, 2021 at the Cummings Road Regional Transfer Station at 8375 Alpine Dr, Prince George, BC.

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

NOTE: DUE TO THE CURRENT PANDEMIC THE REGIONAL DISTRICT IS ENFORCING THE FOLLOWING PROTOCOLS IN RELATION TO SITE MEETINGS:

a) Only one representative per Company allowed on site
b) Face Masks are required at all times
c) 2-meter social distancing must be maintained at all times
d) Hands must be sanitized upon arrival, (provided)
e) All attendees must fill out a Covid19 Risk Assessment Form
f) Any Company Representative not following the above requirements will be asked to leave

1.3 Tender Submissions and Closing Date

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) Monday, February 22, 2021.

Three (3) complete copies of the 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-21-01
   Construction Project – Cummings Road Regional Transfer Station Redevelopment

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 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.

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 Laura Zapotichny, at lzapotichny@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 24).

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.

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 to Laura Zapotichny, lzapotichny@rdffg.bc.ca. 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 Monday, February 15, 2021 at 3pm (local time) 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 15, 2021, should changes be necessary to the work of this ITT, they will be addressed through Part 6 of the General Conditions, Changes to the Contract 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 Location and Facility Information

The Site is located in the Regional District of Fraser-Fort George, British Columbia at 8375 Alpine Drive.

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 14 through 24:
   - 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
   - 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. (References must be from within the last three (3) years)
   - 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. The proposed work

plan needs to include consideration for alternative project tasks to help maintain project schedule should delays occur.

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.

Tender Evaluation Methodology

(a)	Proven, successful experience in providing similar works	30%
(b)	Acceptability of reference checks	10%
(c)	Preliminary Construction Schedule	30%
(d)	Price	30%
	TOTAL	100%

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.

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 Form of Contract and General Conditions that will be used for this Project are the CCDC 4-2011 Unit Price Contract, included as Appendix C to this ITT. Project-specific Supplementary General Conditions to the CCDC 4 are located in Division 01 of the Specifications.

4.2 Award of Contract

A contract for ES-21-01 Construction Project – Cummings Road Regional Transfer Station Redevelopment is anticipated to be awarded at Regional Board on March 18, 2021. All tenderers will be advised, in writing, as to the awarding of the Contract after that date.

The Regional District may, in its sole discretion, award Contract ES-21-01 Construction Project – Cummings Road Regional Transfer Station Redevelopment, 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 START AND DURATION OF CONTRACT

Time is of the Essence: As the Cummings Road facility is critical to managing the Region's solid waste, time is of the essence on this Project

The term of the Contract will begin on April 15, 2021 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 Appendix C 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 November 1, 2021 or later date as agreed upon by the Regional District and the Contractor.

The Contractor will provide a 'Planned Facility-In-Use Date', a milestone date by which the work will be sufficiently complete to allow public use of the facility. The 'Actual Facility-In-Use Date' is the date upon which the Owner determines the project is sufficiently complete to allow public use of the facility.

Bidders are responsible for considering potential project impacts due to the COVID-19 pandemic in preparing their bids and for complying with all applicable guidelines, laws, orders, and requirements issued by the Government of British Columbia. The Regional District recognizes that further changes to COVID requirements may occur and such changes may affect Contract performance. Any unexpected performance issues and/or unexpected delays or changes will be handled in accordance with the terms of the Contract, which may include an extension of time for Contract performance.

6.0 BID PRICES

Tender prices must remain open for acceptance for a period of sixty (60) days from the time of Tender opening (Monday, February 22, 2021), 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 as well as a construction schedule that can meet the strict timeline.

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.

7.0 BONDING

7.1 Bid Bond:

The bid must be accompanied by a Bid Bond in an amount of ten percent (10%) of the total tendered price.

The Bid Bond must be issued by a Surety Company licensed to conduct business in the Province of British Columbia wherein the work is located.

If the successful bidder fails, for any reason, to execute the Contract, the portion of this Bid Bond will be forfeited to, and retained by, the Regional District of Fraser Fort George, in the amount for which the Regional District may legally contract with another party to perform the work, if the latter amount be in excess of the former.

The Bid Bonds submitted by unsuccessful bidders will be returned to them, without interest, as soon as the successful bidder has delivered, to the Regional District, a fully executed Contract for the work, or the period for which bids are irrevocable has elapsed, whichever shall happen first.

7.2 Performance Security:

The successful bidder shall deposit, with the Regional District, when signing the Contract, the following:

a. Performance Bond:

A Performance Bond in the amount of fifty percent (50%) of the tendered price; and a

b. Labour and Materials Payment Bond:

A Labour and Materials Payment Bond in the amount of fifty percent (50%) of the tendered price

In the event of any breach, default, or non-performance by the successful bidder causing loss to the Regional District, then the Regional District may enforce the Labour and Materials Payment Bond, and/or Performance Bond as liquidated damages.

All bonds must be issued by a Surety Company authorized to do business in the Province of British Columbia.

8.0 INSURANCE

The successful Bidder will be required to provide and maintain insurance, with the Regional District of Fraser-Fort George as additional insured, in accordance with the CCDC 4 Contract General Conditions, CCDC 41 (CCDC Insurance Requirements) included as Appendix E to this ITT, and project-specific Supplementary General Conditions.

The successful bidder shall 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.

9.0 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*.

10.0 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.

11.0 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.

12.0 SCOPE OF WORK

The work generally consists of but is not limited to:

a. Removal of existing onsite structures and lock block walls, offsite disposal of any damaged lock blocks, clearing, grubbing, and excavating, offsite disposal of municipal solid waste, reuse of onsite soils, import of site fill, backfilling, compacting materials, and grading and stock piling soils.
b. Provision of lock blocks for retaining wall, concrete curbs, french drain, ditches and swales, riprap, chain link fence and gates.
c. Traffic control.
d. Construct concrete pads and landscaping.
e. Provide site electrical supply including electric fencing, lighting, poles, connections to the attendant booth and a new gate arm and kiosk, and coordination with BC Hydro.
f. Relocation of existing attendant booth.
g. General clean up and demobilization.

This project has a strict construction schedule, with limited flexibility on the Actual Facility-In-Use Date.

13.0 LOCAL CONDITIONS

The Tenderer 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.

14.0 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
- Appendix E – CCDC Insurance Requirements (Refer to CCDC 41)

ACKNOWLEDGEMENT LETTER

The undersigned has received a full set of ITT ES-21-01 Construction Project Cummings Road Regional Transfer Station Redevelopment 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:

Laura Zapotichny, Manager of Waste Diversion Programs
Regional District of Fraser-Fort George
155 George Street
Prince George, BC V2L 1P8
Telephone: 250-960-4400
Fax: 250-562-8676

Email: lzapotichny@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 Bid Bond been included?
- ☐ Has the Tender Form Summary been completed?
- ☐ Has the Schedule of 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-21-01
  Construction Project
  Cummings Road Regional Transfer Station Redevelopment

- ☐ 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, Bid Bonds, 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 bid bond as the security deposit in the amount of ten percent (10%) of the contract value.

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)
Schedule of Prices	$ _____
GST as applicable	$ _____
TOTAL TENDER PRICE – INCLUDING GST	**$** _____

SCHEDULE OF PRICES

DIVISION	SECTION	ITEM	TITLE	UNIT	QTY	UNIT PRICE	TOTAL
DIV 01	**GENERAL REQUIREMENTS**						
		1.1	Mobilization/Demobilization	LS	1		
		1.2	General Requirements	LS	1		
	01 34 43	1.3	Environmental Protection	LS	1		
DIV 02	**REMOVALS**						
	02 41 23	2.1	Sitework Demolition	LS	1		
DIV 03	**CONCRETE AND RETAINING WALLS**						
	32 32 23	3.1	Supply and install of 3 block high lock block retaining wall	LS	1		
	32 32 23	3.2	Installation of reused lock blocks for 2 block high wall	Ea	85		
	03 48 00	3.3	Supply and Install new lock blocks for 2 block high wall	Ea	85		
	32 32 23	3.4	Supply and Install drainage pipe for 2 block high wall	LS	1		
	05 50 13	3.5	Supply and Install of Guard rails	LS	1		
	03 05 10	3.6	Supply and install of 7 concrete bin slabs	LS	1		
	03 05 10	3.7	Supply and install of 7 concrete top of wall slabs	LS	1		
DIV 26	**ELECTRICAL**						
	26 05 10	4.1	Supply and install power lines to the attendant booth, swipe card gate and kiosk c/w new power poles and bases, site lighting, enclosure & meter re-connection.	LS	1		
DIV 31	**EARTHWORKS**						
	31 11 00	5.1	Clearing and Grubbing	m^2	3,100		
	31 14 13	5.2	Stripping, stockpiling and placement of onsite topsoil	m^2	3,100		
	31 24 13	5.3	General Site excavation	m^3	2,750		
	31 24 13	5.4	Excavation Below concrete slabs & retaining wall	m^3	1,750		
	31 24 13	5.5	Reused Onsite Soils Site fill and Subgrade Preparation	m^3	3,400		
	31 24 13	5.6	Imported Site Fill, Subgrade Preparation and Backfill Below Retaining Wall	m^3	2,933		
	31 24 13	5.7	Offsite disposal of MSW (Loading and Haul Costs)	m^3	1,210		
	32 91 21	5.8	Haul Owner Supplied compost (NorGrow)	m^3	50		
	31 91 21	5.9	Blend and Place Prepared Topsoil	m^3	300		
	32 92 20	5.10	Supply and place hydro-seeding	m^2	2,100		
	32 93 00	5.11	Supply and installation of planting mulch, shrubs and trees	LS	1		

DIVISION	SECTION	ITEM	TITLE	UNIT	QTY	UNIT PRICE	TOTAL
DIV 32	**SITE IMPROVEMENTS**						
	32 11 13	6.1	Select Granular Subbase	tonnes	5,355		
	32 11 13	6.2	Well Graded Base	tonnes	2,604		
	32 11 13	6.3	High Fines Surfacing Aggregate	tonnes	1,638		
	03 48 00	6.4	Traffic barriers	Ea.	21		
	32 31 13	6.5	Chain link and electrical fencing	LM	325		
	32 31 13	6.6	Chain link and electric fence double gate	Ea.	2		
	32 31 13	6.7	Chain link and electric fence single gate	Ea.	1		
	32 31 13	6.8	Supply and Install of Mangate	Ea.	1		
DIV 33	**UTILITIES**						
	32 32 23	7.1	Storm ditching (incl. excavation, rip rap)	LM	120		
	33 41 10	7.2	Supply Install French Drain	LM	90		
DIV 36	**MISCELLANEOUS**						
		8.1	Relocate attendant booth	LS	1		
				Total			

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

(within the last three years)

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-21-01 Construction Project
Cummings Road Regional Transfer Station Redevelopment

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 E – CCDC Insurance Requirements (Refer to CCDC 41)

APPENDIX A - SPECIFICATIONS

SPECIFICATIONS

DIVISION 32 – Exterior Improvements

DIVISION 33 – Utilities

END OF SECTION

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

DEFINITIONS

Add the following new definitions:

"**Force Majeure**
Force Majeure is an event or effect that cannot be reasonably anticipated or controlled by the parties, such as an act of God, an act of a legislative, administrative or judicial entity, fire, flood, labour strike or lock-out, epidemic, unusually severe weather, or other similar cause outside of the control of the parties."

"**Actual Facility-in-Use Date**
The Actual Facility-in-Use Date is the date upon which the Consultant determines the *Project* is sufficiently complete to allow public use of the facility."

"**Planned Facility-in-Use Date**
The Planned Facility-in-Use Date is the milestone date by which the Owner requires the Project to be sufficiently complete to allow public use of the facility."

PART 2 ROLE OF THE CONSULTANT

GC 2.3 REVIEW AND INSPECTION OF THE WORK

2.3.5: Delete paragraph in its entirety and replace with the following:

"2.3.5 The *Consultant* and the *Owner* may order any portion or portions of the *Work* to be examined to confirm that such work is in accordance with the requirements of the *Contract Documents*. If the work is not in accordance with the requirements of the *Contract Documents*, the *Contractor* shall correct the work and pay the cost of examination and correction.

GC 2.4 DEFECTIVE WORK

2.4.1: Delete paragraph in its entirety and replace with the following:

"2.4.1 The *Contractor* shall correct at its own cost defective work that has been rejected by the *Owner* or the *Consultant* as failing to conform to the *Contract Documents:*

.1 within five (5) days of receiving *Notice in Writing* from the *Owner* or the *Consultant*, or

.2 without notice if any emergency or danger to the Work or the public exists,

whether or not the defective work has been incorporated in the *Work* and whether or not the defect is the result of poor workmanship, use of defective products or damage through carelessness or other act or omission of the *Contractor*.

GC 2.4: Add the following new paragraph:

"2.4.4 Upon failure of the *Contractor* to correct defective work within the timelines described in paragraph 2.4.1, the *Owner* may, without prejudice to any other remedy it may have, correct such deficiencies and deduct the cost from monies payable to the *Contractor*.

PART 5 PAYMENT

GC 5.5 PAYMENT OF HOLDBACK UPON SUBSTANTIAL PERFORMANCE OF THE WORK

5.5.1: Add the following new subparagraph:

".3 submit notification from WorkSafeBC that all required WorkSafeBC assessments have been paid for the periods covering the *Contract Time*."

PART 6 CHANGES IN THE WORK

GC 6.3 CHANGE DIRECTIVE

GC 6.3: Add new paragraphs as follows:

6.3.14 If, in the opinion of the *Contractor*, it is being required to perform work beyond the scope of the *Contract Documents*, whether at the discretion of the *Owner* or otherwise, the *Contractor* shall within five (5) Working Days deliver to the *Owner* and the *Consultant* a notice of protest in the form provided in Division 01 of the Specifications prior to proceeding with any of the disputed work. This five (5) Working Day time period commences from when direction is given by the *Owner* or the time at which the *Contractor* determines that it is being required to perform such work, whichever occurs first.

6.3.15 The *Contractor* shall keep accurate and detailed cost records indicating the cost of the work done under protest. The *Contractor* shall not be entitled to payment if they fail to keep and produce such records upon the *Owner*'s or *Consultant*'s request.

GC 6.5 DELAYS

6.5.3: Delete this paragraph in its entirety and substitute "intentionally left blank".

PART 7 DEFAULT NOTICE

GC 7.1 OWNER'S RIGHT TO PERFORM THE WORK, TERMINATE THE CONTRACTOR'S RIGHT TO CONTINUE WITH THE WORK OR TERMINATE THE CONTRACT

GC 7.2 - Add new paragraph as follows:

"7.1.7 The *Owner* may terminate the *Contract* at any time, without cause, by providing not less than thirty (30) calendar days' *Notice in Writing* to the *Contractor*."

GC 7.2 CONTRACTOR'S RIGHT TO SUSPEND THE WORK OR TERMINATE THE CONTRACT

GC 7.2: Add new paragraph as follows:

"7.2.6 The *Contractor* may terminate the *Contract* at any time, without cause, by providing not less than thirty (30) calendar days' *Notice in Writing* to the *Owner*."

Add GC 7.2 FORCE MAJEURE

GC 7.2: Add new paragraphs as follows:

"7.2.1: If a *Force Majeure* event occurs that prevents the *Contractor* or the *Owner* from performing their obligations under the *Contract*, the obligations of the parties under the *Contract* shall be suspended for so long as the condition constituting *Force Majeure* continues. The party affected by *Force Majeure* shall:

.1 provide *Notice in Writing* to the other party indicating the anticipated duration of the *Force Majeure* event, actions being taken by the party providing notice to avoid or minimize the effect of the *Force Majeure* event, and

.2 make reasonable efforts to remove or mitigate the effects of the condition constituting *Force Majeure*.

7.2.2. Once the *Force Majeure* event has ended, the *Owner* shall grant to the *Contractor* an extension of the *Contract Time* as may be agreed with the *Contractor* or, if the parties are unable to reach agreement, as determined by the dispute resolution process described under Part 8 of the General Conditions – DISPUTE RESOLUTION.

7.2.3 Where as a result of *Force Majeure* there is a material increase in the *Contractor*'s costs, then the *Owner* shall authorize a change in *Contract Price* in accordance with Part 6 of the General Conditions – CHANGES IN THE WORK, as may be agreed between the parties or, if the parties are unable to reach agreement, as determined by the dispute resolution process described under Part 8 of the General Conditions – DISPUTE RESOLUTION.

7.2.4 In the event of *Force Majeure* resulting in a substantial material increase in the cost of the *Work*, the *Owner* may choose to not proceed with the *Project* and may terminate the *Contract* in accordance with Part 7 of the General Conditions – DEFAULT NOTICE. If the *Owner* terminates this *Contract* following the end of the *Force Majeure* event, then it shall compensate the *Contractor* for unpaid completed *Work*."

Add PART 13 CONFIDENTIALITY, FREEDOM OF INFORMATION, AND OWNERSHIP

Add GC 13.1 CONFIDENTIALITY AND FREEDOM OF INFORMATION

GC 13.1: Add new paragraph as follows:

"13.1.1 In accordance with the Freedom of Information and Protection of Privacy Act, R.S.B.C. 1996, c165, as amended, the *Contractor* shall treat as confidential and will

not, without the prior written consent of the *Owner*, 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."

Add GC 13.2 OWNERSHIP

GC 13.2: Add new paragraphs as follows:

"13.2.1 Any material produced, received or provided by the *Owner* to the *Contractor* as a result of this *Contract* and any equipment, machinery, or other property provided by the *Owner* to the *Contractor* as a result of this *Contract* shall be:

.1 the exclusive property of the *Owner*; and

.2 forthwith be delivered by the *Contractor* to the *Owner*, or the *Owner* giving written notice to the *Contractor* requesting delivery of the same, or at completion of this *Contract*.

13.2.2 *Contractor* shall not be entitled to payment for extra materials or stockpiles not used on the *Project.* Any extra materials and stockpiles not used on the *Project* shall be:

.1 the exclusive property of the *Contractor*; and

.2 shall be removed by the *Contractor* from the *Place of the Work* at no cost to the *Owner*.

13.2.3 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 *Project*, shall be provided by the *Contractor* to the *Owner* in an amenable format (i.e. Word, Excel, AutoCAD) and will become the property of the *Owner* and the *Owner* shall not be limited by *Contractor*'s copyright or proprietary terms with regards to use by the *Owner*."

PART 9 PROTECTION OF PERSONS AND PROPERTY

GC 9.4 CONSTRUCTION SAFETY

GC 9.4: Add new paragraph as follows:

"9.4.2 If at any time the *Owner* or the *Consultant* 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* shall comply with such an order immediately at no change in *Contract Price* or *Contract Time*. No Neither the *Owner* nor the *Consultant* shall be held liable for any damages or breach of laws, bylaws or regulations that may result.

Add PART 14 BONUS AND PENALTY PROVISIONS

Add GC 14.1 BONUS AND PENALTY PROVISIONS

GC 14.1: Add new paragraph and subparagraphs as follows:

"14.1.1 Bonus and penalty provisions apply to this *Contract* as follows, based on the *Planned Facility-in-Use Date* of August 31, 2021:

.1 If the *Contractor* advances the *Work* such that the facility is ready for public use prior to the *Planned Facility-in-Use Date*, the *Contractor* shall be entitled to a bonus of $1,000 for each *Working Day* between the *Actual Facility-in-Use Date* and the *Planned Facility-in-Use Date*, up to a maximum bonus of $30,000.

.2 For each *Working Day* of delay between the *Planned Facility-in-Use Date* and the *Actual Facility-in-Use Date*, the *Contractor* shall pay to the *Owner* a penalty of $1,000 per *Working Day* up to a maximum of $30,000.

END OF SECTION

PART 1 - GENERAL

1.1 Section Includes

.1 General project requirements, including the following:

.1 Specification Language

.2 Project Coordination

.3 Project Timing

.4 Summary of Work

.5 Regulatory Requirements

.6 Contractor Use of Premises

.7 Existing Conditions and Utilities

.8 Subcontracting

.9 Damage to Existing Property

.10 Pre-ordered Products

.11 Owner-supplied Products

.2 Unless specifically stated otherwise, all requirements of Contract Documents are Contractor's responsibility to fulfill.

1.2 Specification Language

.1 These specifications are written in imperative mood in an abbreviated form. The imperative language of the Specification is directed to the Contractor, unless specifically noted otherwise. Incomplete sentences shall be completed by inserting shall, "the Contractor shall" and "shall be", and similar mandatory phrases by inference in the same manner as they are applied to notes on the Drawings. The words "shall be" shall be supplied by inference where a colon (:) is used within sentences or phrases. Except where worded to the contrary, fulfil and perform all indicated requirements, whether stated imperatively or otherwise.

.2 The terms "as indicated", "indicated" and "as shown" shall mean "as indicated on Drawings".

.3 The terms "provide" and "provision of" shall mean "to supply and install complete and ready for intended use".

1.3 Project Coordination

.1 Plan, control, coordinate, and execute the Work in accordance with Contract Documents and as required for performance of the Work.

.2 Be responsible for overall management and coordination of Project with Subcontractors, sub-Subcontractors, and Suppliers, manufacturers, authorities having jurisdiction, and other parties as required to complete the Work.

1.4 Project Timing

.1 Time is of the essence in the performance of this Contract. Required timing for project activities and milestones are provided below:

.1	Construction Start-up Meeting:	May 4, 2021
.2	Mobilization to site:	May 10, 2021
.3	Substantial Performance of the Work	August 31, 2021
.4	Planned Facility-in-Use Date:	August 31, 2021
.5	Construction Completion:	October 29, 2021
.6	Final Invoicing and Closeout Submittals:	November 30, 2021

.2 As incentive to meeting the Planned Facility-in-Use Date listed above, the Owner has incorporated bonus and penalty provisions into the Contract terms. Refer to Section 00 73 00 Supplementary General Conditions for definitions of “Planned Facility-in-Use Date” and “Actual Facility-in-Use Date” and for Contract bonus and penalty provisions.

.3 Refer to Section 01 77 00 Closeout Procedures for definition of Construction Completion.

1.5 Summary of Work

.1 The Work of this Contract is detailed in the Contract Documents and includes provision of labour, services, Products, materials, Construction Equipment, services, incidentals, and Temporary Work as required for performance of the Work, including but not limited to the following:

.1 Removal of existing onsite structures (including but not limited to the steel structure, lock block retaining wall) and reuse of lock blocks, offsite disposal of any damaged lock blocks, clearing and grubbing, excavating, offsite disposal of MSW, reuse of onsite soils, import of site fill, backfilling, compacting materials, grading and stockpiling works as per Drawings and Specifications;

.2 Provide lock-blocks for retaining walls, railings, concrete curbs, French drain, ditches and swales, riprap, chain link fence and gates;

.3 Provide traffic control;

.4 Construct reinforced concrete pads;

.5 Construct landscaping;

.6 Provide site electrical supply including lighting, poles, electric fencing, connections to attendant booth and new lift arm gate assembly and coordination with BC Hydro;

.7 Relocation of the existing Attendant Booth; and

.8 General clean-up of Place of Work including new entrance and demobilization.

1.6 Regulatory Requirements

.1 Conduct the Work in accordance with existing laws, codes, ordinances, and regulations, most recent edition including related supplements and amendments, which in any way affect conducting of the Work, including but not limited to:

.1 National Building Code of Canada (NBC)

.2 British Columbia Building Code (BCBC)

.3 Applicable codes and bylaws of local authorities having jurisdiction

.4 British Columbia Workers Compensation Act, Occupational Health and Safety Regulation and WorkSafeBC requirements

.5 All other applicable legislation

.2 Meet or exceed requirements of:

.1 Contract Documents

.2 Specified standards, codes and referenced documents

.3 In the event of conflict or discrepancy, the more stringent requirements apply.

1.7 Contractor Use of Premises

.1 Contractor has unrestricted use of the Place of the Work until Substantial Performance of the Work.

.2 Coordinate use of premises under direction of Consultant or Owner.

.3 Assume full responsibility for protection and safekeeping of Products under this Contract.

.4 Obtain and pay for use of additional storage or Work areas needed for operations under this Contract.

1.8 Existing Conditions

.1 Site Conditions:

.1 Information regarding existing site conditions has been derived from survey data provided by Koehler Land Surveying Inc., on June 1, 2020. The Consultant has not field verified accuracy of survey.

.2 Information on existing site conditions is provided as a courtesy and does not relieve the Contractor of its responsibility for inspecting the Place of the Work and satisfying itself as to the local conditions prior to commencing Work.

.2 Examination:

.1 Examine existing surfaces and conditions prior to commencing Work of each Specification section. Immediately report adverse conditions to Consultant and take corrective measures to Consultant's satisfaction.

.2 Commencement of Work shall imply Contractor's acceptance of existing surfaces and conditions. No claims for damages or extras resulting from such conditions or defects will be accepted later, except where such conditions could not have been known prior to commencing work.

1.9 Subcontracting

.1 Subcontracting of any portion of the Work will not be permitted without prior written consent of Owner or Consultant.

1.10 Damage to Existing Property

.1 In the event of damage to the Owner's property arising from Contractor's actions:

.1 Immediately notify the Owner of damage.

.2 Owner will investigate and notify Contractor of damages to be repaired.

.3 If Contractor does not reply within seventy-two (72) hours, Owner will conduct repairs and deduct cost of repairs from payments to Contractor.

1.11 Pre-ordered Products

.1 On execution of Contract between Owner and Contractor, execute agreements with designated Suppliers in accordance with Contract terms.

.2 Contractor responsibility for purchase, handling, and installation for pre-ordered Products is same as for other Contractor-furnished Products.

1.12 Owner-supplied Products

.1 Owner-supplied compost (NorGrow).

.2 Permanent site signage.

.3 Waste and recycling containers and bins.

END OF SECTION

PART 1 - GENERAL

1.1 Section Includes

.1 Payments will be made on the basis of the Total Tender Price in the Tender Form Summary and the Unit Prices in the Schedule of Prices.

.2 The Contract Price for supply and installation of materials shall be full compensation of supplying, hauling, constructing, installing, cleaning, testing, commissioning and placing into service together with all other work subsidiary and incidental thereto for which separate payment is not provided elsewhere.

.3 Method of measurement of quantities for payment and basis for payment will be in accordance with the following items of this Section. Quantities shall be measured by the Contractor for payment using generally accepted field survey methods. Contractor shall provide documentation of measurements and corresponding calculations to the Consultant upon request.

.4 Where the Schedule of Prices shows separate items for supply and installation, the Unit Prices or Lump Sum Prices bid for supplying shall include supplying, delivering, loading, unloading, and all allowances for handling, storage, breakage and waste. Payment will be made only for Products and materials actually installed.

.5 Unless otherwise noted, payment encompasses all aspects of performing the Work for each item and includes all tools, labour, Construction Equipment, Products, materials, consumables, and operations necessary or incidental thereto.

.6 Where the Contractor will be hauling materials to and from the Foothills Boulevard Regional Landfill the Contractor is required to track the number of loads and types of materials hauled to and from the Foothills Boulevard Regional Landfill. The Contractor is required to meet all regulations as established by the Regional District of Fraser-Fort George Bylaw No. 3023, Amendment Bylaw No. 3115, 2018. The Contractor is not responsible for the tipping fee associated with materials hauled to the Foothills Boulevard Regional Landfill.

1.2 Measurement and Payment

.1 Division 01 – General Requirements

.1 Item 1.1 - Mobilization and Demobilization

.1 Measurement: Lump Sum.

.2 Payment: Paid for as a lump sum item. Payment shall be made on invoice for 50% of the Contractor’s quoted amount on Construction start and the balance 50% on invoice on completion of demobilization and clean-up of the Place of the Work. Cost for this item shall not exceed five percent (5%) of the Total Tender Price.

.3 Work Includes: Initial mobilization and final demobilizing of Construction Equipment and Temporary Work, including site trailer set up, temporary power, etc.

.2 Item 1.2 – General Requirements

.1 Measurement: Lump Sum.

.2 Payment: Paid for as a lump sum item. Payment shall be made on a percentage per month basis for duration of the Work.

.3 Work Includes: All direct and indirect costs including but not limited to: temporary facilities and utilities, Performance Labour and Material Bonds, traffic management/control, health and safety, all surveys, quality control testing, expenses and profit associated with the Contract.

.3 Item 1.3 – Environmental Protection

.1 Measurement: Lump Sum.

.2 Payment: Paid for as a lump sum item. Payment shall be made on a percentage per month basis for duration of the Work.

.3 Work Includes: Requirements of Section 01 34 43 - Development and implementation of a Construction Environmental Management Plan (CEMP) and all environmental protection elements required for the duration of the Work including but not limited to nesting survey(s), dust control, erosion and sediment control and management of MSW prior to offsite disposal. Management of MSW shall be done in accordance with all governing regulations.

.2 Division 02 – Removals

.1 Item 2.1 – Sitework Demolition

.1 Measurement: Lump Sum.

.2 Payment: Paid for as a lump sum item. Payment shall be made when all removals/demolition is complete. Partial payment may be considered based on the Consultant’s estimate of physical percent complete.

.3 Work Includes: Removal and offsite disposal or recycling of all elements identified on the Drawings and Specifications. Including but not limited to existing concrete and lock-block retaining walls, steel structure, guardrails, chainlink fencing and existing site electrical. Includes demolition of the existing lock block walls and stockpiling of the lock blocks in good condition for reuse. Includes coordination with the Owner and BC Hydro as required for removal of items as identified on the Drawings. Revenue generated from recycling will be for the benefit of the Contractor.

.3 Division 03 – Concrete and Retaining Walls

.1 Item 3.1 – Supply and Install of 3-Block High Lock Block Retaining Wall

.1 Measurement: Lump Sum.

.2 Payment: Paid for as a lump sum. Payment shall be made when 3-Block High Lock Block Retaining Wall is complete. Partial payment may be considered based on the Consultant's estimate of physical percent complete.

.3 Work Includes: Supply and installation of all elements of the 3-block high lock block retaining wall on the Drawings and Specifications. Including but not limited to new lock blocks, flattop lock blocks, geogrid, drainage pipe, geotextile, drain rock. Structural backfill (Select Granular Subbase) will be paid under Item 6.1.

.2 Item 3.2 – Installation of Reused Lock Blocks for 2-Block High Wall

.1 Measurement: Each.

.2 Payment: Paid for as a per Each item. Payment will be made upon completion of placement of each lock block and geotextile.

.3 Work Includes: All Work associated with preparation and placement of the reused lock blocks for the 2-Block Wall as shown on the Drawings and Specifications. Includes supply and installation of geotextile fabric. Granular backfill will be paid under Item 6.1.

.3 Item 3.3 – Supply and Installation of New Lock Blocks for 2-Block High Wall

.1 Measurement: Each.

.2 Payment: Paid for as a per Each item. Payment will be made upon completion of placement of each lock block and geotextile.

.3 Work Includes: All Work associated with supply, preparation and placement of new lock blocks required for the 2-Block Wall as shown on the Drawings and Specifications. Includes supply and installation of geotextile fabric. Granular backfill will be paid under Item 6.1.

.4 Item 3.4 – Supply and Installation of Drainpipe for 2-Block High Wall

.1 Measurement: Lump Sum.

.2 Payment: Paid for as a lump sum item. Payment shall be made when Drainpipe for 2-Block High Wall is complete. Partial payment may be considered based on the Consultant's estimate of physical percent complete.

.3 Work Includes: All Work associated with the supply and installation of drainpipe, drain rock and geotextile as shown on the Drawings and Specifications.

.5 Item 3.5 – Supply and Installation of Guard Rails

.1 Measurement: Lump Sum.

.2 Payment: Paid for as a lump sum item. Payment shall be made when Guard Rails are complete. Partial payment may be considered based on the Consultant's estimate of physical percent complete.

.3 Work Includes: All Work associated with the supply and installation of Guard Rails as shown on the Drawings and Specifications.

.6 Item 3.6 – Supply and Install 7 Concrete Bin Slabs

.1 Measurement: Lump Sum

.2 Payment: Paid for as a lump sum item. Payment shall be made when Concrete Slabs are complete. Partial payment may be considered based on the Consultant's estimate of physical percent complete.

.3 Work Includes: Forming, installation of rebar, concrete supply and placement, finishing, curing and provision of control joints of the seven 150 mm thick concrete slabs in accordance with the Drawings and Specifications.

.7 Item 3.7 – Supply and Install 7 Concrete Top-of-Wall Slabs

.1 Measurement: Lump Sum

.2 Payment: Paid for as a lump sum item. Payment shall be made when Concrete Slabs are complete. Partial payment may be considered based on the Consultant's estimate of physical percent complete.

.3 Work Includes: Forming, installation of rebar, concrete supply and placement, finishing, curing and provision of control joints of the seven 200 mm concrete slabs in accordance with the Drawings and Specifications.

.4 Division 26 – Electrical

.1 Item 4.1 – Supply and install underground power cables to the Attendant Booth, lift arm gate assembly, c/w poles, power lines, electrical meter re-connection, site lighting, lockable waterproof enclosures, conduits and connections as required in the Drawings and Specifications.

.1 Measurement: Lump Sum.

.2 Payment: Paid for as a lump sum item. Payment shall be made when all Electrical work is complete. Partial payment may be considered based on the Consultant's estimate of physical percent complete.

.3 Work Includes: Supply and install underground power cables to the Attendant Booth, lift arm gate assembly including concrete base, c/w poles, power lines, electrical meter re-connection, site lighting, lockable waterproof enclosures, conduits and connections as required in the Drawings and Specifications including trenching and reuse of excess trench material, import and placement of approved backfill and compaction. Coordination with BC Hydro for permanent power connection and re-connection to meter. All demolition of existing electrical including removal of existing poles to be included under Item 2.1.

.5 Division 31 – Earthworks

.1 Item 5.1 – Clearing and Grubbing:

.1 Measurement: Square Meters

.2 Payment: Paid for as a Unit Price per square meter based on surveyed quantities (refer to 1.1.3).

.3 Work Includes: All Work required to completely grub and strip stumps, roots, logs, shrubs, grass, weeds, fallen timber and other surface litter, wherever they occur within the right-of-way and entrance roadway, and within such other areas as directed by the Consultant and shown on the Drawings, including but not limited to cutting, hauling, stockpiling, chipping, cleaning and all other works incidental thereto. All cleared and grubbed materials to be separated and chipped as required for acceptance as compost at the Foothills Boulevard Regional Landfill. Contractor is responsible for hauling cleared and grubbed materials to the Owner's composting facility and tracking the number of trucks hauled. Branches or other wood larger than 75 mm (3 inches) must be chipped for acceptance as compost.

.2 Item 5.2 – Stripping, Stockpiling and Placement of Native Topsoil

.1 Measurement: Square Meters

.2 Payment: Paid for as a Unit Price per square meter of area stripped based on surveyed quantities (refer to 1.1.3).

.3 Work Includes: All Work required to completely strip topsoil, stockpile and placement for reuse onsite.

.3 Item 5.3 - General Site Excavation

.1 Measurement: Cubic Meters

.2 Payment: Paid for at Unit Price per cubic meter based on surveyed quantities (refer to 1.1.3).

.3 Work Includes: General site grading excavation in accordance with the Drawings, Specifications, Geotechnical Report, and as directed by the Consultant. Work shall include but not be limited to excavating, dewatering, cutting, hauling, stockpiling, dust control, preparing and maintaining access and haul roads and all other works incidental thereto. Excavated materials, where approved, may be used as fill material.

.4 Item 5.4 – Excavation for Concrete Slabs and Retaining Wall

.1 Measurement: Cubic Meters

.2 Payment: Paid for at Unit Price per cubic meter based on surveyed quantities (refer to 1.1.3).

.3 Work Includes: Excavation and segregation of excavated materials (mineral soils and MSW) underlying the concrete slabs and Lock Block Retaining Wall in accordance with the Drawings, Specifications,

Geotechnical Report, and as directed by the Consultant. Work shall include but not be limited to excavating, dewatering, cutting, hauling, stockpiling, dust control, preparation and maintaining access and haul roads and all other works incidental thereto. MSW shall be segregated from mineral soils for offsite disposal. Excavated mineral soils, where approved, will be used as fill material.

.5 Item 5.5 – Site Fill and Subgrade Preparation:

.1 Measurement: Cubic Meters

.2 Payment: Paid for at Unit Price per cubic meter based on surveyed quantities (refer to 1.1.3).

.3 Work Includes: Haul, placement and compaction of approved onsite reclaimed mineral soils as noted on the Drawings, Specifications and in accordance with the Geotechnical Report, including but not limited to cutting, hauling, stockpiling, placing, dumping, watering, mixing and material conditioning, windrowing, compacting, grading, dust control and all other works incidental thereto.

.6 Item 5.6 – Imported Site Fill, Subgrade Preparation and Backfill Below Lock Block Retaining Wall:

.1 Measurement: Cubic Meters

.2 Payment: Paid for at Unit Price per cubic meter based on surveyed quantities (refer to 1.1.3).

.3 Work Includes: Supply, haul, placement and compaction of Consultant approved imported soils and compaction as noted on the Drawings, Specifications and in accordance with the Geotechnical Report, including but not limited to cutting, hauling, stockpiling, placing, dumping, watering, mixing and material conditioning, windrowing, compacting, grading, dust control and all other works incidental thereto.

.7 Item 5.7 – Stockpiling and Offsite Disposal of Municipal Solid Waste (MSW)

.1 Measurement: Cubic Meters

.2 Payment: Paid for at Unit Price per cubic meter based on surveyed stockpile of MSW prior to loading and haul offsite.

.3 Work Includes: Stockpiling, stockpile management, loading and haul of MSW to the Foothills Boulevard Regional Landfill for final disposal.

.8 Item 5.8 – Haul Owner Supplied NorGrow/Compost

.1 Measurement: Cubic Meters

.2 Payment: Paid for at Unit Price per cubic meter based on agreed volume per truck load.

.3 Work Includes: Hauling NorGrow from the composting facility at the Foothills Boulevard Regional Landfill and stockpiling as required prior

to blending for use as prepared topsoil as per the Drawings and Specifications.

.9 Item 5.9 – Blend and Place Prepared Topsoil

.1 Measurement: Cubic Meters

.2 Payment: Paid for at Unit Price per cubic meter based on surveyed quantities (refer to 1.1.3).

.3 Work Includes: Blending Norgrow with mineral soil or other soils deemed suitable by the Consultant to create a Prepared Topsoil as defined in 31 91 21 and 32 93 00. Placement of Prepared Topsoil as per the Drawings and Specifications.

.10 Item 5.10 – Supply and Place Hydro-Seeding

.1 Measurement: Square Meters

.2 Payment: Paid for at Unit Price per square meter based on surveyed quantities (refer to 1.1.3).

.3 Work Includes: Supply and placement of hydro-seeding as per the Drawings and Specifications.

.11 Item 5.11 – Supply and Installation of Planting Mulch, Shrubs and Trees

.1 Measurement: Lump Sum

.2 Paid for as a lump sum item. Payment shall be made when all plantings are complete.

.3 Work Includes: Supply, placement and installation of planting mulch, shrubs and trees as per the Drawings and Specifications.

.6 Division 32 – Site Improvements

.1 Item 6.1 – Select Granular Subbase

.1 Measurement: Tonnes

.2 Payment: Paid for at Unit Price per tonnes based on truck weigh scale tickets.

.3 Work Includes: Supply, haul, spread and compaction of Select Granular Subbase on the prepared subgrade surface of the Work as per the Drawings and Specifications and in accordance with the Geotechnical Report. Includes supply, haul, spread and compaction of Select Granular Subbase as backfill for the Lock Block Retaining Wall.

.2 Item 6.2 – Well Graded Base

.1 Measurement: Tonnes

.2 Payment: Paid for at Unit Price per tonnes based on truck weigh scale tickets.

.3 Work Includes: Supply, haul, spread and compaction of Well Graded Base on the prepared Select Granular Subbase as per the Drawings and Specifications and in accordance with the Geotechnical Report.

