

CONTRACT DOCUMENTS

for

**PARKSVILLE COMMUNITY PARK
WASHROOM AND SITE IMPROVEMENTS**

193 Island HWY E
Parksville, British Columbia

Prepared By:

The TULA Project Inc
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T2G 1L9

Tel:403.470.0827

Reference No. # 5330-20-22WASH
May 2023

Part 2.0: Drawing List

Tender Drawings			
Drawing Number	Name	Revision	Date
Landscape			
L0.00	Cover Sheet	0	
L0.01	Data Sheet	0	
L0.02	Surface Demolition Plan	0	
L1.01	Layout Plan	0	
L1.02	Greater Site Layout Plan	0	
L2.01	Planting Schedule	0	
L2.02	Planting Plan	0	
L4.01	Details	0	
L4.02	Details	0	
Civil			
C01	Key Plan and Site Plan	0	
C02	General Notes	0	
C03	Site Servicing Plan	0	
C04	Surface Works and Site Grading Plan	0	
Architectural			
A1.1	Proposed site plan, location plan, site stats, drawing index and general notes	0	
A1.2	Proposed construction assemblies, thermal insulation, calculations, and sections	0	
A2.1	Proposed Floor plans	0	
A3.1	Proposed Elevations	0	
A4.1	Proposed sections, fabric form concrete wall details & accessory details	0	
A5.1	Proposed interior millwork elevations	0	
A6.1	Proposed Specifications	0	
E1.1	Proposed Reflected Ceiling Plan	0	
Structural			
S101	General Notes	0	
S102	General Notes / Typical Details	0	
S201	Foundation Plan / Roof Framing Plan	0	
S301	Details	0	

Part 3.0 – Supplementary Conditions

Part 4.0 - Appendices

- 4.1 Appendix 1 Preliminary Construction Schedule
- 4.2 Appendix 2 Experience of Superintendent
- 4.3 Appendix 3 Contractor Comparable Work Experience

- 4.4 Appendix 4 Irrigation Sketch
- 4.5 Appendix 5 City of Parksville Irrigation approved product list
- 4.6 Appendix 6 Geotechnical Report
- 4.7 Appendix 7 Proposed Electrical Drawings for reference
- 4.8 Appendix 8 Parksville Community Park Plaza Site Plan

Part 5.0 - Reference Documents (for reference by bidder – physical copies not included within bid documents)

- 5.1 General Conditions (refer to the CCDC 2 General Conditions, Latest Edition)
- 5.2 City of Parksville Engineering Standards and Specifications

1.1 ADVERTISEMENT FOR BIDS

- .1 Bid Call:
1. The City of Parksville will receive bids for this Project on or before 1500hr PST on June 8th (unless modified by an addendum) at:
 - .1 1116 Herring Gull Way, Parksville, British Columbia, V9H 2H3
 - .2 The official bid closing time will be determined by the reception desk clock at the bid closing location.
 - .3 Any bid received after the bid closing time will be declared a bid received after the Bid Closing Time.

1.2 BID OPENING PROCESS

- .1 Unofficial bid results will be disclosed promptly to all Bidders. Such disclosure will not imply that the bids received are compliant or that a contract will be awarded to the lowest or any Bidder.

1.3 BID DOCUMENT AVAILABILITY

- .1 Bid documents are available in electronic form. It does not confer a license to use the Bid Documents for any other purposes. Bid documents may be obtained from:
 1. www.bcbid.gov.bc.ca
 2. www.parksville.ca

1.4 PROJECT DESCRIPTION

- .1 The supply and install of a washroom building and general site improvements. The works include all site works including required demolition, site preparation, deep and shallow utility installation, rough grading, fine grading, pathway installation, paver installation, outdoor shower area, and water fountain. The work also includes the washroom building including foundations and base preparation, associated electrical and mechanical components. Work shall include all the required construction and schedule coordination with the adjacent construction of the Parksville Community Park Plaza.

END OF SECTION

1.1 GENERAL

- .1 Carefully examine the following information. Failure to follow these instructions may result in bid disqualification.
- .2 Project Information:
 1. Project / Contract Name: Parksville Washroom & Site Improvements
 2. Project / Contract No.: 5330-20-22WASH
 3. Owner: The City of Parksville
 4. Project Address: 193 Island HWY E, Parksville, British Columbia
- .3 Examine the Bid Documents and promptly notify the person designated to receive inquiries of any perceived errors, omissions, conflicts, or discrepancies in the Bid Documents.

1.2 BID DOCUMENTS

- .1 00 21 13 Instruction to Bidders
- .2 00 41 13 Bid form
- .3 00 43 22 Unit Prices Bid Form
- .4 00 43 23 Alternate Prices Bid Form
- .5 00 43 36 Lists of Subcontractors
- .6 CCDC 2 – 2020, Articles of Agreement
- .7 CCDC 2 – 2020, General Conditions
- .8 CCDC 2 – 2020, Definitions
- .9 Supplementary Conditions
- .10 Drawings and Specifications
- .11 Appendices
- .12 Addenda

1.3 CONTRACT DOCUMENTS

- .1 The contract documents shall be defined as comprising the following documents:
 1. 00 41 13 Bid Form
 2. 00 43 22 Unit Price Bid Form
 3. 00 43 23 Alternate Prices Bid Form
 4. 00 43 36 List of Subcontractors

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5. CCDC 2 – 2020, Articles of Agreement
 6. CCDC 2 – 2020, General Conditions
 7. CCDC 2 – 2020, Definitions
 8. Supplementary Conditions
 9. Drawings and Specifications
 10. Appendices
 11. Addenda

1.4 BID SUBMISSION REQUIREMENTS

- .1 Bids must be received by the Owner before the Bid Closing Time, with bid form supplements submitted at times relative to the Bid Closing Time as described below.
- .2 Bids will be time and date marked upon receipt at the location specified for receipt of bids. The Bidder shall be solely responsible for verifying that its bid is correctly time and date marked.
- .3 Bids shall be submitted in sealed envelopes clearly labelled as follows:
 1. “Tender for: Parksville Washroom and Site Improvements. Project REF # 5330-20-22WASH”
- .4 Bids shall remain sealed until receipt of bid form supplements as listed in Section 00 41 13.
- .5 Bids must be submitted on Section 00 41 13 and prescribed bid form supplements as listed in Section 00 41 13, as required, furnished with Bid Documents. Fill-in blanks on such documents and forms.
- .6 The Bidder shall present the bid price in figures.
 1. The stipulated bid price shall include the cost of all Products, materials, labour, equipment, delivery, storage, handling, statutory charges, overhead and profit, other related charges, and inclusive of all duties and taxes applicable, except Value Added Taxes, and all other charges on account of such work, measured complete in place for all parts of the Work.
- .7 Documents and forms submitted must be legible, written in ink or typewritten, and all items must be bid. Any form of erasure, strikeout, or overwriting must be initialled by the Bidder’s authorized signing officer.
- .8 Bids submitted must be signed in ink and sealed. Incorporated companies shall affix their corporate seal and have bid signed by their duly authorized officers.
- .9 Bids must not be restricted by a covering letter, a statement added, or by alterations not called for.
- .10 Each bid shall include a completed Section 00 41 13, as required, a bid bond, and an

- agreement to bond, as required herein, together with any bid form supplements that Bidder is instructed elsewhere herein, or in any addendum hereto, to submit with its bid.
- .11 Provide a baseline construction schedule, in the form of Appendix 1, showing the proposed Ready for Take over by the client by the date.
 - .12 Provide name and brief description of the previous work experience of the Superintendent the Bidder will use for the Work, in the form of Appendix 2.
 - .13 Provide a list of previous comparable work, including a brief description of the work, approximate contract value, and references (with phone numbers), in the form of Appendix 3.
 - .14 In no event will the Owner be responsible for any costs incurred by anyone in the preparation and/or submission of a bid, including costs for printing copies of the Bid Documents.
 - .15 By submitting a bid, a Bidder agrees to each and every of the terms, provisions and conditions set out in the Bid Documents.

1.5 BID WITHDRAWAL AND MODIFICATION

- .1 If withdrawing a bid, Bidders must submit a signed letter to the Owner prior to closing.
- .2 Modifications or withdrawals must be signed by an authorized signing officer.
- .3 Bidders are warned that faxed or emailed modifications or withdrawals are submitted solely at their own risk and will not be considered received until they have been received at the designated contact information, and date and time of the modification has been recorded by the bid authority.
- .4 The Owner will assume no responsibility or liability for modifications or withdrawals that are, for any reason, delayed, illegible, unclear as to intent, ambiguous, contrary to these instructions, or otherwise improperly received.
- .5 For email modifications or withdrawals, the clock used for the official bid closing time will govern. The Owner's handwritten date and time or time stamp from the clock used for the official bid closing will take precedence over facsimile machine generated time and date.
- .6 For email modifications and withdrawal, the time received by the Bid Authority's servers will determine as to whether the bid modification was received by the closing time.
- .7 For faxed modifications and withdrawal, the clock used for the official bid closing time will govern. The Owner's handwritten date and time or time stamp from the clock used for the official bid closing will take precedence over facsimile machine generated time and date.
- .8 Bid modifications:
 1. Modifications will be accepted prior to the time and date specified for the closing of bids, in a manner determined by the Owner using the bid amendment form included in Section 00 41 13 – Bid Form – Stipulated Price.
 2. Only the Bidder's entries on the delivered Bid Form may be revised; the

modification must state only the amount by which a bid figure is to be increased or decreased, or specific directions as to the exclusion or inclusion of particular words.

3. Ensure all bid modifications to the original bid are clearly legible. State monetary modifications to the bid amount numerically and in writing.
4. State all addendum numbers received, if different from what was indicated on the originally submitted Bid Form.
- .9 If changes are required to Supplementary Bid Forms, new Supplementary Bid Forms must be submitted and revised in their entirety on new submission forms. Where applicable, prices are completely new prices.

1.6 PRE-BID INQUIRIES AND ISSUANCES OF ADDENDA

- .1 Direct inquiries relating to bid documents, only to the owner at:
 1. Graham Gidden, Manager of Special Projects, ggidden@parksville.ca
 2. The Owner and Consultant will be responsible for clarifications of Bid Documents only as incorporated into addenda as issued to holders of Bid Documents on record at the offices of the Owner.
 3. Questions are due 15:00hr, local time, on June 1st, 2023.
 4. Addenda will be issued no later than 17:00hr, local time, on the 3rd Working Day prior to the date of the Bid Closing Time.
- .2 Bidders shall notify Owner, in writing prior to Bid Closing Time, of the following:
 - .1 Discrepancies or omissions found in the Bid Documents.
 - .2 Clarifications required regarding the meaning of requirements contained in the Bid Documents.
- .3 The Owner may issue written addenda to registered holders of the Bid Documents.
- .4 Where apparent discrepancies are identified by Bidders among various parts of Bid Documents, and in the absence of addenda addressing such discrepancies, Bidders shall allow for the greater amount of labour required and/or material referred to, including increasing bonding and insurance requirements, as applicable, when preparing their bid.