.3 Item 6.3 – High Fines Surfacing Aggregate

.1 Measurement: Tonnes

.2 Payment: Paid for at Unit Price per tonnes based on truck weigh scale tickets.

.3 Work Includes: Supply, haul, spread and compaction of High Fines Surfacing Aggregate on the prepared Well Graded Base as per the Drawings and Specifications and in accordance with the Geotechnical Report.

.4 Item 6.4 – Traffic Barriers

.1 Measurement: Each.

.2 Payment: Paid for as per Each item. Payment will be made upon completion of placement of all traffic barriers.

.3 Work Includes: Supply and placement of pre-cast concrete traffic barriers as per the Drawings and Specifications.

.5 Item 6.5 – Chain Link and Electric Fence:

.1 Measurement: Linear Meters

.2 Payment: Paid for at Unit Price per linear meter based on surveyed quantities (refer to 1.1.3).

.3 Work Includes: Supply and installation of the chain link fence c/w posts in concrete, electric fence and all components, including electrical connection necessary for complete fencing and as shown on the Drawings and Specifications.

.6 Item 6.6 – Chain Link and Electric Fence Double Gates:

.1 Measurement: Each

.2 Payment: Paid for as a per Each item. Payment will be made upon completion of this item.

.3 Work Includes: Supply and installation of chain link fence double gates c/w posts in concrete, electric fence and all components as shown on the Drawings and Specifications.

.7 Item 6.7 – Chain Link and Electric Fence Single Gate:

.1 Measurement: Each

.2 Payment: Paid for as a per Each item. Payment will be made upon completion of this item.

.3 Work Includes: Supply and installation of chain link fence single gates c/w posts in concrete, electric fence and all components as shown on the Drawings and Specifications.

.8 Item 6.8 – Supply and Install of Man Gate

.1 Measurement: Each.

.2 Payment: Paid for as a per Each item. Payment will be made upon completion of this item.

.3 Work Includes: Supply and installation of man gate gates c/w posts in concrete, electric fence and all components as shown on the Drawings and Specifications.

.7 Division 33 – Utilities

.1 Item 7.1 – Storm Ditching

.1 Measurement: Lineal Meters

.2 Payment: Paid for at Unit Price per linear meter based on surveyed quantities (refer to 1.1.3).

.3 Work includes: Supply and installation of approved rip rap and geotextile, excavation to construct and shape the ditches, to the elevation and profile as shown in the Drawings.

.2 Item 7.2 – Supply and Install French Drain

.1 Measurement: Lineal Meters

.2 Payment: Paid for at Unit Price per linear meter based on surveyed quantities (refer to 1.1.3).

.3 Work Includes: Supply and installation of all components of the French Drain including trenching, management of excess trench material onsite, backfilling, drain rock, perforated PVC piping and geotextile.

.8 Division 36 – Miscellaneous

.1 Item 8.1 – Relocate Attendant Booth

.1 Measurement: Lump Sum.

.2 Payment: Paid for as a lump sum item. Payment shall be made when relocation is complete.

.3 Work Includes: Relocation and placement of the existing Attendant Booth as indicated on the Drawings. Refer to 02 41 23 – Sitework Demolition.

END OF SECTION

NOTICE OF PROTEST – SAMPLE FORM

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

END OF SECTION

PART 1 - GENERAL

1.1 Section Includes

.1 Applications for payment.

1.2 Applications for Progress Payment

.1 Notify Consultant sufficiently in advance of operations to permit required measurement for payment. Section 01 20 00 Measurement and Payment stipulates methods for measurement and payment.

.2 Progress claims submitted for payment during the project are to be based on the cost breakdown contained in the Tender Form submitted by the Contractor.

.3 Submit progress claims in duplicate the first week of each month for the value, proportionate to Contract Price, of Work performed and Products delivered to Place of Work at that date. Only one claim per month will be accepted.

.4 With each progress claim, submit the following:

.1 Updated construction progress schedule in accordance with Section 01 32 00 Construction Progress Documentation.

.2 Progress photography in accordance with Section 01 32 Construction Progress Documentation.

.3 Proof Contractor remains in good standing with WorkSafeBC for the purposes of Section 258 of the *Workers Compensation Act* and has paid and kept current all assessments required by WorkSafeBC.

END OF SECTION

PART 1 - GENERAL

1.1 Related Requirements

.1 Consultant at its discretion may choose to perform material testing for quality assurance purposes.

1.2 Appointment and Payment

.1 Retain services of competent, certified materials testing laboratory (lab) licensed in the province of British Columbia to provide testing as follows:

.1 All testing required to determine whether materials to be incorporated into the Work meet Contract requirements.

.2 Testing shall include but not be limited to the following:

- Sampling and transporting of samples to the lab.
- Gradation testing.
- Other tests as indicated in Specifications sections.

.3 Contractor's lab shall provide all test results to Consultant within 24 hours of obtaining results.

.4 Where tests or inspections by designated testing laboratory reveal Work not in conformance with Contract requirements, Contractor shall pay costs for additional tests or inspections as required by the Consultant to verify acceptability of corrected Work.

1.3 Contractor's Responsibilities

.1 Furnish labour, equipment and facilities to:

.1 Provide access to Work to be inspected and tested

.2 Facilitate inspections and tests

.3 Make good Work disturbed by inspections and tests

.4 Provide storage on site for laboratory's exclusive use to store equipment and cure test samples

.2 Notify Consultant sufficiently in advance of operations to allow for assignment of laboratory personnel and scheduling of test by the Consultant's lab.

.3 Pay costs for uncovering and making good Work that is covered before required inspection or testing is completed and approved by Consultant.

END OF SECTION

PART 1 - GENERAL

1.1 Section Includes

.1 Schedules

.2 Project Record Documents

.3 Progress Photography

1.2 Schedules

.1 Submit schedules to Consultant as follows:

.1 Construction schedule: within 10 Working Days of Contract award.

.1 Provide copy of construction schedule to Owner for purposes of coordination with transfer station operating schedule

.2 Construction progress schedule: updated twice monthly to be submitted by the 15th of each month and submitted with each Application for Progress Payment at month-end.

.3 Submittal schedule for Shop Drawings, Product data and samples: within 10 Working Days of Contract award.

.1 Include dates when reviewed submittals will be required from Consultant.

.2 Include dates when delivery will be required for Owner-supplied Products.

.4 Product delivery schedule: within 10 Working Days of Contract award.

.5 Schedule of shutdown or closure activities (if applicable): within 15 Working Days of Contract award.

.2 Format

.1 Prepare schedule in form of a horizontal Gantt chart.

.2 Split horizontally for projected and actual performance.

.3 Provide horizontal timescale identifying first Working Day of each week.

.4 Format for listings: chronological order of start of each item of Work.

.3 Submission

.1 Submit schedules electronically by email in PDF format.

.2 Consultant will review schedule and return review copy within 10 Working Days after receipt.

.3 Submit finalized schedule within 5 Working Days after return of review copy.

.4 Submit revised progress schedule with each application for payment.

.5 Also distribute copies of revised schedule to:

.1 Job site office

.2 Subcontractors

.3 Other concerned parties as directed by Owner and Consultant

1.3 Project Record Documents

.1 Consultant will provide Drawings as two (2) hard copy sets and one digital PDF. Specifications will be provided by Consultant in digital PDF format only.

.1 Mark up as-built information on one set as Work progresses.

.2 Store second set in field office as “clean set”, apart from documents used for construction. Provide files, racks, and secure storage

.3 Label and file in accordance with applicable Specification section numbers. Label each document "PROJECT RECORD" in neat, large, printed letters.

.4 Maintain project record documents in clean, dry, and legible condition. Do not use record documents for construction purposes.

.5 At completion of project and prior to final inspection, neatly transfer notations to second set and submit both sets to Consultant as part of Project Manual specified in Section 01 78 00 Closeout Submittals.

.2 Mark up as-built information concurrently with construction progress. Do not conceal Work until required information is recorded.

.3 Provide felt-tip marking pens, maintaining separate colours for each major system, for recording information.

.4 Contract Drawings 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, referenced to visible and accessible features of construction

.3 Field changes of dimension and detail

.4 Changes made by change orders

.5 Details not on original Contract Drawings

.6 References to related Shop Drawings and modifications

.5 Specifications: legibly mark each item to record actual construction, including:

.1 Manufacturer, trade name, and catalogue number of each Product actually installed, particularly optional items and substitutions.

.2 Changes made by Addenda, change orders, and change directives.

.6 Other Documents: maintain manufacturer's Product data, certifications, inspection certifications, and field test records as required by individual Specification sections.

.7 Make project record documents available for inspection by Consultant and Owner at all times during progress of the Work.

.8 Consultant may also keep a record of project changes, but this shall in no way absolve the Contractor of the responsibility to maintain its own records.

1.4 Progress Photography

.1 Take photographs of the Work on a daily basis to document site conditions and progress of the Work. Include:

.1 Overall site (Place of the Work)

.2 Individual systems and assemblies, including interior and exterior locations

.2 Photo Format: Digital JPG format.

.3 Image Resolution: 150 to 200 PPI.

.4 Photo Identification: Indicate Project name and number and date taken in filenames.

.5 Submission Frequency: monthly with progress claim.

END OF SECTION

PART 1 - GENERAL

1.1 Section Includes

.1 Administrative requirements for submittals, including:

.1 Shop Drawings and Product data

.2 Substitution Requests

.3 Progress Photography

.4 Certificates and transcripts

1.2 Administrative Requirements

.1 Submit to Consultant identified submittals for review. Submit as required in order to not cause delay in Work. Failure to submit in ample time is not considered sufficient reason for an extension of Contract Time and no claim for extension by reason of such default will be allowed.

.2 Work affected by submittal shall not proceed until review is complete.

.3 Present Shop Drawings, Product data, samples, and mock-ups in SI Metric units.

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

.5 Review submittals prior to submission to Consultant. This review represents that necessary requirements have been determined and verified, or will be, and that each submittal has been checked and coordinated with requirements of Work and Contract Documents. Submittals not stamped, signed, dated, and identified as to specific project will be returned without being examined and shall be considered rejected.

.6 Notify Consultant in writing, at time of submission, of any deviations from Contract Document requirements and provide reasons for such deviations. Individual submittals will not be reviewed by Consultant until all related information is submitted.

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

.8 Contractor’s responsibility for errors and omissions in submission is not relieved by Consultant’s review of submittals.

.9 Consultant’s review and approval of submittals does not relieve Contractor from its obligation to perform the Work in accordance with Contract requirements.

.10 Keep one reviewed copy of each submission on site.

1.3 Shop Drawings and Product Data

.1 Indicate materials, methods of construction and attachment or anchorage, erection diagrams, connections, explanatory notes, and other information necessary for completion of Work. Where articles or equipment attach or connect to other articles or equipment, indicate that such items have been coordinated, regardless of Specification section under which adjacent items will be supplied and installed. Indicate cross references to Drawings and Specifications.

.2 Allow 10 Working Days for Consultant's review of each submission.

.3 Shop Drawings submitted for review will be reviewed only for general compliance with design intent and for general dimensions, with any comments made following that review being intended to assist the Contractor in preventing errors.

.4 Adjustments made on Shop Drawings by Consultant are not intended to change Contract Price. If adjustments affect value of Work, state such in writing to Consultant prior to proceeding with Work.

.5 Make changes in Shop Drawings, as Consultant may require, consistent with Contract Documents. When resubmitting, notify Consultant in writing of any revisions other than those requested.

.6 Accompany submissions with transmittal letter indicating:

- .1 Date
- .2 Project title and number
- .3 Contractor's name and address
- .4 Identification and quantity of each Shop Drawing, Product data and sample
- .5 Other pertinent data

.7 Submissions shall include:

- .1 Original date and revision dates
- .2 Project title and number
- .3 Name and address of applicable:
  - .1 Subcontractors
  - .2 Suppliers
  - .3 Manufacturers
- .4 Contractor's stamp, signed by Contractor's authorized representative certifying approval of submissions, verification of field measurements and compliance with Contract Documents.
- .5 Details of appropriate portions of Work as applicable:
  - .1 Fabrication
  - .2 Layout, showing dimensions, including identified field dimensions and

clearances

.3 Setting or erection details

.4 Capacities

.5 Performance characteristics

.6 Standards

.7 Operating weight

.8 Wiring diagrams

.9 Single line and schematic diagrams

.10 Relationship to adjacent work

.8 After Consultant's review, distribute copies.

.9 Submit digital (PDF) versions of Shop Drawings for each requirement requested in Specification sections and as Consultant may reasonably request.

.10 Submit digital (PDF) versions of Product data sheets or brochures for requirements requested in Specification sections and as requested by Consultant where Shop Drawings will not be prepared due to standardized Product manufacture.

.11 Delete information not applicable to Project.

.12 Supplement standard information to provide details applicable to Project.

.13 If, upon review by Consultant, no errors or omissions are discovered or if only minor corrections are made, copies will be returned, and fabrication and installation of Work may proceed. If Shop Drawings are rejected, noted copy will be returned and resubmission of corrected Shop Drawings must be performed through same procedure indicated above before fabrication and installation of Work may proceed.

1.4 Substitution Requests

.1 Supply Products and materials as specified unless substitution has been approved in writing by Consultant.

.2 Submit requests for substitutions to Consultant in writing prior to ordering such Products and materials and at least 20 Working Days prior to commencing Work in which requested substitution would be incorporated. No extension in Contract Time will be granted as a result of late substitution requests.

.1 Include sufficient technical detail to allow the Consultant to determine whether the proposed Product is truly equivalent or better than the Product specified. Submittals lacking detail will not be considered.

.2 Include details on cost impact of substitution.

.3 Final approval of proposed Product or material is at Consultant's sole discretion.

1.5 Progress Photography

.1 Submit digital progress photographs in accordance with Section 01 32 00 – Construction Progress Documentation.

1.6 Certificates and Transcripts

.1 Submit proof of WorkSafeBC status immediately after award of Contract.

END OF SECTION

PART 1 - GENERAL

1.1 Section Includes

.1 Definitions

.2 Contractor's Responsibilities

.3 Permits

.4 Construction Environmental Management Plan (CEMP)

.5 Environmental Monitor

.6 Air Quality and Dust Control

.7 Archaeology

.8 Clearing, Stripping and Grubbing

.9 Contaminated Materials

.10 Groundwater Management

.11 Wildlife Protection

.12 Erosion and Sediment Control

.13 Spill Prevention and Response

1.2 Definitions

.1 "Appropriately Qualified Professional" (AQP) means an applied scientist or technologist specializing in a relevant applied science or technology, including but not necessarily limited to archaeology, agrology, forestry, biology, engineering, erosion and sediment control, geomorphology, geology, hydrology, hydrogeology, or landscape architecture. An AQP must be recognized by the appropriate professional organization in British Columbia, registered and in good standing, and acting under that organization's Code of Ethics and subject to disciplinary action by that organization. He or she must also be someone who, through demonstrated suitable education, experience, accreditation, and knowledge directly related and relevant to the level and responsibilities of the particular matter, may be reasonably relied on to provide advice within his or her area of expertise and experience.

.2 "Construction Environmental Management Plan" (CEMP) means a plan written by an AQP that describes the Environmental Requirements of the project and outlines the approach that the Contractor will undertake to mitigate potential adverse effects of the project. The CEMP describes the specific commitments that the Contractor will adhere to with respect to environmental protection throughout the project duration.

.3 "Environmental Agencies" means the current, seceding or successional appropriate regulating branches of the Federal, Provincial and Municipal government agencies responsible for the management and protection of the Environment and human resources and any issuance of environmental permits, approvals or licences.

.4 "Environmental Monitor" means an AQP hired by the Contractor to ensure compliance with the Environmental Requirements and to advise the Contractor, Owner and the Consultant on environmental issues or concerns.

.5 “Environmental Requirements” means the requirements of applicable: environmental legislation, permits, approvals, licenses, and authorizations, and the Specifications of the construction contract.

1.3 Contractor’s Responsibility

.1 The Contractor shall undertake the Work in strict compliance with Environmental Requirements. The Contractor shall not do, omit, or permit, any act or thing which contravenes these Environmental Requirements or specifications, or which causes, or has the potential to cause, environmental damage.

.2 In the event of a discrepancy between any of the clauses of these environmental protection specifications, and the provisions of any legislation, regulations, or municipal bylaws, the provisions of existing laws, regulations and bylaws shall prevail.

.3 Should any of the Contractor’s activities contravene these specifications, the Consultant or the Environmental Monitor may issue a stop work order directing the immediate cessation of such activities. The Consultant may itself undertake remedial measures, or may order the Contractor to do so, as deemed necessary. The costs of any work stoppages, and/or remedial works thus undertaken, shall be to the account of the Contractor.

.4 The Contractor shall immediately notify the Consultant, in writing, upon the discovery of any hazardous conditions within or immediately adjacent to the Work Site. The Contractor shall take suitable precautions to prevent injury to persons, and damage to the environment or property, until the hazardous conditions are remedied or removed by the responsible party.

1.4 Submittals

.1 At least 15 Working Days prior to commencement of Work, submit Contractor’s standard environmental incident reporting forms for Consultant’s review.

1.5 Permits

.1 Except where otherwise specified in individual Specification sections, obtaining permits and authorizations for the construction work, if any are required, are the responsibility of the Contractor.

.2 Permits include but are not limited to:

.1 Demolition Permit – Regional District of Fraser-Fort George

1.6 Construction Environmental Management Plan (CEMP)

.1 The Contractor shall provide to the Consultant a Construction Environmental Management Plan (CEMP), prepared and/or signed and accepted by an AQP. The following time periods are required for plan review and acceptance unless otherwise specified in the Special Provisions or by the Consultant. No review or change requested by the Consultant in any way relieves the Contractor of any of its responsibilities for protection of the environment.

.2 The CEMP shall be submitted to the Consultant for review at least fifteen (15) working days prior to mobilization to the site.

.3 Any CEMP modifications shall be submitted to the Consultant for review at least ten (10) working days prior to any changes being made in the field.

.4 Following review, the CEMP will be revised as necessary and a final version provided to the Consultant.

.5 The Contractor shall make copies of the CEMP accessible to personnel on-site.

.6 The CEMP must be inclusive of all elements relevant to the complete scope and duration of the work being undertaken and, including, but not limited to, the following:

.1 a clear description of how the work will comply with the environmental protection requirements of the Contract, including, but not limited to, the Standard Specifications, Special Provisions, and Environmental Requirements.

.2 a summary that clearly demonstrates the Contractor's understanding of the specific environmental issues involved with the Work, including Environmental Requirements;

.3 a description that demonstrates the Contractor's understanding of Consultant/Contractor responsibilities;

.4 clear identification of the process, including duration and sequence of each task, leading to the receipt of agency approvals, and the linkage between the process and the project schedule;

.5 contact names, positions and telephone numbers of individuals responsible for elements of the plan and relevant Environmental Agency contacts.

.7 The CEMP must include the following:

.1 Air Quality and Dust Control;

.2 Archaeology Management;

.3 Clearing and Grubbing;

.4 Waste Management;

.5 Groundwater Management;

.6 Wildlife Protection;

.7 Spill Prevention and Response;

.8 Environmental Monitoring Plan identifying the Work activities during which the Environmental Monitor will be onsite;

.9 Erosion and Sediment Control; and

.10 Reclamation Plan.

1.7 Environmental Monitor

.1 Environmental Monitor is responsible for ensuring that environmentally sound construction practices are followed, monitoring effects of construction on the environment, and ensuring Environmental Requirements are met. Environmental Monitor's duties shall include:

.2 Inspecting construction activities and practices at minimum frequency of weekly during excavation activities and periodically post excavation,

.3 Preparing weekly environmental monitoring reports,

.4 Liaising with Consultant, Owner, Contractor, and environmental agencies,

.5 Advising the Contractor on environmentally sound practices and processes,

.6 Stopping construction if it appears that:

.1 Environmental Requirements are not being followed,

.2 There is a release of unacceptable amounts of deleterious substances into the environment,

.3 Construction activities have resulted in physical degradation of the environment, or

.4 There is imminent risk of any such events.

.7 Environmental Monitor shall be available throughout the duration of the project and will attend all meetings at which environmental protection measures are to be discussed.

1.8 Air Quality and Dust Control

.1 Equipment and heavy machinery to meet or exceed federal emission requirements and the Motor Vehicle Safety Act (1995).

.2 Leave machinery running only while in use, except where extreme temperatures prohibit shutting machinery down.

.3 Contractor is encouraged to develop innovative and practical methods for potential idle reduction opportunities applicable to the Project.

.4 Dust palliative shall be water, unless otherwise approved by the Consultant. There is no water available at the Place of Work and Contractor is responsible for providing water as required for dust control.

1.9 Archaeology

.1 Chance find procedures shall be included in the CEMP in the event historical or human remains are encountered.

1.10 Clearing, Stripping and Grubbing

.1 Clear and grub in accordance with Section 31 11 00. Extend only to limits as indicated.

.2 Clearly mark clearing and grubbing limits on site.

.3 Stockpile organic topsoil for future reclamation of the site.

1.11 Contaminated Materials

.1 In the event any new or previously unknown contaminated materials is identified during construction, notify Consultant and Environmental Monitor. Do not relocate or remove materials until Consultant has provided direction.

1.12 Groundwater Management

.1 Excavate drainage sump in the area on site where the historic landfill is located to manage groundwater intrusion into excavation work. Pump groundwater from excavation to excavated sump on site. Include placement of rock at pump discharge location, at a minimum, to prevent erosion and additional sedimentation.

1.13 Wildlife Protection

.1 If site works commence between late April and mid-August, a breeding bird survey shall be conducted by an AQP prior to mobilization to site. If any nests are identified, protect with suitable buffer defined by AQP and maintain until fledglings have left. AQP will report on initial survey findings and conduct periodic inspection to confirm status of nests.

.2 Do not harm, feed or unnecessarily harass wildlife. Drive slowly and avoid hitting wildlife where possible. Keep food wastes in secure containers.

1.14 Erosion and Sediment Control

.1 Incorporate temporary soil erosion and sediment control features into the Works. Inspect integrity of such measures daily during adverse weather conditions.

.2 Erosion and sediment control measures shall be capable of continuous operation during working and non-working hours and are subject to acceptance by Consultant. Immediately correct deficiencies observed in erosion control measures.

.3 Regularly maintain sediment and drainage control measures such that they function as designed.

1.15 Spill Prevention and Response

.1 Installation, operation, and decommissioning of fuel storage tank systems, if applicable, must comply with:

.1 Environmental Code of Practice for Aboveground and Underground Storage Tank Systems Containing Petroleum Products and Allied Petroleum Products (CCME 2003), and the,

.2 Storage Tank Systems for Petroleum Products and Allied Petroleum Products Regulations (SOR/2008-197)

.2 Temporary fuel tanks less than 2,500 L shall comply with CSA B139-15.

.3 Machinery and equipment used on site must be in good repair and free of excess oil and grease

.4 Prepare contingency plans for clean-up of toxic or hazardous spills prior to starting the Work and submit, together with a list of spill abatement equipment to be stored on the job site, to Consultant for review. Spill contingency plans may be a sub-plan to the CEMP.

.5 Keep spill kits and additional equipment or materials onsite as required to deal with a potential spill.

.6 Promptly replace used spill abatement and clean-up materials and maintain a sufficient inventory of materials throughout construction operations.

.7 Immediately report any spill of any toxic or hazardous material verbally to Consultant and Emergency Management BC (24-hour phone line: 1-800-663-3456). Provide written notification of spill within 10 Working Days of this verbal report.

.8 Immediately take the necessary steps at own expense to abate discharge and provide necessary labour, equipment, materials and absorbents to contain and remove spill, clean up affected area, dispose of waste materials at an approved disposal site, and restore area to the satisfaction of Environmental Agencies. Remove and replace soil contaminated by spills with comparable substitutes at own expense. Dispose of removed contaminated soil and vegetation at an approved waste disposal site.

.9 If Contractor fails to respond to Consultant's requirements for cleanup, Consultant reserves right to take whatever action is necessary to clean up spill and deduct incurred costs from moneys due or to become due to Contractor.

END OF SECTION

PART 1 - GENERAL

1.1 Workplace Safety

.1 Contractor shall, for the purposes of the Workers Compensation Act (BC), and for the duration of the Work of this Contract:

.1 be the "prime contractor" for the "workplace" as defined in the Workers Compensation Act (BC).

.2 comply with the Workers Compensation Act of British Columbia and the Occupational Health and Safety Regulation of British Columbia.

.3 do everything reasonably practicable to establish and maintain a system or process that will ensure compliance with the Act and its regulations as required to ensure the health and safety of all persons at the "workplace".

.4 pay and keep current all assessments required by WorkSafeBC.

.5 direct Subcontractors, sub-Subcontractors, other contractors, employers, workers and any other persons at the "workplace" on safety-related matters to the extent required to fulfill its "prime contractor" responsibilities pursuant to the Act, regardless of:

.1 whether or not any contractual relationship exists between Contractor and any of these entities, and

.2 whether or not such entities have been specifically identified in this Contract.

.2 Owner does not anticipate there will be any contractors, other than those performing Work of this Contract, engaged in work at the "workplace" during the performance of the Work of this Contract.

1.2 Submittals

.1 Prior to commencing Work, submit Clearance Letter confirming good standing with WorkSafeBC.

.2 Prepare and submit the following within 15 Working Days after award of Contract:

.1 Occupational Health and Safety Plan (OHSP)

.2 Emergency Preparedness Plan

.3 Contractor’s standard forms for incident and accident reporting.

.3 COVID-19 Measures:

.1 Include in OHSP measures to be applied at the Place of the Work to ensure compliance with applicable COVID-19 guidelines, laws, orders, requirements, and any revisions or amendments thereto issued by the Province of British Columbia.

.4 Bear and Wildlife Control Measures:

.1 Include in OHSP measures to be applied at the Place of the Work to ensure bear and wildlife control measures are in place for the duration of the Work. Include provisions for temporary electric fencing.

.5 Keep Plans listed above up to date and current throughout construction.

END OF SECTION

PART 1 - GENERAL

1.1 Section Includes

.1 Quality of Work.

.2 Access to Work.

.3 Inspection & Testing.

1.2 Quality of Work

.1 Ensure Quality of Work is of highest standard, executed by workers experienced and skilled in respective duties for which they are employed. Immediately notify Consultant if required Work is such as to make it impractical to produce required results.

.2 Do not employ anyone unskilled in their required duties. Consultant reserves right to require dismissal from site, workers deemed incompetent or careless.

.3 Decisions as to standard or fitness of Quality of Work in cases of dispute rest solely with Consultant, whose decision is final.

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

.5 Be responsible for coordination and placement of openings, sleeves, and accessories.

1.3 Access to Work

.1 Allow Consultant access to Work. If part of Work is in preparation at locations other than Place of the Work, allow access to such Work whenever it is in progress.

.2 Allow inspection and testing agencies access to Work, offsite manufacturing facilities, and fabrication plants.

.3 Cooperate to provide reasonable facilities for such access.

1.4 Inspection & Testing

.1 Coordinate and schedule testing and inspection services for the following Work to be provided by the Consultant:

.1 Geotechnical: perform testing and inspection (compaction, bearing capacity, pile installation, soil preparation etc.) as per requirements of Drawings and the Geotechnical Report.

.2 Concrete:

.1 Concrete testing to be done by responsible authority as indicated in the Contract.

.2 Concrete to be tested in accordance with requirements of CSA A23.1 and A23.2, including requirements for air, slump, and age prior to being used. Maintain records of pour dates, testing performed, class of concrete used, and test results for all items placed. Mix designs to be reviewed and approved by testing agency.

.3 Reinforcing steel for Concrete: perform visual inspection of bar size, grade, spacing, cover, chairs, ties, and coatings (if applicable). Basis of inspection shall be final reviewed Shop Drawings.

.4 Steel: Perform visual inspection of all welds, torque testing of bolted connections, and check on bearing, plumbness, alignment and painting. Basis of inspection shall be final reviewed Shop Drawings. Perform non-destructive testing (NDT) of 10% of field welds.

.2 Contractor will be responsible for costs associated with retesting due to failed samples or rejected Work. Contractor to accelerate the Work as required to eliminate any delays caused by failed samples or rejected Work at Contractor's expense.

.3 Give timely notice requesting inspection if Work is designated for special tests, inspections, or approvals by Consultant instructions or by law of Place of the Work.

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

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

.6 Reports

.1 Submit copies of inspection and test reports to Consultant as directed.

.2 Provide copies to Subcontractor of work being inspected or tested.

.7 Tests and Mix Designs

.1 Furnish test results and mix designs as requested.

.2 Cost of tests and mix designs beyond those called for in Contract Documents or beyond those required by law of Place of the Work will be appraised by Consultant and may be authorized as recoverable.

END OF SECTION

PART 1 - GENERAL

1.1 Section Includes

.1 Temporary utilities.

1.2 Installation and Removal

.1 Provide temporary utilities and controls as required to execute Work expeditiously.

.2 Remove from site all such Work after use.

1.3 Dewatering

.1 Provide temporary drainage and pumping facilities to keep excavations and site free from standing water.

1.4 Fire Protection

.1 Provide and maintain temporary fire protection equipment during performance of Work as required by insurance companies, authorities having jurisdiction, and governing codes, regulations, and bylaws.

.2 There is no water available at the Place of the Work.

END OF SECTION

PART 1 - GENERAL

1.1 Section Includes

.1 Construction Equipment

.2 Site Storage and Loading

.3 Parking

.4 Sanitary Facilities

1.2 Installation and Removal

.1 Provide construction facilities as required to execute Work expeditiously.

.2 Remove from site all such Work after use.

1.3 Construction Equipment

.1 Construction Equipment, including but not limited to hoists, cranes, and earth-moving equipment, shall be operated by certified and qualified operator.

1.4 Site Storage and Loading

.1 Confine Work and operations of employees to areas permitted by Owner and approved by Consultant. Do not unreasonably encumber premises with Products.

.2 Do not load or permit to load any part of Work with a weight or force that will endanger the Work.

1.5 Construction Parking

.1 Parking will be permitted onsite provided it does not disrupt performance of Work.

.2 Provide and maintain adequate access to Place of the Work.

.3 If authorized to access Place of the Work via existing roads, maintain such roads for Contract duration and make good damage resulting from Contractors' use of roads.

1.6 Sanitary Facilities

.1 Provide sanitary facilities for workforce in accordance with governing regulations and ordinances.

.2 Post notices and take such precautions as required by local health authorities. Maintain area and keep premises in sanitary condition.

END OF SECTON

PART 1 - GENERAL

1.1 Section Includes

.1 Requirements pertaining to:

.1 Protection, shoring and bracing, including design by professional engineer registered in British Columbia.

.2 Temporary barriers, fencing, guardrails, barricades, enclosures, and dust-tight screens.

.3 Maintaining access to site and managing public traffic flow.

.4 Fire routes and protection for offsite and public property.

.5 Protection of building finishes.

1.2 Submittals

.1 Shop Drawings: Submit Shop Drawings signed and sealed by professional engineer registered in British Columbia for temporary shoring, bracing, and hoarding. Consultant assumes no responsibility for temporary shoring works.

1.3 Preparation

.1 Carry out pre-construction visual survey of site conditions prior to commencement of Work.

.2 Do not commence work until all required shoring and bracing is in place and has been inspected by engineer responsible for shoring design.

.3 Consult with project geotechnical engineer for required excavations and temporary support structures.

1.4 Installation and Removal

.1 Provide temporary barriers and controls to execute Work expeditiously.

.2 Remove from site all such work after use.

1.5 Protection, Shoring and Bracing

.1 Provide temporary shoring, bracing, and hoarding as required, including provision of hoarding and security measures as needed to restrict public access Work area.

.2 Structures:

.1 Keep new and existing structures plumb, level, and free of cracks or other distress during all phases of the work.

.2 During progress of Work, monitor structures a minimum of twice a week (visually and using survey equipment) for signs of movement, cracking or distress. Monitor more frequently, if directed by engineer responsible for shoring design. Protection is to be designed to prevent movement of existing structures.

.3 Where temporary shoring is within the proximity of open excavations, Contractor's shoring engineer shall verify with project geotechnical engineer that shoring loads may be safely supported on grade, without causing slope instability or compromising the safety of the adjacent excavations.

.4 Do not deviate from or field-alter shoring and bracing indicated on reviewed Shop Drawings without prior written approval of engineer responsible for shoring design. Notify Consultant of any deviations.

.5 Do not remove temporary shoring or bracing until approved by engineer responsible for shoring design.

1.6 Barriers and Temporary Fencing

.1 Erect temporary fencing and electric fencing as required to maintain site security and bear control throughout duration of the Work. Provide at least one lockable truck gate. Maintain fence in good repair.

.2 Provide barriers around trees and plants designated to remain. Protect from damage by equipment and construction procedures.

1.7 Guardrails and Barricades

.1 Provide secure, rigid guardrails and barricades around deep excavations, open shafts, open stair wells, open edges of floors and roofs.

.2 Provide as required by governing authorities and as indicated.

1.8 Dust-tight Screens

.1 Provide dust-tight screens or partitions to localize dust-generating activities and for protection of workers, finished areas of Work, and public.

.2 Maintain and relocate protection until such Work is complete.

1.9 Access to Site

.1 Provide and maintain access roads, sidewalk crossings, ramps and construction runways as may be required for access to Work.

1.10 Public Traffic Flow

.1 Provide and maintain signal flag operators, traffic signals, barricades and flares, lights, or lanterns as required to perform Work and protect the public.

1.11 Fire Routes

.1 Maintain access to property, including overhead clearances for use by emergency response vehicles.

1.12 Protection for Offsite and Public Property

.1 Protect surrounding private and public property from damage during performance of Work.

.2 Be responsible for damage resulting from Contractor activities, Subcontractor activities, and the Work.

1.13 Protection of Building Finishes

.1 Protect finished and partially finished building finishes and equipment during performance of Work.

.2 Provide necessary screens, covers, and hoardings.

.3 Confirm with Consultant locations and installation schedule a minimum of 5 Working Days prior to installation.

.4 Be responsible for damage incurred due to lack of or improper protection and repair to existing condition.

END OF SECTION

PART 1 - GENERAL

1.1 Section Includes

.1 Product quality, availability, storage, handling, protection, and transportation.

.2 Substitutions.

.3 Manufacturer's instructions.

.4 Fastenings.

.5 Protection of Work in progress.

1.2 Reference Standards

.1 Conform to reference standards cited in Part 1 of Specifications sections for Work of those sections.

.2 If there is question as to whether any Product or system is in conformance with applicable standards and Contract Documents, Consultant reserves right to have such Products or systems tested to prove or disprove conformance.

.3 Conform to latest date of issue of referenced standards in effect on date of submission of Tenders, except where specific date or issue is specifically noted.

1.3 Quality

.1 Products, materials, equipment, and articles (referred to as Products throughout Specifications) incorporated in Work shall be new, not damaged or defective, of highest quality, and suitable for the purpose intended. If requested, furnish evidence as to type, source and quality of Products provided.

.2 Defective Products, whenever identified prior to completion of Work, will be rejected, regardless of previous inspections. Inspection does not relieve responsibility but is precaution against oversight or error. Remove and replace defective Products at Contractor’s expense and accelerate the Work as required to eliminate delays caused by rejection at Contractor’s expense.

.3 Should any dispute arise as to quality or fitness of Products, decision rests strictly with Consultant based upon requirements of Contract Documents.

.4 Unless otherwise indicated in Specifications, maintain uniformity of manufacture for any particular or like item.

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

1.4 Availability

.1 Immediately upon signing Contract, review Product delivery requirements and anticipate foreseeable supply delays for any items. If delays in supply of Products are foreseeable, notify Consultant of such immediately so substitutions or other remedial action may be authorized in time to prevent delay in performance of Work.

.2 In event of failure to notify Consultant at commencement of Work and should it subsequently appear that Work may be delayed for such reason, Consultant reserves right to substitute more readily available products of similar character at no increase in Contract Price or Contract Time.

1.5 Storage, Handling and Protection

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

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

.3 Store Products subject to damage from weather in weatherproof enclosures.

.4 Store cementitious products clear of earth or concrete floors and away from walls.

.5 Keep sand to be used for grout or mortar materials clean and dry. Store sand on wooden platforms and cover with waterproof tarpaulins during inclement weather.

.6 Remove and replace damaged Products at own expense and to satisfaction of Consultant.

.7 Touch up damaged factory finished surfaces to Consultant's satisfaction. Use touch-up materials to match original. Do not paint over name plates.

1.6 Transportation

.1 Pay costs of transportation of Products required in performance of Work.

1.7 Substitutions

.1 No substitution of specified Products or materials is allowed without prior approval in writing by the Consultant.

.2 Submit substitution requests in accordance with Section 01 33 00 Submittal Procedures.

1.8 Manufacturer's Instructions

.1 Unless otherwise indicated in Specifications, install or erect Products in accordance with manufacturer's latest printed instructions. Do not rely on labels or enclosures provided with products. Obtain written instructions directly from manufacturers.

.2 Notify Consultant in writing of conflicts between Specifications and manufacturer's instructions so Consultant may establish course of action.

.3 Improper installation or erection of Products due to failure to comply with these requirements authorizes Consultant to require removal and re-installation at no increase in Contract Price or Contract Time.

1.9 Fastenings

.1 Provide metal fastenings and accessories in same texture, colour and finish as adjacent materials unless indicated otherwise.

.2 Prevent electrolytic action between dissimilar metals and materials.

.3 Use non-corrosive hot dip galvanized steel fasteners and anchors for securing exterior work unless stainless steel or other material is specifically requested in affected Specification section.

.4 Space anchors within individual load limit or shear capacity and ensure they provide positive permanent anchorage. Wood plugs and other organic material plugs are not acceptable.

.5 Keep exposed fastenings to a minimum, space evenly and install neatly.

.6 Fastenings that cause spalling or cracking of material to which anchorage is made are not acceptable.

1.10 Protection of Work in Progress

.1 Adequately protect in-progress and completed Work. Work damaged or defaced due to failure in providing such protection is to be removed and replaced, or repaired, as directed by Consultant, at no increase in Contract Price or Contract Time.

END OF SECTION

PART 1 - GENERAL

1.1 Section Includes

.1 Field survey services to measure and stake Work site.

.2 Survey services to establish and confirm inverts for Work.

.3 Requirements associated with existing services and utilities

.4 Recording of subsurface conditions found.

1.2 References

.1 Consultant's identification of existing survey control points and property limits as identified on the Drawings.

1.3 Qualifications of Contractor's Survey Staff

.1 Use competent, qualified survey staff approved by Consultant.

1.4 Survey Reference Points

.1 Existing base horizontal and vertical control points are designated on Drawings.

.2 Locate, confirm, and protect control points prior to starting site Work. Preserve permanent reference points during construction.

.3 Make no changes or relocations without prior written notice to Consultant.

.4 Report to Consultant when reference point is lost, destroyed, or requires relocation because of necessary changes in grades or locations.

.5 Require surveyor to replace control points in accordance with original survey control with prior approval of Consultant.

1.5 Survey Requirements

.1 Benchmarks and survey control points are identified on the Drawings. Locations with horizontal and vertical data will be provided to Contractor and are to be included in Project Record Documents by the Contractor.

.2 Use instrumentation to establish lines and levels, locate and lay out.

.3 Stake for grading, fill and topsoil placement and landscaping features.

.4 Stake slopes and ditches.

.5 Establish pipe invert elevations.

.6 Establish foundation and floor elevations.

.7 Establish lines and levels for mechanical and electrical work.

1.6 Existing Services and Utilities

.1 Before commencing Work, establish locations and extents of existing underground and above-grade utilities and services that may interfere with the Work. Coordinate with the Owner, Consultant, and other authorities as may be required for the protection, removal or relocation of such buried services.

.2 Coordinate with civil, mechanical and electrical trades regarding existing underground or above-grade utilities and services adjacent to the Work.

.3 When breaking into or connecting to existing services or utilities, execute Work at times directed by local governing authorities, with minimum of disturbance to Work.

.4 Protect, relocate or maintain existing active services. When services are encountered, cap off in manner approved by authority having jurisdiction. Stake and record location of capped service.

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

1.7 Location of Equipment and Fixtures

.1 Location of equipment, fixtures and outlets indicated or specified are to be considered as approximate.

.2 Locate equipment, fixtures, and distribution systems to provide minimum interference and maximum usable space and in accordance with manufacturer's recommendations for safety, access, and maintenance.

.3 Inform Consultant of impending installation and obtain approval for actual location.

.4 Where unknown services are encountered, immediately advise Consultant and confirm findings in writing.

.5 Upon Consultant request, submit field drawings indicating relative position of various services and equipment.

1.8 Records

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

.2 On completion of foundations and major site improvements, prepare a certified survey showing dimensions, locations, angles and elevations of Work.

.3 Record locations of maintained, re-routed, and abandoned service lines.

1.9 Submittals

.1 Submit name and address of Contractor's surveyor to Consultant.

.2 On request of Consultant, submit documentation to verify accuracy of field engineering work.

.3 Submit certificate signed by Surveyor certifying and noting elevations and locations of completed Work that conform and do not conform to the Contract Documents to the Consultant.

1.10 Subsurface Conditions

.1 Promptly notify Consultant in writing if subsurface conditions at Place of the Work differ materially from those indicated in Contract Documents or a reasonable assumption of probable conditions based thereon.

.2 After prompt investigation, should Consultant determine conditions differ materially, instructions will be issued for changes in Work as provided in the General Conditions.

.3 Consultant's geotechnical engineer will review and confirm soil conditions at start of the Work.

.1 Contractor shall provide Consultant's geotechnical engineer with adequate access to the Place of the Work as required and may be present during review as a witness.

END OF SECTION

PART 1 - GENERAL

1.1 Section Includes

.1 Requirements and limitations for cutting and patching the Work.

1.2 Submittals

.1 Submit written request in advance of cutting or alteration that affects or could affect:

.1 Structural integrity of any element of Project

.2 Integrity of weather-exposed or moisture-resistant elements

.3 Efficiency, maintenance, or safety of any operational element

.4 Visual qualities of sight-exposed elements

.5 Work of Owner or separate contractor

.2 Include in request:

.1 Identification of Project

.2 Location and description of affected Work

.3 Explanation of necessity for cutting or alteration

.4 Description of proposed Work and Products to be used

.5 Alternatives to cutting and patching

.6 Effect on Work of Owner or separate contractor

.7 Written permission of affected separate contractor

.8 Date and time work will be executed

1.3 Materials

.1 Change in Materials: Submit substitution request in accordance with Section 01 33 00 - Submittal Procedures.

1.4 Preparation

.1 Inspect existing conditions, including elements subject to damage or movement during cutting and patching.

.2 After uncovering, inspect conditions affecting performance of Work.

.3 Beginning of cutting or patching means acceptance of existing conditions.

.4 Provide supports to assure structural integrity of surroundings; provide devices and methods to protect other portions of project from damage.

.5 Provide protection from elements for areas which may be exposed by uncovering work; maintain excavations free of water.

1.5 Execution

.1 Execute cutting, fitting, and patching, including excavation and fill, to complete Work.

.2 Uncover Work to install ill-timed Work.

.3 Remove and replace defective and non-conforming Work.

.4 Execute Work by methods to avoid damage to other Work and to provide proper surfaces to receive patching and finishing.

.5 Refinish surfaces to match adjacent finishes. For continuous surfaces, refinish to nearest intersection; for an assembly, refinish entire unit.

END OF SECTION

PART 1 - GENERAL

1.1 Section Includes

.1 Waste Management.

.2 Cleaning.

1.2 Waste Management

.1 General:

.1 Fires are prohibited on site. No burning of rubbish or construction waste is permitted.

.2 Do not bury rubbish and waste materials on site unless approved by Consultant.

.3 Remove waste from Place of the Work at regularly scheduled times and dispose in accordance with governing regulations, and as directed by Consultant.

.4 Arrange for and obtain permits from authorities having jurisdiction for disposal of waste and debris.

.2 Storage:

.1 Create and designate, with appropriate signing, suitable sites and facilities for storage of waste or surplus material prior to disposal.

.3 Disposal:

.1 Where recycling facilities are available, dispose of recyclable waste to approved facility.

.2 Dispose of all other waste, except building materials, at Foothills Boulevard Regional Landfill. Alternative disposal sites must be approved by Consultant.

.3 Take waste building materials to Consultant-approved recycler.

.4 If historic municipal solid waste is disturbed at Place of the Work, excavate and haul in covered loads to the Foothills Boulevard Regional Landfill for disposal.

1.3 Cleaning

.1 Daily Cleaning:

.1 Clean up Place of the Work daily and remove debris and waste.

.2 Final Cleaning:

.1 Conduct final cleaning in accordance with GC 3.13 CLEANUP.

.2 Make good landscaping, sodding and flower beds damaged by equipment, materials, or workforce used to conduct the Work.

END OF SECTION

PART 1 - GENERAL

1.1 Section Includes

.1 Administrative procedures preceding preliminary and final inspections of Work.

1.2 References

.1 Builders Lien Act

1.3 Inspection and Declaration

.1 Contractor's Inspection: Contractor and Subcontractors shall inspect the Work, identify deficiencies and defects, and repair as required to conform to Contract Documents.

.1 Issue a Substantial Performance Certificate in accordance with the Builders Lien Act in the Place of the Work. Submit copy to Consultant.

.2 Request Consultant's final inspection.

.2 Substantial Performance: submit written certificate that the following have been performed:

.1 Work has been completed and inspected for compliance with Contract Documents.

.2 Defects have been corrected and deficiencies completed.

.3 Work is complete and ready for final inspection.

.3 Consultant’s Final Inspection: Consultant and Contractor will inspect the Work to identify obvious defects or deficiencies. Contractor shall correct Work accordingly. If Work is deemed incomplete by Consultant, complete outstanding items and request re-inspection.

.4 Construction Completion: When Consultant considers deficiencies and defects have been corrected and it appears Contract requirements have been performed, Consultant will issue a Construction Completion Certificate and recommend the Owner issue a Notice of Acceptance to the Contractor.

.5 Commencement of Lien and Warranty Periods: Date of Owner's Notice of Acceptance of the Work shall be date for commencement of warranty period and commencement of lien period unless required otherwise by Builders Lien Act in Place of the Work.

.6 Final Payment: When Owner issues Notice of Acceptance, make application for final payment, giving total adjusted Contract Price, previous payments and monies remaining due. Refer to Contract General Conditions.

.7 Payment of Holdback: After expiry of statutory time for filing of liens and in accordance with conditions of the Builders Lien Act, submit an application for payment of holdback amount in accordance with Contract General Conditions.

END OF SECTION

PART 1 - GENERAL

1.1 Section Includes

.1 Requirements associated with the following:

.1 Project manual

.2 Warranties and bonds.

.3 Final site survey.

1.2 Project Manual

.1 Within 10 Working Days after Substantial Performance of the Work, submit to Consultant two (2) completed physical Project Manuals and one digital version in PDF file format for review and approval.

.2 Project Manual to include the following:

.1 Cover sheet indicating names of Owner, project manager, departmental representative, Contractor, and Subcontractors.

.2 Table of Contents organized by Specification section number.

.3 Project record documents, neatly marked up in accordance with Section 01 32 00 Construction Progress Documentation, including:

.1 Project Drawings and Specifications
.2 Addenda
.3 Change Orders and other Contract modifications
.4 Approved Shop Drawings, Product data, and samples

.4 Copies of:

.1 Test reports and certificates
.2 Final acceptance from inspectors
.3 Warranties and bonds

.5 Operation and maintenance data.

.3 Format

.1 Organize data in the form of an instructional manual.

.2 Binders: vinyl, hard covered, 3 'D' ring, loose leaf 219 x 279 mm with spine and face pockets.

.3 Text: Manufacturer's printed or typewritten data.

.4 Drawings: provide with reinforced punched binder tab. Bind in with text; fold larger Drawings to size of text pages.

.4 Submission

.1 Submit instructions and data prepared by personnel experienced in maintenance and operation of described Products.

.2 Copy will be returned after final inspection, with Consultant's comments.

.3 Revise documents as required prior to final submittal.

.4 Upon Consultant request, furnish evidence as to type, source and quality of Products and materials provided.

.5 Contractor shall include all costs associated with Project Manual preparation, production, and transportation.

1.3 Warranties and Bonds

.1 Separate each warranty or bond with index tab sheets keyed to Table of Contents listing.

.2 List Subcontractor, supplier, and manufacturer, with name, address, and telephone number of responsible principals.

.3 Obtain warranties and bonds, executed in duplicate by subcontractors, suppliers, and manufacturers, within 10 Working Days after completion of the applicable item of Work.

.4 Except for items put into use with Owner's permission, leave date of beginning of time of warranty until Date of Notice of Acceptance is determined.

.5 Verify documents are in proper form, contain full information, and are notarized.

.6 Co-execute submittals when required.

.7 Retain warranties and bonds until time specified for submittal.

1.4 Final Survey

.1 Submit final site survey certificate in accordance with Section 01 71 00 - Preparation, certifying that elevations and locations of completed Work are in conformance or non-conformance with Contract Documents.

END OF SECTION

PART 1 - GENERAL

1.1 References

.1 Canadian Federal Legislation

.1 Canadian Environmental Protection Act (CEPA), 1988

.2 Canadian Environmental Assessment Act (CEAA), 1995

.3 Transportation of Dangerous Goods Act (TDGA), 1992

.4 Motor Vehicle Safety Act (MVSA), 1995

1.2 General

.1 Comply with Section 01 34 43 Environmental Protection.

.2 Ensure Work does not adversely affect adjacent watercourses, groundwater, and wildlife or contribute to excess air and noise pollution.

.3 Do not dispose of waste of volatile materials such as, mineral spirits, oil, petroleum-based lubricants, or toxic cleaning solutions into watercourses, storm, or sanitary sewers. Ensure proper disposal procedures are maintained throughout the project.

.4 Do not pump water containing suspended materials into watercourses, storm or sanitary sewers, or onto adjacent properties.

.5 Control disposal and runoff of water containing suspended materials or other harmful substances in accordance with local authorities.

.6 Protect trees, plants and foliage on site and adjacent properties where indicated.

.7 Coordinate removal of items by the Owner and/or BC Hydro as indicated on the Drawings.

1.3 Regulatory Requirements

.1 Perform Work in compliance with CEPA, CEAA, MVSA, and all applicable federal, provincial and local laws, bylaws, and regulations.

PART 2 - PRODUCTS – Not Used

PART 3 - EXECUTION

3.1 Preparation

.1 Inspect site with Consultant and verify extent and location of items designated for removal, disposal, alternative disposal, recycling, salvage, and items to remain.

.2 Locate and protect utilities. Preserve active utilities traversing site in operating condition.

.3 Notify and obtain approval of utility companies before starting demolition.

3.2 Sequences of Operation

.1 Removal:

.1 Remove items as indicated.

.2 Do not disturb items designated to remain in place.

.3 Remove only designated treed area during demolition. Obtain written approval from Consultant prior to removal of any treed area not designated.

.4 Stockpile topsoil for final grading and landscaping. Provide erosion control and seeding if not immediately used.

.2 Removal from Site:

.1 Interim removal of stockpiled material may be required by Consultant if it is deemed to interfere with operations of Consultant or other contractors.

.2 Remove stockpiles of like materials by an alternate disposal option once collection of that material is complete.

.3 Contractor to provide locations for recycling of materials removed from site for approval in writing by the Consultant 7 Days prior to removal. Do not dispose of these materials in a landfill or a waste stream destined for landfill.

.4 Waste material must be hauled to authorized disposal site and facilities approved by Owner or Consultant.

.3 Removal and Reuse or Relocation Onsite:

.1 Items to be removed and reused or relocated onsite include but are not limited to:

.1 Lock blocks from existing retaining wall.
.2 Attendant booth.

.2 Remove and reuse or relocate as indicated or as directed by Consultant.

.3 Review condition of the Attendant Booth with the Consultant prior to relocation to ensure there will be no damage to the Attendant Booth during relocation.

.4 Review condition of the lock blocks from the existing retaining wall with the Consultant to identify lock blocks suitable for reuse onsite.

.5 Make adequate provisions for construction stresses and for sufficient temporary bracing and shoring to keep structure plumb and level during all phases of Work.

3.3 Restoration

.1 Restore areas and existing works outside areas of demolition to conditions that existed prior to commencement of Work and match condition of adjacent, undisturbed areas.

.2 Use only soil treatments and procedures that are not harmful to health, not injurious to plants, and do not endanger wildlife, adjacent water courses or groundwater.

3.4 Cleanup

.1 Upon completion of the Work remove debris, trim surfaces, and leave Place of Work clean in accordance with GC 3.13 CLEANUP.

.2 Use only cleaning solutions and procedures that are not harmful to health, not injurious to plants, and do not endanger wildlife, adjacent water courses or groundwater.

END OF SECTION

PART 1 - GENERAL

1.1 Section Includes

.1 All cast-in-place concrete, including foundations.

1.2 Related Sections

.1 Section 31 24 13 – Excavation, Embankment, Compaction and Grading

1.3 References

.1 ASTM International:

.1 ASTM A185 / A185M-07, Standard Specification for Steel Welded Wire Reinforcement, Plain, for Concrete.

.2 Canadian Standards Association (CSA):

.1 CSA A23.1-14/A23.2-14, Concrete Materials and Methods of Concrete Construction/Test Methods and Standard Practices for Concrete

.2 CSA S269.1-1975-(R2003) Falsework for Construction Purposes

.3 CSA S269.3, Concrete Formwork

.4 CSA A283, Qualification Code for Concrete Testing Laboratories

.5 CSA G30.18-M92, Carbon Steel Bars for Concrete Reinforcement

.6 CSA W186, Welding of Reinforcing Bars in Reinforced Concrete Construction

.3 Reinforcing Steel Institute of Canada (RSIC)

.1 Reinforcing Steel - Manual of Standard Practice

.4 GeoNorth Engineering Ltd., Geotechnical Investigation Report dated September 18, 2020.

1.4 Standard

.1 Conform to requirements of CAN/CSA-A23.1-14 unless otherwise specified.

.2 Concrete Formwork and Falsework: to CSA-S269.1.

1.5 Inspection

.1 Concrete testing: to CAN/CSA-A23.2 by testing laboratory designated and paid for by Owner. Repeat testing required by deficient work to be paid for by Contractor.

.2 Give testing laboratory and Consultant minimum 24 hours' notice before each concrete pour.

1.6 Submittals

.1 Shop Drawings: Submit for information only, prepared in accordance with plans to clearly show formwork and reinforcing sizes, shapes, locations, and details.

.1 Show placement and details of reinforcing steel. Draw all walls in full elevation and slabs with top and bottom bars on separate plans.

.2 Each Shop Drawing submitted shall bear the stamp and signature of a professional engineer registered or licensed in the province or territory where the Work is being constructed.

.2 Concrete supplier certification, as well as the following:

.1 Certification that plant, equipment, materials, production, and delivery conform to CSA A23.1-14

.2 Written quality assurance plan per Clause J7.2 of CSA A23.1-14.

.3 Concrete mix design for each exposure classes listed in Contract Documents (consultant agrees to maintain confidentially of mix design submittals). Mix design to include:

.1 Letter, signed and sealed by professional engineer registered in the province or territory where the Work is being constructed, confirming that:

.1 Mix design and concrete complies with CSA A23.1-14 and will provide required strength, durability and performance.

.2 Cement, supplementary cementing material, reinforcing, admixture, aggregates, and water meet requirements of this specification.

.2 Chemical admixtures.

.3 Results from at least five (5) sets of tests that include, as a minimum, air content and slump tests and 7-day, 28-day, and 56-day compressive strength tests.

.4 Certification that materials and mix design do not result in expansion due to alkali aggregate reactivity.

.5 Supplier’s certificate stating that equipment for producing concrete meets CSA A23.1.

.4 Material Test Reports for:

.1 Portland cement or Portland limestone cement

.2 Supplementary cementing material

.3 Admixtures

.4 Aggregates

.5 Water

.5 Reports, seven days prior to placing concrete, detailing:

.1 Curing methods.

.2 Hot and cold weather concreting methods.

.3 Location and details of construction joints.

.4 Patching and repair procedures.

1.7 Delivery, Handling and Storage:

.1 Silane Sealer:

.1 Store at temperatures between -18 and 30°C.

.2 Condition material between 10 and 30 °C prior to use

1.8 Quality Control

.1 Foundations have been designed in accordance with recommendations of Geotechnical Investigation Report. Complete foundations and associated earthworks under site supervision of geotechnical engineer.

.2 Inspection of Reinforcement: Advise designated inspection agency of placement of reinforcing steel for reinforced concrete at least 48 hours prior to planned time of concrete placement. Do not place or concrete until bar placement has been approved by inspector.

PART 2 - PRODUCTS

2.1 Materials

.1 Portland Cement and Cementitious Materials to CSA-A3000 Cementitious Materials Compendium. Use Portland cement Type 50, sulphate resisting, unless otherwise indicated.

.2 Grout:

.1 Non-shrink Grout: Premixed cementitious compound, nonmetallic aggregates, 50 MPa compressive strength at 28 days.

.2 Products: Sika Grout 212, Sika Grout 212SR where sulphate exposure is indicated or alternative as approved by Consultant.

.3 Pre-moulded joint filler: bituminous impregnated fibreboard to ASTM D 1751.

.4 Joint sealer/filler: grey, to CAN/CGSB-19.24, Type1, Class B.

.5 Floor hardener: non-metallic, pre-mixed.

.6 Sealer: Sikagard SN-40 Sika Canada Inc. or approved equivalent.

.7 Dovetail anchor slots: minimum 0.6 mm thick galvanized steel, insulation filled.

.8 All other concrete materials: to CAN/CSA-A23.1.

2.2 Mix Proportions

.1 Concrete: 28-day compressive strength, water/cementing materials ratio, and air content in accordance with CSA A23.1.

.2 Concrete Subject to Freezing and Thawing or to Applications of De-icing Chemicals: 28-day compressive strength, water/cementing materials ratio, and air content in accordance with CSA A23.1-14.

.3 Minimum 28-day compressive strengths, unless otherwise indicated:

.1 Pavements, slabs on grade, walks, curbs, and exposed site concrete: 25 MPa.

.4 Method: Alternative 1 (performance specification), Table 5 of CAN/CSA-A23.1-14.

.5 Nominal size of coarse aggregate: 20 mm unless otherwise indicated or approved by the Consultant.

.6 Slump: as indicated below unless determined otherwise by concrete supplier in order to meet workability requirements for project concrete placement:

Type of Construction	**Slump mm**
Mass concrete, pavements, topping concrete	40
Structural concrete, sidewalks, curb and gutter, driveways, and slabs on ground.	80

.7 Air content: concrete to contain purposely entrained air in accordance with table below unless otherwise indicated on Drawings:

Type of Concrete	**Range of Air Content for Concretes with Indicated Nominal Maximum Sizes of Coarse Aggregate**		
	10 mm	**20 mm**	**40 mm**
Parking floors and ramps, pavements, sidewalks and curb and gutter.	7 to 10	5 to 8	4 to 7
Other structures.	5 to 8	4 to 7	3 to 6

.8 Clear Concrete Cover for Reinforcing Steel:

Location	**Specified Cover (mm)**
Concrete cast against earth	75 (to ties)
Formed pile caps, grade beams, piers	40 (to ties)
Foundation walls	40 (exterior face), 25 (inside face)
Slabs-on-grade	See Schedule and Details

.9 Admixtures: to Clause 6 of CAN/CSA-A23.1. Admixtures containing chlorides shall not be used.

2.3 Concrete Reinforcement

.1 Conform to requirements of CSA A23.1-14 and A23.3-14.

.2 Reinforcing Steel: Deformed bar conforming to CSA G30.18-M92, grade 400R, unless otherwise indicated. Reinforcing steel specified to be welded shall conform to CSA G30.18-M92, grade 400W, unless otherwise indicated.

.3 Welded wire fabric: minimum yield strength of 450 MPa and conforming to ASTM A185. Supply in flat sheets only.

.4 Detail and bend reinforcing steel as outlined in RSIC Manual of Standard Practice.

.5 Do not field cut or field bend bars without Consultant's approval.

.6 Provide chairs, spacer bars, support bars and other accessories to support reinforcing in accordance with CSA A23.1 and CSA A23.3. Wire, chairs and bar supports for foundations and for exposed concrete shall be non-metallic or coated.

.7 Splices:

.1 Provide Class 'B' tension lap splices unless noted otherwise. Splice locations shall be to the Consultant’s approval.

.2 Lap splices in welded wire mesh shall not be less than 200 mm, as measured between outermost crosswires of each fabric sheet.

.8 Dowels to Existing Concrete: Hilti RE500 doweling system. Comply with manufacturer's written instructions.

.9 Provide 15 m nosing bar for sills, ledges, and steps, unless otherwise indicated.

.10 Provide continuous 15 m top and bottom reinforcing bars at all edges of slabs. This reinforcing may be provided by modifying bars shown on plan or schedule or by providing additional reinforcing.

.11 Provide minimum 2 – 20 m vertical at each end, tee and corner of all reinforced concrete walls unless otherwise indicated.

.12 Tie reinforcing bars and anchor bolts in place prior to concrete placement. Wet set placement of rebar or anchor bolts is not acceptable.

PART 3 - EXECUTION

3.1 General

.1 Do not place concrete until:

.1 Waterstops, embedded items, and reinforcement are securely in place.

.2 Consultant has completed field reviews and deficiencies have been rectified.

.3 Resources, including equipment and crews, are on hand to complete placement of concrete without interruption.

.4 Concrete can be placed in one continuous pour between construction joints.

.2 Do not place beams, walls and slabs in one continuous pour that would exceed 20 meters in length. Submit proposed locations of construction joints for Consultant's approval prior to start of Work.

.3 Chamfers: 20 mm for all exposed concrete edges, unless otherwise indicated.

.4 Provide minimum seven (7) day wet burlap cure to all exposed concrete elements (slab, foundation, etc.).

3.2 Bonding of New Concrete to Existing Concrete:

.1 Unless otherwise indicated, intentionally roughen existing concrete substrates to be bonded to new concrete to a full amplitude of 6mm and clean of all dirt, rust and laitance.

.2 Do not cut existing reinforcing bars that intersect joints of new-to-existing concrete.

.3 Thoroughly wet down prepared surfaces of existing concrete with potable water for not less than one (1) hour prior to placement of new concrete.

.4 Blow puddles and free clear of repair area immediately before placement of new concrete.

.5 Concrete substrate must be clean, sound, and in a saturated surface dry condition at time of application.

.6 Temperature of slab and air temperature must not be below +10°c.

3.3 Inserts

.1 Cast in sleeves, ties, slots, anchors, reinforcement, frames, conduit, bolts, waterstops, joint fillers and other inserts required to be built in.

.1 Form or sleeve openings prior to placing concrete.

.2 Provide additional reinforcing at openings as shown or directed

.2 Obtain Consultant's approval for any sleeves and openings required but not indicated on Drawings.

3.4 Tolerances

.1 Tolerance in horizontal location and vertical location of any point in the structure to be no more than that indicated in the following table:

Indicated Dimension m	Tolerance mm
$\leq$ 2.5	$\pm$ 5
> 2.5 and $\leq$ 5.0	$\pm$ 10
> 5.0 and $\leq$ 10.0	$\pm$ 15
> 10.0 and $\leq$ 15.0	$\pm$ 20

Indicated Dimension m	Tolerance mm
> 15.0 and ≤ 20.0	± 30
> 20.0	± 50

.2 Tolerance in cross-sectional dimension of beams, girders and columns and wall and slab thickness to be as indicated in the following table:

Indicated Dimension mm	Tolerance mm
≤ 300	± 8
> 300 and ≤ 1000	± 12
> 1000	± 20

.3 Tolerance in average slope for floors, beams, girders or other horizontal units to be within 1:400 measured at any one surface but the total variation not to exceed 40 mm for the length of the structure.

.4 Tolerance in average slope for inclined surfaces to be within 1:400 measured at any one surface but the total variation not to exceed 40 mm for the length of the structure.

.5 Tolerance in flatness for any horizontal, vertical, or inclined surface to be measured with a 3 m straight edge placed on the surface. The gap between the straight edge and concrete not to exceed the following, unless otherwise indicated on the drawings:

.1 Equipment pads: provide a smooth troweled surface with finishing tolerance ± 3 mm.

.2 Interior floor slabs to be left exposed or to receive a covering requiring a smooth surface: provide a dense troweled surface free from blemishes with finishing tolerance ±5 mm.

.3 Floor slabs to receive mortar bed for ceramic or quarry tile or other surface: screed to correct grade, provide broomed texture on floors. Finishing tolerance ±12 mm.

3.5 Foundations

.1 Refer to Section 31 24 13 and the Geotechnical Investigation Report for excavation, backfilling, protection, dewatering and subgrade preparation requirements and recommendations.

.2 Slabs-on-Grade:

.1 Subgrade: Prepare subgrade for slabs-on-grade in accordance with recommendations of Geotechnical Investigation Report.

.1 Place over 300 mm thick layer of 20 mm crushed granular base over compacted subgrade.

.2 Compact granular base and subgrade to 98% SPMDD.

3.6 Control Joints

.1 Cut control joints in slabs on grade at locations indicated, in accordance with CAN/CSA-A23.1. Fill with specified joint sealer/filler.

3.7 Expansion and Isolation Joints

.1 Install pre-moulded joint filler in expansion and isolation joints full depth of slab flush with finished surface.

3.8 Curing

.1 Protect from freezing and drying. Cure concrete in accordance with CAN/CSA-A23.1, except that curing compounds shall not be used where bond is required by subsequent topping or coating.

3.9 Finishes

.1 Finish concrete as soon as forms are stripped in accordance with CAN/CSA-A23.1.

.2 Broom-finish concrete slabs.

.3 Do not machine-trowel finish air-entrained concrete.

.4 Do not repair honeycomb concrete until inspected by the Consultant.

.1 Demolish and remove from Place of the Work all concrete that, in the opinion of the Consultant, has its strength significantly reduced by presence of honeycombed concrete.

.2 Repair honeycomb concrete accepted by Consultant using methods approved by Consultant.

.5 Cut out all ties and other metal work not indicated to remain. Cut out to a depth equal to indicated concrete cover and patch in accordance with CSA 23.1.

.6 Use curing compounds compatible with applied finish on concrete surfaces.

.7 Do not put curing compounds on surfaces to receive fresh concrete.

3.10 Grout

.1 Mix and install grout in accordance with manufacturer’s written instructions.

.2 Grout into place, bolts and other items of concrete hardware that are not placed prior to pouring of concrete.

.3 Mix and place shrinkage-compensating grout.

3.11 Protective Sealing

.1 Following curing (28 days), apply silane sealer treatment to exposed surfaces in accordance with manufacturer's written instructions.

.1 Do not apply at or below temperatures of -10°C.

.2 Ensure surface is dry, ice-free and frost-free at time of application.

.3 Do not apply to exterior surfaces if rain is expected within 12 hours.

.4 Using a roller or low-pressure spray, apply at 4.0 m^2/L, ensuring Product penetrates surface and does not accumulate, run off, pond, or puddle.

.5 Apply flood coat in two (2) passes, "wet on wet", with the second pass at right angles to the first. Complete and correct surface coverage is crucial to ensuring success of such sealers.

.6 If pooling or ponding occurs on horizontal surfaces, redistribute or remove excess material on surface before material starts to dry and forms a film that will prevent penetration of excess material.

.7 If material accumulation or run-off lines occur on vertical surfaces, redistribute material on surface or remove by sponging.

.8 Do not let dry excess material, as darkening, change of color and appearance of substrate may occur.

END OF SECTION

PART 1 - GENERAL

1.1 Section Includes

.1 Miscellaneous precast concrete, including concrete traffic barriers (jersey barriers)

1.2 References

.1 CSA A23.1/A23.2, Concrete Materials and Methods of Concrete Construction/Test Methods and Standard Practices for Concrete

.2 CSA A23.3, Design of Concrete Structures

.3 CSA A23.4, Precast Concrete – Materials and Construction

.4 CSA G30.18, Carbon Steel Bars for Concrete Reinforcement

.5 CAN/CSA G40.21-M92, Structural Quality Steels

.6 CGSB 1-GP-181M, Coating, Zinc-Rich, Organic, Ready Mixed

.7 RSIC, Reinforcing Steel - Manual of Standard Practice

1.3 Standard

.1 Except where specifically stated otherwise, all materials and methods in this section to conform to requirements of the latest version of CAN/CSA-A23.1.

1.4 Submittals

.1 Product Data: Submit manufacturer's Product data in accordance with Section 01 33 00 Submittal Procedures.

.1 Test Results: Provide a minimum of five sets of concrete test results showing air content and 28-day strength of the concrete

.2 Submit signed and sealed shop drawings in accordance with CSA A23.3 and CSA A23.4. Include setting, erection, layout, and production drawings that detail:

.1 Positioning of all individual precast concrete units.

.2 Location of all hardware cast into, fastened to, or otherwise associated with precast concrete units.

.3 Reinforcement, openings, sleeves and inserts.

.4 Surface finishes.

.5 Methods of handling and erection.

.6 Design loadings, including transportation and construction loading.

.7 Material strengths.

.3 Submit concrete mix designs signed and sealed by a Professional Engineer registered in the Province of British Columbia.

1.5 Delivery, Storage and Handling

.1 Protection, storage, and handling of precast concrete units to Manufacturer's recommendations.

PART 2 - PRODUCTS

2.1 Materials

.1 Precast concrete materials, manufacture and curing to CAN/CSA-A23.4 unless stated otherwise.

.2 Reinforcing Steel: to CAN/CSA-A23.1

.3 Forms: to CSA-A23.4

.4 Hardware and miscellaneous materials: to CSA-A23.1.

2.2 Tolerances

.1 Conform to requirements of CSA A23.4, Section 10.

2.3 Concrete Mixes

.1 Unless otherwise specified or indicated, use concrete mix designed to produce minimum of 30 MPa compressive cylinder strength at 28 days, with maximum water/cement ratio to CSA A23.4.

.2 Use cement and supplementary cementing materials which conform to CSA A23.1.

.3 Air Entrainment of Concrete Mix: Refer to CSA-A23.1

.4 Use of calcium chloride not permitted.

2.4 Finishes

.1 Finish units to standard grade to CSA A23.4 Clause 24.

2.5 Jersey Barriers

.1 Meet standards established by BC Ministry of Transportation in Section 941 of BC MOT Standard Specifications for Highway Construction (Volume 2 of 2).

.1 Minimum cement content: 320 kg per cubic metre

.2 Maximum water/cement ratio: 0.45

.3 Course aggregate: nominal maximum size not exceeding 28 mm

.4 Slump: 50 mm ± 20 mm

.5 Entrained air: 5 to 8%

.2 Reinforcing steel for bent and hooked connections: to CSA CAN3-G40.21-M, Grade 260W, carefully bent to radii detailed and installed as indicated.

.1 Bending shall be done by methods that will not produce fracture or other injury. The metal heating shall not be to a higher temperature than that

producing a "dark cherry red" colour. After heating, the metal shall be cooled as slowly as possible. Following the bending, surface of the metal shall be carefully inspected for evidence of fracture, and any fractured pieces shall be replaced.

.2 Prior to delivery, prepare exposed surfaces of connections with heavy application of zinc-rich coating to CGSB Standard 1-GP-181M.

.3 Pick-up Points: Formed with accurately placed rigid PVC pipe recessed 15 mm from finished surfaces.

.4 Grouting: Grout bolt recesses and exposed connection hardware to match surrounding concrete as closely as practical.

.5 Unit Size Tolerances: +/- 3 mm, except as otherwise indicated.

PART 3 - EXECUTION

3.1 General

.1 Place precast concrete units straight, level and square to tolerances and finishes as indicated.

END OF SECTION

PART 1 - GENERAL

1.1 Section Includes

.1 Supply and installation of structural steel and miscellaneous metal fabrications, including but not limited to:

.1 Pedestrian pipe railings and anchors

.2 Metal kick plates

.3 Metal fasteners

1.2 References

.1 ASTM International

.1 ASTM A53/A53M, Standard Specification for Pipe, Steel, Black and Hot-Dipped, Zinc-Coated Welded and Seamless.

.2 ASTM A123/A123M, Standard Specification for Zinc (Hot-Dip Galvanized) Coatings on Iron and Steel Products

.3 ASTM A153/A153M-16a, Standard Specification for Zinc Coating (Hot-Dip) on Iron and Steel Hardware.

.4 ASTM A193 / A193M - 20, Standard Specification for Alloy-Steel and Stainless Steel Bolting for High Temperature or High Pressure Service and Other Special Purpose Applications.

.5 ASTM A269, Standard Specification for Seamless and Welded Austenitic Stainless Steel Tubing for General Service.

.6 ASTM A276/A276M-17, Standard Specification for Stainless Steel Bars and Shapes.

.7 ASTM A307, Standard Specification for Carbon Steel Bolts and Studs, 60,000 PSI Tensile Strength.

.8 ASTM A780/A780M-09(2015), Standard Practice for Repair of Damaged and Uncoated Areas of Hot-Dip Galvanized Coatings.

.9 ASTM B633-19, Standard Specification for Electrodeposited Coatings of Zinc on Iron and Steel.

.10 ASTM F593-17, Standard Specification for Stainless Steel Bolts, Hex Cap Screws, and Studs.

.11 ASTM F3125/F3125M-15a, Standard Specification for High Strength Structural Bolts, Steel and Ally Steel, Heat Treated, 120 ksi (830 MPa) and 150 ksi (1040 MPa) Minimum Tensile Strength, Inch and Metric Dimensions.

.2 CSA International

.1 CSA G40.20/G40.21, General Requirements for Rolled or Welded Structural Quality Steel/Structural Quality Steel.

.2 CAN/CSA G164 M92(R2003), Hot Dip Galvanizing of Irregularly Shaped Articles.

.3 CAN/CSA S16-14, Design of Steel Structures.

.4 CSA W47.1-09, Certification of Companies for Fusion Welding of Steel

.5 CSA W48, Filler Metals and Allied Materials for Metal Arc Welding (Developed in co-operation with the Canadian Welding Bureau).

.6 CSA W55.3-2008 (R2018), Certification of Companies for Resistance Welding of Steel and Aluminum.

.7 CSA W59 18, Welded Steel Construction.

.3 Canadian Institute of Steel Construction (CISC)

.1 Code of Standard Practice for Structural Steel, 8th Edition.

.4 Health Canada / Workplace Hazardous Materials Information System (WHMIS)

.1 Safety Data Sheets (SDS).

.5 The Master Painters Institute (MPI)

.1 Architectural Painting Specification Manual, current edition.

1.3 Submittals

.1 Product Data:

.1 Submit manufacturer's instructions, printed product literature and data sheets for sections, plates, pipe, tubing, bolts. Include product characteristics, performance criteria, physical size, finish, and limitations.

.2 Submit two copies of WHMIS SDS in accordance with Section 01 35 30 Worksite Safety.

.1 For finishes, coatings, primers, and paints applied on site: indicate VOC concentration in g/L.

.2 Shop Drawings:

.1 Submit Shop Drawings stamped and signed by professional engineer registered or licensed in the Province of British Columbia.

.2 Indicate materials, core thicknesses, finishes, connections, joints, method of anchorage, number of anchors, supports, reinforcement, details, and accessories.

.3 Letters of Assurance: Upon Consultant’s request, submit the following:

.1 Schedule S-B “Assurance of Professional Design and Commitment for Field Review by Supporting Professional” with Shop Drawings submittal.

.2 Schedule S-C “Assurance of Professional Field Review and Compliance by supporting Registered Professional” promptly on completion of Work.

.4 Test Reports: submit certified test reports showing compliance with specified performance characteristics and physical properties.

.5 Certifications: submit product certificates signed by manufacturer certifying materials comply with specified performance characteristics and criteria and physical requirements.

1.4 Quality Assurance

.1 Design, fabricate and erect to CAN/CSA-S16-14 and CISC Code of Standard Practice.

1.5 Delivery, Storage and Handling

.1 Deliver, store and handle materials in accordance with Section 01 61 00 Product Requirements and with manufacturer's written instructions.

.2 Delivery and Acceptance Requirements: deliver materials to site in original factory packaging, labelled with manufacturer's name and address.

PART 2 - PRODUCTS

2.1 Materials: General

.1 Steel sections and plates: to CSA G40.20-04/G40.21-04

.1 Grades:

.1 Welded or Rolled Sections: Grade 350W

.2 Channels, Angles and Plates: Grade 300W

.3 All Other Sections: Grade 350W unless otherwise indicated

.2 Steel pipe: to ASTM A53/A53M

.3 Welding materials: to CSA W59.

.4 Welding electrodes: to CSA W48 Series.

.5 Bolts: high-tensile steel to ASTM A325 and A307.

.1 Use bearing type connections, minimum two M20 bolts per connection, unless otherwise indicated. Bolt threads must be excluded from shear planes.

.6 Anchor Bolts: to ASTM A307 unless otherwise indicated. No substitutions allowed.

.1 Hilti concrete anchor bolts shall be high strength HAS.E Threaded rod meeting requirements of ASTM A193, Grade B7 unless otherwise indicated, installed in accordance with manufacturer’s written instructions.

.2 Use stainless steel HAS rods and hardware required for all areas exposed to weather, chlorides, or other corrosive chemicals and where indicated.

.7 Stainless Steel: as indicated on Drawings. All applicable CSA Standards to be followed. do not mix carbon steel and stainless steel.

.8 Grout: non-shrink, non-metallic, flowable, 15 MPa at 24 hours.

2.2 Fabrication

.1 Fabricate work square, true, straight and accurate to required size, with joints closely fitted and properly secured.

.2 Use self-tapping shake-proof flat-headed screws on items requiring assembly by screws or as indicated.

.3 Where possible, fit and shop assemble work, ready for erection.

.4 Ensure exposed welds are continuous for length of each joint. File or grind exposed welds smooth and flush.

.5 Finish metal plate to ensure edges are smooth and without burrs.

2.3 Finishes

.1 Zinc Plating: Unless otherwise indicated, all rods and hardware to be zinc plated to ASTM B633 SC1.

.2 Chromium plating: chrome on steel with plating sequence of 0.009 mm thickness of copper 0.010 mm thickness of nickel and 0.0025 mm thickness of chromium.

.3 Galvanizing: Exterior Structural Steel to be hot dipped galvanized to CAN/CSA-G164-M92(R2003), with minimum zinc coating of 600 g/sq.m. All other steel to be prime painted unless otherwise indicated.

.1 Repair damaged areas of galvanized surfaces with two coats of zinc-rich paint.

2.4 Isolation Coating

.1 Isolate aluminum from following components by means of bituminous paint:

.1 Dissimilar metals except stainless steel, zinc, or white bronze of small area.

.2 Concrete, mortar, and masonry.

.3 Wood.

2.5 Pipe Railings

.1 Galvanized steel pipe pedestrian guardrails. Railing shapes and sizes and spacing of uprights as indicated.

.2 Base Plates: galvanized steel plate fully welded to bases of guardrail uprights.

.3 Anchors for Installation on Concrete:

.1 Anchor Rod: Grade 55 zinc-plated carbon steel threaded anchor rod.

.1 Product: Hilti HAS-E-55 anchor rod or approved equivalent.

.2 Adhesive: Injectable hybrid mortar for heavy duty anchoring.

.1 Product: Hilti HIT-HY-200 or approved equivalent.