1.7 BONDING REQUIREMENTS

- .1 Bonds shall be issued by a bonding company acceptable to the Owner and licensed to issue such instruments in the Province of British Columbia.
 1. Bid Bond:

- .1 Each Bidder shall submit its bid bond, in the form of CCDC 220, or Certified Cheque, or Irrevocable Letter of Credit (payable to the City of Parksville) in an amount equal to not less than 10% of the bid price and naming the Owner as the Obligee.
 - .2 The bid bond shall be valid for the Bid Acceptance Period.
 - .3 The bid bond, with the exception of those of the Bidders submitting the two most appropriate bids, in the Owners absolute discretion, will be returned within 10 Working Days after the Bid Closing Time.
 - .4 The bid bonds of the Bidders submitting, in the Owner's sole and absolute discretion, the two most appropriate bids will be returned to the Bidder to whom the Owner has issued the notification of conditional award of the Contract described later in this section, has fully complied with the conditions pertaining to Contract award described in the Bid Documents and the notification of conditional award of the Contract. If the Bidder so notified refuses or neglects to comply with the said conditions, the Owner may, at its sole discretion, claim against the bid bond, and the bid bond shall be subject to forfeiture, not as a penalty, but as liquidated damages sustained. The Owner shall then have the right to award the Contract to the Bidder submitting, in the Owner's sole and absolute discretion, the next most appropriate bid, or to re-offer the invitation to submit bids.
2. Agreement Bond:
- .1 Each Bidder shall submit with its bid an agreement to bond issued by a bonding company accepted by the Owner and licensed to issue such instruments in the Province of British Columbia, obliging bonding company to issue a performance bond and a labour and material payment bond, each naming the Owner as the Obligee, in the amounts and in the forms as follows:
 - .1 Performance Bond:
 1. Amount: 100% of the bid price
 2. Form: CCDC 221 Performance Bond
 - .2 Labour and material bond:
 1. Amount: 50% of the bid price
 2. Form: CCDC 222 Labour and Material Payment Bond
 - .2 The agreement to bond shall be valid for the Bid Acceptance Period.
3. Costs for bonds are included in the stipulated price bid.

1.8 THE BID ACCEPTANCE PERIOD

- .1 The Bid Acceptance Period is defined as a period of up to, and including, 60 days, commencing at the Bid Closing Time, during which all bids shall be irrevocable and open to acceptance by the Owner.
- .2 After bid closing and before expiry of the bid acceptance period stated in the Bid Form, the Owner may request all Bidders to agree to an extension of the originally specified bid acceptance period. In such case the bid acceptance period will be extended subject to the Bidder, whose bid the Owner wishes to accept, having agreed in writing to the extension.
- .3 Where the bidding procurement of construction services for this project has a method where unofficial bid results are made available publicly after the bid closing time, and before expiry of the bid acceptance period stated in the Bid Form, the Owner may request all Bidders to agree to an extension of the originally specified bid acceptance period. In such case, the bid acceptance period will be extended, subject to the lowest compliant Bidder having agreed in writing to the extension.

1.9 PRE-BID SITE VISIT

- .1 An optional site visit has been scheduled for:
 1. May 29th, 10:00am, Meet at Parksville Community Park on Beachside Dr. south of the volleyball courts.

1.10 COMPLETION TIME

- .1 Bidders shall state the completion time in the space provided in Section 00 41 13. The completion time shall be stated as the number of weeks within which the Bidder proposes to complete the Work from notification of conditional award of the Contract to the Bidder by the Owner. The completion time stated by the Bidder shall form the basis of the Contract Time.
- .2 Timing of the performance of the Work is a vital concern to the Owner. As a result, the completion time as set out by Bidders in Section 00 41 13 will be a factor that may be considered by the Owner in determining the most appropriate Bidder.

1.11 EXAMINATION OF THE BID DOCUMENTS AND THE PLACE OF WORK

- .1 It is the responsibility of the Bidder to examine the Bid Documents carefully and immediately upon receipt to verify that the set of Bid Documents that has been received by the Bidder is complete in all respects. Any omissions shall be brought to the attention of the Owner following the procedures prescribed in this section (above) for Bidder inquiries.
 1. No payments for extra work will be allowed where such extra work is the result of the Bidder using an incomplete set of Bid Documents in the preparation of their Bid.
- .2 Bidders shall examine the complete Bid Documents and shall also visit the Place of the Work and carefully examine conditions affecting the Place of the Work and work to be

done thereon.

- .3 It is the responsibility of the Bidder to make an estimate of the difficulties to be encountered in performing the Work. If investigative work is carried out at the Place of the Work by Bidders, Bidders undertaking such investigative work shall make good the Place of the Work to the condition that it was in before the investigation was made. The Bidder shall be responsible for damage and claims resulting from that investigation.
- .4 The levels and other information provided in the Bid Documents are furnished in good faith for the use and guidance of the Bidder in the preparation of their bid but shall in no way relieve the Bidder of the responsibility of ascertaining to their own satisfaction the nature of conditions existing at the Place of the Work.
- .5 No payments for extra work will be allowed for conditions known, knowable, or reasonably inferable from a thorough examination of the Bid Documents or the Place of the Work prior to the Bid Closing Time, nor for existing conditions noted in Section 00 31 00.

1.12 AVAILABILITY OF PRODUCTS

- .1 Products that are specified by their proprietary names or by part or catalogue number form the basis of the Contract. No substitutes for such Products may be used without Consultant's prior acceptance in writing.
- .2 Prior to submitting bid, Bidders shall review Product delivery requirements and anticipate foreseeable supply delays for any items. If delays in supply of Products are likely or possible, notify Consultant of such, in order that substitutions or other remedial action may be contemplated.
- .3 In the event of failure to notify the Consultant prior to submitting bid of potential delays in supply of Products, and should it subsequently appear that the Work may be delayed for such reason, the Consultant reserves the right to substitute more readily available Products of similar character, at the Contractor's cost and at no additional cost to the Owner.

1.13 BID FORM SUPPLIMENTS

- .1 The following bid form supplements form an integral part of Section 00 41 13:
 - .1 Section 00 43 22 Unit Price Bid Form Supplement
 - .2 Section 00 43 23 Alternative Prices Bid Form Supplement
 - .3 Section 00 43 36 List of Subcontractors Bid Form Supplement
- .2 Bid Form Supplements shall be submitted together with the Bid Form.
 1. Bid form supplements shall be signed, dated, on the same manner as Section 00 41 13.
 2. The requirements for completing bid form supplements, and the effect the bid form supplements will have in the evaluation of bids, shall be described hereunder.
 3. Section 00 43 22 Unit Price Bid Form Supplement:

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- .1 Bidders shall make an entry against each unit price listed.
 - .2 Unit prices include supply and installation, unless otherwise indicated, and are based on work indicated in the Bid Drawings.
 - .3 Unit prices shall be firm for the duration of the Work.
 - .4 Included in unit prices are materials, labour, equipment, delivery handling, statutory charges, overhead and profit, other related charges, and inclusive of all duties and taxes applicable, except Value Added Taxes, and similar charges on account of work, measured complete in place.
 - .5 Provide unit prices in given measurement only.
 - .6 Unit prices are not included in the bid price.
 - .7 Unit prices will be considered in determining the most appropriate Bidder.
4. Section 00 43 23 Alternate Prices Bid Form Supplement:
- .1 Bidders shall make an entry against each alternative price listed. The amount to be added to, or deducted from, the bid price shall be entered for each alternative requested.
 - .2 The alternative prices bid shall be inclusive of costs of carrying out the Work described in accordance with the applicable parts of the Contract Documents, and shall include the costs of all preparation, excavation, products, materials, labour, equipment, delivery, storage, handling, statutory charges, project management, overhead and profit, other related charges, and shall include all duties and taxes applicable, except Value Add Taxes, and all other charges on account of such work, measured complete in place for all parts of the Work affected by the alternative price.
 - .3 Alternatives and alternative prices shall be open for acceptance by the Owner for the duration of the Bid Acceptance Period.
 - .4 The Work of the Contract and the Contract Price will reflect the alternatives and alternative prices, if any, accepted by the Owner at the time of the Contract Award.
 - .5 Acceptance of any alternatives will not affect the Contract Time, unless Bidders have specifically indicated an increase or decrease in time, in number of days, on account of a particular alternative in their bid.
 - .6 The Owner shall have the right to accept any of the alternatives and corresponding alternative prices in any order or combination, including all or none.

.7 Alternative prices will be considered in determining the most appropriate Bidder.

5. Section 00 43 36 List of Subcontractors Bid Form Supplement:

.1 Bidders shall submit the names of Subcontractors and major Suppliers that they are proposing to use in the execution of the Work by making an entry in each space provided on the bid form supplement, including stating “by own force” (meaning under the direct employ of the Bidder) where applicable.

.2 In submitting Section 00 43 36, Bidders represent that the Subcontractors and major Suppliers listed in each meet or exceed the qualifications requirements specified in the Contract Documents pertaining to the parts of the Work for which they have been listed. Should it subsequently be found that a Subcontractor or major Supplier does not meet the qualification requirements specified in the Contract Documents pertaining to the parts of the Work for which the Subcontractor or major Supplier has been listed, the Contractor shall replace the unqualified Subcontractor or major Supplier with a qualified Subcontractor or major Supplier satisfactory to the Contractor and to the Owner, at no additional cost to the Owner and at no increase in the Contract Time.

.3 Once section 00 43 36 has been submitted in accordance with the requirements of Section 00 21 13, the Subcontractors and major Suppliers listed may not be changed except with the written consent of the Consultant and the Owner.

1.14 BIDDER’S PROPOSED ALTERNATES

.1 Submit bids for work only as indicated in the Bid Documents. Unsolicited alternatives may be proposed by Bidder during bid period. Submit proposals at least 10 Working Days prior to the Bid Closing Time to allow for review, and for incorporation into an addendum, if accepted.

.2 The Owner will not necessarily accept alternatives proposed by Bidder.

1.15 OWNER’S BUDGET

.1 The Owner reserves the right not to award the Contract should the bids received exceed the Owner’s budget for the Work.

1.16 BID ACCEPTANCE

1. The Owner, at is sole discretion, may accept or reject any or all of the Alternate

Prices submitted in the Bid Documents.

2. Alternative Prices listed in the Bid Documents will remain open for acceptance by the Owner for the period stated in the Bid Documents, from the time and date specified for closing of bids.
3. Bids which contain qualifying conditions or otherwise fail to conform to these Instructions to Bidders may, at the sole discretion of the Owner, be disqualified or rejected.
4. The Owner retains the separate right to waive minor irregularities in the Bid Form if such irregularities have not provided the Bidder with a competitive advantage.
5. In the event that a single bid is received, the Owner may open the bid privately without reference to the Bidder. If the bid is opened and it is in excess of the Owner's budget, the Owner reserves the right to re-issue the Bid Documents for new public re-bid without revisions being made to the Bid Documents and without disclosing the single Bid Price. The Owner reserves the right to accept or reject a single bid.
6. The Owner has the right to enter into over-budget negotiations with the lowest compliant Bidder if a single Bidder, without cancellation of all bids or consideration to other Bidders, and to require that Bidder to negotiate with Subcontractors named on their Bid Form.

1.17 AWARD OF THE CONTRACT

.1 Bid analysis and evaluation:

1. The Owner reserves the right to reject any or all bids, including without limitation the lowest bid, and to award the Contract to whomever the Owner in its sole and absolute discretion deems appropriate and in the best interests of the Owner notwithstanding any custom of the trade to the contrary.
2. The Owner, at its sole discretion, may accept or reject any or all of the Alternate Prices submitted in the Bid Documents.
3. Alternative Prices listed in the Bid Documents will remain open for acceptance by the Owner for the period stated in the Bid Documents, from the time and date specified for closing of bids.
4. Bids which contain qualifying conditions or otherwise fail to conform to these Instructions to Bidders may, at the sole discretion of the Owner, be disqualified or rejected.
5. The Owner retains the separate right to waive minor irregularities in the Bid Form

if such irregularities have not provided the Bidder with a competitive advantage.

6. In the event that a single bid is received, the Owner may open the bid privately without reference to the Bidder. If the bid is opened and it is in excess of the Owner's budget, the Owner reserves the right to re-issue the Bid Documents for new public re-bid without revisions being made to the Bid Documents and without disclosing the single Bid Price. The Owner reserves the right to accept or reject a single bid.
7. The Owner has the right to enter into over-budget negotiations with the lowest compliant Bidder if a single Bidder, without cancellation of all bids or consideration to other Bidders, and to require that Bidder to negotiate with Subcontractors named on their Bid Form.
8. The Owner reserves the right to include for consideration, and may award the Contract to a Bidder submitting, a bid that is substantially compliant with the terms and conditions of the Bid Documents. Bids that are non-compliant will not be considered by the Owner. Bids containing errors or omissions not listed under paragraph 1.17.9 will be declared substantially compliant.
9. Bids containing the following errors or omissions, in no particular order, will be declared non-compliant:
 - .1 Bid received after the Bid Closing Time (which bids will be returned unopened).
 - .2 Bid not received in hard copy at the location prescribed for the receipt of bids by the Bid Documents.
 - .3 Bid received by fax, by email, or by any other electronic means.
 - .4 Bid not submitted in sealed envelope (whether envelope was provided by Owner or by Bidder).
 - .5 Bid does not include bid bond in form and amount prescribed by the Bid Documents.
 - .6 Bid does not contain agreement to bond in form and amount prescribed by the Bid Documents.
 - .7 Bid where evidence of collusion, intent to defraud, or illegal practices on the part of a Bidder is presented or discovered.
 - .8 Bid has been qualified by any condition other than those prescribed by the Bid Documents.
 - .9 Section 00 41 13 Stipulated Price Bid Form is omitted or incomplete.

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- .10 Section 00 41 13 Stipulated Price Bid Form is not dated, unsigned, not sealed, improperly signed, improperly sealed, illegible, obscure, or contains erasures or alterations not called for.
 - .11 Section 00 41 13 Stipulated Price Bid Form does not contain acknowledgement of examination of all addenda issued.
 - .12 Section 00 43 22 Unit Prices Bid Form Supplement omitted or incomplete, not signed, or not dated.
 - .13 Section 00 43 23 Alternative Prices Bid Form Supplement omitted or incomplete, not signed, or not dated.
 - .14 Section 00 43 36 List of Subcontractors Bid Form Supplement incomplete, omitted, not signed, or not dated.
10. In determining the most appropriate bid, the criteria considered by the Owner will include, but will not be limited to, the following (in no particular order):
- .1 Bid price.
 - .2 Completion time (schedule).
 - .3 Unit prices.
 - .4 Alternative prices.
- .2 Contract Award:
- 1. Delivery by registered mail or common carrier, to the address given by the Bidder in its bid on Section 00 41 13, of notification of conditional award of the Contract to the Bidder by the Owner shall constitute acceptance of said bid and notice of award of the Contract by the Owner to the Bidder to the extent described by the notice of conditional award.
 - 2. It is intended that a Contract will be awarded within the Bid Acceptance Period. Contract Documents will be prepared for signature immediately following Contract award and are to be signed within 7 days of Contract award. Contractor's organization and mobilization at the Place of the Work may be permitted prior to signing of Contract.
 - 3. If Bidder has not been so notified within the Bid Acceptance Period, the Bidder may, unless Bidder has otherwise agreed or offered and except as otherwise provided herein, withdraw its bid without penalty, forfeiture, or obligation to the Owner or any kind.
 - 4. The Bidder accepts and agrees that, upon receipt of the notice of conditional award of Contract, the Bidder will comply with the conditions stipulated by the notice of

conditional award of Contract.

5. The Bidder accepts and agrees that, upon fulfillment to the satisfaction of the Owner of the above noted requirements, and any other conditions described by the notice of conditional award, the Owner will provide written authorization to the Bidder to commence the Work and that, upon receipt of such authorization, the Bidder will, within 10 Working Days, commence the Work actively at the Place of the Work.

1.18 EXECUTION OF THE BID

- .1 Execute the bid form in one of the following ways:
 1. Limited Company: Include the company's full name and the name(s) and status of the authorized signing officer(s) in the spaces provided for that purpose. Affix the signatures(s) of authorized officer(s) and date the Form; or
 2. Partnership: Print the partnership name and the name(s) of the person(s) signing in the spaces provided. Affix the signature of one or more of the authorized partners, who must sign in the presence of a witness who also must sign and date the Form; or
 3. Sole Proprietor: Print the business name and the name of the sole proprietor in the spaces provided. The sole proprietor must sign and date the Form in the presence of a witness who must also sign and date the Form.

1.19 BONDS AND INSURANCE

1. The Bidder shall submit to the Owner, within 7 days from the date of receipt of notice of conditional award of the Contract, the performance and labour and material payment bonds, each in the amounts and in the forms described above.
2. The Bidder shall submit to the Owner within 7 days from the date of receipt of notice of conditional award of the Contract, proof that it has in place the various types of insurance as required by the Contract.
3. Submission of the performance bond and labour and material payment bonds and proofs of the insurance shall be a condition of the award of the contract to the extend described in the notice of conditional award of the Contract referenced above.

END OF SECTION

1.1 BID FORM – STIPULATED PRICE

Project / Contract: Parksville Washroom and Site Improvements

Project / Contract No.: 5330-20-22-WASH

From (Bidder)

company name

street address or postal box number city/town

province and postal code

Bidders Ph.

Bidders Fax

Bidders Email

To (Owner): The City of Parksville

We, the undersigned, having examined the Bid Documents for the above named project / contract, including Addendum Number(s) _____, and being familiar with the site and existing conditions, hereby offer to perform the Work in accordance with the bid Documents, for the stipulated bid price of:

\$ _____
amount in writing in Canadian Dollars, excluding Value Added Taxes

\$ _____ in Canadian dollars, excluding Value Added Taxes
amount in figures

We, the undersigned, declare that:

Schedule:

- .1 We agree to attain *Ready-For-takeover* within _____ weeks after receiving notice of contract award. The contract time is identified by the Owner based on the rational included in Part 1.3 Project Specific Amendments. The date of the contract award will be

- the date the letter of award is sent to the bidder.
- .2 We have arrived at this bid without collusion with any competitor,
 - .3 This bid is open to acceptance by the Owner for a period of 60 days from the date of bid closing, and
 - .4 All bid form supplements called for by the Bid Documents form an integral part of this bid.

1.2 SIGNATURES

- .1 Signed and submitted by:

legal company name

name and title of authorized signing officer

signature of authorized signing officer

name of witness

signature of witness

name and title of authorized signing officer

signature of authorized signing officer

name of witness

signature of witness

Dated this _____ day of _____, 20_____.

Bid Modification

(To be used where required)

Project / Contract: Parksville Washroom and Site Improvements

Project / Contract No.: 5330-20-22-WASH

From (Bidder)

company name

Bidder Signature

signature

Dated this _____ day of _____, 20_____.

Submitted by:

Physical Address:

WE HEREBY MODIFY OUR BID PRICE AS FOLLOWS:

	To previously submitted bid price	From previously submitted bid price
	ADD	SUBTRACT
Modification to bid price (in figures)	\$	\$
Modification to bid price (in writing)		

These prices do not include value added taxes.

Other amendments including issued addendum number(s) are (or for reference and include by attachment).

Amendment to Schedule

If applicable, the amended change in time from the original bid is:

Add _____calendar days / weeks; Subtract _____ calendar days / weeks.
Bidders are to cross out which does not apply, days or weeks.

Supplemental Bid Forms

If changes are required to the Supplemental Bid Forms they must be submitted on new submission forms. Where applicable, the prices are completely new prices as per Division 00 21 13 Instruction to Bidders.

legal company name

name and title of authorized signing officer

signature of authorized signing officer

Telephone

email

Project / Contract: Parksville Washroom and Site Improvements

Project / Contract No.: 5330-20-22-WASH

From (Bidder)

company name

Bidder Signature

signature

Dated this _____ day of _____, 20_____.

The following are our Unit Prices for the units of work listed hereunder. The unit prices listed apply to performing the units of work only during the Contract Time.

The below unit price(s) are intended for adjustment to the quantities, after contract award and as specified in the contract documents.

These prices do NOT include Value Added Taxes.

<u>Item #</u>	<u>Unit of Work</u>	<u>Unit</u>	<u>Unit Price (\$)</u>	
			<u>Unit cost for additions</u>	<u>Unit costs for deletions</u>
1	Over excavation of native material by 150mm if sub-base is not suitable for pavers and gravel surfacing	m ²		
2	Supply and install of 150mm depth - 75mm minus pit run	m ²		
3	Supply and install of assembly P2 – pedestrian pavers on sub-grade	m ²		
4	Supply and install of assembly P3 – pedestrian pavers on concrete mud-slab	m ²		
5	Supply and install of assembly P5 - vehicular pavers 2 on subgrade	m ²		
6	Supply and install of assembly G1 – gravel pathway	m ²		
7	Supply and install of assembly C2 – Pedestrian grade concrete on subgrade	m ²		

8	Supply and install of assembly S1 - sod	m ²
9	Supply and install of assembly S2 – top soil	m ³
10	Supply and install of assembly S3 – top soil	m ³
11	Supply and install of outdoor showers	ea
12	Supply and install of irrigation realignments and additional coverage for all tree and shrub beds	ls
13	Supply and install of 50mm depth bark mulch	m ²
14	Supply and install deciduous 50mm cal tree	ea
15	Supply and install deciduous 75mm cal tree	ea
16	Supply and install shrubs, #2 pot	ea
17	Supply and install perennials / grasses 15cm pot	ea
18	Exterior landscape maintenance	monthly
19	Supply and install of wall assembly W1	m ²
20	Supply and install of wall assembly W2	m ²
21	Supply and install of wall assembly W3	m ²
22	Ceiling below attic Opt 1	m ²
23	Ceiling below attic Opt 2	m ²
24	Ceiling below attic Opt 3	m ²
25	Over excavation and placement of approved granular material for roadworks	tonne

26	Approved Granular Material (import fill)	tonne
26	Non mountable curb (without gutter) as per CoP standards	lm
27	Concrete sidewalk as per CoP details	lm
28	1200 dia. Drywell as per CoP dwg no. D18 & D19	ea
29	600mm dia. Barrel on shower drain line c/w/ min. 450mm sump	ea
30	Asphalt paving	m ²
31	Concrete 200 width x 325 ht concrete header	lm
32	Bollard, embedded	ea

Project / Contract: Parksville Washroom and Site Improvements

Project / Contract No.: 5330-20-22-WASH

From (Bidder)

company name

Bidder Signature

signature

Dated this _____ day of _____, 20_____.

We, the above named Bidder, offer the alternative prices requested below. The Amount to be added to, deducted from, our bid price (as entered in Section 00 41 13, previously submitted) is entered for each alternative requested. All alternative prices exclude Value Added Taxes. If there is no change to the base bid price for an alternate, we have so indicated. We understand, agree, and accept that:

- .1 The Owner shall have the right to accept any of the alternatives and corresponding alternative prices in any order of combination, including all or none,
- .2 Alternative prices will be considered in determining the most appropriate bidder in accordance with the rules governing bid analysis given under Section 00 21 13,
- .3 Alternatives and alternative prices are open for acceptance by the Owner for the duration of the Bid Acceptance Period.
- .4 The Work of the Contract and the Contract Price will reflect the alternatives and alternative prices, if any, accepted by the Owner at the time of contract award, and
- .5 Acceptance of any alternatives will not affect the Contract Time, unless we have specifically indicated an increase or decrease in the Contract Time, in number of days, on account of a particular alternative.

<u>Alternative Item #</u>	<u>Description of Alternative</u>	<u>Amount to be added to bid price and / or contract time</u>	<u>Amount to be deducted to bid price and / or contract time</u>
1	Delete fountain from the Work.		
2	Delete fabric form concrete wall from the Work.		
3	Delete concrete benches from the Work.		