2.6 Kick Plates

.1 Galvanized steel plate, thickness and sizes as indicated.

PART 3 - EXECUTION

3.1 Examination

.1 Verification of Conditions: verify conditions of substrates previously installed under other sections or contracts are acceptable for metal fabrications installation in accordance with manufacturer's written instructions.

.1 Visually inspect substrate.

.2 Inform Consultant of unacceptable conditions immediately upon discovery.

.3 Proceed with installation only after unacceptable conditions have been remedied and after receipt of written approval to proceed from Consultant.

3.2 Welding

.1 Do welding work to CSA W55.3 and CSA W59.

.1 Fusion welding only to be undertaken by fabricator certified to CSA W47.1 for Division 1 or 2.

.2 Resistance welding: to CSA W55.3.

.2 Exposed welds shall be continuous and ground smooth.

.3 Select appropriate electrodes and pre-heating to suit site conditions

3.3 Erection

.1 Erect metalwork square, plumb, straight, and true, accurately fitted, with tight joints and intersections.

.2 Exposed fastening devices to match finish and be compatible with material through which they pass.

.3 Supply components for work by other trades in accordance with shop drawings and schedule.

.4 Make field connections with bolts to CSA S16.

.5 Deliver items over for casting into concrete and building into masonry together with setting templates to appropriate location and construction personnel.

.6 Touch-up rivets, field welds, bolts and burnt or scratched surfaces with primer after completion of:

.1 Primer: maximum VOC limit 250 g/L to GS-11.

.7 Touch-up galvanized surfaces with zinc rich primer where burned by field welding.

.1 Primer: maximum VOC limit 250 g/L to GS-11.

3.4 Pipe Railings

.1 Install pipe railings as indicated.

.1 Anchor into concrete in accordance with anchor rod and epoxy manufacturer's instructions.

3.5 Kick Plates

.1 Install kick plates as indicated.

END OF SECTION

PART 1 - GENERAL

1.1 Section Includes

.1 Provision of lift arm gate assembly, including but not limited to:

.1 Gate structure and arm.

.2 Electric gate operators and battery back-up.

1.2 References

.1 National Electrical Manufacturers Association (NEMA): NEMA ICS 6 - Industrial Control and Systems: Enclosures.

.2 Underwriters Laboratories (UL):

.1 UL 325 - Standard for Safety for Door, Drapery, Gate, Louver, and Window Operators and Systems.

.2 UL 991 - Standard for Tests for Safety-Related Controls Employing Solid-State Devices

1.3 Submittals

.1 Submit in accordance with Section 01 33 00 Submittal Procedures.

.2 Product Data:

.1 Submit manufacturer's instructions, printed product literature and data sheets. Include product characteristics, performance criteria, physical size, finish, and limitations.

.3 Shop Drawings:

.1 Indicate equipment layout, mounting bolt locations, electric power requirements, installation details, and wiring diagrams.

.2 Furnish catalogue description, illustration and specification data for each piece of equipment and accessory.

.4 Manufacturer's Instructions: submit manufacturer's installation instructions and special handling criteria, installation sequence, and cleaning procedures.

.5 Manufacturer's Field Reports: submit manufacturer's written reports within 5 Working Days of review, verifying compliance of Work.

.6 Closeout Submittals: Provide operation and maintenance data in accordance with Section 01 78 00 – Closeout Submittals.

.1 Include documentation of maintenance and repair service availability for emergency conditions. Provide emergency phone number and email address.

1.4 Quality Assurance

.1 Installer Qualifications: Installation performed by factory-authorized contractor trained in gate operation systems of type specified.

.2 Maintenance: Provide quarterly maintenance for one year following Substantial Completion.

1.5 Delivery, Storage and Handling

.1 Deliver, store and handle materials in accordance with Section 01 61 00 Product Requirements and with manufacturer's written instructions.

.2 Delivery and Acceptance Requirements: deliver materials to site in original factory packaging, labelled with manufacturer's name and address.

1.6 Warranty

.1 Provide manufacturer’s standard warranty.

PART 2 - PRODUCTS

2.1 Manufacturer

.1 Approved Manufacturer: LiftMaster; 300 Windsor Drive; Oak Brook, IL 60523. ASD Toll-Free: 800.282.6225. Email: specs@LiftMaster.com. Web: LiftMaster.com.\

.2 Substitutions: Not permitted.

2.2 Gate Operators

.1 Gate Operators: High-speed commercial barrier gate operators with built-in battery backup.

.1 Product: MA Mega Arm Heavy Duty DC Barrier Gate Operator with plastic cover.

.1 Model: MADCBB

.2 Compliance: UL Listed. UL 325, UL 991 and CSA C22.2 No. 247 standards.

.3 Intended for use in Class I, II, III and IV vehicular barrier gate applications.

.4 Chassis and Frame: Powder coated 1/4 in. aluminum alloy.

.5 Gate Arm: 12 ft. aluminum breakaway arm. Colour and finishes as indicated.

.6 Motor: 1/2 HP, 24V DC, 800 RPM motor, 10,000 cycles per day.

.7 Electrical Power Requirements: 120/220V AC.

.8 Battery Backup for Operation during Power Outages: Up to 900 full cycles with 12 ft (3658 mm) arm. Automatically reset to normal operation when power is restored.

.9 Operation: Soft start/stop.

.10 Universal Controller: 8 inputs right or left-handed operation safety-stop.

.11 Anti-tailgate, quick-close features.

.12 Selectable Auto Open: 15 seconds after power failure or upon battery depletion barrier arm can be set to automatically open. 15-second delay helps reduce nuisance callbacks due to short power interruptions or brownouts.

.13 Limit Setting: Magnetic.

.14 Operator Speed: Open or close speed of 0.9 second.

.15 Accessory Electrical Power Requirements: 24 VDC 500 mA Battery Backup for accessory power.

.16 Auxiliary Outlet to power accessory devices.

.2 Accessories: Provide optional accessories listed below.

.1 Heater: to allow operation from -40°C to 60°C.

PART 3 - EXECUTION

3.1 Examination and Preparation

.1 Inspect and prepare substrates using methods recommended by manufacturer for achieving best result for substrates under Project conditions.

.2 Do not proceed with installation until substrates have been prepared using in accordance with manufacturer's requirements and deviations from manufacturer-recommended tolerances are corrected. Commencement of installation constitutes acceptance of conditions.

3.2 Installation

.1 Install in accordance with manufacturer's written installation instructions.

3.3 Field Quality Control

.1 Manufacturer's Field Review: Provide field review by manufacturer to verify compliance of installed Work.

.2 Test for proper operation and adjust until satisfactory results are obtained.

3.4 Protection

.1 Protect installed Products until Project completion.

.2 Touch up, repair, or replace damaged products prior to Substantial Completion

END OF SECTION

PART 1 - GENERAL

1.1 Section Includes

.1 Provision of labour and materials necessary for complete and operating electrical systems as indicated and as specified herein. Work that is obviously necessary or reasonably implied as required to complete the Work, even if not specifically shown or specified, shall be done as if it was both shown and specified.

.2 Work of this Section includes but is not limited to:

.1 Demolition of existing light fixtures, electric fence, and associated feeders, conduits, and electrical materials.

.2 Provision of all equipment, materials, manpower, lifting devices, transportation, scanning and coring, and other ancillaries, as needed to complete Project electrical Work as specified herein and as indicated, included but not limited to:

.1 New site lighting fixtures and associated feeders, circuit breakers, lighting poles, and materials.

.2 New Meter Pole and associated feeders and conduits.

.3 New electric fence, drop-arm barrier gate, and associated feeders, conduits, and circuit breakers, disconnect switches and materials.

.4 Complete Seismic Restraint System (SRS) for electrical systems and electrical equipment, including transformers, panelboards, and raceways.

.5 Modifications to existing service and grounding as indicated.

.3 Coordination with civil contractor for demolition of existing underground conduit and feeder and for relocation of existing attendant shed.

.4 Coordination of final location of relocated attendant shed, new drop-arm barrier gate, new electric fence, lighting and meter poles, and new associated feeders and conduits with civil contractor on site.

.5 Coordination with BC Hydro of disconnection and re-connection of existing BC Hydro service on site, including removal and installation of BC Hydro Meter.

.6 Coordination with BC Hydro of removal of existing BC Hydro Poles BCH-1, BCH-2, and BCH-3, overhead feeders, and BC Hydro Meter on site.

1.2 References

.1 CEC – Canadian Electrical Code, most recent edition.

.2 BCBC – BC Building Code, most recent edition.

.3 Technical Safety BC

.1 BC Electrical Safety Regulation

.2 Safety Orders and Directives

.4 ASHRAE

.1 Standard 90.1-2016 - Energy Standard for Buildings Except Low-Rise Residential Buildings (ANSI Approved; IES Co-sponsored).

1.3 Related Sections

.1 02 41 23 Sitework Demolition

1.4 Submittals

.1 Shop Drawings: Submit to Consultant in accordance with Section 01 33 00 – Submittal Procedures prior to commencing Work of this section:

.1 Electrical: Submit to electrical Shop Drawings, signed and sealed by professional engineer registered in British Columbia.

.1 Electrical Shop Drawings shall be reviewed, approved, and stamped by electrical Subcontractor and general Contractor prior to submission. Electrical contractor shall verify conformance with Contract Documents.

.2 Electrical Shop Drawings shall include:

.1 Circuit breakers

.2 Disconnect switches

.3 Light fixtures

.4 Drop arm barrier gate

.5 Electric fence controller

.6 Meter Pole

.2 Provide engineered shop drawings for the pole bases signed and sealed by an Engineer licensed to practice in British Columbia. The drawings will identify the suitability of the base for the pole height, and equipment load on the pole.

.3 SRS: Provide detailed installation Shop Drawings, signed and sealed by professional engineer specializing in SRS and registered in British Columbia.

.4 Supporting Letters of Assurance: Submit S-B and S-C, and letters of assurance for SRS from Contractor’s seismic engineer prior to conducting final inspection.

.2 Obtain and submit electrical plans and specifications and submit to local electrical safety branch for approvals.

1.5 Quality Assurance

.1 Field Reviews are required at certain stages during course of construction. These stages can include, but are not limited to, the following, depending on type of installation:

.1 Rough-in boxes and wiring prior to closing in of walls and ceilings or pouring of floor slab.

.2 Intermediate inspections.

.3 Substantial completion

.4 Final inspection.

.2 Coordinate field reviews with Consultant and provide a minimum of 48 hours' notice to Consultant prior to required field reviews.

1.6 Delivery, Storage and Handling

.1 Deliver, store and handle materials in accordance with Section 01 61 00 Product Requirements and with manufacturer's written instructions.

.2 Delivery and Acceptance Requirements: deliver materials to site in original factory packaging, labelled with manufacturer's name and address.

PART 2 - PRODUCTS

2.1 Materials – General

.1 Electrical equipment, devices, raceway, and wiring shall be cETL, BTL, CSA, or ULC listed.

.2 Electrical materials, equipment and fittings shall bear evidence of CSA or local inspection authority approval.

.3 Use new Products and materials of uniform manufacture. Where use or reuse of existing Products or materials is allowed, thoroughly clean, recondition and re-energize as part of the Work.

2.2 Incoming Electrical Service

.1 Modify existing electrical service as indicated. Coordinate service connection with BC Hydro on site.

2.3 Grounding

.1 Modify existing grounding system as indicated. Coordinate with BC Hydro for service connection grounding requirements.

.2 For new Work, provide complete, CEC-compliant grounding/bonding system complete with all required bonding jumpers, bonding wiring, and ground rods/connectors.

2.4 Branch Circuit Panel Boards

.1 Existing panel board to remain.

2.5 Wiring

.1 Unless otherwise specifying, wiring shall be copper, 98% conductivity, with RW90 X-link P.E. insulation.

.1 Minimum size: #12 AWG.

.2 Wire sized #10 AWG or larger may be stranded; smaller shall be solid.

.2 Aluminum cable is not permitted.

.3 Use colour-coded conductors throughout with different phase conductors coloured red, black and neutral coloured white.

.4 Size conductors to maintain voltage drop at less than 2% for feeders and branch circuit wiring.

.5 Panel board feeders shall be multiple conductors in conduits. Teck cable permitted only as indicated.

.6 Use EMT conduit throughout where conduit is installed indoors, except for underground.

.7 Seal all conduits or cables penetrating floor slabs or fire-retardant walls and ceilings with CSA-approved flame-retardant compounds to maintain adequate fire rating in accordance with BCBC requirements. Complete fire stopping to Consultant's satisfaction.

.8 Install branch circuit wiring in combustible and non-combustible construction in EMT raceways or armoured cable as specified herein. Install branch circuit home runs indoors in EMT raceways. Armoured cable is acceptable for final connections to equipment.

2.6 Disconnect Switches

.1 Disconnect Switches for Mechanical Equipment: cUL/CSA/cETL rated.

.2 Fractional Horsepower (FHP) Disconnect Switches for 120/208V Equipment:

.1 Schneider Electric or Consultant-approved equivalent.

.2 Type F, manual starter, toggle switch with padlock provision, 2 hp, 230V AC, NEMA 4x.

.3 Include padlock and key.

2.7 Devices

.1 Devices and junction boxes shall include cover plates.

.1 Backboxes: non-combustible type.

.2 Colours and Finishes: to match existing.

2.8 Precast Pole Foundation

.1 Type C pole concrete base equivalent to Fraserway Prekast Ltd Richmond Pole Base or approved equal.

2.9 Aluminum Poles

.1 Aluminum poles: as indicated, to CSA C22.2 No.206 and:

.1 Mounting on concrete anchor base: as indicated.

.2 Style: Mono-tube, round tapered G063-T6 aluminum, wall thickness 6 mm.

.3 Tapered davit for number of luminaires as indicated.

.4 Access hand hole 250 mm above pole base for wiring connections, with welded-on reinforcing frames bolted-on cover.

.5 Size, type and model: as indicated on drawings.

.6 Anchor bolts: size as indicated, steel with shims, nuts, washers and covers.

.7 Finish: semi-lustrous satin by rotary sand process.

.8 Grounding lug.

2.10 Luminaire Mounting Brackets

.1 Mounting brackets aluminum for specified luminaires and to meet the intent as indicated.

2.11 Luminaires

.1 Luminaire with weatherproof housing and features as indicated on Luminaire Schedule.

2.12 Meter Pole

.1 30 feet Pole, Full length pressure treated, class 6 or higher

.2 Minimum diameter at top: 5.5 inches

.3 Minimum diameter 6 feet from butt: 9 inches

.4 Gain mark 12 feet from butt

.5 Near the top of the pole, insert a bolt through the clevis

PART 3 - EXECUTION

3.1 General

.1 Comply with requirements of CEC, BCBC, BC Electrical Safety Regulation, Technical Safety BC Safety Orders and Directions, and regulations of local electrical inspection authority.

.2 Coordinate replacement of electrical equipment with facility management to prevent disruption of operation schedule.

3.2 Examination

.1 Prior to commencing Work of this section, check Drawings of all other trades for proper coordination of electrical connection locations.

.2 Inspect existing conditions for compliance with most up-to-date CEC regulations. Report non-compliant conditions immediately to Consultant. Correct non-compliant conditions to Consultant's satisfaction prior to commencing Work.

.3 Verify measurements on site against dimensions listed on reviewed Shop Drawings. Obtain direction from Consultant prior to commencing Work if site measurements vary from dimensions on Shop Drawings.

.4 Examine Work of other Subcontractors upon which the Work of this section depends to ensure Work can be carried out satisfactorily without changes to building as indicated. Notify Consultant immediately of conflicts with other works beyond those covered by Drawings and Specification and obtain Consultant direction on how to proceed.

3.3 Preparation

.1 Identify loads prior to commencing activities that may disrupt power. Provide temporary power to identified loads as directed by Consultant or Owner.

.2 Implement safe lockout procedures when isolating electrical connection.

.3 Protect existing utilities and equipment to be retained.

.4 Pre-Installation Testing

.1 Complete megger tests on feeder conductors before installation. Suitably log, tabulate and incorporate results in operating and maintenance manuals.

3.4 Electrical Demolition

.1 Do demolition work in accordance with Section 02 41 23.

.2 Demolish and clean up system compartments of decommissioned system unless specified otherwise or as directed by Consultant.

3.5 Installation

.1 Install electrical wiring, equipment, devices and ancillaries, as indicated, in compliance with CEC and BCBC and in accordance with manufacturers' installation instructions.

.2 Mounting Heights: Measure from floor level to centre line of device outlet, unless otherwise specified or indicated.

.1 Disconnect Switches: Mounted within 9m and line-of-sight of equipment that is it servicing.

.2 Light Switches: Mounted 1200mm above finished floor.

.3 Install precast base for poles at locations as shown on drawings. Adjust final location 3,000 mm in any direction at no additional charge to the project based on site conditions or interferences. Coordinate installation with Civil Contractor on site.

.1 Install poles true and plumb, complete with brackets in accordance with manufacturer's instructions.

.2 Install luminaires.

.3 Check luminaire orientation, level and tilt.

.4 Connect luminaire to lighting circuit.

.3 Seismic Restraint System (SRS):

.1 Coordinate SRS installation with Contractor's Seismic Engineer.

.2 Install SRS in accordance with BCBC requirements and with design and recommendations of Contractor's Seismic Engineer.

.4 Meter Pole:

.1 Meter Pole base shall be installed 5 feet below grade, or as required by BC Hydro standards.

3.6 Identification

.1 Identify main distribution switches, breakers, panels, and control devices with lamacoid plates as follows:

.1 Nameplates: 3 mm high lettering on 12 x 70 mm plates.

.2 Lamacoid labels indicating panels and circuit numbers serving equipment.

.2 Colour code exposed conduit above removable ceilings for electrical systems at panel locations, pullbox locations, locations where they enter or leave a room, and 10 m on centre within an area. Colour coding of conduit to consist of paint applied to provide easy identification, to Consultant's satisfaction.

.3 Colour code conductors throughout building with the same colour applying to the same phase throughout. Colour coding to be by insulation colour or permanently applied colour banding at distribution controls and panels. Colour code as follows:

.1	Equipment grounding conductor:	green
.2	Neutral conductor - 120 V:	white
.3	120/208 V phase wires:	red, black and blue
.4	Fire alarm:	red
.5	Intrusion alarm:	orange
.6	Telephone & data:	blue

.4 Neatly lace or clip feeder conductors of each feeder group at distribution pull boxes, wireways, etc.

.5 Identify each conductor at pull boxes, junction boxes and device outlet box locations as to panel and circuit, voltage, and system served (e.g. panel 2a circuit 23 is identified as 2a-23).

.6 Provide conductor identification similar to system proposed for power for all systems at all pull box, junction box and device locations.

.7 Provide typewritten panel directory for each panel. Provide newly updated and printed panel directory schedules for panelboards where existing circuits are modified.

3.7 Electrical Tests and Inspections

.1 Test and check all portions of electrical systems for satisfactory operation.

.2 Before energizing any portion of electrical systems, perform tests on all feeders. Results to conform to CEC and to satisfaction of authorized inspection authority and Consultant.

.3 Upon completion of Work and immediately prior to final inspection and takeover, check load balance on all feeders at panel boards. Carry out tests by turning on all loads and checking load current balance. If imbalance exceeds 15 percent, reconnect circuits to balance load.

3.8 Acceptance Criteria

.1 Before Consultant will recommend final acceptance to Owner, previously identified deficiencies must be corrected, and the following items submitted to Consultant:

.1 Contractor's written one (1) year warranty.

.2 Letter to Consultant stating installation is totally completed and system has been installed in accordance with Drawings and Specifications and the CEC.

.3 Electrical inspector's letter of final acceptance.

END OF SECTION

PART 1 - GENERAL

1.1 References

.1 ASTM D 4791, Test Method for Flat or Elongated Particles in Coarse Aggregate.

1.2 Related Sections

.1 32 11 13 – Granular Surfacing, Base and Subbase

1.3 Samples

.1 Submit samples in accordance with Section 01 33 00 – Submittal Procedures.

.2 Allow continual sampling by Consultant during production.

.3 Provide Consultant with access to source and processed material for sampling.

.4 Install sampling facilities at discharge end of production conveyor to allow Consultant to obtain representative samples of items being produced. Stop conveyor belt when requested by Consultant to permit full cross-section sampling.

.5 Pay cost of sampling and testing of aggregates that fail to meet specified requirements.

PART 2 - PRODUCTS

2.1 Materials

.1 Aggregate Quality: sound, hard, durable material free from soft, thin, elongated, or laminated particles, organic material, clay lumps or minerals, or other substances that would act in deleterious manner for use intended.

.2 Flat and elongated particles of coarse aggregate: to ASTM D4791.

.1 Greatest dimension not to exceed five times least dimension.

.3 Gradation of Granular Fill: as specified in Section 32 11 13.

.4 Fine Aggregates: satisfying required grading, to be one of the following or a blend of the following:

.1 Natural sand.

.2 Manufactured sand.

.3 Screenings produced in crushing of quarried rock, boulders, gravel, or slag.

.5 Coarse Aggregates: satisfying required grading, to be one of the following or a blend of the following:

.1 Crushed rock.

.2 Gravel and crushed gravel composed of naturally formed particles of stone.

PART 3 - EXECUTION

3.1 Aggregate Processing

.1 Process aggregate uniformly using methods that prevent contamination, segregation, and degradation.

.2 Blend aggregates, if required, to obtain gradation requirements, percentage of crushed particles, or particle shapes as specified. Use methods and equipment approved by Consultant.

.3 Wash aggregates, if required to meet specifications. Use only equipment approved by Consultant.

.4 When operating in stratified deposits, use excavation equipment and methods that produce uniform, homogeneous aggregate.

3.2 Aggregate Handling

.1 Handle and transport aggregates to avoid segregation, contamination, and degradation.

3.3 Aggregate Stockpiling

.1 Stockpile aggregates on site in locations as indicated unless directed otherwise by Consultant. Do not stockpile on completed pavement surfaces.

.2 Stockpile aggregates in sufficient quantities to meet project schedules.

.3 Stockpiling sites to be level, well drained, and of adequate bearing capacity and stability to support stockpiled materials and handling equipment.

.4 Except where stockpiled on acceptably stabilized areas, provide compacted sand base not less than 300 mm in depth to prevent contamination of aggregate. Stockpile aggregates on ground but do not incorporate bottom 300 mm of pile into work.

.5 Separate different aggregates by strong, full depth bulkheads, or stockpile far enough apart to prevent intermixing.

.6 Do not use intermixed or contaminated materials. Remove and dispose of rejected materials as directed by Consultant within 48 hours of rejection.

.7 Stockpile materials in uniform layers of thickness as follows:

.1 Maximum 1.5 m for coarse aggregate and base course materials.

.2 Maximum 1.5 m for fine aggregate and sub-base materials.

.3 Max 1.5 m for other materials.

.8 Uniformly spot-dump aggregates delivered to stockpile in trucks and build up stockpile as specified.

.9 Do not cone piles or spill material over edges of piles.

.10 Do not use conveying stackers.

.11 During winter operations, prevent ice and snow from becoming mixed into stockpile or in material being removed from stockpile.

3.4 Site Cleaning

.1 Remove surplus aggregate from the Place of the Work unless otherwise directed by the Consultant.

.2 Site of the Owner's natural aggregate deposit (if applicable):

.1 Leave aggregate stockpile site in tidy, well-drained condition, free of standing surface water.

.2 Leave any unused aggregates in neat compact stockpiles as directed by Consultant.

.3 For temporary or permanent abandonment of aggregate source, when indicated, restore source to condition meeting requirements of authority having jurisdiction.

END OF SECTION

PART 1 - GENERAL

1.1 Definitions

.1 Clearing and grubbing consists of the complete removal from site, with the exception of trees and vegetation indicated to remain, of all vegetation, tree stumps to a depth of 500 mm below the surface, and surface boulders and rubbish.

.2 Vegetation with a trunk diameter of 50 mm or more will be considered a tree for the purpose of stump removal.

.3 All cleared and grubbed materials to be separated and chipped as required for acceptance as composting at the Foothills Boulevard Regional Landfill. Branches or other wood larger than 75 mm (3 inches) will not be accepted as composting and must be chipped for acceptance at the Foothills Boulevard Regional Landfill.

1.2 Storage and Protection

.1 Prevent damage to fencing, trees, landscaping, natural features, benchmarks, survey marks, buildings, pavements, utility lines, site appurtenances, water courses and root systems of trees which are to remain.

.1 Repair any damaged items to approval of Consultant.

.2 Replace any trees designated to remain, if damaged, as directed by Consultant.

.2 Comply with applicable legislation, including but not limited to the Migratory Birds Convention Act and Species at Risks Act.

PART 2 - EXECUTION

2.1 Preparation

.1 Inspect site and verify with Consultant, items designated to remain.

.2 Locate and protect utility lines. Preserve in operating condition active utilities traversing site.

.3 Preserve drainage courses.

.4 Notify utility authorities before starting clearing and grubbing.

2.2 Clearing and Grubbing

.1 Clear and grub the indicated and preserve vegetation indicated to remain.

.2 Cut off branches overhanging area cleared as directed by Consultant.

.3 Cut off unsound branches on trees designated to remain as directed by Consultant.

.4 Grub out stumps and roots of trees 500 mm or greater below ground surface such that all stumps and roots within the full stripping depth are removed and disposed of.

.5 Grub out visible rock fragments and boulders, greater than 300 mm in greatest dimension.

.6 Remove all surface rubbish.

.7 Chip timber and branches as required to a maximum size of 75 mm.

.8 Haul, track truck loads and dispose of cleared materials from the Place of the Work at Owner's composting facility located at the Foothills Boulevard Regional Landfill.

.9 No burning is allowed on this Project.

2.3 Finished Surface

.1 Leave ground surface in condition suitable for immediate grading operations and stripping of topsoil to approval of Consultant.

END OF SECTION

PART 1 - GENERAL

1.1 Definition of Topsoil

.1 Material to be stripped as topsoil shall meet the following:

.1 Material capable of supporting good vegetative growth and suitable for use in top dressing, landscaping, and seeding and acceptable to the Consultant

.2 Reasonably free from subsoil, slag, clay, stone, lumps, live plants, roots, sticks, stones over 30 mm and foreign matter

1.2 Related Sections

.1 31 11 00 – Clearing and Grubbing

.2 32 91 21 – Topsoil Placement and Finish Grading

PART 2 - EXECUTION

2.1 Stripping of Topsoil

.1 Remove topsoil on site before construction procedures commence to avoid compaction of topsoil.

.2 Remove vegetation from designated areas by non-chemical means and dispose of stripped vegetation in accordance with Section 31 11 00.

.3 Strip topsoil to its full depth. Avoid mixing topsoil with subsoil.

.4 Stockpile topsoil for reuse onsite.

.5 Protect stockpiles from contamination and compaction.

2.2 Placement of Topsoil and Finish Grading

.1 Placement and Finish Grading in accordance with Section 32 91 21.

END OF SECTION

PART 1 - GENERAL

1.1 Section Includes

.1 Excavation, backfilling, embankment, compaction and grading of the site as indicated.

1.2 References

.1 ASTM 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)).

.2 Geotechnical Investigation Report, GeoNorth Engineering Ltd., dated September 18, 2020.

1.3 Related Sections

.1 31 11 00 – Clearing and Grubbing

.2 31 14 13 – Stripping and Placing of Topsoil

.3 32 11 13 – Granular Surfacing, Base and Subbase

.4 32 32 23 – MSE and Gravity Retaining Walls

1.4 Definitions

.1 Excavation Classes: two classes of excavation will be recognized, rock excavation and common excavation.

.1 Rock: any solid material larger than 0.5 cubic metre that cannot be removed by means of duty mechanical excavating equipment having a 0.95 to 1.15 m bucket. Frozen material not classified as rock.

.2 Municipal Solid Waste (MSW): any material as defined in the Geotechnical Report and/or by the Consultant as MSW and must be removed from site.

.3 Common Excavation: excavation of materials of whatever nature that is not included under definitions of rock excavation or MSW.

.2 Topsoil: material capable of supporting good vegetative growth and suitable for use in top dressing, landscaping, and seeding and acceptable to the Consultant.

.3 Waste material: material unsuitable for use in embankment or surplus to requirements.

.4 Borrow material: material obtained from areas outside the Work Site and required for construction of embankments or for other portions of work.

.5 Unsuitable materials:

.1 Compressible or frost susceptible materials under excavated areas ordered to be removed by the Consultant.

.2 Municipal Solid Waste (MSW)

.6 Embankment: material derived from usable excavation and placed above original ground or stripped surface up to subgrade elevation.

.7 Pavement structure: combination of layers of unbound or stabilized granular sub-base, base, and asphalt or concrete surfacing.

.8 Subgrade elevation: elevation immediately below granular base structure.

.9 Free haul distance: distance that excavated material is to be hauled without compensation.

.10 Overhaul: authorized hauling in excess of free haul distance that excavated material is moved.

PART 2 - PRODUCTS

2.1 Materials

.1 Fill Material for Grading: Mineral soil excavated from the site and approved by Consultant, or when indicated, approved borrow material supplied by Contractor.

.2 Embankment materials require approval by Consultant.

.3 Borrow materials require approval by Consultant.

.4 Material used for embankment not to contain organic matter, frozen lumps, weeds, sod, roots, logs, stumps, or any other unsuitable material.

2.2 Compaction Equipment

.1 Compaction equipment must be capable of obtaining required densities in materials on project.

PART 3 - EXECUTION

3.1 Clearing and Grubbing

.1 Grub and strip site, including previously cleared areas, in accordance with Section 31 11 00.

3.2 Site Preparation

.1 Remove snow, ice, rubbish and vegetation from excavation and embankment areas and from other areas as indicated.

.2 Snow and ice may be stored on site if space permits and if melt water from it does not affect the Work; otherwise, it must be removed from site.

3.3 Water Distributors

.1 Apply water with equipment capable of uniform distribution of water.

3.4 Stripping of Topsoil

.1 Strip and place topsoil in accordance with Section 31 14 13.

.2 Strip topsoil from excavation and embankment areas and from areas as indicated or as directed by Consultant after vegetation has been removed from these areas.

.3 Strip topsoil to its full depth. Do not mix topsoil with subsoil.

.4 Stockpile in locations as directed by Consultant. Stockpile height not to exceed 2 m.

.5 Dispose of unused topsoil as directed by Consultant.

3.5 Excavating

.1 General:

.1 Complete site surveying as applicable for measurement and payment purposes.

.2 Maintain crowns and cross slopes to provide good surface drainage.

.3 Keep excavations free of ponding water.

.2 Excavations

.1 Conduct excavation using heavy tracked excavator equipped with smooth lip (clean-up) bucket to minimize disturbance of native sub-grade materials.

.2 Loose, disturbed, remolded or slough materials should be allowed to remain in prepared excavations(s). If a suitable founding surface cannot be prepared through mechanical means, then hand cleaning may be necessary.

.3 Sub-grade materials are subject to loss of strength if disturbed; as such, equipment should not be allowed to operate on the sub-grade surfaces

.3 Unsuitable Materials and Waste Materials:

.1 Notify Consultant whenever unsuitable materials are encountered in excavations and remove unsuitable materials to depth and extent as directed by Consultant.

.2 Remove unsuitable materials and waste material, including excavated MSW, from Place of the Work unless disposal of this material on site is indicated.

.3 MSW to be stockpiled onsite and surveyed by the Contractor for payment prior to hauling offsite.

.4 MSW to be hauled and disposed of at the Foothills Boulevard Regional Landfill.

.4 Rock Excavation:

.1 If, during excavation, material appearing to conform to classification for rock is encountered, notify Consultant immediately to enable measurements to be made to determine volume of rock to be removed.

.2 Shatter rock to 300 mm below subgrade elevation as indicated.

.3 Provide effective drainage to ditches, leaving no undrained pockets in foundation.

.4 Scale down rock slopes and remove rock fragments that are liable to slide or roll down slopes.

.5 Borrow:

.1 Completely use in embankments, suitable materials removed from excavations before taking material from borrow areas.

.2 Where the Consultant has designated a borrow area on Work Site confine borrow to the area indicated

.3 Provide additional suitable embankment material from off site as required. Borrow sources from offsite shall be reviewed and approved by the Consultant.

.4 On completion of borrow activities, the appearance of excavated borrow area must be approved by Consultant. Borrow area surfaces must be regular, with side slopes of 3:1 unless otherwise indicated on Drawings. Where site elevations permit, slope bottom of borrow area to provide for drainage.

.6 Ditches, Trenches and Channels:

.1 Construct ditches, trenches and channels to depths and widths as indicated, or as directed by Consultant, to permit ready flow of surface water.

.2 Maintain and keep ditches and channels open and free from debris until final acceptance of Work.

3.6 Backfilling

.1 Refer to Drawings and Geotechnical Investigation Report for structural backfilling materials and compaction requirements.

.2 When backfill is required on both sides of a wall, raise backfill level simultaneously on both sides, with the difference in height between two sides not to exceed 600 mm.

3.7 Embankments

.1 Bench slopes greater than 4:1, or where shown on Drawings, to ensure proper bond between new materials and existing surfaces. Obtain prior approval from Consultant of method to be used.

.2 Scarify slopes of 4:1 and flatter 200 mm deep, after topsoil stripping, unless otherwise indicated on Drawings.

.3 Break up or scarify existing pavement to sub-grade elevation as indicated.

.4 Do not place frozen material nor place material on frozen surfaces.

.5 Maintain crowned surface during construction to ensure ready run-off of surface water. Do not place material in free-standing water.

.6 With material containing less than 25% by volume of stone or rock fragments larger than 100 mm:

.1 Place and compact to full width in uniform layers not exceeding 200 mm loose thickness. Consultant may authorize thicker lifts if specified compaction can be achieved.

.2 Compact to density of not less than 98% Standard Proctor Density to ASTM D 698 and in accordance with Geotechnical Report.

.3 Bring soil moisture content to level required to achieve specified compaction. Add water or aerate as required.

.7 Where material consists principally of rock:

.1 Place to full width in layers of sufficient depth to contain maximum sized rocks, but in no case is layer thickness to exceed 1 m.

.2 Individual rock fragments not exceeding 1.5 m in vertical dimension permitted provided their vertical dimension does not exceed one third of fill section depth.

.3 Carefully distribute rock material to fill voids with smaller fragments to form compact mass.

.4 Fill surface voids at subgrade level with rock spalls or selected material to form an earth-tight surface.

.5 Do not place boulders and rock fragments with dimensions exceeding 150 mm within 600 mm of subgrade elevation.

.6 Place topsoil on embankment areas as shown on Drawings or as directed by Consultant and trim to maintain specified slopes and grades.

.7 Remove surface stones, roots, and other debris, from the placed topsoil and leave surface in uniform condition.

3.8 Grading

.1 Rough grade to levels, profiles, and contours allowing for surface treatment as indicated.

.2 Rough grade and allow for subgrade levels for concrete walks, paved areas, roads, ditches, grassed areas, and flower beds, etc.

.3 Grade ditches to depths and grades as indicated.

.4 Prior to placing fill over existing stripped ground, scarify surface to depth of 150 mm. Maintain fill and existing surface at approximately same moisture content to facilitate bonding.

.5 Compact filled and disturbed areas to maximum dry density to ASTM D698, as provided for in the Geotechnical Report and as indicated

.6 Do not disturb soil within branch spread of trees or shrubs to remain.

3.9 Finishing and Tolerances

.1 Horizontal location of components of the Work to be within 50 mm of indicated location. However:

.1 Where the Work joins existing Work, no misalignment is permitted.

.2 Subgrade widths of roadbeds shall not be less than that indicated.

.2 Elevations:

.1 Road subgrades to be within 20 mm of design elevations but not uniformly high or low.

.2 Ditches bottoms to be within 40 mm of the indicated elevations.

.3 Road shoulders elevations to conform with finished pavement or curbing elevations.

.3 Finish other surfaces of common material to neat condition, suitable for seeding or sod.

.1 Remove isolated boulders exposed in excavation slopes and fill resulting cavities.

.2 Hand finish slopes that cannot be finished satisfactorily by machine.

.4 Finish back and side slopes of rock material to neat and safe condition, true to line and grade. For excavation slopes in bedrock steeper than 1:1, scale slope by removing loose fragments.

3.10 Protection

.1 Maintain finished surfaces in condition conforming to this section until completion of the Work.

END OF SECTION

PART 1 - GENERAL

1.1 Section Includes

.1 Supply, placement and compaction of granular subbase, base and surfacing as indicated.

1.2 References

.1 BC Ministry of Transportation and Infrastructure (MOTI)

.1 Standard Specifications for Highway Construction

.2 ASTM International

.1 ASTM C117, Test Method for Material Finer Than 0.075 mm Sieve in Mineral Aggregates by Washing.

.2 ASTM C131, Test Method for Resistance to Degradation of Small-Size Coarse Aggregate by Abrasion and Impact in the Los Angeles Machine.

.3 ASTM C136, Method for Sieve Analysis of Fine and Coarse Aggregates.

.4 ASTM D422, Method for Particle-Size Analysis of Soils.

.5 ASTM D698, Test Method for Laboratory Compaction Characteristics of Soil Using Standard Effort (12,400 ft-lbf/ft) (600 kN-m/m).

.6 ASTM D1883, Test Method for CBR (California Bearing Ratio) of Laboratory Compacted Soils.

.7 ASTM D4318, Test Method for Liquid Limit, Plastic Limit and Plasticity Index of Soils.

.3 Standards Council of Canada

.1 CAN/CGSB-8.1, Sieves Testing, Woven Wire, Inch Series.

.2 CAN/CGSB-8.2, Sieves Testing, Woven Wire, Metric.

1.3 Related Sections:

.1 31 05 17 – Aggregates: General

.2 31 24 13 – Excavation, Embankment, Compaction and Grading

1.4 Submittals

.1 Submit sieve analysis to confirm material meets specified gradation requirements.

1.5 Delivery, Storage and Handling

.1 Stockpile minimum 50% of total aggregate required prior to commencing operation.

1.6 Density Testing

.1 Consultant will test the Work, at its own discretion, to judge compliance with Contract Documents.

.2 Payment for Consultant's tests will be by the Owner, in accordance with Section 01 29 83 – Testing Laboratory Services.

.3 A density test will represent part of the Work, as indicated by Consultant, but representing an area no more than 1500 m^2 of lift being placed.

.4 Provide Consultant with 48 hours' notice prior to need for testing, and if required, provide notice directly to approved laboratory.

PART 2 - PRODUCTS

2.1 Materials

.1 Use durable aggregate that will not degrade from exposure to water, freeze-thaw cycles or handling, spreading or compacting.

.1 SGSB: pit-run material is allowed that meets gradation specified in table below.

.2 WGB and HFSA: Use crushed and screened material meeting requirements of BC MOTI Standard Specifications.

.2 Gradations: within specified limits when tested to ASTM C136 and ASTM C117. Sieve sizes to CAN/CGSB-8.2:

Sieve Size (mm)	Percentage Passing		
	Well Graded Base	Select Granular Subbase	High Fines Surfacing Aggregate
100	-	100	-
75	-	95-100	-
40	-	-	-
25	100	-	100
19	80-100	35-100	85-100
9.5	50-85	-	60-85
4.75	35-70	15-60	40-70
2.36	25-50	-	-
1.18	15-35	-	20-50
0.300	5-20	3-15	10-30
0.075	0-5	0-5	7-12

PART 3 - EXECUTION

3.1 Sequence of Operation

.1 Granular Subbase:

.1 Place granular subbase after subgrade is inspected and approved by Consultant.

.2 Granular Base:

.1 Place granular base after subbase surface is inspected and approved by Consultant.

.3 Surfacing:

.1 Place surfacing after base is inspected and approved by Consultant.

3.2 Placing

.1 Place materials to depth and grade in areas as indicated.

.2 Ensure no frozen or unsuitable material is placed.