4	Delete shade umbrellas from the Work.
5	Delete 1 outdoor shower from the Work
6	Delete 3/4" finished fir plywood, good one side and 3/4 strapping from wall assemblies W2 and W3 from the Work
7	Replace powder coated metal overhead bracketed washroom partition with un-coated un-finished stock panels / partitions for washroom stalls from the Work
8	Delete concrete post and rail fence along north side of volleyball courts from the Work
9	Delete two (2) raised crossings, yellow tactile warnings, and pedestrian signage from the Work
10	Delete concrete sidewalk extension on south side of Salish Sea Drive from the Work
11	Delete powder coated metal life size bathroom icons from the Work

Project / Contract: Parksville Washroom and Site Improvements

Project / Contract No.: 5330-20-22-WASH

From (Bidder)

company name

Bidder Signature

signature

Dated this _____ day of _____, 20_____.

The Owner has specified below the subcontractors that are required to be named by the Bidder.

We, the above-named Bidder, intent to use for the above -named project the Subcontractors named below:

<u>Item #</u>	<u>Item of Work</u>	<u>Name of Subcontractor</u>
1	Fabric Formed Concrete	Earthhouse Contact: Tony Johnson Tel: 250.888.3684 Email – tony@earthhouseholdings.com
2	Mechanical Design	
3	Electrical Design	
4	Site Work	
5	Building Construction	

Part 1 General

1.1 WORK COVERED BY CONTRACT DOCUMENTS

- .1 Work of this Contract comprises general construction of washroom facility and general site improvements, located at 193 Island Highway East; and further identified as The Parksville Community Park.

1.2 CONTRACT METHOD

- .1 Construct Work under stipulated price contract.

1.3 SUBMITTALS

- .1 Submit in accordance with Section 01 33 00 - Submittal Procedures.
- .2 Submit Project Construction Progress Schedule in accordance with Section 01 32 16.19 Construction Progress Schedule – Bar (GANT) Chart.
- .3 Submit site-specific and Work Plan Health and Safety Plan in accordance with Section 01 35 29.06 - Health and Safety Requirements.

1.4 WORK BY OTHERS

- .1 Co-operate with other Contractors in carrying out their respective works and carry out instructions from Consultant.
- .2 Co-ordinate work with other contractors. If any part of work under this Contract depends for its proper execution or result upon work of another contractor, report promptly to Consultant, in writing, any defects which may interfere with proper execution of Work.
- .3 Verify work of Project executed before start of Work of this Contract, and which is specifically excluded from this Contract:
 - .1 Installation of electrical site infrastructure including kiosk, conduit and wiring, junction box, receptacles, and data infrastructure.
 - .2 Installation of hose bib.

1.5 FUTURE WORK

- .1 Work of this Project shall include provisions for co-ordinating related work, identified in Contract Documents, for the following principal items:
 - .1 Electrical conduit and wiring
 - .2 Water hose bib

1.6 CONTRACTOR USE OF PREMISES

- .1 Limit use of premises for Work, and for access, to allow:
 - .1 Work by other contractors.
- .2 Co-ordinate use of premises under direction of Consultant and Owner.
- .3 Obtain and pay for use of additional storage or work areas needed for operations under this Contract.

- .4 Refer to Section 01 51 00 - Temporary Utilities, Section 01 52 00 - Construction Facilities and Section 01 56 00 - Temporary Barriers and Enclosures, for temporary facilities, access roads and parking areas, traffic regulations, and utilities.
- .5 Remove or alter existing work to prevent injury or damage to portions of existing work which remain.
- .6 Repair or replace portions of existing work which have been altered during construction operations to match existing or adjoining work, as directed by Consultant, at no cost to the Owner.
- .7 Ensure that operations conditions of exiting work at completion are still the same, equal to or better than that which existed before new work started.

1.7 OWNER OCCUPANCY

- .1 Co-operate with Owner in scheduling operations to minimize conflict and to facilitate Owner usage.

1.8 OWNER FURNISHED ITEMS

- .1 Owner Responsibilities:
 - .1 Arrange for delivery of shop drawings, product data, samples, manufacturer's instructions, and certificates to Contractor.
 - .2 Deliver supplier's bill of materials to Contractor.
 - .3 Arrange for delivery to site in accordance with Progress Schedule.
 - .4 Inspect deliveries jointly with Contractor.
 - .5 Submit claims for transportation damage.
 - .6 Arrange for replacement of damaged, defective or missing items.
 - .7 Arrange for manufacturer's field services; arrange for and deliver manufacturer's warranties and bonds to Contractor.
- .2 Contractor Responsibilities:
 - .1 Designate submittals and delivery date for each product in progress schedule.
 - .2 Review shop drawings, product data, samples, and other submittals. Submit to Consultant notification of observed discrepancies or problems anticipated due to non-conformance with Contract Documents.
 - .3 Receive and unload products on Site.
 - .4 Inspect deliveries jointly with Owner; record shortages, and damaged or defective items.
 - .5 Handle products on Site, including uncrating and storage.
 - .6 Protect products from damage, and from exposure to elements.
 - .7 Assemble, install, connect, adjust, and finish products.
 - .8 Provide installation inspections required by public authorities.
 - .9 Repair or replace items damaged by Contractor or subcontractor on site (under his control).
- .3 Schedule of Owner furnished items:
 - .1 Bollards

.2 Garbage Cans

1.9 EXISTING SERVICES

- .1 Notify, Consultant, Owner and utility companies of intended interruption of services and obtain required permission.
- .2 Where Work involves breaking into or connecting to existing services, give Consultant 48 hours notice for necessary interruption of mechanical or electrical service throughout course of work. Minimize duration of interruptions. Carry out work at times as directed by governing authorities with minimum disturbance to pedestrian, and vehicular traffic.
- .3 Provide alternative routes for pedestrian and vehicular traffic.
- .4 Establish location and extent of service lines in area of work before starting Work. Notify Consultant of findings.
- .5 Submit schedule for approval by Consultant for any shut-down or closure of active service or facility including power and communications services. Adhere to approved schedule and provide notice to affected parties.
- .6 Provide adequate bridging over trenches which cross sidewalks or roads to permit normal traffic.
- .7 Where unknown services are encountered, immediately advise Consultant and confirm findings in writing.
- .8 Protect, relocate or maintain existing active services. When inactive services are encountered, cap off in manner approved by authorities having jurisdiction.
- .9 Record locations of maintained, re-routed and abandoned service lines.
- .10 Construct barriers, as required, in accordance with Section 01 56 00 - Temporary Barriers and Enclosures.

1.10 DOCUMENTS REQUIRED

- .1 Maintain at job site, one copy of each document as follows:
 - .1 Contract Drawings.
 - .2 Specifications.
 - .3 Addenda.
 - .4 Reviewed Shop Drawings.
 - .5 List of Outstanding Shop Drawings.
 - .6 Change Orders.
 - .7 Other Modifications to Contract.
 - .8 Field Test Reports.
 - .9 Copy of Approved Work Schedule.
 - .10 Health and Safety Plan and Other Safety Related Documents.
 - .11 Other documents as specified.

Part 2 Products

2.1 NOT USED

.1 Not used.

Part 3 Execution

3.1 NOT USED

.1 Not used.

END OF SECTION

Part 1 General

1.1 ACCESS AND EGRESS

- .1 Design, construct and maintain temporary "access to" and "egress from" work areas, including stairs, runways, ramps or ladders and scaffolding, independent of finished surfaces and in accordance with relevant municipal, provincial and other regulations.

1.2 USE OF SITE AND FACILITIES

- .1 Execute work with least possible interference or disturbance to normal use of premises. Make arrangements with Departmental Representative and Consultant to facilitate work as stated.
- .2 Where security is reduced by work provide temporary means to maintain security.
- .3 The Contractor shall provide sanitary facilities for use by Contractor's personnel. Keep facilities clean.
- .4 Closures: protect work temporarily until permanent enclosures are completed.

1.3 EXISTING SERVICES

- .1 Notify, Departmental Representative and Consultant and utility companies of intended interruption of services and obtain required permission.
- .2 Where Work involves breaking into or connecting to existing services, give Departmental Representative Consultant 48 hours of notice for necessary interruption of mechanical or electrical service throughout course of work. Keep duration of interruptions minimum. Carry out interruptions after normal working hours of occupants, preferably on weekends.
- .3 Provide for pedestrian and vehicular traffic.
- .4 Construct barriers in accordance with Section 01 56 00 - Temporary Barriers and Enclosures.

1.4 SPECIAL REQUIREMENTS

- .1 Ensure Contractor's personnel employed on site become familiar with and obey regulations including safety, fire, traffic and security regulations.
- .2 Keep within limits of work and avenues of ingress and egress.

1.5 SECURITY

- .1 Where security has been reduced by Work of Contract, provide temporary means to maintain security.

Part 2 Products

2.1 NOT USED

- .1 Not Used.

Part 3 Execution

3.1 NOT USED

.1 Not Used.

END OF SECTION

Part 1 General

1.1 REFERENCE STANDARDS

- .1 City of Parksville Engineering Standards and Specifications, Current Edition
- .2 Canadian Construction Documents Committee (CCDC) 2 2020 – Stipulated Price Contract.

1.2 CONSTRUCTION SITE

- .1 The Owner will provide the land upon which the work is to be constructed.

1.3 CONTRACTOR’S USE OF THE SITE

- .1 Use of the site is restricted to those areas shown on the plans or approved by the Consultant.
- .2 The Contractor shall have use of the site, provided that the Contractor shall permit access to the Owner, the Contract Administrator and other Contractor’s on the site for purposes of inspections, reviews, tests and carrying out work related to the work.
- .3 Contractor’s use of the site for storage and for executing the work is subject to the approval of the Owner. Contractor shall provide site plan mark up for approval by the Contract Administrator indicating construction laydown area for materials on site.
- .4 The Contractor shall not unreasonably encumber the site with material or equipment.
- .5 The Contractor shall obtain and pay for the use of additional storage or work areas needed for operations.
- .6 The Contractor shall maintain/provide access to all residential and commercial property adjacent to the work at all times, and shall confine activities relevant to the work to areas within the designated working area. No fires are permitted on the site.
- .7 The Contractor shall conduct construction operations with minimum interference to adjacent roadways, sidewalks and access facilities in general, and shall keep such areas free from materials, debris and equipment at all times.

Part 2 Products

2.1 NOT USED

- .1 Not Used.

Part 3 Execution

3.1 NOT USED

- .1 Not Used.

END OF SECTION

Part 1 General

1.1 ADMINISTRATIVE

- .1 Schedule and administer project meetings throughout the progress of the work at the call of the Consultant.
- .2 Prepare agenda for meetings.
- .3 Distribute written notice of each meeting four days in advance of meeting date to Consultant and Owner.
- .4 Provide physical space and make arrangements for meetings.
- .5 Preside at meetings.
- .6 Record the meeting minutes. Include significant proceedings and decisions. Identify actions by parties.
- .7 Reproduce and distribute copies of minutes within three days after meetings and transmit to meeting participants and, affected parties not in attendance, Departmental Representative and Consultant.
- .8 Representative of Contractor, Subcontractor and suppliers attending meetings will be qualified and authorized to act on behalf of party each represents.

1.2 PRECONSTRUCTION MEETING

- .1 Within 10 days after award of Contract, request a meeting of parties in contract to discuss and resolve administrative procedures and responsibilities.
- .2 Senior representatives of Departmental Representative Consultant, Contractor, major Subcontractors, field inspectors and supervisors will be in attendance.
- .3 Establish time and location of meeting and notify parties concerned minimum 5 days before meeting.
- .4 Incorporate mutually agreed variations to Contract Documents into Agreement, prior to signing.
- .5 Agenda to include:
 - .1 Appointment of official representative of participants in the Work.
 - .2 Schedule of Work: Construction Progress Schedule - Bar (GANTT) Chart.
 - .3 Schedule of submission of shop drawings, samples, colour chips. Submit submittals in accordance with Section 01 33 00 - Submittal Procedures.
 - .4 Requirements for temporary facilities, site sign, offices, storage sheds, utilities, fences in accordance with Section 01 52 00 - Construction Facilities.
 - .5 Site security in accordance with Section 01 56 00 - Temporary Barriers and Enclosures.
 - .6 Proposed changes, change orders, procedures, approvals required, mark-up percentages permitted, time extensions, overtime, administrative requirements.
 - .7 Owner provided products.
 - .8 Record drawings in accordance with Section 01 33 00 - Submittal Procedures.

- .9 Maintenance manuals in accordance with Section 01 78 00 - Closeout Submittals.
- .10 Take-over procedures, acceptance, warranties in accordance with Section 01 78 00 - Closeout Submittals.
- .11 Monthly progress claims, administrative procedures, photographs, hold backs.
- .12 Appointment of inspection and testing agencies or firms.
- .13 Insurances, transcript of policies.

1.3 PROGRESS MEETINGS

- .1 During course of Work schedule progress meetings weekly.
- .2 Contractor, major Subcontractors involved in Work and Departmental Representative Consultant and Owner are to be in attendance.
- .3 Notify parties minimum five days prior to meetings.
- .4 Record minutes of meetings and circulate to attending parties and affected parties not in attendance within three days after meeting.
- .5 Agenda to include the following:
 - .1 Review, approval of minutes of previous meeting.
 - .2 Review of Work progress since previous meeting.
 - .3 Field observations, problems, conflicts.
 - .4 Problems which impede construction schedule.
 - .5 Review of off-site fabrication delivery schedules.
 - .6 Corrective measures and procedures to regain projected schedule.
 - .7 Revision to construction schedule.
 - .8 Progress schedule, during succeeding work period.
 - .9 Review submittal schedules: expedite as required.
 - .10 Maintenance of quality standards.
 - .11 Review proposed changes for affect on construction schedule and on completion date.
 - .12 Other business.

Part 2 Products

2.1 NOT USED

- .1 Not Used.

Part 3 Execution

3.1 NOT USED

- .1 Not Used.

END OF SECTION

Approved: 2009-12-31

Part 1 General

1.1 ADMINISTRATIVE REQUIREMENTS

- .1 Submit to Consultant submittals listed for review. Submit promptly and in orderly sequence to not cause delay in Work. Failure to submit in ample time is not considered sufficient reason for extension of Contract Time and no claim for extension by reason of such default will be allowed.
- .2 Do not proceed with Work affected by submittal 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 before 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 considered rejected.
- .6 Notify Consultant, in writing at time of submission, identifying deviations from requirements of Contract Documents stating reasons for deviations.
- .7 Verify site 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 Contractor's responsibility for deviations in submission from requirements of Contract Documents is not relieved by Consultant review.
- .10 Keep one reviewed copy of each submission on site.

1.2 SHOP DRAWINGS AND PRODUCT DATA

- .1 Refer to CCDC 2 GC 3.8. and
- .2 Submit drawings stamped and signed by professional engineer registered or licensed in British Columbia, Canada.
- .3 Indicate materials, methods of construction and attachment or anchorage, erection diagrams, connections, explanatory notes and other information necessary for completion of Work. Where articles or equipment attach or connect to other articles or equipment, indicate that such items have been coordinated, regardless of Section under which adjacent items will be supplied and installed. Indicate cross references to Contract drawings and specifications.
- .4 Allow 10 days for Consultant's review of each submission.
- .5 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 before to proceeding with Work.

- .6 Make changes in shop drawings as Consultant may require, consistent with Contract Documents. When resubmitting, notify Consultant in writing of revisions other than those requested.
- .7 Accompany submissions with transmittal letter, containing:
 - .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.
- .8 Submissions to include:
 - .1 Date and revision dates.
 - .2 Project title and number.
 - .3 Name and address of:
 - .1 Subcontractor.
 - .2 Supplier.
 - .3 Manufacturer.
 - .4 Contractor's stamp, signed by Contractor's authorized representative certifying approval of submissions, verification of site measurements and compliance with Contract Documents.
 - .5 Details of appropriate portions of Work as applicable:
 - .1 Fabrication.
 - .2 Layout, showing dimensions, including identified site 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.
- .9 After Consultant's review, distribute copies.
- .10 Submit electronic copy of shop drawings for each requirement requested in specification Sections and as Consultant may reasonably request.
- .11 Submit electronic copies 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 manufacture of product.
- .12 Submit electronic copies of test reports for requirements requested in specification Sections and as requested by Consultant.

- .1 Report signed by authorized official of testing laboratory that material, product or system identical to material, product or system to be provided has been tested in accord with specified requirements.
- .2 Testing must have been within 3 years of date of Contract award for project.
- .13 Submit electronic copies of certificates for requirements requested in specification Sections and as requested by Consultant.
 - .1 Statements printed on manufacturer's letterhead and signed by responsible officials of manufacturer of product, system or material attesting that product, system or material meets specification requirements.
 - .2 Certificates must be dated after award of Contract complete with project name.
- .14 Submit electronic copies of manufacturers instructions for requirements requested in specification Sections and as requested by Consultant.
 - .1 Pre-printed material describing installation of product, system or material, including special notices and Safety Data Sheets concerning impedances, hazards and safety precautions.
- .15 Submit electronic copies of Manufacturer's Site Reports for requirements requested in specification Sections and as requested by Consultant.
- .16 Documentation of the testing and verification actions taken by manufacturer's representative to confirm compliance with manufacturer's standards or instructions.
- .17 Submit electronic copies of Operation and Maintenance Data for requirements requested in specification Sections and as requested by Consultant.
- .18 Delete information not applicable to project.
- .19 Supplement standard information to provide details applicable to project.
- .20 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, through same procedure indicated above, must be performed before fabrication and installation of Work may proceed.

1.3 SAMPLES

- .1 Submit for review samples in duplicate as requested in respective specification Sections. Label samples with origin and intended use.
- .2 Deliver samples prepaid to site office.
- .3 Notify Consultant in writing, at time of submission of deviations in samples from requirements of Contract Documents.
- .4 Where colour, pattern or texture is criterion, submit full range of samples.
- .5 Adjustments made on samples by Consultant are not intended to change Contract Price. If adjustments affect value of Work, state such in writing to Consultant before proceeding with Work.
- .6 Make changes in samples which Consultant may require, consistent with Contract Documents.

- .7 Reviewed and accepted samples will become standard of workmanship and material against which installed Work will be verified.

1.4 MOCK-UPS

- .1 Erect mock-ups in accordance with Section 01 43 00 - Quality Assurance.

1.5 PHOTOGRAPHIC DOCUMENTATION

- .1 Submit electronic copy of colour digital photography in jpg format, standard resolution, monthly with progress statement and as directed by Consultant.
- .2 Project identification: name and number of project and date of exposure indicated.
- .3 Number of viewpoints: [] locations.
 - .1 Viewpoints and their location as determined by Consultant.
- .4 Frequency of photographic documentation: weekly and as directed by Consultant.
 - .1 Upon completion of: excavation, foundation, framing and services before concealment, of Work, and Consultant.

1.6 CERTIFICATES AND TRANSCRIPTS

- .1 Immediately after award of Contract, submit Workers' Compensation Board status.
- .2 Submit transcription of insurance immediately after award of Contract.

Part 2 Products

2.1 NOT USED

- .1 Not Used.

Part 3 Execution

3.1 NOT USED

- .1 Not Used.

END OF SECTION

Part 1 General

1.1 SUMMARY

- .1 This Section describes recommendations and requirements sourced from federal, provincial, and municipal public health authorities and Canadian construction associations to maintain a safer construction site.
- .2 Due to the rapidly changing nature of viral pandemics, if a conflict occurs between this Section and public health authority health measures or other government public health orders, give higher priority to public health authority recommendations and requirements.

1.2 ABBREVIATIONS AND ACRONYMS

- .1 PHAC: Public Health Agency of Canada
- .2 PPE: Personal Protection Equipment

1.3 DEFINITIONS

- .1 COVID-19: Coronavirus disease 2019 is a contagious disease caused by severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2)
- .2 Disinfectants (hard surface): An agent capable of destroying pathogenic microorganisms or inhibiting their growth.
- .3 Hand Sanitizer: Alcohol-based hand sanitizer containing at least 60% alcohol.
- .4 Isolate: A specific series of actions as determined by the public health authority. These procedures are different from quarantine. <linkref rid="https://www.canada.ca/en/public-health/services/diseases/2019-novel-coronavirus-infection/prevention-risks.html#self" xmlns="NMS">https://www.canada.ca/en/public-health/services/diseases/2019-novel-coronavirus-infection/prevention-risks.html#self</linkref>
- .5 Physical Distancing: Maintaining 2 m physical distance between persons.
- .6 Quarantine: A specific series of actions as determined by the public health authority. These procedures are different from isolate. <linkref rid="https://www.canada.ca/en/public-health/services/diseases/2019-novel-coronavirus-infection/prevention-risks.html#self" xmlns="NMS">https://www.canada.ca/en/public-health/services/diseases/2019-novel-coronavirus-infection/prevention-risks.html#self</linkref>
- .7 Surface Sanitizer: A substance, or mixture of substances, that reduces the population of infectious agents on environmental inanimate surfaces and objects. Surface sanitizers are not as effective as hard-surface disinfectants.

1.4 REFERENCE STANDARDS

- .1 Government of Canada:
 - .1 Medical Devices Regulations, SOR/98-282
- .2 Province of British Columbia:
 - .1 Workers Compensation Act, Occupational Health and Safety Regulation, [2021]

- .3 Canada Labour Code
 - .1 Canada Occupational Health and Safety and Regulations, [2021]

1.5 ACCESS TO SITE

- .1 Before allowing access to site, perform screening of persons to confirm the following:
 - .1 They have not travelled outside of Canada within the past [14] days.
 - .2 To the best of their knowledge, they have not been in contact with someone with a confirmed or probable case of COVID-19.
 - .3 They have not recently worked on a different construction site that was shut down due to COVID-19.
 - .4 They are not currently exhibiting flu-like symptoms (such as cough, fever, shortness of breath, runny nose, or sore throat).
 - .5 Check person's temperature with temperature measuring device.
- .2 Discourage persons from entering the Project site who are at an increased risk of developing a serious response to COVID-19, such as:
 - .1 older adults
 - .2 persons with underlying medical conditions
 - .3 persons with compromised immune systems
- .3 Responses and results of screening measures, whether a person is permitted on site or not, is considered private and sensitive medical information.
- .4 If a person arrives at the Project site but is suspected of having COVID-19, prohibit them from entering the site. Recommend they go directly back home or other location for isolation. When a person is unable to safely transport themselves, arrange a vehicle and driver.
- .5 When transporting a potentially ill person, both driver and passenger must wear masks and nitrile gloves. Seat passenger in the backseat. Driver shall open and close doors to minimize touch points.

1.6 ADMINISTRATIVE REQUIREMENTS

- .1 Comply with COVID-19 restrictions requirements from applicable federal, provincial, and local statutes, regulations, and ordinances.
- .2 Be responsible for implementing, monitoring, and enforcing daily site-specific COVID-19 Safety Plan.
- .3 Give precedence to safety and health of persons on site over cost and schedule considerations.
- .4 Personal Protective Equipment: Verify that safety equipment and protective clothing is kept clean and maintained in good condition.
- .5 Develop protective equipment usage procedures and ensure that procedures are followed by persons on site; include the following procedures at a minimum:
 - .1 Dispose of or disinfect PPE worn on site at end of each shift.
 - .2 Disinfect reusable PPE before reissuing.