.3 Place material only on clean, unfrozen surface free from snow or ice.

.4 Place materials using methods that do not lead to segregation or degradation.

.5 Place material to full width in uniform layers not exceeding 150 mm compacted thickness. Consultant may authorize thicker layers if specified compaction can be achieved.

.6 Shape each layer to smooth contour, parallel to finished grade, and compact to the specified density before succeeding layer is placed.

.7 Remove and replace portion of layer in which material has become segregated during spreading.

3.3 Compaction

.1 Compaction equipment to be capable of obtaining required material densities. Where indicated compaction densities are not being obtained and if directed by the Consultant replace the equipment with equipment approved by the Consultant.

.2 Unless otherwise indicated, compact to 100% Standard Proctor Density (SPD) in accordance with ASTM D698.

.3 Shape and roll alternately to obtain smooth, even, and uniformly compacted layer.

.4 Dry material or supply and uniformly add water as necessary to adjust material moisture content during compacting to obtain specified density.

.5 In areas not accessible to rolling equipment, compact to specified density with mechanical tampers approved by Consultant.

.6 Correct surface irregularities by loosening and adding or removing material until surface is within specified tolerance and compact.

3.4 Proof Rolling

.1 Proof roll after placement and compaction is completed for each material (i.e. after subbase compaction, after base compaction, and after surfacing compaction). Proof rolling and correction of deficiencies will be incidental work.

.2 For proof rolling, use standard roller of 45,400 kg gross mass with four pneumatic tires each carrying 11,350 kg and inflated to 620 kPa. Four tires arranged abreast with centre-to-centre spacing of 730 mm.

.3 If Consultant approves use of non-standard proof rolling equipment, Consultant will determine level of proof rolling.

.4 Make sufficient passes with proof roller to subject every point on surface to three separate passes of loaded tire.

.5 Where proof rolling reveals areas of defective subgrade or subbase, reconstruct defective work and repeat proof rolling.

3.5 Site Tolerances

.1 Finished Subbase Surface: within 10 mm of elevation as indicated but not uniformly high or low.

.2 Finished Base Surface: within plus 5 mm or minus 10 mm of established grade and cross section but not uniformly high or low

3.6 Protection

.1 Maintain placed and compacted materials in condition conforming to this section until succeeding material is placed or until accepted by Consultant where placement of succeeding material is by others.

END OF SECTION

PART 1 - GENERAL

1.1 Section Includes

.1 Provision of chain link fences and gates with electrified fence system mounted on outside perimeter as indicated.

1.2 References

.1 ASTM A 53, Specification for Pipe, Steel, Black and Hot-Dipped, Zinc-Coated Welded and Seamless.

.2 ASTM A 90, Test Method for Weight of Coating on Zinc-Coated (Galvanized) Iron or Steel Articles.

.3 ASTM A 121, Specification for Zinc-Coated (Galvanized) Steel Barbed Wire.

.4 ASTM A 525M, Specification for General Requirements for Steel Sheet, Zinc-Coated (Galvanized) by the Hot Dip Process.

.5 CAN/CSA-A23.1, Concrete Materials and Methods of Concrete Construction.

.6 CAN/CSA-G164, Hot Dip Galvanizing of Irregularly Shaped Articles.

.7 CAN/CGSB-138.1, Fence, Chain Link, Fabric.

.8 CAN/CGSB-138.2, Fence, Chain Link, Framework, Zinc-Coated, Steel.

.9 CAN/CGSB-138.3, Fence, Chain Link - Installation.

.10 CAN/CGSB-138.4, Fence, Chain Link, Gates.

.11 CAN/CGSB-1.181, Ready-Mixed Organic Zinc-Rich Coating.

1.3 Shop Drawings

.1 Submit Shop Drawings in accordance with Section 01 33 00 – Submittal Procedures.

PART 2 - PRODUCTS

2.1 Standards

.1 Steel Pipe to ASTM A53.

.2 Chain Link Fabric to CAN2-138.1.

.3 Fence, Chain Link, Framework, Zinc-Coated, Steel to CAN2-138.2.

.4 Fence, Chain Link Installation to CAN2-138.3.

2.2 Materials

.1 Chain Link Fences and Gates:

.1 Pipe: Steel butt weld, Schedule 40, with hot dip galvanized 50 g/m^2 coating.

.2 Mesh Wire:

.1 Galvanized steel wire with hot-dipped galvanized 490 g/m2 coating.

.2 Vinyl coating, where indicated on the drawings, 0.045 mm dry film thickness minimum.

.3 Concrete: Sulphate Resistant Type 50 Portland cement, 24 MPa @ 28 days, 50 mm to 80 mm slump, 20 mm aggregate, 6% air entrainment.

2.3 Components

.1 Chain Link Fences:

.1 Line Posts: 48 mm (1-7/8") O.D., 4.05 kg/m at 3.0 m centres.

.2 Corner, Terminal and Straining posts: 76 mm (3") O.D., 8.62 kg/m.

.3 Gate Posts: 114 mm (4.5") O.D., 16.06 kg/m, unless otherwise indicated.

.4 Top and Brace Rail: 33 mm (1.315") O.D., 2.51 kg/m plain end, sleeve coupled.

.5 Post Caps: Cast aluminum, sized to post diameter, set screw retained.

.6 Line Post Eye tops: Cast aluminum.

.7 Rail Ends: Cast aluminum.

.8 Fittings: Sleeves, bands, clips, tension bars, fasteners and fittings galvanized steel.

.9 Fabric: 50 mm diamond mesh, interwoven 3.5 mm wire, top selvage twisted tight, bottom selvage knuckle end closed.

.10 Bottom Tension Wire: 5.0 mm (6 gauge.) steel single strand hot-dipped galvanized to 490 g/m^2.

.2 Gates:

.1 Fabricate gates as indicated with electrically welded joints, and hot-dip galvanized after welding.

.2 Gate Frame: 41 mm (1-5/8") O.D., 3.38 kg/m. On gate leaves, 3.0 m and more, fit horizontal and vertical intermediate brace and diagonal tension brace.

.3 Fasten fence fabric to gate with twisted selvage at top.

.4 Furnish gates with galvanized malleable iron hinges, latch and latch catch with provision for padlock which can be attached and operated from either side of installed gate.

.5 Furnish double gates with chain hook to hold gates open and centre rest with drop bolt for closed position.

.3 Electrified Fence System:

.1 Energizer: Gallagher MB1000 Fence Energizer or approved equivalent.

.2 Energizer Cabinet: Lockable NEMA 4X rated enclosure as indicated.

.3 Conducting Wire: Class 3 galvanized high tensile smooth fence wire, 12.5 gauge.

.4 Grounding: Copper grounding rods and ground rod clamps as indicated.

.5 Hook-up Wire: Insulated 20 kV galvanized

.6 Wire Mounting Brackets: Electric fence offset brackets with porcelain insulators as indicated and as recommended by electric fence system manufacturer.

.1 Offset Distance: 12 in. from chain link fence.

PART 3 - EXECUTION

3.1 Grading

.1 Remove debris and correct ground undulations along fence line to obtain smooth uniform gradient between posts. Provide clearance between bottom of fence and ground surface of 30 to 50 mm.

3.2 Erection of Chain Link Fence

.1 Erect fence along lines as indicated and in accordance with CAN/CGSB-138.3.

.2 Excavate post holes to the lines indicated on the drawings and to the depth and diameter as indicated in the following table.

Location	Depth	Diameter
Fence height up 1.2 to 1.8 m:		
Line posts	1000 mm	250 mm
Gate, corner and strainer posts	1200 mm	300 mm

.3 Fill holes with concrete and set posts to provide not less than 75 mm concrete cover. Extend concrete 40 mm above finished grade level and slope to drain away from posts. Brace to hold posts in plumb position and true to alignment and elevation until concrete has set.

.4 Do not install fence fabric until concrete has cured a minimum of 5 days.

.5 Space line posts 3 m apart, measured parallel to ground surface.

.6 Space straining posts at equal intervals not exceeding 90 m

.7 Install additional straining posts at sharp changes in grade. At changes of grade where fence tensioning forces produce uplift provide concrete mass at the strainer post sufficient to resist uplift forces with 1.5 safety factor.

.8 Install corner post where change in alignment exceeds 10 degrees.

.9 Install end posts at end of fence and at buildings. Install gate posts on both sides of gate openings.

.10 Install brace between end and gate posts and nearest line post, placed in centre of panel and parallel to ground surface. Install braces on both sides of corner and straining posts in similar manner.

.11 Install overhang tops and caps. Overhang to project over the property being fenced.

.12 Install top rail between posts and fasten securely to posts and secure waterproof caps and overhang tops.

.13 Install bottom tension wire, stretch tightly and fasten securely to end, corner, gate and straining posts with turnbuckles and tension bar bands.

.14 Lay out fence fabric. Stretch tightly to tension recommended by manufacturer and fasten to end, corner, gate, and straining posts with tension bar secured to post with tension bar bands spaced at 300mm intervals. Knuckled selvedge at bottom. Twisted selvedge at top.

.15 Secure fabric to top rails, line posts and bottom tension wire with tie wires at 450 mm intervals. Give tie wires minimum two twists.

.16 Install grounding rods as indicated.

3.3 Electrified Fence System:

.1 Install electrified fence wiring as indicated and in accordance with manufacturer's installation instructions.

.1 Install with sufficient clearance (offset) and insulation to prevent unintentional electrification of chain link fence assembly.

.2 Use electric fence insulators to prevent contact between hot and ground wire loops.

3.4 Installation of Gates

.1 Install gates in locations as indicated.

.2 Level ground between gate posts and set gate bottom approximately 40 mm above ground surface.

.3 Determine position of centre gate rest for double gate. Cast gate rest in concrete as directed. Dome concrete above ground level to shed water.

.4 Install concrete gate stops where indicated.

3.5 Touch up

.1 Clean damaged surfaces with wire brush removing loose and cracked coatings. Apply two coats of organic zinc-rich paint to damaged areas. Pre-treat damaged surfaces according to manufacturers' instructions for zinc-rich paint.

3.6 Cleaning

.1 Clean and trim areas disturbed by operations. Dispose of surplus material and restore damaged landscaping as directed by Consultant.

END OF SECTION

PART 1 - GENERAL

1.1 Section Includes

.1 Supply and installation of Mechanically Stabilized Earth (MSE) and gravity retaining walls in accordance with Contract Documents, including:

.1 Excavation and preparation of subgrade.

.2 Placement and compaction of reinforced backfill materials.

.3 Installation of retaining wall assembly, including interlocking precast concrete blocks (lock blocks), geosynthetics, connections and drainage.

1.2 Related Sections

.1 31 24 13 – Excavation, Embankment, Compaction and Grading

.2 32 11 13 – Granular Surfacing, Base and Subbase

.3 32 91 21 – Topsoil Placement and Finish Grading

.4 32 92 20 – Seeding

.5 33 41 10 – Site Drainage

1.3 References

.1 The Canadian Geotechnical Society

.1 Canadian Foundation Engineering Manual, 4th Edition (2006) (CFEM)

.2 Engineers and Geoscientists British Columbia

.1 Professional Practice Guidelines: Civil and Transportation Infrastructure Retaining Wall Design (2019)

.3 Federal Highway Administration (FHWA)

.1 FHWA-NH1-00-043, Mechanically Stabilized Earth Walls and Reinforced Soil Slopes Design & Construction Guidelines (2001).

.4 ASTM International

.1 ASTM D4533 / 4533M-15 - Standard Test Method for Trapezoid Tearing Strength of Geotextiles.

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

.3 ASTM D4751-20a - Standard Test Methods for Determining Apparent Opening Size of a Geotextile.

.4 ASTM D6241-14 - Standard Test Method for Static Puncture Strength of Geotextiles and Geotextile-Related Products Using a 50-mm Probe.

.5 Canadian Standards Association (CSA)

.1 CSA A23.1/A23.2, Concrete Materials and Methods of Concrete Construction/Test Methods and Standard Practices for Concrete

.2 CSA A23.4, Precast Concrete – Materials and Construction

.3 CSA G30.18, Carbon Steel Bars for Concrete Reinforcement

.4 CAN/CSA G40.21-M92, Structural Quality Steels

.6 CGSB 1-GP-181M, Coating, Zinc-Rich, Organic, Ready Mixed

.7 RSIC, Reinforcing Steel - Manual of Standard Practice

1.4 Submittals

.1 Precast Concrete: Provide manufacturer's concrete mix designs and aggregate test results to Consultant.

.2 Reinforced Backfill: Provide test results to Consultant to verify reinforced backfill meets material, placement, and compaction criteria. Tests on reinforced backfill materials shall include sieve analysis.

1.5 Quality Assurance

.1 Notify Consultant at least 10 Working Days prior to installation of retaining walls. Allow Consultant access to all parts of the Work and supply such information and assistance as is required.

PART 2 - PRODUCTS

2.1 Materials

.1 Soil Reinforcement: Tensar UX1600 MSE geogrid or approved equivalent.

.2 Filter Fabric: nonwoven geotextile as specified in Section 33 41 10.

.3 Lock Blocks: Interlocking precast concrete blocks as manufactured by Lock-Block Ltd., or approved equivalent.

.1 Block Size: 1.5 m x 0.75 m x 0.75 m

.2 Block Profiles:

.1 Bottom and intermediate courses to have interlocking keys on top and key slots on bottom.

.2 Top course to be flat top with interlocking key slots on bottom.

.3 Finish: Smooth finish.

.4 Fill Materials:

.1 MSE Walls

.1 Backfill: Free-draining granular soil meeting specifications for Select Granular Subbase (SGSB).

.2 Working Surface Below Wall and Base Course at Top of Wall: Well-Graded Base (WGB).

.3 Surface Course at Top of Wall: High Fines Surface Aggregate (HFSA).

.2 Gravity Walls:

.1 General site fill as approved by Consultant.

.5 Rip Rap: Hard, relative density (formally specific gravity) not less than 2.65, durable quarry stone, free from seams, cracks, or other structural defects, to meet following size distribution for use intended:

.1 Hand-placed rip rap:

.1 D_{50} of 150 mm
.2 Minimum diameter 100 mm
.3 Maximum diameter 300 mm

PART 3 - EXECUTION

3.1 Preparation

.1 Remove organic soil, existing fill and Municipal Solid Waste (MSW) from below footprint of concrete lock block wall facing, wall reinforcing, and concrete slabs, and out laterally to allow for 1H:1V slope down to natural, undisturbed silty clay, sand or clay till.

.2 If seepage encountered in excavation, use pumps and sumps to keep bottom of excavation dry.

.3 Bring excavation to grade using mineral soil, free from organic material and debris, at moisture content suitable for compaction.

.1 Place fill out laterally from edges of wall facing, wall reinforcement and concrete slabs at distance equal to depth of fill required below footing to allow 1H:1V distribution of stress from bottoms of structures.

.2 Place fill in uniform layers no greater than 300 mm per layer.

.3 Compact each layer to minimum 98% SPD.

.4 To provide level working surface below wall and concrete slab, apply layer of WGB at least 300 mm thick compacted to minimum 100% SPD.

.4 Where rip rap is to be placed on slopes, excavate trench at toe of slope to dimensions as indicated. Grade areas to be rip rapped to uniform, even surface. Fill depressions with suitable material and compact to provide firm bed.

3.2 MSE Retaining Walls

.1 General

.1 MSE Wall Embedment: Embed base course of MSE wall a minimum of 0.4 m below finished grade for frost protection.

.2 Placement of Geogrid: Place below bottom block and between each row of blocks, extending at least 2.4 m from back of wall.

.1 Maintain uniform reinforcement length throughout entire height of wall. Extend reinforced backfill zone as indicated.

.2 Place geogrid with roll width perpendicular to back of wall, without overlapping adjacent widths. Pull out slack, wrinkles, and creases.

.3 Do not cut geogrid to fit over interlocking keys (“crosses” at top of blocks). Let overlying block fix location of geogrid.

.3 Fill Placement and Compaction:

.1 Place fill in layers no more than 300 mm thick. Start placing from back of lock blocks, spreading toward back of reinforced zone to help maintain tension on geogrid.

.2 Compact fill to 100% Standard Proctor Density. Use walk-behind compactor operated at least 50 mm from back of retaining wall. Operate compaction equipment so direction of travel is parallel to back of wall. Larger equipment may be used where distance to back of wall is more than 1 m.

.2 Installation:

.1 Base Course:

.1 Place base layer of geogrid on prepared subgrade as indicated.

.2 Set first layer of concrete lock blocks on top of geogrid base layer.

.3 Place and compact fill until flush with top of lock blocks.

.2 Intermediate Course(s):

.1 Place layer of geogrid, lapping over interlocking keys.

.2 Place layer of lock blocks, staggering vertical joints in relation to previous course.

.3 Place and compact fill until flush with top of lock blocks.

.3 Top Course:

.1 Place final layer of geogrid, lapping over interlocking keys.

.2 Place final layer of flat-topped lock blocks, staggering vertical joints in relation to previous course.

.3 Place and compact final layer of granular fill.

.4 Place and compact base and surface courses as indicated.

3.3 Gravity Wall and Swale

.1 Excavate and prepare subgrade surface as indicated.

.2 Place layer of geotextile over bottom and sides of exposed subgrade surface. Overlap adjacent sheets by minimum 450 mm or as recommended by geotextile manufacturer.

.3 Finish surface even, free of large openings and neat in appearance.

.4 Install lock blocks with vertical joints staggered between courses.

.5 Ensure swale is protected from silt and fine materials. Repair swale with new rip rap at Consultant's direction if silt or fine particles are present.

.6 Grade and apply topsoil to backfilled area in accordance with Section 32 91 21 to match existing slope.

.7 Seed in accordance with Section 32 92 20.

END OF SECTION

PART 1 - GENERAL

1.1 Definitions

.1 COMPOST: A mixture of soil and decomposing organic matter used as a fertilizer, mulch, or soil conditioner. Compost is processed organic matter containing 40% or more organic matter as determined by the Walkley-black or LOI test. Product must be sufficiently decomposed (i.e. stable) so that any further decomposition does not adversely affect plant growth (C:N ratio below 50) and contain no toxic or growth inhibiting contaminates. Composed bio-solids must meet the requirements of the Guidelines for Compost Quality, Category (A) (B) produced by the Canadian Council of the Ministers of the Environment (CCME), January 1996. Includes NorGrow bulk compost, or approved equivalent.

PART 2 - PRODUCTS

2.1 Topsoil

.1 Topsoil: natural, fertile, friable, agricultural soil meeting the following requirements:

- .1 Not less than 6% organic material
- .2 pH value ranging from 5.9 to 7.0
- .3 Non-toxic to plant growth
- .4 E.C. salinity reading not exceeding 1.5
- .5 Reasonably free from subsoil, slag, clay, stone, lumps, live plants, roots, sticks, quack grass, noxious weeds, stones over 30 mm and foreign matter.

.2 Topsoil includes:

- .1 Native Topsoil: native stockpiled topsoil reused onsite.
- .2 Prepared Topsoil: a blended mixture of Owner supplied NorGrow bulk compost and mineral soil to be prepared by the Contractor.

PART 3 - EXECUTION

3.1 Preparation of Existing Grade

.1 Verify that grades are correct. If discrepancies occur, notify Consultant and do not commence work until instructed by Consultant.

.2 Grade soil, eliminating uneven areas and low spots, ensuring positive drainage.

.3 Remove debris, roots, branches, clay lumps, stones in excess of 30 mm diameter and other deleterious materials. Remove soil contaminated with calcium chloride, toxic materials and petroleum products. Remove debris which is at the surface. Dispose of removed material off site.

.4 Cultivate entire area which is to receive topsoil to minimum depth of 100 mm. Cross cultivate those areas where equipment used for hauling and spreading has compacted soil.

3.2 Preparation of Topsoil

.1 Stockpile and reuse onsite topsoil.

.2 Mix NorGrow bulk compost with mineral soil to prepare topsoil.

3.3 Placing and Spreading of Topsoil / Planting Soil

.1 Place topsoil after Consultant has accepted subgrade and topsoil material.

.2 Spread topsoil in uniform layers not exceeding 150 mm.

.3 For sodded areas keep topsoil 15 mm below finished grade.

.4 Spread topsoil as indicated to following minimum depths after settlement.

- .1 150 mm for seeded areas
- .2 135 mm for sodded areas
- .3 300 mm for flower beds
- .4 600 mm for shrub beds

.5 Manually spread topsoil/planting soil around trees, shrubs and obstacles.

3.4 Finish Grading

.1 Grade to eliminate rough spots and low areas and ensure positive drainage. Prepare loose friable bed by means of cultivation and subsequent raking.

.2 Consolidate topsoil to required bulk density using equipment approved by Consultant. Leave surfaces smooth, uniform and firm against deep footprinting.

3.5 Acceptance

.1 Consultant will inspect and test topsoil in place and determine acceptance of material, depth of topsoil and finish grading.

3.6 Surplus Topsoil

.1 Stockpile surplus topsoil at a location on the site designated by the Consultant, unless otherwise indicated.

END OF SECTION

PART 1 - GENERAL

1.1 Product Data

.1 When requested by Consultant, submit product data in accordance with Section 01 33 00 – Submittal Procedures.

.2 Provide product data for:

- .1 Seed
- .2 Mulch
- .3 Tackifier
- .4 Fertilizer

.3 Submit in writing to Consultant 5 Working Days days prior to commencing Work:

- .1 Volume capacity of hydraulic seeder in litres
- .2 Amount of material to be used per tank based on volume
- .3 Number of tankloads required per hectare to apply specified slurry mixture per hectare

1.2 Scheduling

.1 Schedule hydraulic seeding to coincide with preparation of soil surface.

.2 Schedule hydraulic seeding using grass mixtures and mixtures containing Crawnvetch or Trefoil between dates recommended by the Provincial Agricultural Department.

1.3 Delivery and Storage

.1 Fertilizer:

- .1 Deliver and store in original packages showing net mass, analysis and manufacturer
- .2 Store on pallets and protect from the elements

.2 Grass seed: deliver and store in original packages, with label indicating:

- .1 Analysis of seed mixture
- .2 Percentage of pure seed by weight
- .3 Year of production
- .4 Net mass
- .5 Date tagged and location

.3 Mulching material: deliver and store in original packages and protect from the elements.

1.4 Maintenance Period

.1 Maintain seeded areas from time of seeding until acceptance by the Consultant.

.2 Seeded areas will be accepted by the Consultant when:

.1 Satisfactory seed test results have been received from seed testing laboratory
.2 Seeded areas are properly established
.3 Turf is free of bare and dead spots
.4 No surface soul is visible when grass cut to height of 50 mm

.3 Warranty of seeding beyond the acceptance period is not required, unless otherwise indicated.

PART 2 - PRODUCTS

2.1 Fertilizer

.1 Complete commercial fertilizer, minimum of 50% of elements derived from organic sources.

.2 Consultant may adjust specified fertilizer after topsoil test analysis results are received, with no change in Contract Price.

2.2 Grass Seed

.1 Grass seed: Canada No. 1 seed mixture in accordance with the Canada Seeds Act for lawn grass forage mixtures, having minimum purity of 97% and germination of 75%. Supply the seed mixture unless otherwise indicated:

.1 Seed mixture for playgrounds and trafficked areas:
30% Kentucky Bluegrass blend
35% Creeping red fescue,
30% Crested wheat grass,
5% Colonial bent grass.

2.3 Water

.1 Obtained from the Owner if available at Place of the Work, otherwise supplied by Contractor.

2.4 Mulching Material

.1 Wood of wood cellulose fibre free of growth or germination inhibiting ingredients.

.2 Mass of fibre mulch shall be net air-dry mass determined in accordance with Canadian Pulp and Paper Section, Standard A2.

2.5 Matting

.1 Jute matting: uniform, open weave

.2 Blanket matting: consistent dense mat of curled and seasoned wood excelsior with a strong photo degradable plastic mesh on top side.

2.6 Staples

.1 25 mm wide by 200 mm deep by 3 mm diameter steel wire.

PART 3 - EXECUTION

3.1 Fertilizing

.1 Apply fertilizer only after final grade has been approved by Consultant.

.2 Apply 12-51-0 fertilizer at 300 kg/ha.

.3 Spread evenly with calibrated mechanical distributor.

.4 Mix thoroughly into upper 50 mm of topsoil.

3.2 Seeding

.1 Obtain Consultant's approval of seedbed finish grades, final tilth, surface flatness and fertilizer application before seeding.

.2 Sow at the rate of 300 kg/ha, during calm weather and when soil moisture content is adequate for germination.

.3 Sow 50% of seed with broadcast spreader.

.4 Sow remaining 50% of seed at right angles to first seeding pattern, using same broadcasting method.

.5 Cover seed.

.6 Apply fibre mulch to seeded areas at rate of 2250 kg/ha. Use hydro-seeder for application to achieve uniform cover.

.7 Roll seeded grass with roller not exceeding 50 kg.

.8 Water entire area with fine spray immediately after each area has been sown.

.9 Apply enough water to ensure penetration of at least 50 mm, avoid washing out seeds.

3.3 Hydro-Seeding

.1 Proceed with hydro-seeding only after final grade has been approved by the Consultant.

.2 Mix grass seed and fertilizer thoroughly to obtain following mixture:

.1 Water – 3400 L/ha
.2 Grass Seed – 170 kg/ha
.3 Fertilizer – 12-51-0 at 170 kg/ha

.3 Apply seed and fertilizer mixture with approved hydraulic seeder.

.4 Immediately following seeding apply 2250 kg/ha of fibre mulch to form uniform blotter like ground cover allowing absorption and percolation of water.

.5 Area seeded shall not exceed area which can be mulched on same day.

3.4 Protection of Seed Areas – General

.1 Immediately after seeding, erect barricades and warning signs to protect seeded areas from traffic until grass is established.

.2 Keep site well drained and landscape excavations dry.

3.5 Seed Protection on Slopes and Ditches

.1 Cover all prepared and seeded slopes 3:1 or steeper with matting.

.2 Unroll matting either horizontally or vertically to the slope without stretching or pulling.

.3 Lay matting smoothly on soil surface. Overlap adjacent sections of matting minimum 100 mm and staple.

.4 Staple matting into seedbed. Space staples 300 mm apart at start and end of each roll and 1.8 m apart on each side of matting roll and one row in centre, alternatively spaced between each side. Use common row of staples on adjoining matting.

.5 Minimize damage to seedbed during installation of matting. Regrade by hand raking as required, to correct any damages.

.6 In ditches, unroll matting in direction of flow. Overlap adjacent sections of matting minimum 100 mm with upstream section on top and stapled.

3.6 Maintenance

.1 Apply water in sufficient quantities to prevent grass and underlying soil from drying out.

.2 Areas with no irrigation system: supply labour, all hoses and attachments necessary to provide adequate watering to prevent grass and underlying soil from drying out.

.3 Where water is not supplied, on site by the Owner, provide water truck to haul and apply water to seeded areas.

.4 Provide weed control in newly seeded areas by mowing when required.

.5 Cut grass first time when it reaches height of 60 mm and maintain to minimum height of 50 mm. Do not cut more than 30% of blade in any single mowing.

.6 Re-seed areas which show root growth failure, deterioration, bare or thin spots, or which have been damaged by any means, including vandalism and replacement operations.

.7 Fertilize seeded areas six weeks after seeding with 27-14-0 fertilizer. Spread evenly at rate of 300 kg/ha, water in well.

.8 Postpone fertilizing until spring if application falls after August 15th.

3.7 Clean-up

.1 Clean up immediately any soil and debris spilled onto pavement or concrete.

.2 Broom clean pavement and sidewalks. Clear soil and rubble from underground surface storm sewer lids.

.3 Leave site in neat and clean condition. Remove excess materials from site.

END OF SECTION

PART 1 - GENERAL

1.1 Related Sections

.1 32 91 21 – Topsoil and Finish Grading

.2 32 92 20 – Seeding

1.2 References

.1 Nomenclature: to "International Code of Nomenclature for Cultivated Plants".

.2 Canadian Standards for Nursery Stock: latest edition by Canadian Nursery Landscape Association (CNLA).

.3 Clean Plants Standard (latest version): program administered by the Canadian Nursery Certification Institute with approval and support of the Canadian Food Inspection Agency.

.4 Canadian System of Soil Classification: latest edition by Agriculture and Agri-Food Canada.

.5 ANSI A300: pruning standards and practices of the International Society of Arboriculture.

1.3 Submittals

.1 Submit for Consultant's review and approval as applicable:

.1 Copies of permits and licenses required by authorities having jurisdiction prior to commencement of Work.

.2 Samples of all topsoil, soil mix, mulch, and other organic materials intended for use. Samples to weigh between 500 g and 1 kg and be packaged in clean containers with label indicating source of material, date of sampling and project name. Samples to be typical of lot of material to be supplied and provide an accurate indication of colour, texture and organic content.

.3 List of plant nursery sources. Where applicable, provide "Clean Plants Certification Number" of each Clean Plants-certified nursery for approval. Submit information minimum two weeks prior to commencement of Work.

.4 Samples of planting accessories and materials including source of supply as specified or as directed by Consultant.

.5 Site supervisor's credentials prior to commencement of Work.

.6 Work schedule showing approximate dates for commencement and completion of each item of Work. Submit prior to commencement of Work.

.7 Submit other required information and documents as specified or requested by Consultant.

1.4 Quality Assurance

.1 Contractor: Experienced and knowledgeable in landscape Work.

.2 Site Supervisor: Competent, experienced, and knowledgeable to direct and supervise landscaping staff and Work. Shall possess a Landscape Journeyman Gardener certification or other similar qualification acceptable to Consultant.

.3 Staffing: Experienced, competent, and trained landscape personnel who will perform all tasks and services in a knowledgeable and professional manner.

.1 Ensure Workers act safely and professionally while Working at Place of the Work.

.2 Do not assign any Worker that the Consultant deems incompetent, careless, insubordinate, or otherwise objectionable.

.4 Obtain approvals as required by Contract for suppliers, sub-Contractors, materials and Products.

1.5 Delivery, Storage and Handling

.1 Handle plants with care and skill to prevent injuries to trunk, branches, roots, root balls and containers. Trees with damaged, broken or abraded trunks or branches may be rejected.

.2 Protect plants during shipment with windscreen or other suitable covering. Carefully tie in all branches before transporting. Take all precautions to prevent excessive drying from sun and wind and breakage from wind and equipment during transport. All points of contact between plant and equipment shall be protected with pads.

.3 Adequately protect plants in storage from drying out, frost damage, exposure of roots to sun, injury and breakage resulting from equipment and severe winds, site vandalism and other damages.

.4 Install plants within 24 hours of delivery to site. Store and heel plants in with topsoil or mulch in suitable location when planting cannot be completed on time. Keep all plants moist until planted. Plants not planted within required timeframe, weather permitting, may be deemed unacceptable by Consultant.

.5 Do not install plants whose soil balls have been cracked or broken or when burlap ropes used in connection with transplanting have been removed. Do not use plants damaged during contact with equipment, or plants that are wilted, windburned or stressed.

.6 Replace damaged or rejected plants at no cost to Owner.

.7 Do not transport trees in open trucks when the temperature is above 25°C or at speeds in excess of 60 km/h.

1.6 Soil Analysis

.1 Imported Soil: Arrange and pay for services of accredited testing laboratory to perform horticultural soil analysis on each source of soil mix and topsoil supplied by Contractor.

.2 Native Stockpiled Topsoil: Arrange and pay for services of accredited testing laboratory to perform horticultural soil analysis on native topsoil stockpiled on site.

.3 Prepared Topsoil: Arrange and pay for services of accredited testing laboratory to perform horticultural soil analysis on topsoil prepared by the Contractor.

.4 Be responsible for ensuring all samples of imported soil are submitted for testing well in advance of commencement of Work. Imported topsoil and/or soil mix shall not be placed on site until approved by Consultant.

.5 Soil analysis for horticultural use shall include results for: existing major soil nutrients; soil pH value; total soluble salts (electrical conductivity); percentage of organic matter; soil texture and percentage of sand, silt and clay; nutrient recommendations; and recommendations for soil amendments.

.6 Consultant reserves the right to inspect and evaluate all sources of imported and prepared topsoil selected by Contractor.

.7 Contractor to submit original copies of soil analysis reports to Consultant as required.

1.7 Maintenance Period

.1 Owner will be the sole assessor of Contractor’s maintenance performance and workmanship.

.2 Coordinate maintenance practices with Owner. Alter maintenance schedules, when necessary, to accommodate Owner's site activities.

.3 Maintain exterior landscape Work for a minimum of one year, inclusive of one full and complete growing season (May 1 to October 31) commencing from date of interim acceptance of the landscape portion of Work in Contract.

.4 Perform maintenance services during landscape growing season (May 1 to October 31). Consultant, however, reserves the right to determine actual date of commencement and termination of maintenance based on existing climatic conditions, soil moisture and plant health.

.5 Maintenance activities during the maintenance period are to include, but are not limited to, the following activities:

.1 Protect landscape plantings and turf areas against damage during maintenance period. Protection includes temporary protections, fencing, barriers, and signs as required for protection. If any plant material or turf becomes damaged or injured because of insufficient protection, treat or replace plant material or turf at own expense.

.2 Complete spring cleanup by May 15 or sooner, weather permitting. Remove and dispose of protective coverings and mulch used in winter protection. Clean, sweep, collect and remove sand, rock chips, salt and other debris accumulated during winter months from all maintained turf and hard surface areas. Re-sweep turf and hard surface areas until completely clean and acceptable to Owner. Dispose of all collected debris to approved municipal disposal site.

.3 Collect and remove dead vegetation, leaves, litter, and other debris from turf areas. Rake clean snow mould, where existing, from lawn areas.

.4 Clean plant beds, raised planters, tree wells, hedges and other landscaped areas of plant debris, leaves, litter, and other foreign matter. Remove collected debris from site.

.5 Loosen and lightly cultivate non-mulched planting soil without disturbing roots of permanent plantings. Reinstall all loose plant bed edging materials and replace where necessary.

.6 Seeded Areas: provide adequate watering of seeded areas to ensure proper seed germination and turf establishment. Supply and operate a portable and mobile irrigation system to water seeded turf areas as necessary until adequately and well established.

.7 Sodded Areas: regularly and adequately apply water to all sodded areas. Water shall be deeply and thoroughly applied to keep new sod and underlying soil from drying out and to ensure healthy vigorous growing conditions are maintained. Apply water during early morning or evening to achieve efficient use of water.

.8 Apply fertilizer as directed by Owner. Use only mechanical equipment to spread fertilizer. Check spreader calibration to ensure specified application rate is used.

.9 Mowing and trimming: cut and maintain turf and grass areas at required variable minimum heights respective of the growing season. During periods of active growth turf and grass shall be mowed at minimum required mowing height. During hot dry conditions and slow growth periods turf shall be mowed at increased or maximum heights to maintain turf health.

.10 Regularly monitor and visually inspect the health and care of all plants on site to ensure proper plant care is provided in accordance with specifications that will enable plants to grow in a vigorous, healthy and non-stressed condition.

.11 Maintain all planting locations each week during the maintenance period to ensure healthy and vigorous growing conditions and to ensure aesthetically clean and pleasing site appearances.

.12 Plant watering - Regularly test and monitor soil moisture conditions and a plant's need for water to ensure adequate health and survival. Natural rainfall should be considered in determining amount and frequency of watering. Regularly review plant watering needs with Owner. Ensure sufficient moisture is provided each week, as necessary, to maintain an adequate level of moisture within the root systems and ensure healthy plant growth and survival.

.13 Plant removal - Immediately remove all dead, unhealthy and unappealing plants from site or when directed by Owner. Promptly supply and install healthy new replacement plants to ensure original landscape plan is maintained. Replacement plants shall meet specifications and be approved by Owner.

.14 Pest monitoring - regularly monitor and visually inspect all plants, turf and other landscape areas to identify potential pest problems and determine appropriate pest controls. Pest problems include insect, disease and weed infestations that pose a serious and on-going threat to plant life on site.

.15 Weed control - Provide ongoing weed control and eradication methods during active growth and establishment, by cultivation, physical removal and use of approved chemical pesticides.

.6 Additional maintenance beyond the specified maintenance and warranty period required for Contractor to achieve final acceptance shall be provided at Contractor's own expense.

.7 Incomplete weeks or months of maintenance shall be carried over to the following landscape growing season.

.8 Consultant reserves the right to extend maintenance period or reduce monthly progress payments for maintenance services any time Contractor fails or neglects to provide proper and adequate maintenance services in accordance with Contract specifications as determined by Consultant.

1.8 Warranty

.1 Provide warranty for plant materials, related Works and materials for a minimum period of one year, inclusive of one full and complete growing season (May 1 to October 31), commencing from the date of Substantial Performance of the Work.

.2 Consultant reserves the right to extend Contractor's warranty responsibilities for an additional one year on replacement plants and for original plants where leaf development, colour and growth are not sufficient to ensure future survival.

.3 During warranty period, remove and replace plants which are dead, unhealthy, unappealing, weak, or in unsatisfactory growing condition or that in any other way do not meet requirements of specifications or that show more than 25% dead or unhealthy growth.

.4 Perform supply and installation of warranty replacement plants in accordance with Contract specifications. All plants not found in a healthy thriving condition must be immediately removed from site and replaced during the warranty period. When directed by Consultant, plant replacements shall be completed within seven (7) days of notification.

.5 Consultant shall be sole judge as to condition of plant material regarding warranty replacements.

PART 2 - PRODUCTS

2.1 Source Quality Control

.1 All plants to be true to genus, species and cultivar specified and grown in a recognized nursery in accordance with good horticultural practices as advocated by the Canadian Nursery Landscape Association. Each plant nursery shall be a "Clean Plants Certified Nursery" approved by the Canadian Nursery Certification Institute.

.2 Plants grown in a "Clean Plants Certified Nursery" to have been grown and handled in accordance with the Clean Plants Standard developed by the Canadian Nursery Certification Institute and the Canadian Food Inspection Agency. Submit "Clean Plants Certification Number" of each certified nursery for verification.

.3 Supply ball and burlapped trees that have been nursery grown in British Columbia for minimum of five years to ensure hardiness.

.4 Supply container grown shrubs, herbaceous perennials, ground covers and other plants that have been nursery grown under a similar climatic zone to those in locality of project.

.5 Plant supply to conform to federal and provincial regulations.

.6 Trees and other plants will be inspected and selected by Consultant from local nursery source of supply or place of growth prior to digging and delivery to site. Contractor's representative shall be present during inspection. Consultant will tag acceptable plants with cargo seal tags or other suitable tagging material.

.7 Where formal arrangements or consecutive order of trees or other plants are required in plan, all required plant material shall be selected for a uniform height and spread. Consultant reserves the right to reject all plants at source if available plant quantity is inadequate.

.8 Consultant reserves the right to reject any plant where tags have been removed before plants have been planted on site and approved by Consultant.

.9 Approval of plants at source does not impair the right of Consultant to inspect plants on site during progress of Work. Any plant which has been damaged by pests or mechanical equipment; substituted without authorization; injured by any means or cause; or does not conform to specifications must be removed from site whether in place or not and replaced with acceptable plant material as directed by Consultant.

.10 Plant substitutions are not permitted unless approved by Consultant. Contractor shall submit verifiable and adequate proof that specified plants are not available or of unacceptable quality before requesting plant substitutions.

2.2 Materials

.1 Condition and Quality

.1 Plants shall be of specimen No. 1 grade and quality, exceptionally heavy, and so trained or favoured in development and appearance as to be unquestionably and outstandingly superior in form, compactness, branching and symmetry. Plants shall exhibit vigorous growth, be well branched and densely foliated when in leaf; free of disease, insects, eggs, or larvae; free of dead branches and dead branch tips; and have healthy, well developed root systems.

.2 Trees with multiple leaders; damaged, broken or crooked leaders; weak "Y" crotches, bark abrasions or scars; sun scald, frost cracks, disfiguring knots, insect damage or infestations are not acceptable.