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- .3 Ensure appropriate PPE is worn properly during work activities.
 - .6 Verify persons understand the proper use of PPE or educate persons on their proper use.
 - .1 Proper fitting of mask straps.
 - .2 Fit check persons for PPE each time PPE is worn.
 - .3 For flat fold respirators make sure panels are fully unfolded.
 - .4 Mask noseclip moulded around the nose and cheeks to give a good seal. Using both hands, mould noseclip to the shape of the lower part of the nose to ensure a close fit and effective seal. Check for air leaks around nose and at mask edges.
 - .7 Helpful literature on effective use of masks is available from Canadian Centre for Occupational Health and Safety. English: <linkref rid="https://www.ccohs.ca/images/products/pandemiccovid19/pdf/masks-2.pdf " xmlns="NMS">https://www.ccohs.ca/covid19/facts-on-masks/</linkref>
 - .8 Where practical, persons to work remotely.
 - .9 Maintain physical distancing measures.
 - .10 Reorganize workflow when possible.
 - .11 When minimum physical distancing cannot be maintained, wear masks, face coverings, and face shields.
 - .12 Communicate Contractor's COVID-19 Safety Plan to Subcontractors and other persons on site. Post COVID-19 Safety Plan at the Place of the Work, including near site entrance(s).
 - .13 Subcontractors and other persons to comply with the following practices to reduce the risk of COVID-19 transmission as identified by the Public Health Agency of Canada (PHAC), Health Canada, and US Centers for Disease Control and Prevention:
 - .1 Avoid touching eyes, nose, and mouth with unwashed hands
 - .2 When coughing or sneezing:
 - .1 Cough or sneeze into a tissue or the bend of your arm. Do not cough or sneeze into your hand.
 - .2 Dispose of used tissues as soon as possible into a lined waste container. Wash your hands afterwards.
 - .3 Non-medical face-coverings should be worn as a potential mitigant to catching and transmitting the virus, but are not a substitute for proper handwashing, physical distancing, and other protective measures. Do not wear a mask when it will put a person at safety risk (e.g. when it may get caught in machinery). Use face-coverings in line with the PHAC guidelines. <linkref rid="https://www.canada.ca/en/public-health/services/diseases/2019-novel-coronavirus-infection/prevention-risks/about-non-medical-masks-face-coverings.html" xmlns="NMS">https://www.canada.ca/en/public-health/services/diseases/2019-novel-coronavirus-infection/prevention-risks/about-non-medical-masks-face-coverings.html</linkref>
 - .14 Do not share personal items or supplies, such as phones, pens, notebooks, tools, and PPE.
 - .15 Use and remove PPE carefully. Be mindful of which PPE surfaces may be contaminated. Wash hands after handling used PPE.

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- .16 Wash hands often with soap and water for at least 20 seconds after using the washroom, before handling food, after blowing nose, after coughing, after sneezing, and before smoking. If hands are not visibly soiled and soap/water are unavailable, use hand sanitizer instead.
 - .17 Travel:
 - .1 Travel to and from Project site:
 - .1 Non-essential persons are not permitted access to the Project site.
 - .2 When possible, travel to Project site using one person per vehicle. Carpooling is discouraged. Arrange for additional temporary site parking as required.
 - .3 When possible, at the end of a person's shift, change out of work clothes before entering vehicle. Handle work clothes carefully and wash upon arriving home.
 - .4 Monitor persons entering and exiting the Project site, and control entrances to ensure physical distancing is maintained, especially when shifts begin and end.
 - .5 When practical, stagger person's shift start and end times in five-minute intervals to encourage physical distancing.
 - .2 Business-Related Travel:
 - .1 Avoid non-essential business travel. Limit business travel and on an exceptional basis only.
 - .2 When returning from out-of-country travel, undergo a 14-day self-isolation period.
 - .3 Some provincial governments impose similar restrictions for inter-provincial travel. Where occurring, comply with provincial requirements for self-isolation.
 - .4 <https://travel.gc.ca/travel-covid>

1.7 COORDINATION

- .1 Site Coordination:
 - .1 Locate temporary facilities to avoid overcrowding of high-traffic areas and maintain physical distancing.
 - .2 Encourage Subcontractors to propose split or alternating shifts to avoid density of persons. Encourage Subcontractors to work in multiple shifts, with time gaps between shifts.
 - .3 Assign vehicles, equipment, and tools to a single person, or to the minimum number of persons required for safe use.
- .2 Close-Proximity Activities:
 - .1 Ensure persons maintain physical distancing [in all situations]. Where this is not possible due to task-specific safety risks, perform a risk assessment to identify alternative controls to protect persons' health and safety. This might include methods to minimize the duration, adjust proximity to the task, use of physical controls (such as clear plastic barriers), and PPE.

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- .2 Maintain a record of tasks requiring close-proximity activities, including the task-specific safety risks that justify close-proximity and the control measures implemented to protect persons from the risk of infection. Review record regularly to consider if additional safety measures can be implemented.

1.8 MEETINGS

- .1 COVID-19 Safety Meetings: Conduct mandatory COVID-19 safety meetings, and review ongoing safety issues. Include refresher safety meetings if COVID-19 Safety Plan is revised.
- .2 Project Meetings:
 - .1 Hold meetings by teleconferencing or videoconferencing where possible.
 - .2 Avoid common physical greetings, such as handshakes.
 - .3 Arrange furniture to maintain physical distancing.
 - .4 Minimize number of in-person meetings. If required, meetings should involve only necessary individuals and include six people or fewer. When possible hold meetings in open spaces. If required, hold 'Toolbox Talks' and similar meetings in multiple sessions to maintain physical distancing.

1.9 SEQUENCING AND SCHEDULING

- .1 Scheduling:
 - .1 Schedule work to avoid crossover of persons between different crews.
 - .2 Stagger Subcontractors' break and lunch schedules to encourage physical distancing. Make enclosed lunchrooms available only during poor weather.
 - .3 Adjust persons' schedules to allow time for proper cleaning and disinfecting.
- .2 Record and monitor the health status of Subcontractors and other persons on-site:
 - .1 Perform detailed monitoring of persons' status on-site.
 - .2 Keep records of persons' health status off site (e.g., whether they are healthy, sick, not working due to caring for family, or other applicable categories). Maintain a current list of quarantined persons and isolating persons. Comply with privacy legislation.
 - .3 Keep records of which persons work closely together and dates.

1.10 RESPONSE MEASURES

- .1 Persons potentially exposed to COVID-19, or who are exhibiting flu-like symptoms, such as fever, tiredness, coughing, or congestion must
 - .1 stay at home and isolate,
 - .2 avoid entering the Project site,
 - .3 notify their supervisor,
 - .4 contact public health authority for further directions,
 - .5 follow the directions of the public health authority and not enter Project site until recommended by the public health authority.

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- .2 If flu-like symptoms first develop while on site then avoid touching anything, take extreme care to contain coughs and sneezes, immediately return home, and self-isolate.
 - .3 Where Project site areas are potentially contaminated by an infected person or probable infected person, barricade areas to keep persons two metres away until the area is cleaned and disinfected.

1.11 SUBMITTALS

- .1 Submit in accordance with Section 01 33 00 - Submittal Procedures.
 - .1 Product Data: Submit product data for PPE, disinfectants, and sanitizers when requested.
 - .2 Site Quality Control Submittals: Submit site plan indicating locations of temporary facilities, site entrances, and other segregated areas that encourage physical distancing when requested.
 - .3 Special Procedure Submittals: Before mobilization on site, submit Contractor's site-specific COVID-19 Safety Plan. Plan to address contents of this Section and current public health authority recommendations and requirements.
 - .1 Develop checklist for items requiring daily inspection.
 - .2 Address operating procedures and PPE program, and as follows:

1.12 DELIVERY, STORAGE, AND HANDLING

- .1 Delivery and Acceptance Requirements:
 - .1 Post temporary signage to clearly indicate delivery areas. Limit delivery areas to receivers and deliverers only.
 - .2 Avoid passing items between deliverer and receiver when possible (e.g., shipment documents and pens for signatures). Delivery persons shall remain in their vehicles while receiving persons unload the delivery materials wearing PPE.

1.13 SITE CONDITIONS

- .1 Post clear temporary signage at entry points to the Project site. Identify health and safety measures during the COVID-19 pandemic. Update signage when public health authorities revise COVID-19 mitigation recommendations and requirements.
 - .1 COVID-19 awareness posters by Government of Canada are available: <linkref rid="https://www.canada.ca/en/public-health/services/diseases/2019-novel-coronavirus-infection/awareness-resources.html" xmlns="NMS">https://www.canada.ca/en/public-health/services/diseases/2019-novel-coronavirus-infection/awareness-resources.html</linkref>
- .2 Mitigate Interior Touch Areas:
 - .1 Limit access and use of shared devices, such as coffee machines, water fountains, and microwave ovens. Provide means to clean and disinfect such devices between uses.
 - .2 Limit use of common-use pens. Encourage persons to carry their own (such as for sign-in sheets).

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- .3 Washroom Modifications: Install additional temporary sinks, and increase distance between sinks where practical. Temporarily replace faucet handles, paper towel dispensers, and garbage cans to hands-free models where practical.
 - .4 Where touch points like door handles and water coolers remain, provide paper towels to avoid skin contact.
 - .5 Wear gloves at the Place of the Work when possible. Consider glove surfaces to have the same risk as the surfaces of bare hands. Avoid unnecessary touching of anything on site.
- .3 Compartmentalization:
- .1 Where possible segregate Project site into zones or other methods to keep different Subcontractors physically or temporally separated. Promote physical distancing. If virus spreads on site, support containment.
 - .2 Restrict eating to clearly labelled dedicated eating areas. Provide temporary handwashing stations, cleaning and disinfectants, with adequate space to maintain physical distancing.
 - .3 Establish upper limits on number of people allowed in each zone and inside facilities (washrooms, trailers, and eating areas) to encourage physical distancing.
 - .4 Label and enforce one-way staircases where practical.
 - .5 Limit freight elevators to one person capacity where practical.

Part 2 Products

2.1 REGULATORY REQUIREMENTS

- .1 The [province] [territory] [or municipality] may have implemented stricter orders or measures than those indicated in this Section. At the Project site, monitor and enforce compliance with COVID-19-related safety regulations and measures required by the public health authority.

2.2 MATERIALS

- .1 Protective Clothing Devices such as eye protection, face shields, gloves, masks, coveralls
temperature Measuring Devices
- .2 Cleaning, Disinfecting, and Sanitizing Products:
 - .1 Use hard-surface disinfecting products approved for use by Health Canada against COVID-19.
 - .2 Cleaning Products and Hand Soaps: Comply with the Food and Drugs Act, the Canada Consumer Product Safety Act, and the Hazardous Products Act. Health Canada may have implemented an interim policy to allow some exceptions.
 - .3 Hand Sanitizers: Products that are authorized for sale in Canada with a minimum 60% alcohol content.
 - .4 Government of Canada list of hard-surface disinfectants and hand sanitizers with evidence for use against COVID-19:

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- .1 <linkref rid="https://www.canada.ca/en/health-canada/services/drugs-health-products/disinfectants/covid-19/list.html" xmlns="NMS">https://www.canada.ca/en/health-canada/services/drugs-health-products/disinfectants/covid-19/list.html</linkref>

Part 3 Execution

3.1 INSTALLATION

- .1 Doors: Delay installation of permanent doors, temporarily remove doors, or temporarily replace door handles with hands-free hardware, such as foot-pull devices where practical.