.3 Tree trunks shall be clean and free of stubs, decay, splits or other damage. Root collar shall be free of defects, including circling, kinked and stem girdling roots.

.4 Specific tree requirements include:

.1 Deciduous Trees: straight bodied trees according to their natural habit of growth; having a balanced and well branched head; and with leaders intact, undamaged and uncut. Height of branching shall be consistent.

.2 Coniferous Trees: straight central leaders with a dense, heavy and uniform crown; well branched to ground level; and having outstanding natural colour. Trees with a sparse or thinly layered branched structure or with an unnaturally sheared appearance are not acceptable.

.3 Clump Form Trees: three or more trees planted as a group that have grown together to form a single tree having three or more main stems or trunks. Clump trees shall be low branched; have a unified and well-established root system; and have well developed crowns.

.4 Multi-Stem Trees: with three or more main stems originating from a single root crown or from a point just above the root crown. Trees shall be low branched; have a unified and well-established root system; and have well developed crowns.

.5 Shrubs: natural form, typical of genus, species and variety; minimum of four canes or primary stems that start from the ground.

.6 Herbaceous Perennials: healthy and vigorous crowns, well rooted and established, not less than two years old and twice transplanted.

.7 Vines: healthy, vigorous and well rooted in container, not less than 3 runners at 50 cm length or more.

.8 Ground Covers: healthy, vigorous, well rooted and established in container. Size proportionate to root development.

.9 Heeled-in plants or plants from cold storage are not acceptable. Plants that have been top Worked, unnaturally sheared or colour treated are not acceptable.

.10 Collected Plants: native plants indigenous to area. Plants designated as collected plants on plan shall be dug with root balls minimum 20% larger than for nursery grown stock. Well-developed crowns and branching.

.2 Plants – Container Grown Nursery Plants:

.1 Container grown plants shall conform to measurements and container size specified. Measure height and spread, in centimeters, with branches in their normal positions in accordance with Canadian Standards for Nursery Stock. Plants shall possess normal balance between height and spread.

.2 Plants shall be grown in sufficiently sized containers for minimum of three months in accordance with Canadian Standards for Nursery Stock.

.3 Container grown stock shall be healthy, vigorous, well rooted and established in container. Container grown plants shall have a well-established root system reaching sides of container to maintain a firm ball when container is removed but shall not have excessive root growth encircling the inside of container. Over established and root bound plants in containers are not acceptable.

.4 Plants shall have nursery labels containing the correct botanical name.

.3 Plants - Balled and Burlapped:

.1 Supply balled and burlap trees in wire baskets that conform to plant measurements specified on plan. Measure height and spread, in centimetres, with branches in their normal positions in accordance with Canadian Standards for Nursery Stock.

.2 Caliper Size: caliper measurements, in millimetres, shall be the determining measurement. Measure deciduous tree caliper 15 cm above ground on trees up to 100 mm caliper size. Larger sized trees, 100 mm caliper and over, shall be measured 30 cm above ground.

.3 Clump Form / Multi-Stem Tree Measurement: caliper measurements shall be in accordance with Canadian Standards for Nursery Stock.

.4 Coniferous Height: height measurement shall be taken at midpoint between the uppermost whorl and the tip of the leader.

.5 Trees shall be properly machine dug with firm and natural root balls at minimum size and shape as specified in Canadian Standards for Nursery Stock. Root balls shall be placed, firmly wrapped and secured, in burlap lined wire baskets with rope or rottable twine. Root collar shall be apparent at surface of root ball. Plant trunks shall be in centre of root ball.

.6 Root ball size shall be sufficiently large to contain at least 75% of fibrous root system with a ball depth not less than 50% of ball diameter.

.7 Undersized, broken, loose, manufactured or other defective root balls will be rejected. Root balls shall be free from pernicious perennial weeds and grass and their roots.

.8 Adjust root ball size according to growing habits of plants. Clump form and multi-stem trees and coniferous pine trees shall be machine dug with root

balls minimum two sizes larger than standard trees in accordance with Canadian Standards for Nursery Stock.

.9 Trees 150 mm caliper and over shall be root pruned during previous two successive growing seasons prior to delivery.

2.3 Water

.1 Water: clean, fresh, and free of substances or matter that would inhibit vigorous and healthy plant growth.

.2 Supply clean water, equipment, methods of transportation, water tanker, hoses, attachments, and other accessories as necessary to adequately apply water to all plant material and for other Work in Contract.

.3 Costs for supply of water incurred during the Contract period shall be borne by Contractor.

2.4 Soil

.1 Prepared Topsoil: fertile soil material, capable of sustaining healthy growth. Topsoil to be a blended soil of NorGrow bulk compost and mineral soil. Topsoil to be loose and friable, free of subsoil, clay lumps, stones, live plants, roots or any other deleterious material greater than 20 mm diameter, free of litter, foreign matter and toxic materials harmful to plant growth. Topsoil containing construction debris, sod clumps, quackgrass or other noxious weeds is not acceptable. Topsoil to meet the following requirements:

.1 Minimum 6% organic matter.

.2 Acidity/alkalinity shall range from 5.9 pH to 7.0 pH.

.3 Electrical Conductivity (E.C.) - level of soluble salts shall not exceed 1.5 dS/m.

.4 Texture: “Loam” topsoil in accordance with *Canadian System of Soil Classification*. Topsoil to fall within an allowance of ±2% of the values stated in the table below:

Soil	Sand (%)	Silt (%)	Clay (%)	Class
Topsoil	35	35	30	Loam

.2 Native Stockpiled Topsoil: native topsoil shall be stockpiled on site by the Contractor and used for topsoil in this Contract. Prior to use, Contractor shall eliminate all existing weed and foreign grass growth and screen the soil using approved screener. Amend native stockpiled topsoil to comply with soil specifications required in Contract.

.3 Peat Moss: decomposed plants, fairly elastic and homogeneous, free of decomposed colloidal residue, wood, sulphur and iron. Minimum of 80% organic matter by mass, pH value between 4.5 and 6.0. Furnished in an air-dry state, packed in standard bags or bales showing name of manufacturer.

.4 Sand: washed coarse sand, medium to coarse textured, free of impurities, chemical or organic matter.

.5 Bonemeal: finely ground commercial bonemeal with minimum analysis of 4% nitrogen and 20% phosphoric acid.

2.5 Planting Media

.1 Soil Mix: 3 parts fertile topsoil; 1 part horticultural peat moss; 1 part sharp sand; bonemeal – apply at 0.6 kg/m3 soil mix or 50g/m2 soil mix and thoroughly mix into soil.

.2 Fertile Topsoil: fertile soil material, capable of sustaining healthy growth. Supply topsoil as specified. Mix bonemeal fertilizer into topsoil at 0.6 kg/m3 of soil.

2.6 Planting Accessories

.1 Support posts: T rail studded 40 mm x 40 mm metal stakes, minimum 2.1 m long. Stakes shall be scaled, primed and painted.

.2 Guy wire: #12 or #14 pliable galvanized steel wire.

.3 Guy wire anchors: T rail metal stakes, minimum 700 mm long. Paint minimum top 200 mm of stake with an orange fluorescent spray paint for visibility.

.4 Bark protector: 12 mm diameter new reinforced soft black rubber hose. Hose shall be cut of adequate length to completely encircle tree trunk to ensure no wire contacts tree bark. High grade flat grommeted fabric straps is acceptable in staking plants. Hard plastic hose protectors are not acceptable.

.5 Flagging: fluorescent orange flagging tape.

.6 Tree trunk guard: flexible, expandable and self-opening plastic spiral wrap manufactured for horticultural use. Guard shall be of adequate length up to 60 cm high.

.7 Bark mulch: premium shredded coniferous pine bark mulch. Shredded bark mulch shall be approximately 50 mm or less in size. Mulch shall be free of non-organic materials, wood preservatives, diseased wood, moulds, fungi and insect infestations.

.8 Plant protection: materials to protect plants from rodent, animal and sun damages. Install galvanized wire mesh with fasteners; plastic perforated spiraled horticultural strips; burlap plant wrap with fasteners; or other approved materials in accordance with manufacturer’s instructions.

PART 3 - EXECUTION

3.1 Preparation

.1 Locate and stake locations of all subsurface utility lines and underground irrigation lines, where applicable.

.2 Protect benchmarks and hubs which form part of legal site survey.

.3 Stake out locations of all trees and other major planting including outlines of plant beds with wood stakes or other acceptable material.

.4 Where conflict exists between underground services and proposed plantings, promptly notify Consultant for instruction. Adjustments to plant locations require Consultant's approval.

.5 Maintain offset distances when locating trees near underground services, adjacent to walkways, property lines, curbs, intersections, entrances, light standards, site signage and buildings or as directed by Consultant. Do not locate any tree within minimum 1.5 m of a ditch line.

.6 Obtain Consultant's approval of plant locations before installing any plant material. Plants installed by Contractor without Consultant's approval of location shall be relocated at Contractor's expense.

3.2 Preparation of Plant Beds and Trees

.1 Planting Beds: excavate plant beds minimum of 600 mm deep.

.2 Trees: excavate tree planting pits minimum twice the diameter of the root ball and to full depth of root ball. Excavation shall be large enough to provide placement of minimum 300 mm of fertile topsoil backfill around root ball.

.3 Obstructions: notify Consultant if underground construction debris, rock, hardpan soil stratum or other obstructions are encountered during plant pit excavations.

.4 Remove all excavated subsoil and foreign debris material from site. Do not mix with planting soil or use as backfill.

.5 Do not excavate plant pits unless trees are scheduled for installation the same day. Cover and/or clearly flag all excavated plant pits left unattended for any length of time that may present a hazard.

.6 Scarify: scarify and roughen sub-grade soil within sides of excavated tree pit to minimum depth of 100 mm to eliminate smooth glazed walls. In planting beds, scarify and loosen sub-grade soil within excavated plant bed to minimum depth of 150 mm. Complete scarification of subsoil before placing any planting soil in tree pit or plant bed.

.7 Soil Mix-Plant Beds: place soil mix in planting beds to full depth of excavation and approximately 50 mm higher than adjacent finish grade. Soil mix to be placed in

appropriate layers and tamped to eliminate any settlement. Slope grade away from building.

.8 Keep plant pit and plant bed excavations dry. Remove excess water before planting.

.9 Obtain Consultant's approval for all excavation and soil placement requirements before proceeding with installation of plant material.

3.3 Planting

.1 During progress of Work, Consultant will review condition and quality of plants delivered to site and inspect Contractor's Workmanship and performance to ensure compliance with specifications.

.2 Set plants plumb in centre of pits and face for best appearance and relationship to adjacent structures.

.3 Container Grown Plants: set plants in pit at same relation to grade as originally grown, after settlement has taken place. Remove containers and gently separate or split roots before planting to ensure proper root development. Plants installed below finish grade are not acceptable. Thoroughly water plants after planting.

.4 Ball and Burlap Trees: place plant straight in pit on undisturbed soil. Root ball shall be placed so that top of root flare is slightly above finish grade after settlement has occurred. Trees planted too deep with root flare below grade will be rejected by Consultant.

.5 Backfill with fertile topsoil around root ball in layers of 150 mm and firmly tamp to eliminate voids and air pockets. Ensure all trees have minimum 300 mm of topsoil surrounding the sides of the root ball.

.6 When tree pit is approximately 1/2 full of topsoil, thoroughly water planting hole allowing water to completely penetrate planting soil.

.7 Wire Basket: cut and remove all wire, burlap, rope or twine from minimum upper top one-half (1/2) of root balls. Remove all wire basket debris from site; do not bury in tree pit. Trees planted without removal of wire basket will not be accepted by Consultant.

.8 Complete backfilling around root ball to final grade in layers only after wire basket and other materials have been removed. Firmly tamp topsoil in place.

.9 Construct a neat circular water retention saucer surrounded by a soil embankment at outside edge of root ball or as directed by Consultant. In boulevards, parking islands and other confined locations adjust size of saucer to suit location and maintenance issues. Fill saucer with water and allow it to be completely absorbed. Place additional planting soil as necessary where settlement occurs. Thoroughly deep root water all plants.

.10 Slope Planting: place top of root crown at or slightly above finish grade at centre of plant pit. Form a saucer on downhill side to catch and retain water and to control erosion.

.11 After water has been completely absorbed, cover tree watering saucer with 100 mm of shredded bark mulch. Taper mulch to ground level at trunk.

.12 Place bark mulch to 100 mm depth over planting beds. Keep mulch material away from trunks and stems of plants.

.13 Install tree trunk guard around base of deciduous tree trunks that are planted in turf areas to protect from mechanical damage.

3.4 Supporting Trees

.1 Support trees immediately after installation. Install minimum two support posts on deciduous trees 80 mm in caliper and under and on coniferous trees 3.0 m in height and under. Place support posts on prevailing wind side of tree and directly opposite. Larger trees shall require additional support posts spaced equally around tree as necessary.

.2 Anchor support post minimum 450 mm into undisturbed ground. Ensure support posts are secure and vertical. Replace all damaged support posts.

.3 Locate support posts away from trunk and branches. Height of support shall correspond with tree height. Support posts to be installed in a consistent direction.

.4 Provide each tree support with a bark protector and tie secured at approximately 60% of tree height. Do not tie trees too tightly; allow tree to move in response to winds. Keep plant plumb.

.5 Deciduous trees over 100 mm in caliper and coniferous trees over 3.5 m in height may require adequate staking using metal anchors and guy wires as directed by Consultant:

- .1 Guy with three double guys and anchors spaced equally around plant.
- .2 Provide guy looped around plant trunk, encased in hose or rubber belting.
- .3 Attach guys at 60% of plant height at angle of 45 degrees.
- .4 Top of anchor to be flush with finished grade.
- .5 Keep guys taut and plant plumb.
- .6 Attach flagging tape to guys as safety precaution.

3.5 Pruning

.1 Perform pruning in accordance with proper practices and standards (ANSI-A300) of the International Society of Arboriculture. Pruning to be performed by a certified arborist unless approved otherwise by Consultant.

.2 Prune to provide natural branching structure and to encourage healthy natural growth. Do not prune terminal leader of plant or leave protruding stubs when pruning.

.3 Limit pruning to removal of dead or injured branches, stray branches, double leaders, water sprouts, suckers and to compensate for loss of roots as a result of transplanting.

.4 Do not strip lower branches, raise up crown of trees, top or shear any plant.

.5 Remove improperly pruned plants and install acceptable replacement plants at own expense if directed by Consultant.

3.6 Protection

.1 Take all necessary precautions to protect Work in progress, all property, persons, hard surfaces, buildings and existing trees from any damage that might be incurred arising from this Contract.

.2 Protect all plant materials and other site Work from all damage, disturbance, or other construction activity from date of commencement of Work to final completion and acceptance of Work. Remove protection only after plants are properly established and accepted or as directed by Consultant.

.3 Damaged or unhealthy plants and other Work resulting from inadequate protection or watering shall be repaired or replaced as directed by Consultant at Contractor's expense. All damages shall be corrected prior to final acceptance.

3.7 Final Acceptance and Termination of Maintenance

.1 Consultant may accept Work at end of maintenance period provided:

.1 Plants meet requirements of the specifications.

.2 Plants are properly and adequately established.

.3 Plants are alive, healthy and free of all pest infestations.

.4 Plants are properly planted, staked and pruned.

.5 Plants are recently and thoroughly watered.

.6 Plant pits and beds are cultivated and free of weeds, grass and debris.

.7 Planting accessories are properly installed and in good condition.

.2 Contractor shall use specified materials to correct plant installations that do not comply with requirements for acceptance and continue with specified maintenance/establishment until deemed acceptable by Consultant.

3.8 Clean-up and Repairs

.1 During Work, keep all hard surfaces clean and tidy. Sweep and wash all walkways and other pavement surfaces to maintain clean appearances. Clear soil and rubble from catch basins, manholes, valves and other hard surface features.

.2 Collect all litter and other debris from site as necessary during Work.

.3 Remove and dispose of excess soil and waste materials, including subsoil, foreign debris, pots, wire basket debris, plant wrapping debris, and unhealthy plant growth at approved disposal site. Contractor shall be responsible for all disposal costs.

.4 Remove all plant nametags, plant labels, cargo seal tags and flagging tape prior to final inspection or as directed by Consultant.

.5 Repair all damages resulting from the Work.

END OF SECTION

PART 1 - GENERAL

1.1 Section Includes:

.1 Supply and installation of site drainage systems as indicated, including:

.1 Drainage tile beneath MSE retaining wall assembly

.2 French drains

1.2 Related Sections

.1 31 24 13 – Excavation, Embankment, Compaction and Grading

.2 32 32 23 – MSE and Gravity Retaining Walls

1.3 Submittals

.1 Drain Rock: Submit sieve analysis to confirm material meets gradation requirements.

PART 2 - PRODUCTS

2.1 Materials

.1 Filter Fabric: medium weight nonwoven polyester needle-punched geotextile.

.1 Medium Average Roll Values:

.1 Grab Tensile Strength (ASTM D4632) greater than 700 N.
.2 Static Puncture (ASTM D6241) greater than 1,800 N.
.3 Trapezoid Tear (ASTM D4533) greater than 250 N.
.4 Apparent Opening Size (ASTM D4751), 0.2 mm ± 0.02 mm.

.2 Drainage Piping: Rigid perforated PVC drainpipe.

.1 French Drains: 150 mm dia.

.2 Drainage Tile: 100 mm dia.

.3 Aggregate: Clear drain rock; gradation as indicated in table below:

Sieve Size (mm)	Percentage Passing
40	100
19	0-100
4.75	0-10
2.36	0-5
0.075	0-2

PART 3 - EXECUTION

3.1 French Drains

.1 Excavate trenches as indicated.

.2 Line bottom and sides of trench with non-woven geotextile. Overlap adjacent sheets by minimum 450 mm or as recommended by manufacturer.

.3 Fill bottom of trench with drain rock until trench is 1/4 full.

.4 Place drainage pipe as indicated.

.5 Carefully place remainder of drain rock until flush with final grade.

3.2 Drainage Tile

.1 Encase drainage piping with minimum 100 mm of drain rock and wrap in geotextile.

.2 Install drainage piping as indicated, sloped at minimum 0.25%.

END OF SECTION

APPENDIX B - DRAWINGS

NOT FOR CONSTRUCTION
ISSUED FOR TENDER ONLY

ISSUED FOR TENDER

2021 / 01 / 21

Regional District Of Fraser-Fort George

Cummings Road Regional Transfer Station Redevelopment

201945000

DRAWING LIST

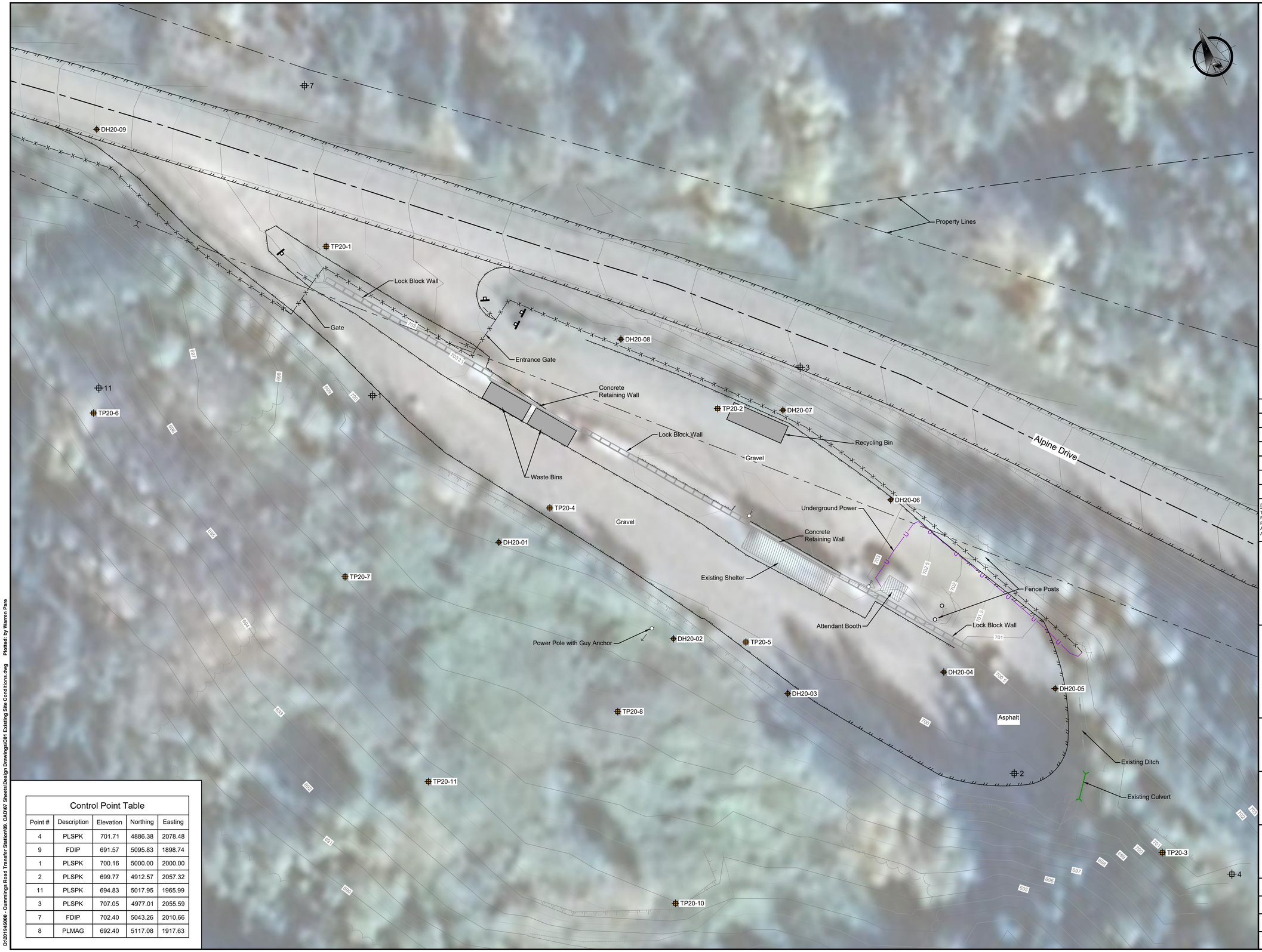
Sheet Number	Sheet Title
C00	Cover
C01	Existing Site Conditions
C02	Removals
C04	Site Layout & Grading Plan
C04	Gravel & Landscaping Plan
C05	Site Entrance & Exit And Landscaping
C06	Cross Sections
C07	Details
C08	Details
E01	Electrical Cover Page
E02	Electrical Details
E03	Electrical Work Plan

LOCATION PLAN

NTS

MORRISON HERSHFIELD

Unit 310, 4321 Still Creek Drive Burnaby, BC V5C 6S7 Tel: 604 454 0402



Control Point Table

Point #	Description	Elevation	Northing	Easting
4	PLSPK	701.71	4886.38	2078.48
9	FDIP	691.57	5095.83	1898.74
1	PLSPK	700.16	5000.00	2000.00
2	PLSPK	699.77	4912.57	2057.32
11	PLSPK	694.83	5017.95	1965.99
3	PLSPK	707.05	4977.01	2055.59
7	FDIP	702.40	5043.26	2010.66
8	PLMAG	692.40	5117.08	1917.63

Notes:

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2. Any Deviation Or Inconsistencies From This Plan Shall Be Reported To The Engineer Immediately.
3. The Dimensions Shown On This Plan Take Precedence Over Scaled Dimensions.
4. All Dimensions Are In Meters, And Decimals Thereof Unless Otherwise Noted.

Legend:

- Control Point
- Property Line
- Top Of Slope
- Toe Of Slope
- Edge Of Gravel
- Drainage Ditch
- Edge Of Tree Line
- Chainlink & Electric Fence
- Edge Of Asphalt
- Underground Power Line
- Culvert
- Power Pole
- Drill Hole Location
- Test Pit Location
- Existing Major Contour
- Existing Minor Contour

3	2021-01-21	ISSUED FOR TENDER
2	2020-12-11	ISSUED FOR TENDER REVIEW
1	2020-11-06	ISSUED FOR CLIENT REVIEW
	YYYY-MM-DD	SUBMISSION INFORMATION

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MORRISON HERSHFIELD
Unit 310, 4321 Still Creek Drive
Burnaby, British Columbia V5C 6S7
Tel: 604-454-0402 Fax: 604-454-0403

PROJECT

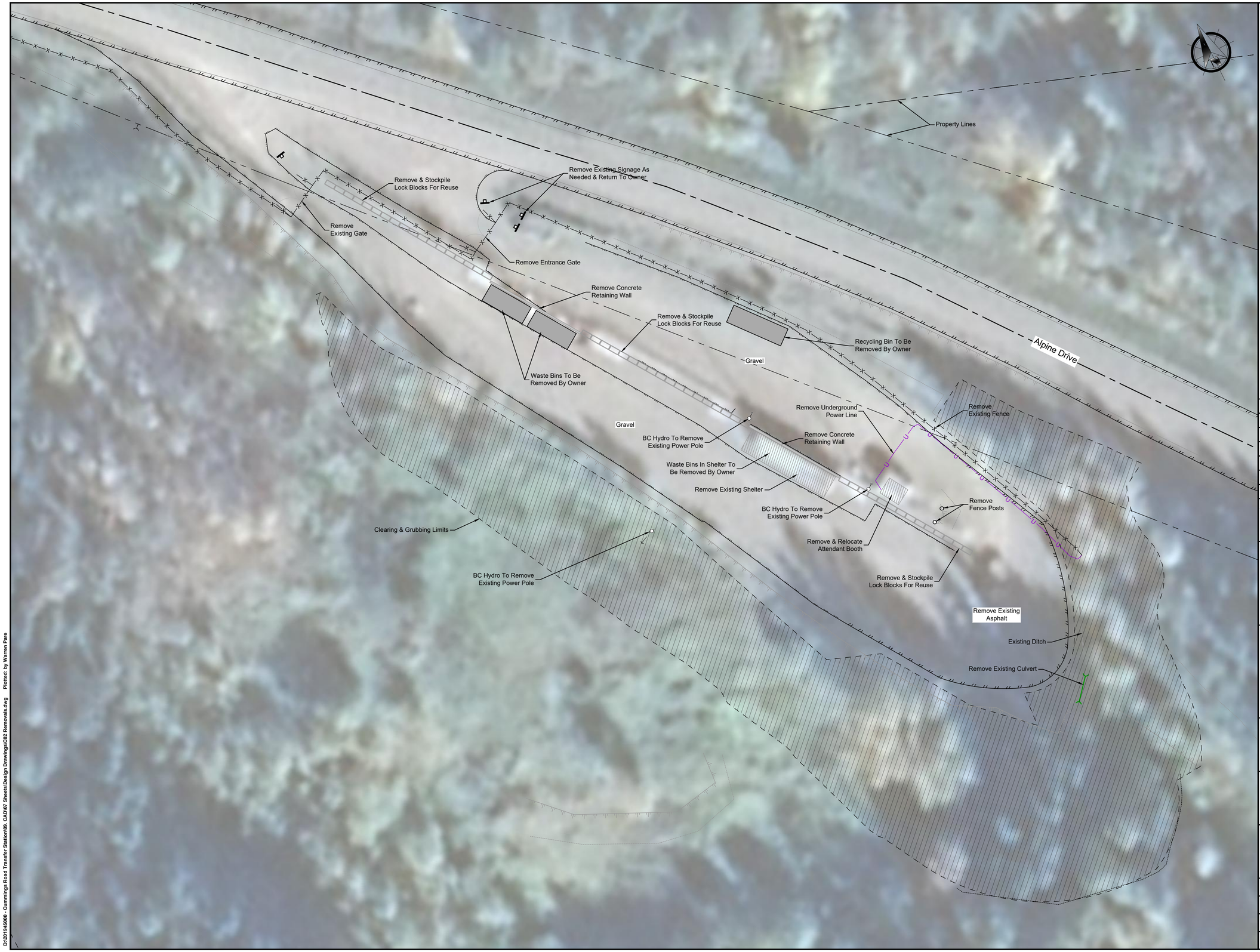
Cummings Rd. Regional Transfer Station Redevelopment

DRAWING

Existing Site Conditions

DESIGN: PM	DATE: Jan. 22, 21	SCALE: 1:250
DRAWN: WP	PROJECT NO.: 201945000	
CHECKED: NM	DRAWING NO: C01	VERSION: 3
APPROVED		

D:\201945000 - Cummings Road Transfer Station\09_CAD\07 Sheets\Design Drawings\C01 Existing Site Conditions.dwg Plotted: by Warren Pare



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Legend:

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- Top Of Slope
- Toe Of Slope
- Edge Of Gravel
- Drainage Ditch
- Edge Of Tree Line
- Chainlink & Electric Fence
- Edge Of Asphalt
- Underground Power Line
- Culvert
- Power Pole

Removals Responsibility Matrix

Item	Responsibility
Waste Bins	Owner
Recycling Bins	Owner
Power Poles	BC Hydro
Removals Coordination	Contractor
All Other Removals	Contractor

3	2021-01-21	ISSUED FOR TENDER
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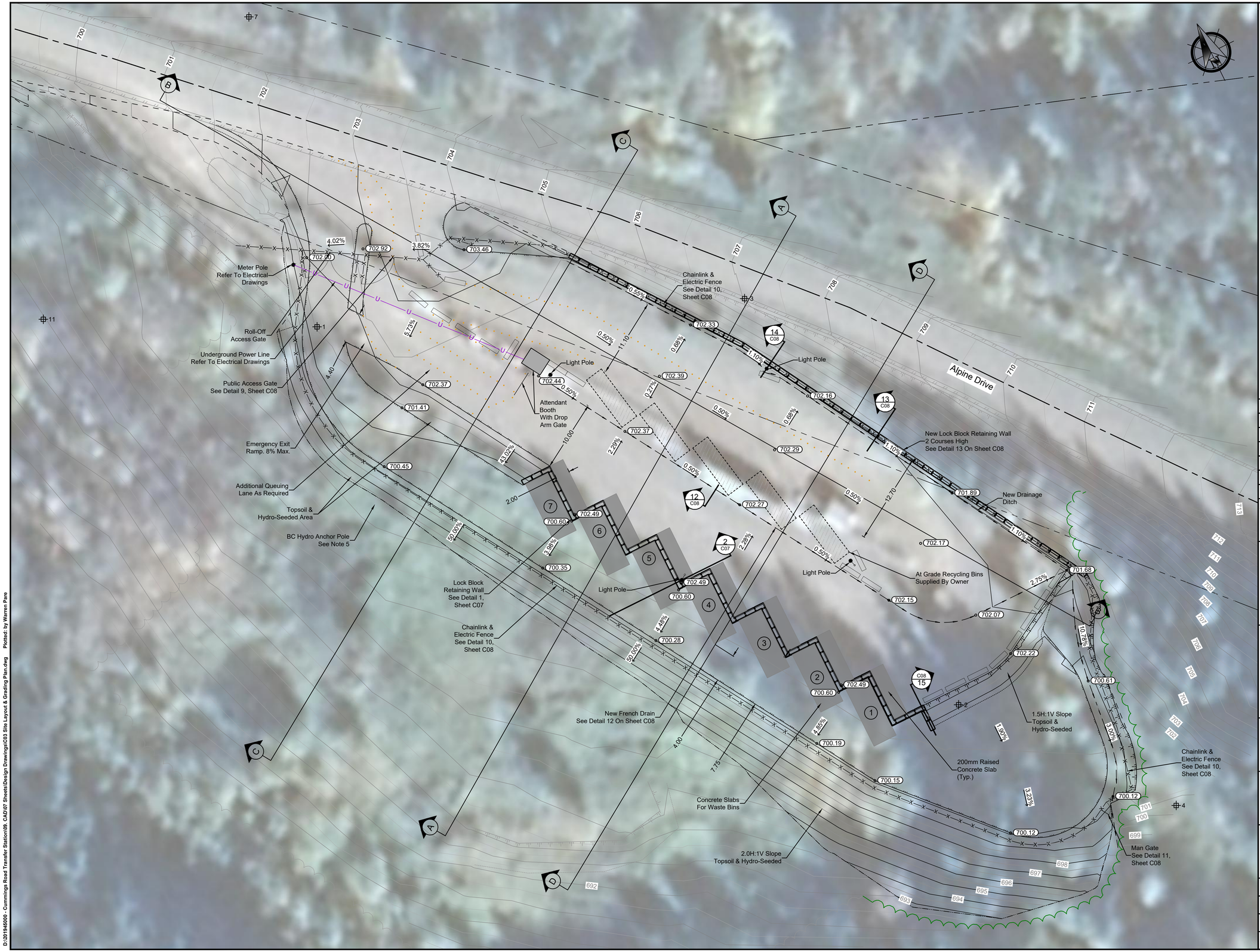
PROJECT
Cummings Rd. Regional Transfer Station Redevelopment

DRAWING
Removals

DESIGN: PM	DATE: Jan. 22, 21	SCALE: As Shown
DRAWN: WP	PROJECT NO.: 201945000	
CHECKED: NM	DRAWING NO: C02	VERSION: 3
APPROVED:		

D:\201945000 - Cummings Road Transfer Station\09_CAD\07 Sheets\Design Drawings\C02 Removals.dwg Plotted: by Warren Pare



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5. Civil Contractor To Coordinate Location Of New BC Hydro Anchor Pole With BC Hydro On Site At The Beginning Of Construction.

Legend:

- Control Point
- 6.22% — Surface Grade
- 700.73 — Surface Elevation
- Property Line
- Top Of Slope
- Toe Of Slope
- Edge Of Gravel
- Drainage Ditch
- Edge Of Tree Line
- Chainlink & Electric Fence
- Traffic Delineators
- Light Pole
- Meter Pole
- Concrete Jersey Barrier
- Existing Major Contour
- Existing Minor Contour
- Proposed Major Contour
- Proposed Minor Contour

3	2021-01-21	ISSUED FOR TENDER
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PROJECT
Cummings Rd. Regional Transfer Station Redevelopment

DRAWING
Site Layout & Grading Plan

DESIGN: PM	DATE: Jan. 22, 21	SCALE: As Shown
DRAWN: WP	PROJECT NO.: 201945000	
CHECKED: NM	DRAWING NO: C03	VERSION: 3
APPROVED		

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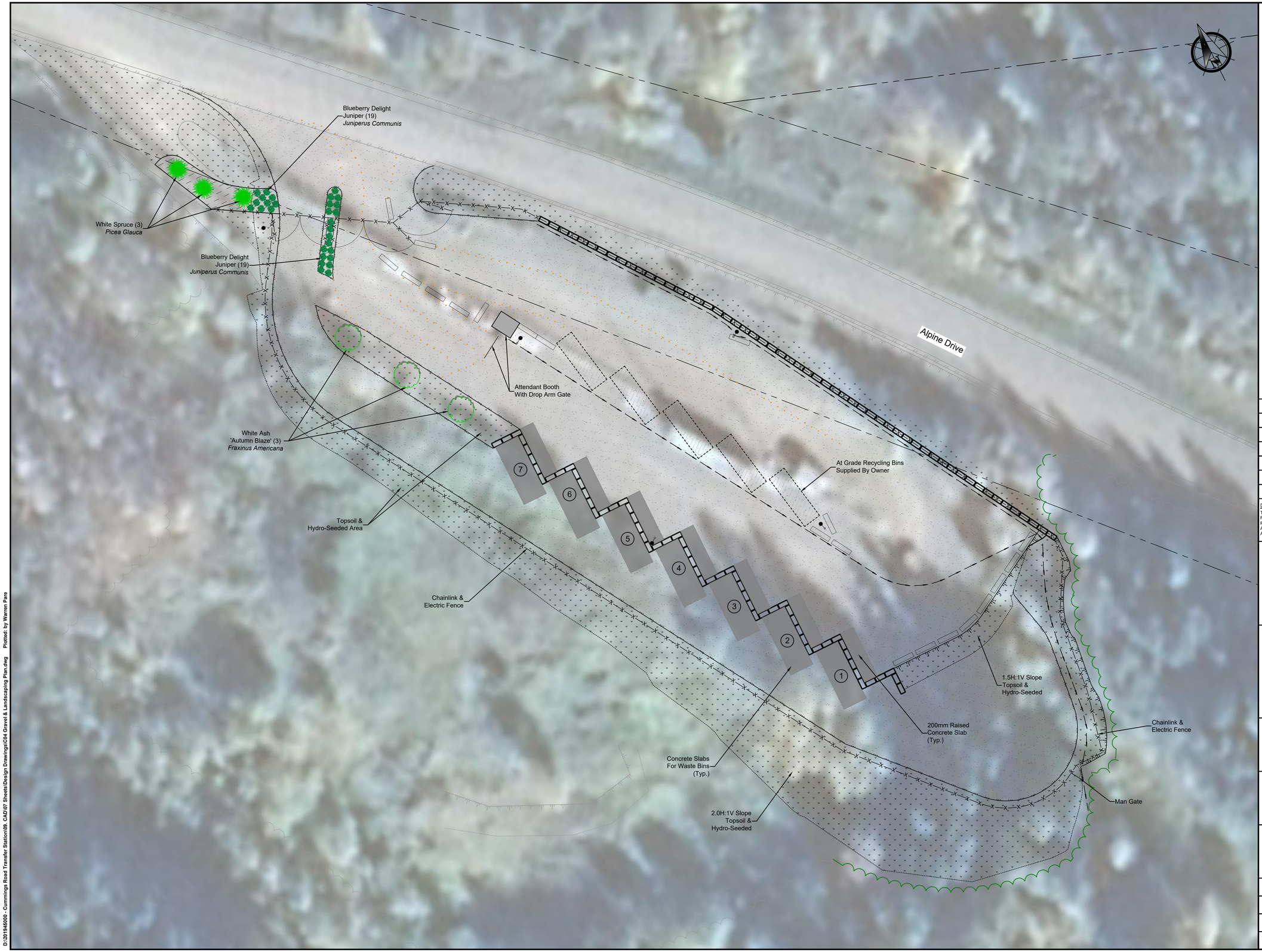

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Legend:

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- Drainage Ditch
- Edge Of Tree Line
- Chainlink & Electric Fence
- Traffic Delineators (By Owner)
- Light Pole
- Meter Pole
- Concrete Jersey Barrier
- Topsoil & Seeded Area
- Graveled Area
- Concrete Slabs
- Mulch Planting Bed