3.2 SITE QUALITY CONTROL

- .1 Site Quality Control Procedures:
 - .1 Be responsible for ensuring appropriate health and safety measures have been implemented, and that directions of the public health authority are followed for persons returning to work after a presumed or confirmed infection of COVID-19.
 - .2 Site Tests and Inspections: Periodically monitor to verify COVID-19 Safety Plan procedures are maintained.

3.3 CLEANING

- .1 Cleaning: Establish Project site cleaning protocols.
 - .1 Perform frequent cleaning and disinfecting of frequently touched objects and surfaces in common areas at Project site at the end of shifts, minimum twice per day, including the following:
 - .1 cabinet and drawer pulls
 - .2 controls
 - .3 commonly touched surfaces on vehicles
 - .4 countertops
 - .5 credit and debit cards
 - .6 door handles
 - .7 elevator buttons
 - .8 faucet handles
 - .9 guardrails and handrails
 - .10 ladders
 - .11 light switches
 - .12 personal workstations
 - .13 phones
 - .14 reusable PPE
 - .15 shared tools and construction equipment
 - .16 steering wheels
 - .17 tables
 - .18 toilets

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- .2 Perform cleaning and disinfecting following PHAC's recommended methods.
 - .1 <linkref rid="canada.ca/en/public-health/ services/publications/diseases-conditions/cleaning-disinfecting-public-spaces.html" xmlns="NMS">canada.ca/en/public-health/services/publications/diseases-conditions/cleaning-disinfecting-public-spaces.html</linkref>
 - .3 Locate additional sanitary measures on site. Post hand washing protocols at hand washing stations and at hand sanitizer stations. Supply disinfectant wiping products for use on site. Locate these types of facilities at site entrances, exits, washrooms, eating areas, offices, and other areas with commonly touched surfaces.
 - .2 Waste Management: Provide suitable disposal containers with liners for single-use PPE and contaminated PPE.

END OF SECTION

Part 1 General

1.1 REFERENCE STANDARDS / RELATED REQUIREMENTS

- .1 Canada Labour Code, Part 2, Canada Occupational Safety and Health Regulations
- .2 Province of British Columbia
 - .1 Workers Compensation Act, RSBC 1996 - Updated 2021

1.2 RELATED REQUIREMENTS

- .1 Canadian Construction Documents Committee (CCDC), General Conditions.
- .2 City of Parksville Engineering Standards and Specifications, Current Edition

1.3 ACTION AND INFORMATIONAL SUBMITTALS

- .1 Submit in accordance with Section 01 33 00 - Submittal Procedures.
- .2 Submit site-specific Health and Safety Plan: Within 5 days after date of Notice to Proceed and prior to commencement of Work. Health and Safety Plan must include:
 - .1 Results of site specific safety hazard assessment.
 - .2 Results of safety and health risk or hazard analysis for site tasks and operation.
- .3 Submit 2 copies of Contractor's authorized representative's work site health and safety inspection reports to Consultant authority having jurisdiction, weekly.
- .4 Submit copies of reports or directions issued by Federal, Provincial and Territorial health and safety inspectors.
- .5 Submit copies of incident and accident reports.
- .6 Submit WHMIS Safety Data Sheets (SDS) in accordance with Section 01 33 00 – Submittal Procedures.
- .7 Consultant will review Contractor's site-specific Health and Safety Plan and provide comments to Contractor within 3 days after receipt of plan. Revise plan as appropriate and resubmit plan to Consultant within 3 days after receipt of comments from Consultant.
- .8 Consultant's review of Contractor's final Health and Safety plan should not be construed as approval and does not reduce the Contractor's overall responsibility for construction Health and Safety.
- .9 On-site Contingency and Emergency Response Plan: address standard operating procedures to be implemented during emergency situations.

1.4 SAFETY ASSESSMENT

- .1 Perform site specific safety hazard assessment related to project.

1.5 MEETINGS

- .1 Schedule and administer Health and Safety meeting with Consultant prior to commencement of Work.

1.6 GENERAL REQUIREMENTS

- .1 Develop written site-specific Health and Safety Plan based on hazard assessment prior to beginning site Work and continue to implement, maintain, and enforce plan until final demobilization from site. Health and Safety Plan must address project specifications.
- .2 Consultant may respond in writing, where deficiencies or concerns are noted and may request re-submission with correction of deficiencies or concerns.

1.7 RESPONSIBILITY

- .1 Be responsible for health and safety of persons on site, safety of property on site and for protection of persons adjacent to site and environment to extent that they may be affected by conduct of Work.

1.8 COMPLIANCE REQUIREMENTS

- .1 Comply with Workers Compensation Act, B.C. Reg.
- .2 Comply with Occupational Health and Safety Act, General Safety Regulations, O.I.C.

1.9 UNFORSEEN HAZARDS

- .1 When unforeseen or peculiar safety-related factor, hazard, or condition occur during performance of Work, follow procedures in place for Employee's Right to Refuse Work in accordance with Acts and Regulations of Province having jurisdiction and advise Consultant verbally and in writing.

1.10 POSTING OF DOCUMENTS

- .1 Ensure applicable items, articles, notices and orders are posted in conspicuous location on site in accordance with Acts and Regulations of Province having jurisdiction, and in consultation with Consultant.

1.11 CORRECTION OF NON-COMPLIANCE

- .1 Immediately address health and safety non-compliance issues identified by authority having jurisdiction or by Consultant.
- .2 Provide Consultant with written report of action taken to correct non-compliance of health and safety issues identified.
- .3 Consultant may stop Work if non-compliance of health and safety regulations is not corrected.

1.12 WORK STOPPAGE

- .1 Give precedence to safety and health of public and site personnel and protection of environment over cost and schedule considerations for Work.

Part 2 Products

2.1 NOT USED

Part 3 Execution

3.1 NOT USED

END OF SECTION

Part 1 General

1.1 SUMMARY

- .1 This Section describes administrative and procedural requirements for reactive activities to verify that completed Work conforms to Contract Documents requirements.
- .2 Having inspection and testing agencies by Contractor or Owner does not relieve the Contractor of their responsibility to perform Work in accordance with Contract Documents.

1.2 ADMINISTRATIVE REQUIREMENTS

- .1 Independent inspection and testing services to be retained and paid for by the Contractor as required by the Consultant. This excludes any inspection and testing that is for the Contractor's own quality control, and excludes inspection and testing required by authority having jurisdiction.
- .2 Allow and coordinate access to Work on site, manufacturing off site, and fabrication off site with inspection and testing agencies.
- .3 Retain and pay for inspection and testing that are designated for Contractor's own quality control plan, and when testing and inspection are required by the Owner.
- .4 Give advanced notice to Consultant and to each inspection/testing agency for inspection and testing required by Contract Documents.
- .5 In advance of each test, notify appropriate agency Consultant in the order that attendance arrangements can be made.

1.3 ACTION AND INFORMATIONAL SUBMITTALS

- .1 Submit in accordance with Section 01 33 00 – Submittal Procedures.
- .2 Submit schedule of testing and inspection activities to Consultant, Owner, applicable Subcontractors, testing agencies, and other affected parties. Include the following:
 - .1 List each testing and inspection agency
 - .2 Identify types of tests and inspections for each agency, and cross reference to applicable specification Section number-title in Contract Documents
 - .3 Description of test and inspection
 - .4 Identify applicable reference standard
 - .5 Identify test and inspection method
 - .6 Indicate number of each test and inspection required
- .3 Submit one digital copy of each quality assurance inspection and test report to Consultant, except where a technical specification Section indicates otherwise.
- .4 Submit reports for inspection and testing required by Contract Documents and performed by Contractor-retained inspection and testing agencies within ten days after inspection or test is completed, except where a technical specification Section indicates a different time period.

.5 Submit one digital copy of each quality control inspection and test report to Consultant, except where a technical specification Section indicates otherwise.

.6 Deliver copies of quality control reports to Subcontractor of work being inspected or tested.

1.4 SITE QUALITY CONTROL PROCEDURES

.1 Provide labour, Construction Equipment, and temporary facilities to obtain and handle test samples and materials on site. Arrange for sufficient space to store and cure test samples.

.2 Deliver samples and materials required for testing, as requested in technical specification Sections. Submit with reasonable promptness and in an orderly sequence to avoid delays in Work.

1.5 TESTING AND INSPECTION SERVICES

.1 Contractor will retain and pay for independent inspection and testing agencies to inspect, test, or perform other quality control reviews of parts of the work, except where indicated otherwise.

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

.3 Correct defects and deficiencies when they are revealed during inspection or testing as advised by Consultant at no change to Contract Amount or Contract Time. Pay costs for retesting and re-inspection. Appointed agency will request additional inspections or tests to ensure full degree of defects or deficiencies are revealed and corrected.

.4 Quality control testing and inspection reports to include the following:

.1 Project name and number

.2 Testing/Inspection agency's name, address, telephone number, and website

.3 Date of issuing report

.4 Dates and locations of tests, inspections, or samples

.5 Description of the Work and test and inspection method

.6 Numbers and titles of associated specification Sections

.7 Test and inspection data and interpretation of test results (e.g., pass or fail)

.8 Ambient conditions at time of test, inspection, or sampling

.9 Recommendations on re-testing and re-inspecting, if applicable

Part 2 Products

2.1 NOT USED

.1 Not Used.

Part 3 Execution

3.1 NOT USED

.1 Not Used.

END OF SECTION

Part 1 General

1.1 REFERENCE STANDARDS

- .1 Canada Green Building Council (CaGBC)
 - .1 LEED Canada-NC Version 1.0-[2004], LEED (Leadership in Energy and Environmental Design): Green Building Rating System Reference Package For New Construction and Major Renovations (including Addendum [2007]).
 - .2 LEED Canada-CI Version 1.0-[2007], LEED (Leadership in Energy and Environmental Design): Green Building Rating System Reference Guide For Commercial Interiors.
- .2 United States Environmental Protection Agency (EPA) / Office of Water
 - .1 EPA 832R92005, Storm Water Management for Construction Activities: Developing Pollution Prevention Plans and Best Management Practices.

1.2 ACTION AND INFORMATIONAL SUBMITTALS

- .1 Provide submittals in accordance with Section 01 33 00 - Submittal Procedures.

1.3 INSTALLATION AND REMOVAL

- .1 Provide temporary utilities controls in order to execute work expeditiously.
- .2 Remove from site all such work after use.

1.4 DEWATERING

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

1.5 WATER SUPPLY

- .1 Provide continuous supply of potable water for construction use.
- .2 Arrange for connection with appropriate utility company and pay costs for installation, maintenance and removal.
- .3 Owner will pay for water charges at prevailing rates, based on General Conditions of Contract.

1.6 TEMPORARY HEATING AND VENTILATION

- .1 Provide temporary heating required during construction period, including attendance, maintenance and fuel.
- .2 Construction heaters used inside building must be vented to outside or be flameless (vent free) type. Solid fuel salamanders are not permitted.
- .3 Provide temporary heat and ventilation in enclosed areas as required to:
 - .1 Facilitate progress of Work.
 - .2 Protect Work and products against dampness and cold.