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1	2020-11-06	ISSUED FOR CLIENT REVIEW
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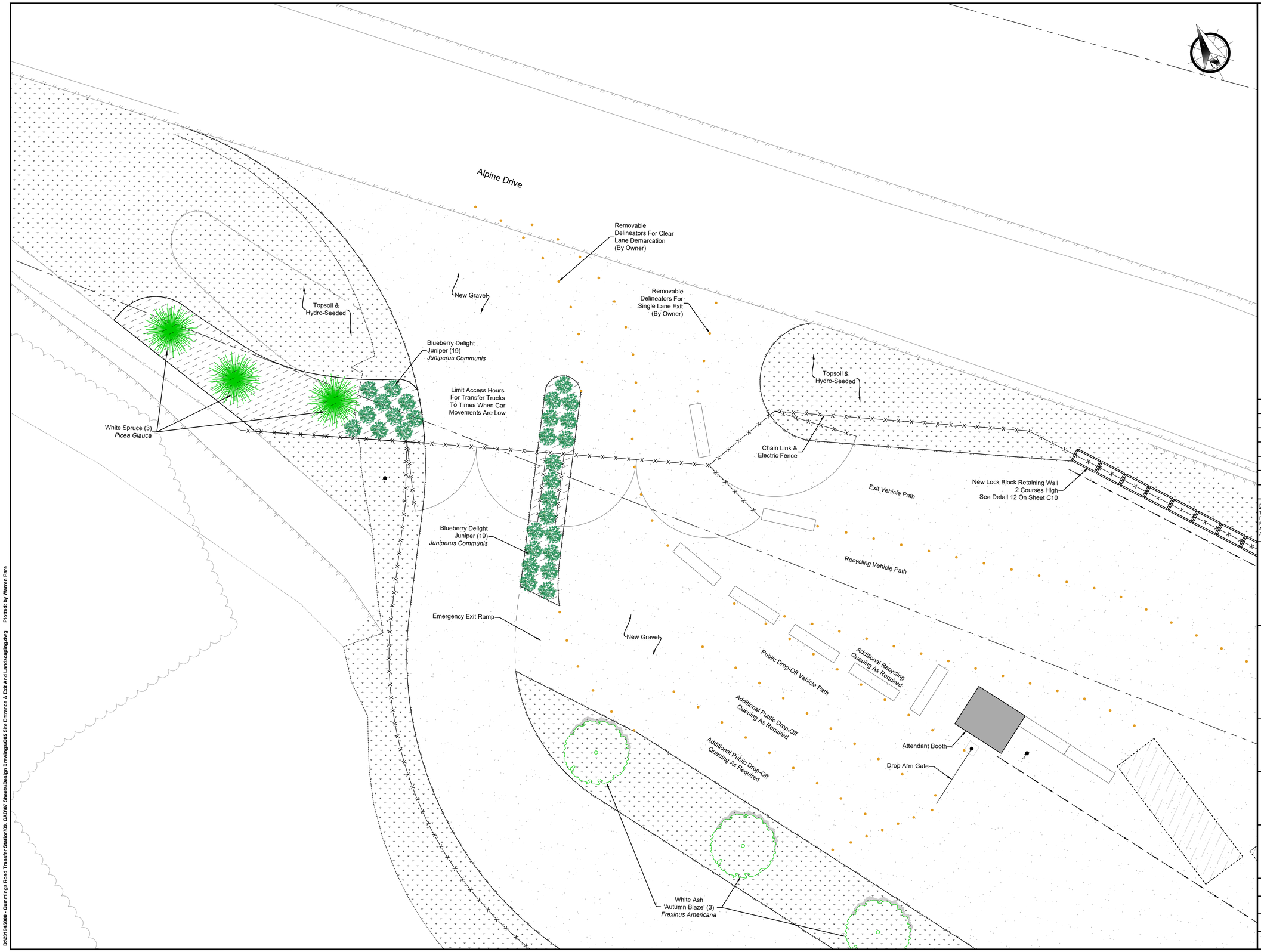
PROJECT

Cummings Rd. Regional Transfer Station Redevelopment

DRAWING

Gravel & Landscaping Plan

DESIGN: PM	DATE: Jan. 22, 21	SCALE: 1:250
DRAWN: WP	PROJECT NO.: 201945000	
CHECKED: NM	DRAWING NO: C04	VERSION: 3
APPROVED:		



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PROJECT

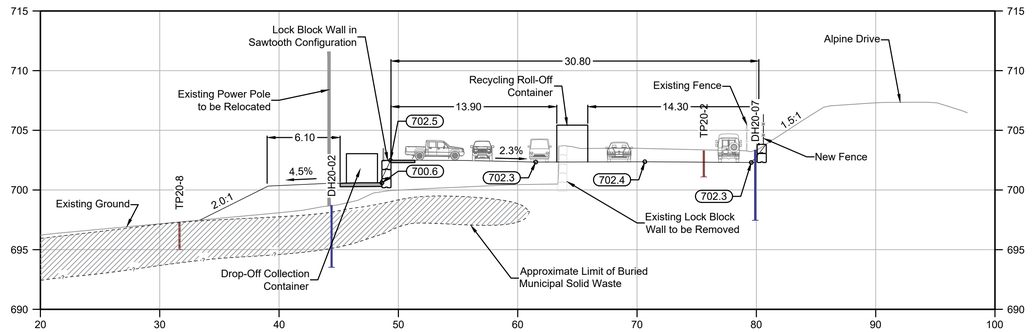
Cummings Rd. Regional Transfer Station Redevelopment

DRAWING

Site Entrance & Exit And Landscaping

DESIGN: PM	DATE: Jan. 22, 21	SCALE: 1:100
DRAWN: WP	PROJECT NO.: 201945000	
CHECKED: NM	DRAWING NO: C05	VERSION: 3
APPROVED		

D:\201945000 - Cummings Road Transfer Station\09. CAD\07 Sheets\Design Drawings\C05 Site Entrance & Exit And Landscaping.dwg Plotted: by Warren Pare



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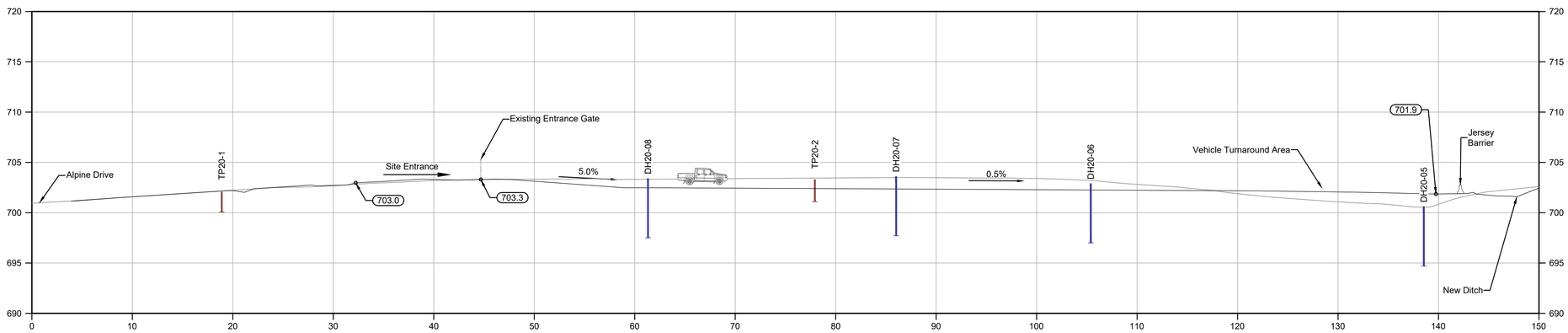

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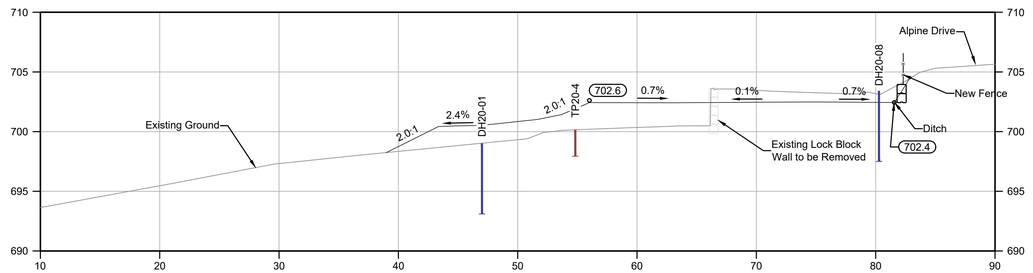

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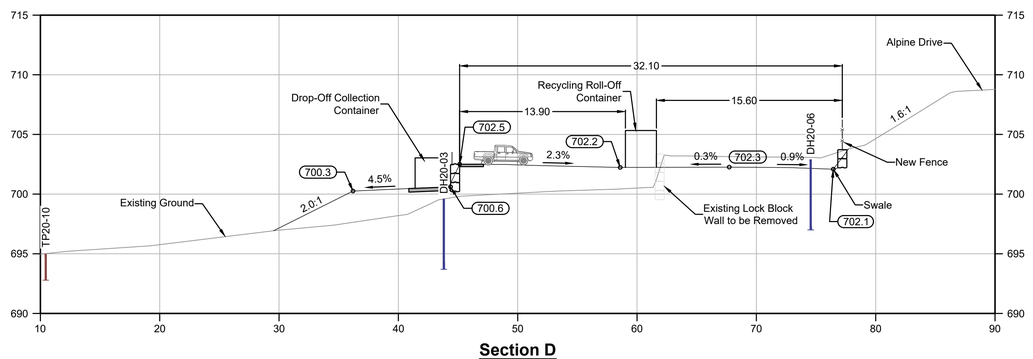

Section D

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Burnaby, British Columbia V5C 6S7
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PROJECT

Cummings Rd. Regional Transfer Station Redevelopment

DRAWING

Cross Sections

DESIGN: PM	DATE: Jan. 22, 21	SCALE: As Shown
DRAWN: WP	PROJECT NO.: 201945000	
CHECKED: NM	DRAWING NO: C06	VERSION: 3
APPROVED		

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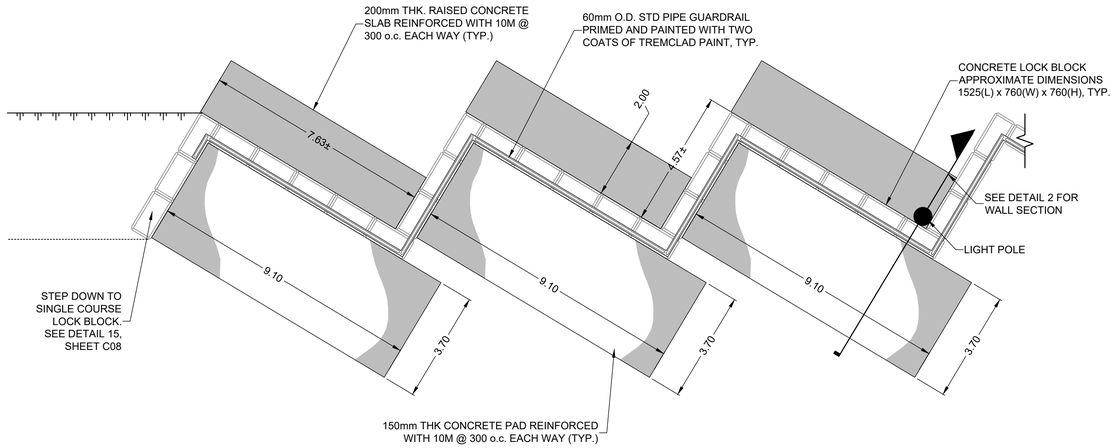
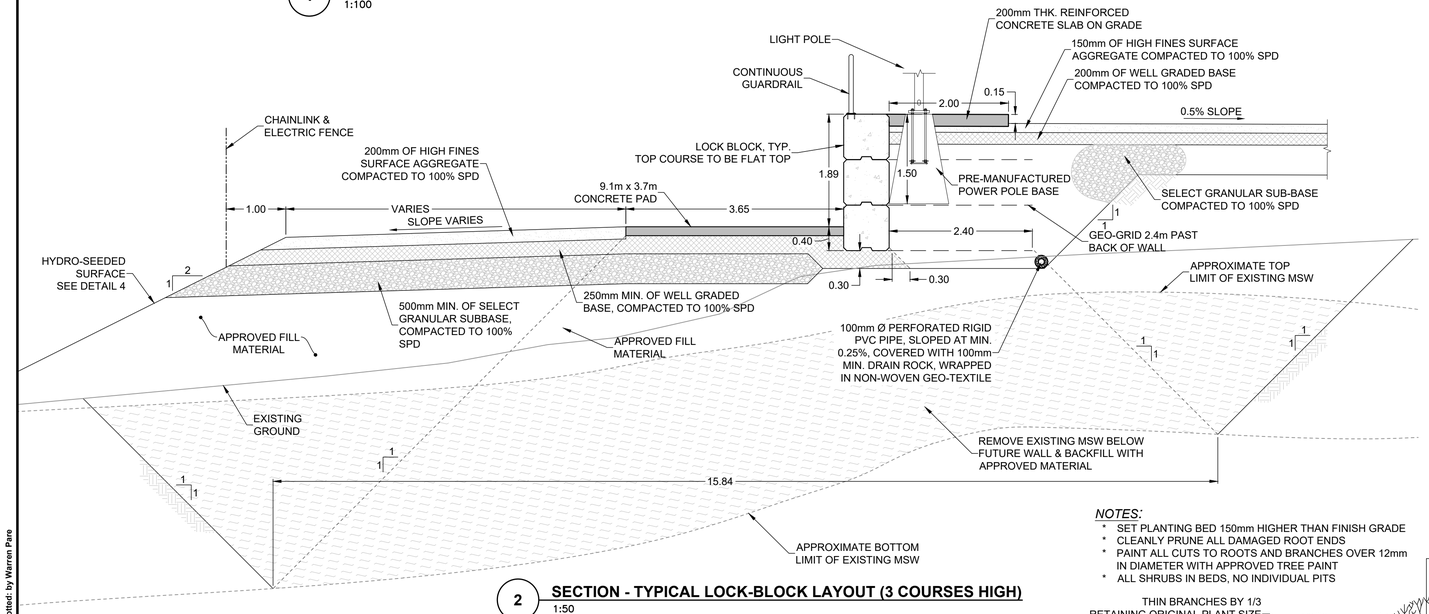
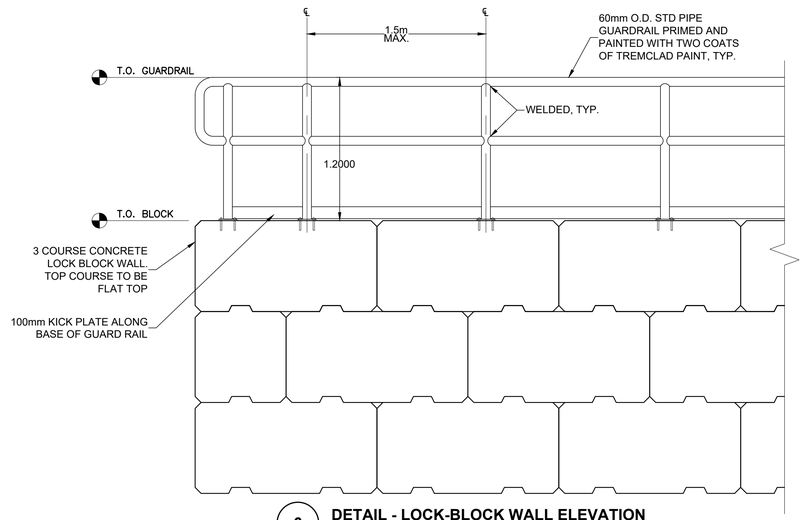


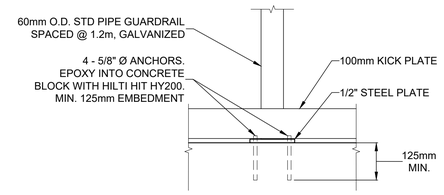
1 PLAN - TYPICAL LOCK-BLOCK LAYOUT (3 COURSES HIGH)
1:100



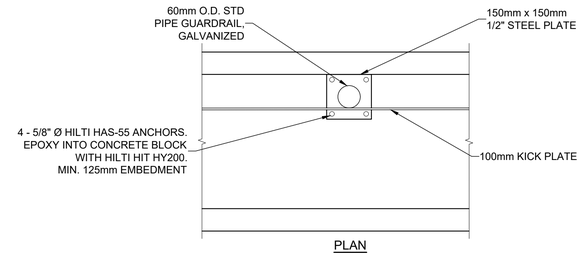
2 SECTION - TYPICAL LOCK-BLOCK LAYOUT (3 COURSES HIGH)
1:50



6 DETAIL - LOCK-BLOCK WALL ELEVATION
1:25

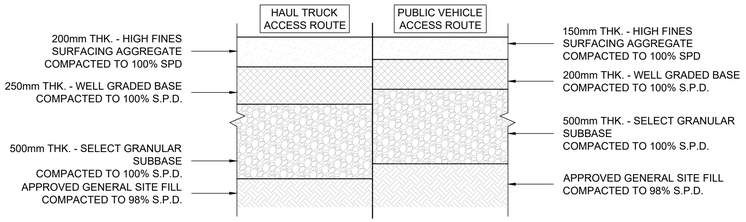


ELEVATION

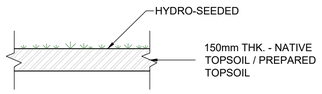


PLAN

7 DETAIL - GUARDRAIL ANCHOR
1:10

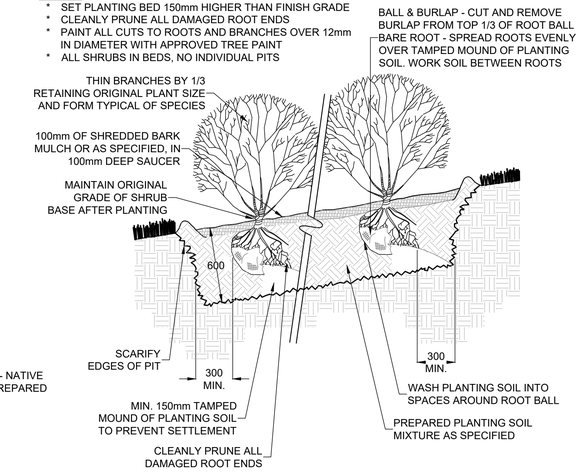


3 DETAIL - GRAVEL SURFACE
N.T.S.

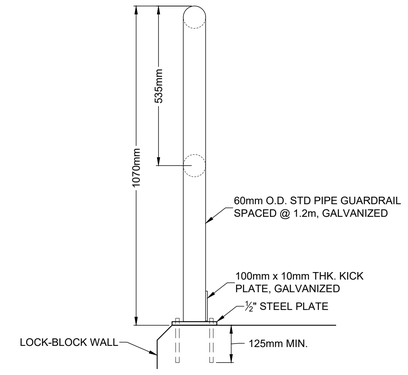


4 DETAIL - TOPSOIL & HYDRO-SEEDED SURFACE
N.T.S.

NOTES:
* SET PLANTING BED 150mm HIGHER THAN FINISH GRADE
* CLEANLY PRUNE ALL DAMAGED ROOT ENDS
* PAINT ALL CUTS TO ROOTS AND BRANCHES OVER 12mm IN DIAMETER WITH APPROVED TREE PAINT
* ALL SHRUBS IN BEDS, NO INDIVIDUAL PITS



5 DETAIL - MULCH PLANTING BED
N.T.S.



8 DETAIL - KICK PLATE
1:10

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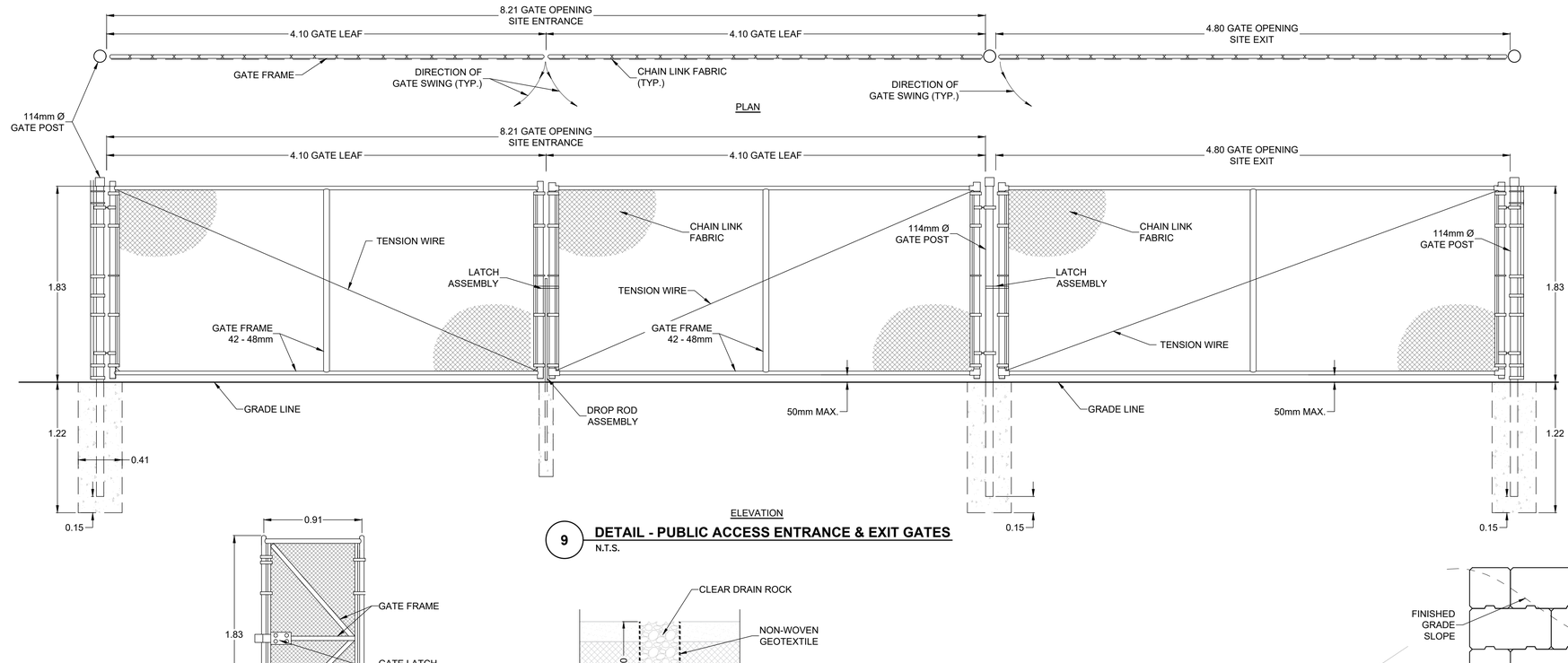
Burnaby, British Columbia V5C 6S7
Tel: 604-454-0402 Fax: 604-454-0403

PROJECT
Cummings Rd. Regional Transfer Station Redevelopment

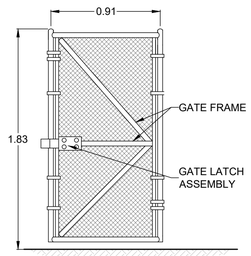
DRAWING
Details

DESIGN	DATE	SCALE
PM	Jan. 22, 21	As Shown
DRAWN: WP	PROJECT NO.: 201945000	
CHECKED: NM	DRAWING NO: C07	VERSION: 3
APPROVED		

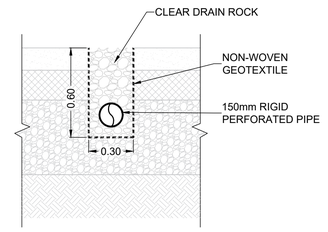
D:\201945000 - Cummings Road Transfer Station\09. CAD\07 Sheets\Design Drawings\C07 Details.dwg Plotted: by Warren Pare



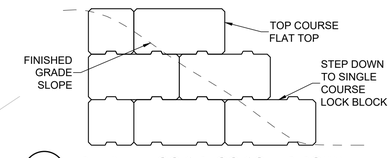
9 DETAIL - PUBLIC ACCESS ENTRANCE & EXIT GATES
N.T.S.



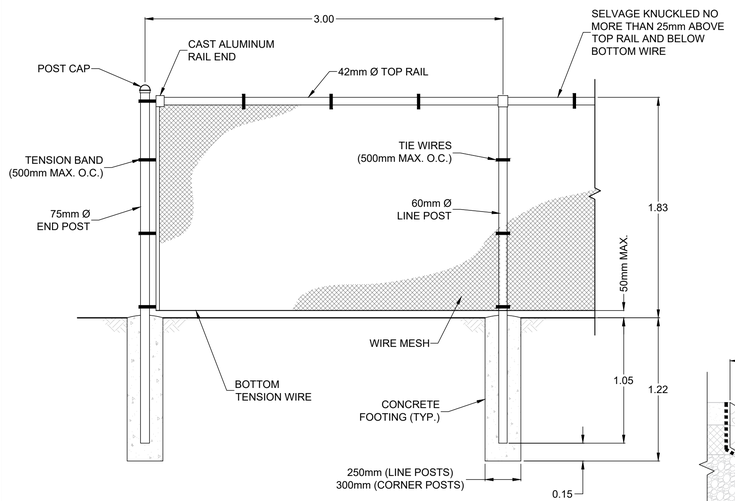
11 DETAIL - MAN GATE
N.T.S.



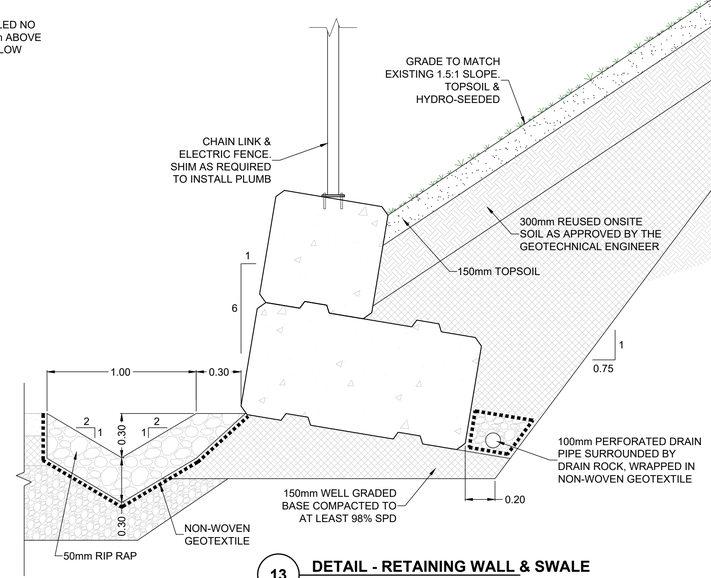
12 DETAIL - FRENCH DRAIN
N.T.S.



15 DETAIL - LOCK BLOCK STEP DOWN
1:50



10 DETAIL - TYPICAL CHAINLINK FENCE
N.T.S.



13 DETAIL - RETAINING WALL & SWALE
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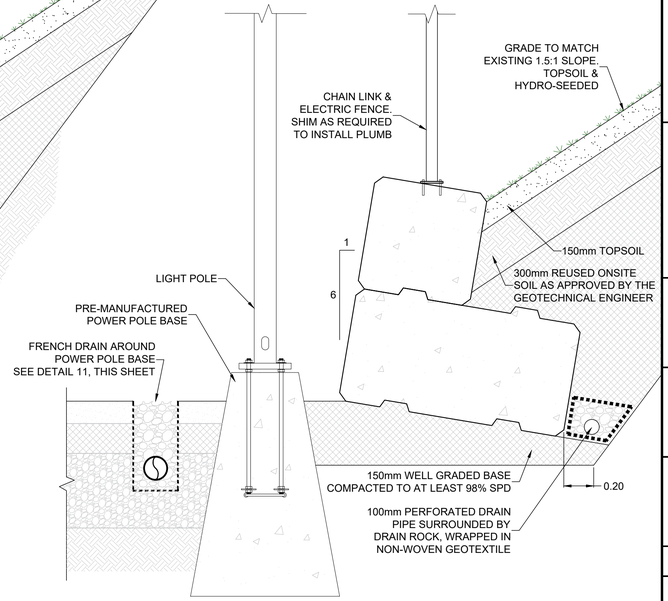

14 DETAIL - POWER POLE BASE
N.T.S.

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Tel: 604-454-0402 Fax: 604-454-0403

PROJECT
Cummings Rd. Regional Transfer Station Redevelopment

DRAWING
Details

DESIGN: PM	DATE: Jan. 22, 21	SCALE: As Shown
DRAWN: WP	PROJECT NO.: 201945000	
CHECKED: NM	DRAWING NO: C08	VERSION: 3
APPROVED:		

SYMBOL LEGEND – LINETYPES AND ANNOTATIONS	
RM	REMOVE; DEMOLISH EXISTING UNIT BACK TO SOURCE AND MAKE SAFE
EX	EXISTING UNIT TO REMAIN IN PLACE; PROVIDE PROVISIONS TO PROTECT UNIT DURING CONSTRUCTION
N	NEW UNIT; PROVIDE ALL ELECTRICAL PROVISIONS TO ACHIEVE INTENT
RL / ERL	RELOCATE/EXISTING IN RELOCATED POSITION; EXTEND EXISTING ELECTRICAL PROVISIONS TO NEW LOCATION, REUSING COMPONENTS WHERE PRACTICAL. PROVIDE ALL NEW MATERIAL TO ACHIEVE RELOCATION INTENT.

ENERGY STATEMENT: ELECTRICAL POWER, LIGHTING, OTHER EQUIPMENT DESIGN (ENERGY)	
CANADIAN ELECTRICAL CODE:	2018
BC BUILDING CODE:	2018
ELECTRICAL DESIGN	
ENERGY STANDARD/CODE:	ASHRAE 90.1–2016
POWER COMPLIANCE PATH:	PRESCRIPTIVE
IN ACCORDANCE WITH:	8.1.5 ALT'S TO EXTG BLDG
OTHER EQUIPMENT PATH:	PRESCRIPTIVE
IN ACCORDANCE WITH:	N/A

ELECTRICAL SYMBOLS	
120V/1φ	120V, 1–PHASE CONNECTION
240V/1φ	240V, 1–PHASE CONNECTION
	15A, 120V DUPLEX RECEPTACLE
	LIGHTING POLE FIXTURE
	MANUAL LIGHT WALL SWITCH
	POWER POLE
	PANELBOARD
	DISCONNECT SWITCH
	CIRCUIT BREAKER
M	BC HYDRO METER
JB	JUNCTION BOX
EFC	ELECTRIC FENCE CONTROLLER

ABBREVIATIONS (USE AS APPLICABLE)	
AFF	ABOVE FINISHED FLOOR
AHU	AIR HANDLING UNIT
AWG	AMERICAN WIRE GAUGE
BKR	BREAKER
C	CONDUIT
CCT	CIRCUIT
CEC	CANADIAN ELECTRICAL CODE
CFM	CUBIC FOOT PER MINUTE
CLG	CEILING
COMM	COMMUNICATIONS
C/W	COMPLETE WITH
CU	COPPER
EM	EMERGENCY POWER
FHP	FRACTIONAL HORSEPOWER
GND	GROUND
JB	JUNCTION BOX
LV	LOW VOLTAGE
NTS	NOT TO SCALE
PH	PHASE
TBC	TO BE CONFIRMED
TBD	TO BE DETERMINED
U/G	UNDERGROUND
VFD	VARIABLE FREQUENCY DRIVE
WP	WEATHERPROOF

LOAD SUMMARY – CUMMINGS RD TRANSFER STATION					
LOCATION NAME:	CUMMINGS RD TRANSFER STATION				
DESIGN LOAD DATA – MAIN BUILDING					
	VOLTAGE	AMPS	WATTS (1φ)	DEMAND FACTOR	WATTS (1φ)
MAXIMUM BC HYDRO SUPPLY (@ 240V/1φ)	240V	100A	24,000W	0.8	19,200W
MAIN DISTRIBUTION – EXISTING LOADS			WATTS (1φ)	DEMAND FACTOR	WATTS (1φ)
	SHED PANEL – EXISTING LOADS TO REMAIN		3,400W	1.0	3,400W
			TOTAL EXISTING LOADS TO BE REMAIN		3,400W
MAIN DISTRIBUTION – NEW LOADS TO BE INSTALLED			WATTS (1φ)	DEMAND FACTOR	WATTS (1φ)
	NEW SITE LIGHTING LOADS		945W	1.0	945W
	NEW EQUIPMENT LOADS		1,000W	1.0	1,000W
			TOTAL NEW LOADS TO BE INSTALLED		1,945W
TOTAL LOADS (EXISTING LOADS TO REMAIN + NEW LOADS TO BE INSTALLED)					3,400W + 1,945W = 5,345W

SHEET LIST TABLE	
Sheet Number	Sheet Title
E01	ELECTRICAL COVER PAGE
E02	ELECTRICAL DETAILS
E03	ELECTRICAL WORK PLAN

SITE INFORMATION

LEGAL DESCRIPTION: PART OF BLOCK B, DISTRICT LOT 9095, CARIBOO DISTRICT. CROWN TENURE

BC HYDRO DESIGN NUMBER: 4337491

PROJECT ELECTRICAL SCOPES OF WORK:

1. COORDINATE WITH CIVIL CONTRACTOR FOR THE DEMOLITION OF EXISTING UNDERGROUND CONDUITS AND FEEDERS, AND FOR THE RELOCATION OF EXISTING ATTENDANT SHED.
2. DEMOLISH EXISTING LIGHT FIXTURES, ELECTRIC FENCE, AND ASSOCIATED FEEDERS, CONDUITS, AND ELECTRICAL MATERIALS.
3. SUPPLY AND INSTALL THE NEW ELECTRIC FENCE AND DROP ARM BARRIER GATE AND ALL ASSOCIATED FEEDERS, CONDUITS, CIRCUIT BREAKERS, DISCONNECT SWITCHES, AND MATERIALS TO MEET THE INTENT SHOWN.
4. COORDINATE THE FINAL LOCATION OF RELOCATED ATTENDANT SHED, NEW DROP ARM BARRIER GATE, NEW ELECTRIC FENCE, NEW LIGHTING POLES, AND NEW ASSOCIATED FEEDERS AND CONDUITS WITH CIVIL CONTRACTOR ON SITE.
5. BC HYDRO TO REMOVE EXISTING POLES BCH–1, BCH–2, AND BCH–3, EXISTING BC HYDRO METER, AND EXISTING OVERHEAD SERVICE FEEDERS. COORDINATE WITH BC HYDRO FOR REMOVAL OF EXISTING POLE MOUNTED LIGHT FIXTURES. INCLUDE FOR PAINTING AND PATCHING OF CONDUIT PENETRATION OF SHED WALL.
6. ELECTRICAL CONTRACTOR TO SUPPLY AND INSTALL NEW METER POLE AND RE–USE EXISTING METER BASE. ELECTRICAL CONTRACTOR TO INCLUDE FOR SUPPLY AND INSTALL OF NEW U/G CONDUIT AND FEEDER FROM SHED PANELBOARD TO NEW METER BASE ON METER POLE, BC HYDRO TO INSTALL THEIR METER IN THE METER BASE, AND MAKE FINAL CONNECTIONS FROM OVERHEAD SERVICE. COORDINATE FINAL METER POLE LOCATION AND TRENCHING PATH WITH CIVIL CONTRACTOR ON SITE.
7. INCLUDE FOR THE SUPPLY AND INSTALL OF NEW 30' LIGHTING POLES L–1, L–2, L–3, AND L–4, INCLUDING ENGINEERED SHOP DRAWINGS FOR THE POLE BASES.
8. SUPPLY AND INSTALL ALL EQUIPMENT AND REQUIRED MATERIALS TO MEET THE INTENT SHOWN ON ELECTRICAL DRAWINGS.
9. SUPPLY AND INSTALL NEW SITE LIGHTING FIXTURES AND THEIR ASSOCIATED FEEDERS, CIRCUIT BREAKERS, AND REQUIRED MATERIALS TO MEET THE INTENT SHOWN ON DRAWINGS.

PROJECT GENERAL NOTES:

1. CONTRACTOR SHALL PROVIDE ALL MATERIALS, MANPOWER, LIFTING DEVICES, TRANSPORTATION, SCANNING AND CORING, AND OTHER ANCILLARIES TO COMPLETE JOB SCOPES AS DEFINED IN THIS DRAWING PACKAGE AND PROJECT SPECIFICATIONS.
2. ELECTRICAL DRAWINGS INDICATE GENERAL LOCATION AND ROUTE TO BE FOLLOWED BY CONDUITS AND/OR WIRE AND DO NOT SHOW ALL STRUCTURAL AND MECHANICAL DETAILS. IN SOME CASES, CONDUIT OR WIRING IS NOT SHOWN ON THE PLANS OR IS SHOWN DIAGRAMMATICALLY IN SCHEMATIC OR RISER DIAGRAMS. CONDUIT AND WIRE SHALL BE INSTALLED TO PROVIDE A COMPLETE OPERATING SYSTEM.
3. IN ORDER TO PROVIDE SUFFICIENT DETAIL AND MAXIMUM DEGREE OF CLARITY ON DRAWINGS, SYMBOLS USED FOR VARIOUS ELECTRICAL DEVICES, PARTICULARLY WALL MOUNTED DEVICES, TAKE UP MORE SPACE ON THE DRAWINGS THAN THE DEVICE DOES ON THE WALL. IN THESE INSTANCES, LOCATE DEVICE ON WALL WITH PRIMARY REGARD FOR CONVENIENCE OF OPERATION AND USAGE OF WALL SPACE, RATHER THAN PLACING DEVICES OUT ALONG WALL SO AS TO COMPLY WITH SCALE LOCATIONS OF ELECTRICAL SYMBOLS.
4. ALL EQUIPMENT AND DEVICES SHALL BE CONTRACTOR SUPPLIED AND INSTALLED UNLESS EXPLICITLY STATED OTHERWISE.
5. CONTRACTOR SHALL BE RESPONSIBLE FOR COORDINATING WITH FACILITY AND VENDORS FOR THE STORAGE OF PROCURED MATERIALS AND EQUIPMENT PRIOR TO DELIVERY. CONTRACTOR SHALL BE RESPONSIBLE FOR STORING PROCURED MATERIALS AND EQUIPMENT.
6. CONTRACTOR IS RESPONSIBLE TO CARRY AND COORDINATE WITH OTHER DISCIPLINES TO COMPLETE JOB SCOPES AS DEFINED IN THIS DRAWING PACKAGE AND PROJECT SPECIFICATIONS.
7. CONTRACTOR IS RESPONSIBLE TO OBTAIN APPLICABLE BUILDING PERMIT AND ELECTRICAL PERMIT FOR THE PROJECT. CONTRACTOR SHALL INCLUDE REQUIRED FEES INTO THE TENDER BID PRICING.
8. ALL NEW ELECTRICAL WORKS SHALL COMPLY WITH REQUIREMENTS FROM MOST UP TO DATE CANADIAN ELECTRICAL CODE (CEC) AND BC BUILDING CODE.
9. ALL NEW ELECTRICAL EQUIPMENT, DEVICES, RACEWAY, AND WIRING SHALL BE cETL, BTL, CSA, AND/OR UL/C LISTED.
10. ALTERNATIVE MANUFACTURER EQUIPMENT OR DEVICES MUST BE APPROVED BY OWNER AND CONSULTANT DURING THE TENDER BID PROCESS AND PRIOR TO PROCUREMENT. CONTRACTOR IS RESPONSIBLE TO IDENTIFY COMPLIANCE TO ORIGINALLY SPECIFIED EQUIPMENT OR DEVICES WHEN PRESENTING ALTERNATIVE.
11. REPLACEMENT OF ANY ELECTRICAL EQUIPMENT EXPECTED TO CAUSE DISRUPTION OF OPERATION SCHEDULE MUST BE COORDINATED WITH FACILITY MANAGEMENT PRIOR TO THE WORK. ALL LOADS TO BE IDENTIFIED PRIOR POWER DISRUPTION AND TEMPORARY POWER TO IDENTIFIED LOADS SHALL BE PROVIDED IF NECESSARY AND/OR REQUIRED BY THE CLIENT.
12. ALL SYSTEM COMPARTMENTS OF DECOMMISSIONED SYSTEM SHALL BE DEMOLISHED AND CLEANED UP UNLESS SPECIFIED OTHERWISE OR DIRECTED BY THE OWNER.
13. CONTRACTOR SHALL SAFEGUARD ALL EXISTING UTILITIES, ELECTRICAL EQUIPMENT, AND ALL OTHER SYSTEMS DURING CONSTRUCTION.
14. ALL NEWLY INSTALLED EQUIPMENT AND DEVICES SHALL BE CLEARLY LABELED INDICATING NAME OF EQUIPMENT/DEVICE AND CONNECTED SYSTEM INFORMATION.
15. CONTRACTOR SHALL ENSURE SAFE LOCKOUT PROCEDURE WHEN ISOLATING ELECTRICAL CONNECTION. ALL EXISTING CONDITIONS FOUND WITHIN THE AREAS OF SCOPES TO BE INCOMPLIANT WITH MOST UP TO DATE CEC REGULATIONS SHALL BE REPORTED TO CONSULTANT IMMEDIATELY AND THEN CORRECTED.
16. CONTRACTOR SHALL VERIFY ALL MEASUREMENTS ON SITE AGAINST THE DIMENSIONS LISTED ON THE SHOP DRAWINGS.
17. CONTRACTOR IS RESPONSIBLE TO PROVIDE AND INSTALL SEISMIC SUPPORT FOR ALL NEWLY INSTALLED EQUIPMENT AND DEVICES. CONTRACTOR SHALL SUBMIT RP–B, RP–CB, AND LETTERS OF ASSURANCE PROVIDED FROM CONTRACTOR'S SEISMIC ENGINEER PRIOR TO FINAL INSPECTION.
18. CONTRACTOR SHALL PROVIDE AND INSTALL NEWLY UPDATED AND PRINTED PANEL DIRECTORY SCHEDULES OF PANELBOARDS IF EXISTING CIRCUITS ARE MODIFIED DURING THIS CONSTRUCTION SCOPES.
19. CONTRACTOR SHALL PROVIDE AND INSTALL LAMACOID LABEL FOR NEWLY INSTALLED EQUIPMENT AND DEVICES. FOR EXISTING LAMACOIDS OR LABELS ON THE EXISTING EQUIPMENT, CONTRACTOR IS RESPONSIBLE TO UPDATE EXISTING WITH A NEW INFORMATION IF ANY CHANGES MADE BY WORK SCOPES IN THIS PROJECT.

NOTES

All dimensions in Metric

E		
D		
C	2021-01-21	ISSUED FOR TENDER
B	2020-12-11	ISSUED FOR TENDER REVIEW
A	2020-11-04	ISSUED FOR 75% REVIEW
	YYYY-MM-DD	SUBMISSION INFORMATION

PROFESSIONAL SEALS

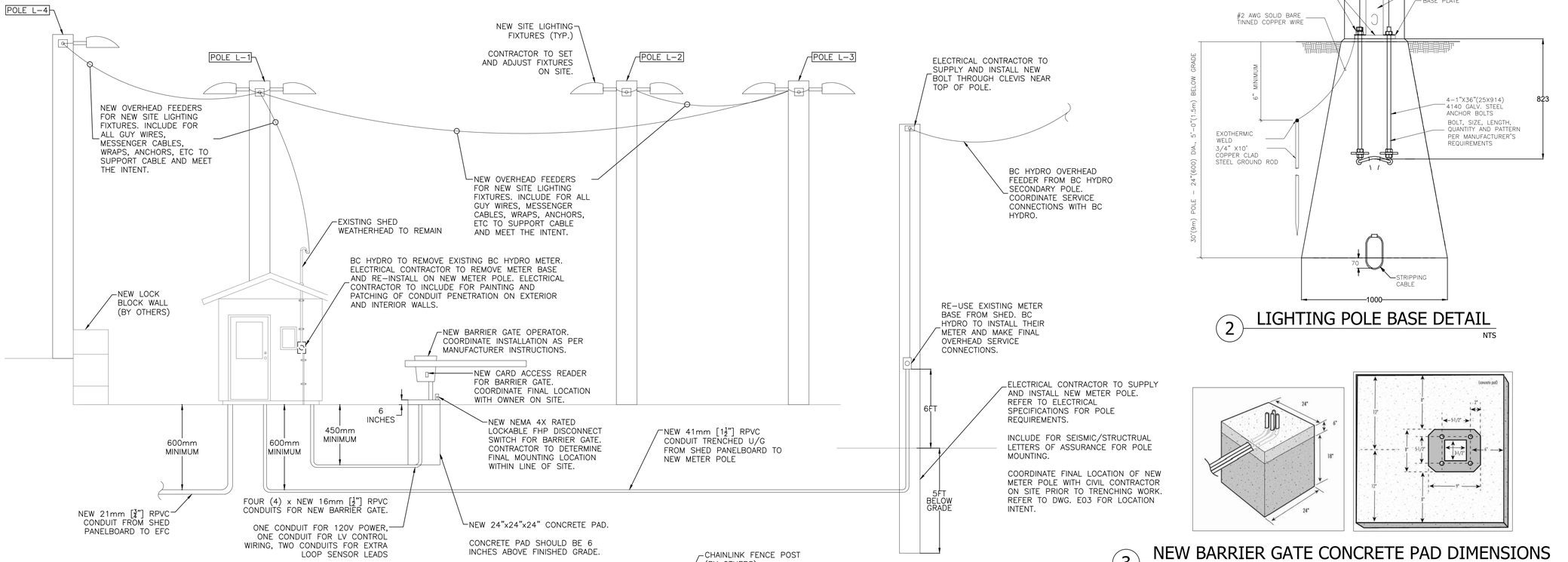
MORRISON HERSHFIELD
Suite 310, 4321 Still Creek Drive
Burnaby, BC V5C 6S7
Tel: 604 454 0402

PROJECT
CUMMINGS ROAD REGIONAL TRANSFER STATION RE-DEVELOPMENT - ELECTRICAL DRAWINGS

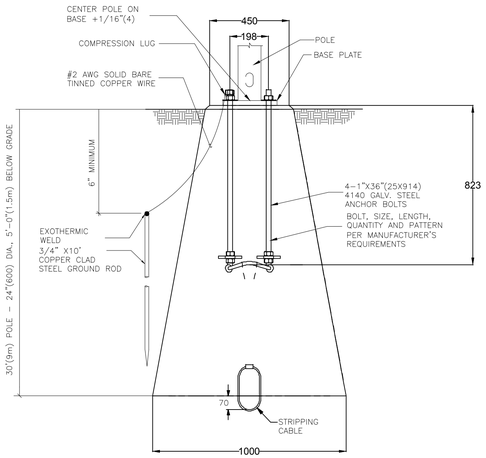
DRAWING
ELECTRICAL COVER PAGE

DESIGN: MC	DATE: 2021-01-21	SCALE: As Shown
DRAWN: MC	PROJECT NO.: 201945000	
CHECKED: KP	DRAWING NO: E01	VERSION: C
APPROVED: KP		

DETAILS SHOWN ARE NOT TO SCALE AND ARE FOR REFERENCE AND INFORMATION PURPOSES ONLY.



1 NEW ELECTRICAL WORK DETAILS
NTS

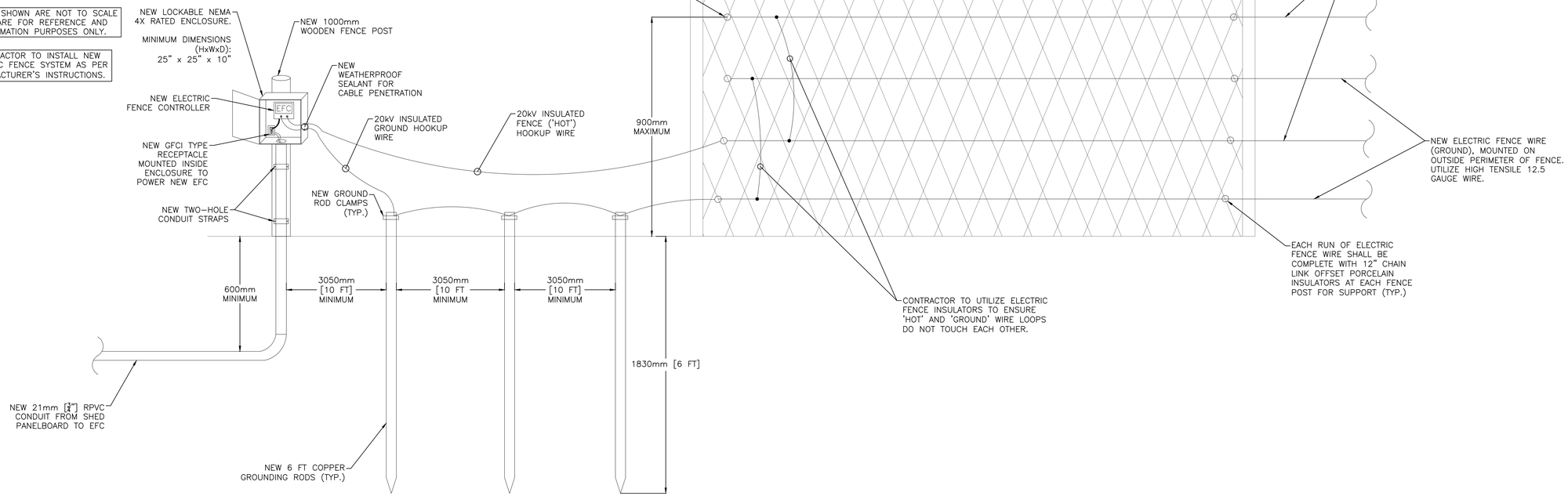


2 LIGHTING POLE BASE DETAIL
NTS

3 NEW BARRIER GATE CONCRETE PAD DIMENSIONS
NTS

DETAILS SHOWN ARE NOT TO SCALE AND ARE FOR REFERENCE AND INFORMATION PURPOSES ONLY.

CONTRACTOR TO INSTALL NEW ELECTRIC FENCE SYSTEM AS PER MANUFACTURER'S INSTRUCTIONS.



4 NEW ELECTRIC FENCE DETAILS
NTS

NOTES

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D		
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B	2020-12-11	ISSUED FOR TENDER REVIEW
A	2020-11-04	ISSUED FOR 75% REVIEW
	YYYY-MM-DD	SUBMISSION INFORMATION

PROFESSIONAL SEALS

MORRISON HERSHFIELD
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Burnaby, BC V5C 6S7
Tel: 604 454 0402

PROJECT
CUMMINGS ROAD REGIONAL TRANSFER STATION RE-DEVELOPMENT - ELECTRICAL DRAWINGS

DRAWING
ELECTRICAL DETAILS

DESIGN: MC	DATE: 2021-01-21	SCALE: As Shown
DRAWN: MC	PROJECT NO.: 201945000	
CHECKED: KP	DRAWING NO: E02	VERSION: C
APPROVED: KP		

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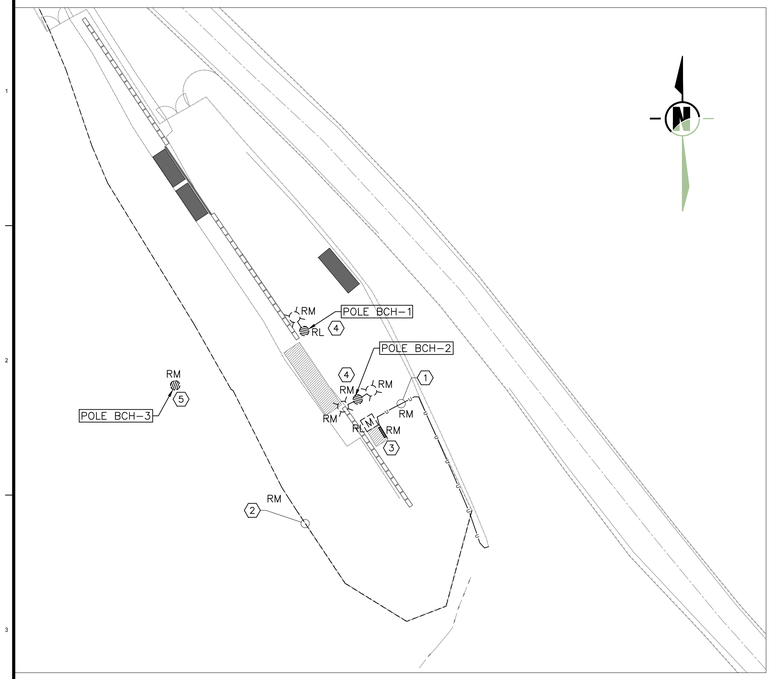
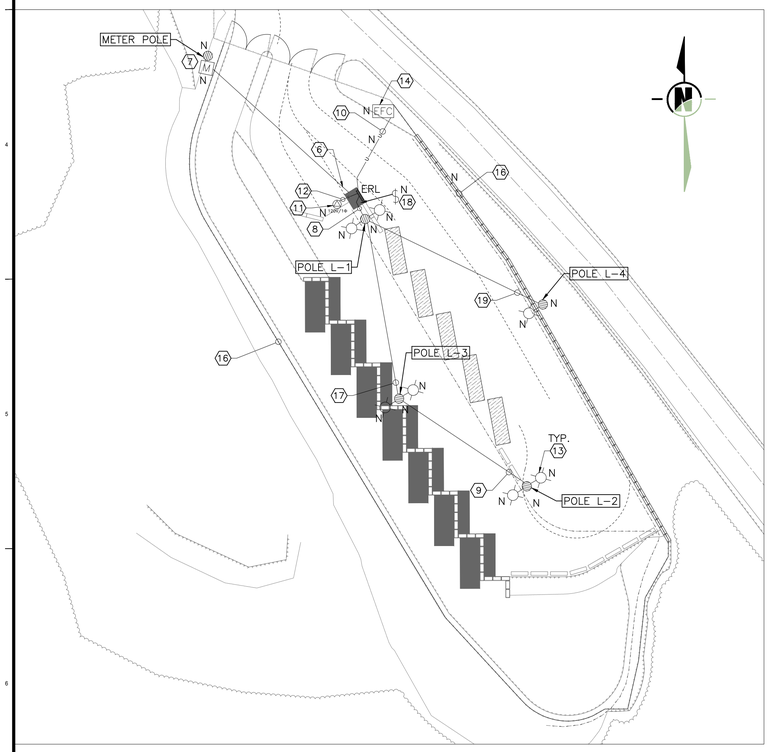


1 ELECTRICAL DEMOLITION PLAN

1:500



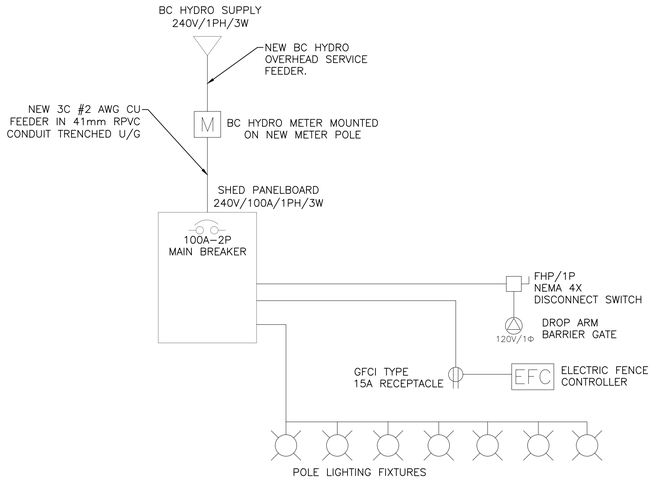
2 ELECTRICAL CONSTRUCTION PLAN

1:500

100 AMP PANEL 120/240V, 1-PHASE, 3-WIRE	SHED PANEL						C/W MAIN BREAKER	
LOAD DESCRIPTION	BRKR	CCT #	PHASE A	PHASE B	PHASE C	CCT #	BRKR	LOAD DESCRIPTION
SHED PLUGS	15A	1	X	-	-	2	15A	SPARE
SITE LIGHTING	**15A**	3	-	X	-	4	**15A**	**NEW ELECTRIC FENCE PLUG**
SHED HEATER	15A	5	-	-	X	6	**15A**	**NEW DROP ARM GATE**
		7	X	-	-	8		
		9	-	X	-	10		
		11	-	-	X	12		
		13	X	-	-	14		
		15	-	X	-	16		
		17	-	-	X	18		
		19	X	-	-	20		
		21	-	X	-	22		
		23	-	-	X	24		

3 MODIFIED SHED PANELBOARD SCHEDULE

NTS



4 MODIFIED SINGLE LINE DIAGRAM

NTS

LUMINAIRE SCHEDULE							
FIXTURE	DESCRIPTION	MANUFACTURER	VOLTAGE	COLOUR TEMPERATURE	LUMENS	WATTAGE	LIGHTING CONTROL
	1. cUL/CSA/cETL LISTED 2. WEATHERPROOF 3. IDA DARK SKY APPROVED 4. LED TYPE 5. POLE MOUNTED 6. TYPE 5QN DISTRIBUTION	HUBBELL LIGHTING – BEACON VIPER L, OR CONSULTANT APPROVED EQUIVALENT	120V	3000K	16,000	135W	INTEGRAL PHOTOCELL WITH MANUAL LIGHT SWITCH OVERRIDE

EQUIPMENT SCHEDULE						
EQUIPMENT	MANUFACTURER	VOLTAGE/PHASE	DISCONNECT	CIRCUIT BREAKER	CIRCUIT	WIRE SIZE
DROP ARM BARRIER GATE	LIFTMASTER MADCBB HEAVY DUTY DC BARRIER GATE OPERATOR, OR OWNER APPROVED EQUIVALENT ACCESSORIES REQUIRED: CARD ACCESS READER AND HEATER	120V/1PH	FHP	15A–1P	CCT #6	2C #12 AWG CU RWU90
ELECTRIC FENCE CONTROLLER	GALLAGHER MB1000 FENCE ENERGIZER, OR OWNER APPROVED EQUIVALENT	120V/1PH	N/A	15A–1P	CCT #4	2C #12 AWG CU RWU90 (FOR RECEPTACLE)

KEYNOTES

1. DEMOLISH EXISTING UNDERGROUND CONDUIT AND FEEDER TO EXISTING ELECTRIC FENCE. COORDINATE REMOVAL WITH CIVIL CONTRACTOR ON SITE.
2. DEMOLISH EXISTING ELECTRIC FENCE.
3. EXISTING ATTENDANT SHED TO BE RELOCATED. ELECTRICAL CONTRACTOR TO DISCONNECT AND REMOVE EXISTING U/G FEEDER TO ELECTRIC FENCE. COORDINATE RELOCATION OF SHED WITH CIVIL CONTRACTOR ON SITE. COORDINATE DISCONNECTION OF EXISTING BC HYDRO SERVICE AND REMOVAL OF EXISTING BC HYDRO METER WITH BC HYDRO. ELECTRICAL CONTRACTOR TO REMOVE METER BASE AND RE–USE FOR NEW METER POLE. EXISTING WEATHER HEAD AND SHED PANELBOARD TO REMAIN. INCLUDE FOR PATCHING AND PAINTING OF CONDUIT PENETRATION ON EXTERIOR AND INTERIOR WALL AND INCLUDE TEMPORARY PROTECTIVE PROVISIONS TO PROTECT EXISTING ELECTRICAL EQUIPMENT DURING RELOCATION OF SHED.
4. BC HYDRO TO REMOVE EXISTING BC HYDRO OVERHEAD SERVICE FEEDERS AND BC HYDRO POLES BCH–1 & BCH–2. COORDINATE WITH BC HYDRO TO DEMOLISH EXISTING POLE LIGHT FIXTURES.
5. BC HYDRO TO REMOVE POLE BCH–3 AND OVERHEAD FEEDER. COORDINATE WITH BC HYDRO ON SITE.
6. RELOCATED ATTENDANT SHED; ELECTRICAL CONTRACTOR TO INCLUDE FOR NEW 3C #2 AWG CU RWU90 IN 41mm RPVC CONDUIT, TRENCHED UNDERGROUND (MIN. OF 600mm BELOW GRADE ALONG THE ENTIRE ROUTE) FROM THE SHED PANELBOARD TO THE RE–USED METER BASE ON THE NEW METER POLE. INSTALL METER BASE 6FT ABOVE GRADE ON THE METER POLE. COORDINATE METER INSTALLATION AND FINAL OVERHEAD SERVICE CONNECTIONS WITH BC HYDRO ON SITE. CONTRACTOR TO SUBMIT BC HYDRO PERMIT AND DECLARATION FOR SERVICE TO BC HYDRO, PRIOR TO BC HYDRO PERFORMING ANY CONSTRUCTION WORK.
7. ELECTRICAL CONTRACTOR TO SUPPLY AND INSTALL NEW 30FT METER POLE. BC HYDRO TO INSTALL NEW BC HYDRO METER IN METER BASE POLE AND MAKE OVERHEAD SERVICE CONNECTIONS FROM THEIR SECONDARY POLE. COORDINATE AND FINALIZE LOCATION OF METER POLE AND TRENCHING PATH WITH CIVIL CONTRACTOR ON SITE PRIOR TO TRENCHING WORK. NEW METER POLE SHALL BE INSTALLED WITHIN 7m OF NEW LANE ROAD. REFER TO ELECTRICAL SPECIFICATIONS FOR METER POLE REQUIREMENTS. INCLUDE FOR ALL GUY WIRE, ANCHORS, WRAPS, ETC, TO SUPPORT POLE STRUCTURAL MOUNTING.
8. INCLUDE FOR THE SUPPLY AND INSTALL OF NEW LIGHTING POLE L–1. INCLUDE FOR NEW 2C #12 AWG CU RW90 TECK CABLE, RUN FROM SHED PANELBOARD TO POLE L–1 THROUGH EXISTING WEATHERHEAD, TO POWER NEW LIGHT FIXTURES ON POLE L–1.
9. INCLUDE FOR THE SUPPLY AND INSTALL OF NEW LIGHTING POLE L–2. INCLUDE FOR NEW 2C #12 AWG CU RW90 TECK CABLE, RUN OVERHEAD FROM POLE L–1 TO POLE L–3, THEN FINALLY TO POLE L–2, TO POWER NEW LIGHT FIXTURES ON THE NEW POLE L–2. INCLUDE FOR ALL GUY WIRE, MESSENGER CABLES, ANCHORS, WRAPS, ETC, TO SUPPORT OVERHEAD CABLE AND TO MEET THE INTENT.
10. INCLUDE FOR NEW 2C #12 AWG CU RWU90 FEEDER IN 21mm RPVC CONDUIT TO BE DIRECT BURIED UNDERGROUND TO THE NEW ELECTRIC FENCE CONTROLLER. COORDINATE UNDERGROUND FEEDER AND CONDUIT INSTALLATION WITH CIVIL CONTRACTOR ON SITE, AND INCLUDE FOR ALL TRENCHING AND BACKFILLING TO MEET THE INTENT.
11. NEW DROP ARM BARRIER GATE TO BE SUPPLIED AND INSTALLED BY ELECTRICAL CONTRACTOR. INCLUDE FOR CARD ACCESS READER AND HEATER OPTIONS AND COORDINATE WITH OWNER FOR PROGRAMMING AND GATE OPERATION INTENT. COORDINATE FINAL LOCATION OF NEW GATE ARM, CARD ACCESS READER, CONCRETE PAD, CONTROLLER, AND UNDERGROUND CONDUIT ON SITE WITH CIVIL CONTRACTOR AND OWNER.
12. ELECTRICAL CONTRACTOR TO INCLUDE FOR THE SUPPLY AND INSTALL OF FOUR (4) NEW 16mm RPVC CONDUITS, TO BE DIRECT BURIED UNDERGROUND FROM THE SHED PANELBOARD TO THE NEW CONCRETE PAD FOR THE GATE ARM. INCLUDE FOR THE SUPPLY AND INSTALL OF FOUR (4) RUNS OF 2C #12 AWG CU RWU90 FEEDERS, EACH RUN INSTALLED IN SEPARATE CONDUIT. REFER TO DWG E0.02 FOR DETAILS.
13. ELECTRICAL CONTRACTOR TO INCLUDE FOR THE SUPPLY AND INSTALL OF NEW POLE MOUNTED LIGHTING FIXTURES. CONTRACTOR TO MOUNT, SET, AND ADJUST LIGHTING FIXTURES ON SITE. INCLUDE FOR SEISMIC LETTERS OF ASSURANCE FROM THE CONTRACTOR'S STRUCTURAL/SEISMIC ENGINEER FOR THE MOUNTING AND INSTALLATION OF LIGHTING FIXTURES.
14. ELECTRICAL CONTRACTOR TO INCLUDE FOR THE SUPPLY AND INSTALL OF NEW ELECTRIC FENCE CONTROLLER (EFC), MOUNTED INSIDE NEW NEMA 4X RATED LOCKABLE ENCLOSURE. NEW EFC TO BE POWERED BY NEW GFCI RECEPTACLE, MOUNTED IN ENCLOSURE. REFER TO DWG E0.02 FOR DETAILS.
15. ELECTRICAL CONTRACTOR TO INCLUDE FOR THE SUPPLY AND INSTALL OF THREE (3) NEW 15A–1P CIRCUIT BREAKERS FOR NEW SITE LIGHTING, NEW EFC, AND NEW DROP ARM BARRIER GATE. ELECTRICAL CONTRACTOR TO INCLUDE FOR THE UPDATE OF NEW TYPEWRITTEN SHED PANEL SCHEDULE.
16. NEW ELECTRIC FENCE WIRE INSTALLED ON THE OUTER PERIMETER OF THE NEW CHAIN LINK FENCE (PROVIDED BY OTHERS), COORDINATE INSTALLATION WITH CIVIL CONTRACTOR. REFER TO DWG E0.02 FOR ELECTRIC FENCE INSTALLATION DETAILS. INCLUDE FOR THE SUPPLY AND INSTALL OF ELECTRIC FENCE WARNING SIGNS ALONG THE FENCE SECTIONS FACING ALPINE DR, EVERY 30m. WARNING SIGNS TO BE 100mm x 200mm, STATING "WARNING: ELECTRIC FENCE" IN 50mm BLACK FONT, YELLOW BACKGROUND, ON BOTH SIDES OF THE SIGN.
17. INCLUDE FOR THE SUPPLY AND INSTALL OF NEW POLE L–3. INCLUDE FOR NEW 2C #12 AWG CU RW90 TECK CABLE, RUN OVERHEAD FROM POLE L–1 TO POLE L–3, TO POWER NEW LIGHT FIXTURES ON THE NEW POLE L–3. INCLUDE FOR ALL GUY WIRE, MESSENGER CABLES, ANCHORS, WRAPS, ETC, TO SUPPORT OVERHEAD CABLE AND TO MEET THE INTENT.
18. INCLUDE FOR THE SUPPLY AND INSTALL OF NEW LIGHT WALL SWITCH MOUNTED INSIDE THE ATTENDANT SHED (LOCATE MOUNTING LOCATION ON SITE, 1220mm AFF). INTENT IS TO PROVIDE MANUAL OVERRIDE OF INTEGRAL PHOTOCELLS OF THE NEW SITE LIGHTING FIXTURES.
19. INCLUDE FOR THE SUPPLY AND INSTALL OF NEW LIGHTING POLE L–4. INCLUDE FOR NEW 2C #12 AWG CU RW90 TECK CABLE, RUN OVERHEAD FROM POLE L–1 TO POLE L–4, TO POWER NEW LIGHT FIXTURE ON THE NEW POLE L–4. INCLUDE FOR ALL GUY WIRE, MESSEGNER CABLE, ANCHORS, WRAPS, ETC, TO SUPPORT OVERHEAD CABLE AND TO MEET THE INTENT. NEW LIGHT POLE L–4 TO BE INSTALLED ON THE OUTSIDE OF NEW LOCK BLOCK WALLS. COORDINATE INSTALLATION AND FINAL LOCATION ON SITE WITH CIVIL CONTRACTOR.

NOTES

All dimensions in Metric

E		
D		
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A	2020-11-04	ISSUED FOR 75% REVIEW
	YYYY-MM-DD	SUBMISSION INFORMATION

PROFESSIONAL SEALS

MORRISON HERSHFIELD
Suite 310, 4321 Still Creek Drive
Burnaby, BC V5C 6S7
Tel: 604 454 0402

PROJECT
CUMMINGS ROAD REGIONAL TRANSFER STATION RE-DEVELOPMENT - ELECTRICAL DRAWINGS

DRAWING
ELECTRICAL WORK PLAN

DESIGN	DATE	SCALE
MC	2021-01-21	As Shown
DRAWN: MC	PROJECT NO.: 201945000	
CHECKED: KP	DRAWING NO: E03	VERSION: C
APPROVED: KP		

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APPENDIX C - CONTRACT AGREEMENT AND GENERAL CONDITIONS

APPENDIX D - SUPPLEMENTAL GENERAL CONDITIONS

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

DEFINITIONS

Add the following new definitions:

"**Force Majeure**
Force Majeure is an event or effect that cannot be reasonably anticipated or controlled by the parties, such as an act of God, an act of a legislative, administrative or judicial entity, fire, flood, labour strike or lock-out, epidemic, unusually severe weather, or other similar cause outside of the control of the parties."

"**Actual Facility-in-Use Date**
The Actual Facility-in-Use Date is the date upon which the Consultant determines the *Project* is sufficiently complete to allow public use of the facility."

"**Planned Facility-in-Use Date**
The Planned Facility-in-Use Date is the milestone date by which the Owner requires the Project to be sufficiently complete to allow public use of the facility."

PART 2 ROLE OF THE CONSULTANT

GC 2.3 REVIEW AND INSPECTION OF THE WORK

2.3.5: Delete paragraph in its entirety and replace with the following:

"2.3.5 The *Consultant* and the *Owner* may order any portion or portions of the *Work* to be examined to confirm that such work is in accordance with the requirements of the *Contract Documents*. If the work is not in accordance with the requirements of the *Contract Documents*, the *Contractor* shall correct the work and pay the cost of examination and correction.

GC 2.4 DEFECTIVE WORK

2.4.1: Delete paragraph in its entirety and replace with the following:

"2.4.1 The *Contractor* shall correct at its own cost defective work that has been rejected by the *Owner* or the *Consultant* as failing to conform to the *Contract Documents:*

.1 within five (5) days of receiving *Notice in Writing* from the *Owner* or the *Consultant*, or

.2 without notice if any emergency or danger to the Work or the public exists,

whether or not the defective work has been incorporated in the *Work* and whether or not the defect is the result of poor workmanship, use of defective products or damage through carelessness or other act or omission of the *Contractor*.

GC 2.4: Add the following new paragraph:

"2.4.4 Upon failure of the *Contractor* to correct defective work within the timelines described in paragraph 2.4.1, the *Owner* may, without prejudice to any other remedy it may have, correct such deficiencies and deduct the cost from monies payable to the *Contractor*.

PART 5 PAYMENT

GC 5.5 PAYMENT OF HOLDBACK UPON SUBSTANTIAL PERFORMANCE OF THE WORK

5.5.1: Add the following new subparagraph:

".3 submit notification from WorkSafeBC that all required WorkSafeBC assessments have been paid for the periods covering the *Contract Time*."

PART 6 CHANGES IN THE WORK

GC 6.3 CHANGE DIRECTIVE

GC 6.3: Add new paragraphs as follows:

6.3.14 If, in the opinion of the *Contractor*, it is being required to perform work beyond the scope of the *Contract Documents*, whether at the discretion of the *Owner* or otherwise, the *Contractor* shall within five (5) Working Days deliver to the *Owner* and the *Consultant* a notice of protest in the form provided in Division 01 of the Specifications prior to proceeding with any of the disputed work. This five (5) Working Day time period commences from when direction is given by the *Owner* or the time at which the *Contractor* determines that it is being required to perform such work, whichever occurs first.

6.3.15 The *Contractor* shall keep accurate and detailed cost records indicating the cost of the work done under protest. The *Contractor* shall not be entitled to payment if they fail to keep and produce such records upon the *Owner*'s or *Consultant*'s request.

GC 6.5 DELAYS

6.5.3: Delete this paragraph in its entirety and substitute "intentionally left blank".

PART 7 DEFAULT NOTICE

GC 7.1 OWNER'S RIGHT TO PERFORM THE WORK, TERMINATE THE CONTRACTOR'S RIGHT TO CONTINUE WITH THE WORK OR TERMINATE THE CONTRACT

GC 7.2 - Add new paragraph as follows:

"7.1.7 The *Owner* may terminate the *Contract* at any time, without cause, by providing not less than thirty (30) calendar days' *Notice in Writing* to the *Contractor*."

GC 7.2 CONTRACTOR'S RIGHT TO SUSPEND THE WORK OR TERMINATE THE CONTRACT

GC 7.2: Add new paragraph as follows:

"7.2.6 The *Contractor* may terminate the *Contract* at any time, without cause, by providing not less than thirty (30) calendar days' *Notice in Writing* to the *Owner*."

Add GC 7.2 FORCE MAJEURE

GC 7.2: Add new paragraphs as follows:

"7.2.1: If a *Force Majeure* event occurs that prevents the *Contractor* or the *Owner* from performing their obligations under the *Contract*, the obligations of the parties under the *Contract* shall be suspended for so long as the condition constituting *Force Majeure* continues. The party affected by *Force Majeure* shall:

.1 provide *Notice in Writing* to the other party indicating the anticipated duration of the *Force Majeure* event, actions being taken by the party providing notice to avoid or minimize the effect of the *Force Majeure* event, and

.2 make reasonable efforts to remove or mitigate the effects of the condition constituting *Force Majeure*.

7.2.2. Once the *Force Majeure* event has ended, the *Owner* shall grant to the *Contractor* an extension of the *Contract Time* as may be agreed with the *Contractor* or, if the parties are unable to reach agreement, as determined by the dispute resolution process described under Part 8 of the General Conditions – DISPUTE RESOLUTION.

7.2.3 Where as a result of *Force Majeure* there is a material increase in the *Contractor*'s costs, then the *Owner* shall authorize a change in *Contract Price* in accordance with Part 6 of the General Conditions – CHANGES IN THE WORK, as may be agreed between the parties or, if the parties are unable to reach agreement, as determined by the dispute resolution process described under Part 8 of the General Conditions – DISPUTE RESOLUTION.

7.2.4 In the event of *Force Majeure* resulting in a substantial material increase in the cost of the *Work*, the *Owner* may choose to not proceed with the *Project* and may terminate the *Contract* in accordance with Part 7 of the General Conditions – DEFAULT NOTICE. If the *Owner* terminates this *Contract* following the end of the *Force Majeure* event, then it shall compensate the *Contractor* for unpaid completed *Work*."

Add PART 13 CONFIDENTIALITY, FREEDOM OF INFORMATION, AND OWNERSHIP

Add GC 13.1 CONFIDENTIALITY AND FREEDOM OF INFORMATION

GC 13.1: Add new paragraph as follows:

"13.1.1 In accordance with the Freedom of Information and Protection of Privacy Act, R.S.B.C. 1996, c165, as amended, the *Contractor* shall treat as confidential and will

not, without the prior written consent of the *Owner*, 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."

Add GC 13.2 OWNERSHIP

GC 13.2: Add new paragraphs as follows:

"13.2.1 Any material produced, received or provided by the *Owner* to the *Contractor* as a result of this *Contract* and any equipment, machinery, or other property provided by the *Owner* to the *Contractor* as a result of this *Contract* shall be:

.1 the exclusive property of the *Owner*; and

.2 forthwith be delivered by the *Contractor* to the *Owner*, or the *Owner* giving written notice to the *Contractor* requesting delivery of the same, or at completion of this *Contract*.

13.2.2 *Contractor* shall not be entitled to payment for extra materials or stockpiles not used on the *Project.* Any extra materials and stockpiles not used on the *Project* shall be:

.1 the exclusive property of the *Contractor*; and

.2 shall be removed by the *Contractor* from the *Place of the Work* at no cost to the *Owner*.

13.2.3 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 *Project*, shall be provided by the *Contractor* to the *Owner* in an amenable format (i.e. Word, Excel, AutoCAD) and will become the property of the *Owner* and the *Owner* shall not be limited by *Contractor*'s copyright or proprietary terms with regards to use by the *Owner*."

PART 9 PROTECTION OF PERSONS AND PROPERTY

GC 9.4 CONSTRUCTION SAFETY

GC 9.4: Add new paragraph as follows:

"9.4.2 If at any time the *Owner* or the *Consultant* 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* shall comply with such an order immediately at no change in *Contract Price* or *Contract Time*. No Neither the *Owner* nor the *Consultant* shall be held liable for any damages or breach of laws, bylaws or regulations that may result.

Add PART 14 BONUS AND PENALTY PROVISIONS

Add GC 14.1 BONUS AND PENALTY PROVISIONS

GC 14.1: Add new paragraph and subparagraphs as follows:

"14.1.1 Bonus and penalty provisions apply to this *Contract* as follows, based on the *Planned Facility-in-Use Date* of August 31, 2021:

.1 If the *Contractor* advances the *Work* such that the facility is ready for public use prior to the *Planned Facility-in-Use Date*, the *Contractor* shall be entitled to a bonus of $1,000 for each *Working Day* between the *Actual Facility-in-Use Date* and the *Planned Facility-in-Use Date*, up to a maximum bonus of $30,000.

.2 For each *Working Day* of delay between the *Planned Facility-in-Use Date* and the *Actual Facility-in-Use Date*, the *Contractor* shall pay to the *Owner* a penalty of $1,000 per *Working Day* up to a maximum of $30,000.

END OF SECTION

APPENDIX E – CCDC INSURANCE REQUIREMENTS

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CANADIAN CONSTRUCTION DOCUMENTS COMMITTEE
CANADIAN CONSTRUCTION DOCUMENTS COMMITTEE

CCDC 41
CCDC INSURANCE REQUIREMENTS

PUBLICATION DATE: JANUARY 21, 2008

1. General liability insurance shall be with limits of not less than $5,000,000 per occurrence, an aggregate limit of not less than $5,000,000 within any policy year with respect to completed operations, and a deductible not exceeding $5,000. The insurance coverage shall not be less than the insurance provided by IBC Form 2100 (including an extension for a standard provincial and territorial form of non-owned automobile liability policy) and IBC Form 2320. To achieve the desired limit, umbrella or excess liability insurance may be used. Subject to satisfactory proof of financial capability by the *Contractor*, the *Owner* may agree to increase the deductible amounts.

2. Automobile liability insurance in respect of vehicles that are required by law to be insured under a contract by a Motor Vehicle Liability Policy, shall have limits of not less than $5,000,000 inclusive per occurrence for bodily injury, death and damage to property, covering all vehicles owned or leased by the *Contractor*. Where the policy has been issued pursuant to a government-operated automobile insurance system, the *Contractor* shall provide the *Owner* with confirmation of automobile insurance coverage for all automobiles registered in the name of the *Contractor*.

3. Aircraft and watercraft liability insurance with respect to owned or non-owned aircraft and watercraft (if used directly or indirectly in the performance of the *Work*), including use of additional premises, shall have limits of not less than $5,000,000 inclusive per occurrence for bodily injury, death and damage to property including loss of use thereof and limits of not less than $5,000,000 for aircraft passenger hazard. Such insurance shall be in a form acceptable to the *Owner*.

4. "Broad form" property insurance shall have limits of not less than the sum of 1.1 times *Contract Price* and the full value, as stated in the *Contract*, of *Products* and design services that are specified to be provided by the *Owner* for incorporation into the *Work*, with a deductible not exceeding $5,000. The insurance coverage shall not be less than the insurance provided by IBC Forms 4042 and 4047 (excluding flood and earthquake) or their equivalent replacement. Subject to satisfactory proof of financial capability by the *Contractor*, the *Owner* may agree to increase the deductible amounts.

5. Boiler and machinery insurance shall have limits of not less than the replacement value of the permanent or temporary boilers and pressure vessels, and other insurable objects forming part of the *Work*. The insurance coverage shall not be less than the insurance provided by a comprehensive boiler and machinery policy.

6. "Broad form" contractors' equipment insurance coverage covering *Construction Equipment* used by the *Contractor* for the performance of the *Work*, shall be in a form acceptable to the *Owner* and shall not allow subrogation claims by the insurer against the *Owner*. Subject to satisfactory proof of financial capability by the *Contractor* for self-insurance, the *Owner* may agree to waive the equipment insurance requirement.

7. Standard Exclusions

   7.1 In addition to the broad form property exclusions identified in IBC forms 4042(1995), and 4047(2000), the *Contractor* is not required to provide the following insurance coverage:
   - Asbestos
   - Cyber Risk
   - Mould
   - Terrorism

Association of Canadian Engineering Companies

Canadian Construction Association

Construction Specifications Canada

The Royal Architectural Institute of Canada