- .3 Prevent moisture condensation on surfaces.
- .4 Provide ambient temperatures and humidity levels for storage, installation and curing of materials.
- .5 Provide adequate ventilation to meet health regulations for safe working environment.
- .4 Maintain temperatures of minimum 10 degrees Celsius in areas where construction is in progress.
- .5 Ventilating:
 - .1 Prevent accumulations of dust, fumes, mists, vapours or gases in areas occupied during construction.
 - .2 Provide local exhaust ventilation to prevent harmful accumulation of hazardous substances into atmosphere of occupied areas.
 - .3 Dispose of exhaust materials in manner that will not result in harmful exposure to persons.
 - .4 Ventilate storage spaces containing hazardous or volatile materials.
 - .5 Ventilate temporary sanitary facilities.
 - .6 Continue operation of ventilation and exhaust system for time after cessation of work process to assure removal of harmful contaminants.
- .6 Permanent heating system of building, not to be used when available. Be responsible for damage to heating system if use is permitted.
- .7 Ensure Date of Substantial Performance and Warranties for heating system do not start until entire system is in as near original condition as possible and is certified by Consultant.
- .8 Maintain strict supervision of operation of temporary heating and ventilating equipment to:
 - .1 Conform with applicable codes and standards.
 - .2 Enforce safe practices.
 - .3 Prevent abuse of services.
 - .4 Prevent damage to finishes.
 - .5 Vent direct-fired combustion units to outside.
- .9 Be responsible for damage to Work due to failure in providing adequate heat and protection during construction.

1.7 TEMPORARY POWER AND LIGHT

- .1 Provide and pay for temporary power during construction for temporary lighting and operating of power tools.
- .2 Arrange for connection with appropriate utility company if required. Pay costs for installation, maintenance and removal.
- .3 Temporary power for electric cranes and other equipment requiring in excess of above is responsibility of Contractor based on General Conditions of Contract.

1.8 TEMPORARY COMMUNICATION FACILITIES

-
- .1 Provide and pay for temporary data hook up, line[s] and equipment necessary for own use and use of Consultant.

1.9 FIRE PROTECTION

- .1 Provide and maintain temporary fire protection equipment during performance of Work required by insurance companies having jurisdiction and governing codes, regulations and bylaws.
- .2 Burning rubbish and construction waste materials is not permitted on Site.

Part 2 Products

2.1 NOT USED

- .1 Not Used.

Part 3 Execution

3.1 TEMPORARY EROSION AND SEDIMENTATION CONTROL

- .1 Provide temporary erosion and sedimentation control measures to prevent soil erosion and discharge of soil-bearing water runoff or airborne dust to adjacent properties and walkways, according to requirements of authorities having jurisdiction.
- .2 Inspect, repair, and maintain erosion and sedimentation control measures during construction until permanent vegetation has been established.
- .3 Remove erosion and sedimentation controls and restore and stabilize areas disturbed during removal.

END OF SECTION

Part 1 General

1.1 REFERENCE STANDARDS

- .1 Canadian Construction Documents Committee (CCDC)
 - .1 CCDC 2-2020, Stipulated Price Contract.
- .2 Canadian General Standards Board (CGSB)
 - .1 CAN/CGSB 1.189-[00], Exterior Alkyd Primer for Wood.
 - .2 CGSB 1.59-[97], Alkyd Exterior Gloss Enamel.
- .3 CSA Group (CSA)
 - .1 CSA-A23.1/A23.2-[04], Concrete Materials and Methods of Concrete Construction/Methods of Test and Standard Practices for Concrete.
 - .2 CSA-0121-[M1978(R2003)], Douglas Fir Plywood.
 - .3 CAN/CSA-S269.2-[M1987(R2003)], Access Scaffolding for Construction Purposes.
 - .4 CAN/CSA-Z321-[96(R2001)], Signs and Symbols for the Occupational Environment.
- .4 United States Environmental Protection Agency (EPA) / Office of Water
 - .1 EPA 832R92005, Storm Water Management for Construction Activities: Developing Pollution Prevention Plans and Best Management Practices.

1.2 ACTION AND INFORMATIONAL SUBMITTALS

- .1 Provide submittals in accordance with Section 01 33 00 - Submittal Procedures.

1.3 INSTALLATION AND REMOVAL

- .1 Prepare site plan indicating proposed location and dimensions of area to be fenced and used by Contractor, number of trailers to be used, avenues of ingress/egress to fenced area and details of fence installation.
- .2 Identify areas which have to be gravelled to prevent tracking of mud.
- .3 Indicate use of supplemental or other staging area.
- .4 Provide construction facilities in order to execute work expeditiously.
- .5 Remove from site all such work after use.

1.4 SCAFFOLDING

- .1 Scaffolding in accordance with CAN/CSA-S269.2.
- .2 Provide and maintain scaffolding, ramps, ladders, swing staging, platforms, temporary stairs as required.

1.5 SITE FENCING

- .1 The Contractor is responsible to completely secure all areas of Work with metal site fencing, 2.0m tall.

1.6 SITE STORAGE/LOADING

- .1 Confine work and operations of employees by Contract Documents. Do not unreasonably encumber premises with products.
- .2 Do not load or permit to load any part of Work with weight or force that will endanger Work.

1.7 CONSTRUCTION PARKING

- .1 Parking will be permitted on site provided it does not disrupt performance of Work.
- .2 Provide and maintain adequate access to project site.
- .3 Clean runways and taxi areas where used by Contractor's equipment.

1.8 SECURITY

- .1 Provide and pay for responsible security personnel to guard site and contents of site after working hours and during holidays.

1.9 OFFICES

- .1 Provide office heated of sufficient size to accommodate site meetings and furnished with drawing laydown table.
- .2 Provide marked and fully stocked first-aid case in a readily available location.

1.10 EQUIPMENT, TOOL AND MATERIALS STORAGE

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

1.11 SANITARY FACILITIES

- .1 Provide sanitary facilities for work force in accordance with governing regulations and ordinances.
- .2 Post notices and take precautions as required by local health authorities. Keep area and premises in sanitary condition.

1.12 CONSTRUCTION SIGNAGE

- .1 Provide and erect project sign, within three weeks of signing Contract, in a location designated by Consultant.
- .2 Indicate on sign, name of Owner, Consultant and Contractor
- .3 No other signs or advertisements, other than warning signs, are permitted on site.
- .4 Locate project identification sign as directed by Consultant.
- .5 Maintain approved signs and notices in good condition for duration of project, and dispose of off site on completion of project or earlier if directed by Consultant.

1.13 PROTECTION AND MAINTENANCE OF TRAFFIC

- .1 Provide access and temporary relocated roads as necessary to maintain traffic.
- .2 Maintain and protect traffic on affected roads during construction period except as otherwise specifically directed by Consultant.
- .3 Provide measures for protection and diversion of traffic, including provision of watch-persons and flag-persons, erection of barricades, placing of lights around and in front of equipment and work, and erection and maintenance of adequate warning, danger, and direction signs
- .4 Protect travelling public from damage to person and property.
- .5 Contractor's traffic on roads selected for hauling material to and from site to interfere as little as possible with public traffic.
- .6 Verify adequacy of existing roads and allowable load limit on these roads. Contractor: responsible for repair of damage to roads caused by construction operations.
- .7 Construct access and haul roads necessary.
- .8 Haul roads: constructed with suitable grades and widths; sharp curves, blind corners, and dangerous cross traffic shall be avoided.
- .9 Provide necessary lighting, signs, barricades, and distinctive markings for safe movement of traffic.
- .10 Dust control: adequate to ensure safe operation at all times.
- .11 Location, grade, width, and alignment of construction and hauling roads: subject to approval by Consultant.
- .12 Lighting: to assure full and clear visibility for full width of haul road and work areas during night work operations.
- .13 Provide snow removal during period of Work.
- .14 Remove, upon completion of work, haul roads designated by Consultant.

1.14 CLEAN-UP

- .1 Remove construction debris, waste materials, packaging material from work site daily.
- .2 Clean dirt or mud tracked onto paved or surfaced roadways.
- .3 Store materials resulting from demolition activities that are salvageable.
- .4 Stack stored new or salvaged material not in construction facilities.

Part 2 Products

2.1 NOT USED

- .1 Not Used.

Part 3 Execution

3.1 TEMPORARY EROSION AND SEDIMENTATION CONTROL

- .1 Provide temporary erosion and sedimentation control measures to prevent soil erosion and discharge of soil-bearing water runoff or airborne dust to adjacent properties and walkways, according to requirements of authorities having jurisdiction.
- .2 Inspect, repair, and maintain erosion and sedimentation control measures during construction until permanent vegetation has been established.
- .3 Remove erosion and sedimentation controls and restore and stabilize areas disturbed during removal.

END OF SECTION

Part 1 General

1.1 REFERENCE STANDARDS

- .1 British Columbia Ministry of Transportation
 - .1 Traffic Control Manual for Work on Roadways.

1.2 PROTECTION OF PUBLIC TRAFFIC

- .1 Comply with requirements of Acts, Regulations and By-Laws in force for regulation of traffic or use of roadways upon or over which it is necessary to carry out Work or haul materials or equipment.
- .2 When working on travelled way:
 - .1 Place equipment in position to minimize interference and hazard to travelling public.
 - .2 Keep equipment units as close together as working conditions permit and preferably on same side of travelled way.
 - .3 Do not leave equipment on travelled way overnight.
- .3 Close lanes of road only after receipt of written approval from Consultant.
 - .1 Before re-routing traffic erect suitable signs and devices to the satisfaction of the City of Parksville.
- .4 Keep travelled way graded, free from pot holes and of sufficient width for required number of lanes of traffic.
 - .1 Provide 3.5 m wide minimum temporary roadway for traffic in one-way sections through Work and on detours.
- .5 Provide and maintain road access and egress to property fronting along Work under Contract and in other areas as indicated, except where other means of road access exist that meet approval of Consultant.

1.3 INFORMATIONAL AND WARNING DEVICES

- .1 Provide and maintain signs, and other devices required to indicate construction activities or other temporary and unusual conditions resulting from Project Work which requires road user response.
 - .1 Supply and erect signs, delineators, barricades and miscellaneous warning devices to satisfaction of the City of Parksville.
 - .2 Place signs and other devices in locations recommended to satisfaction of the City of Parksville.
- .2 Meet with Departmental Representative and Consultant prior to commencement of Work to prepare list of signs and other devices required for project. If situation on site changes, revise list to approval of Departmental Representative and Consultant.
- .3 Continually maintain traffic control devices in use:

- .1 Check signs daily for legibility, damage, suitability and location. Clean, repair or replace to ensure clarity and reflectance.
- .2 Remove or cover signs which do not apply to conditions existing from day to day.

1.4 CONTROL OF PUBLIC TRAFFIC

- .1 Provide competent flag personnel, trained in accordance with, and properly equipped to satisfaction of the City of Parksville for situations as follows:
 - .1 When public traffic is required to pass working vehicles or equipment that block all or part of travelled roadway.
 - .2 When it is necessary to institute one-way traffic system through construction area or other blockage where traffic volumes are heavy, approach speeds are high and traffic signal system is not in use.
 - .3 When workmen or equipment are employed on travelled way over brow of hills, around sharp curves or at other locations where oncoming traffic would not otherwise have adequate warning.
 - .4 Where temporary protection is required while other traffic control devices are being erected or taken down.
 - .5 For emergency protection when other traffic control devices are not readily available.
 - .6 In situations where complete protection for workers, working equipment and public traffic is not provided by other traffic control devices.
 - .7 At each end of restricted sections where pilot cars are required.
 - .8 Delays to public traffic due to contractor's operators: 15 minutes maximum.

Part 2 Products

2.1 NOT USED

- .1 Not Used.

Part 3 Execution

3.1 NOT USED

- .1 Not Used.

END OF SECTION

Part 1 General

1.1 REFERENCE STANDARDS

- .1 Canadian General Standards Board (CGSB)
 - .1 CGSB 1.59-[97], Alkyd Exterior Gloss Enamel.
 - .2 CAN/CGSB 1.189-[00], Exterior Alkyd Primer for Wood.
- .2 CSA Group (CSA)
 - .1 CSA-O121-[M1978(R2003)], Douglas Fir Plywood.

1.2 INSTALLATION AND REMOVAL

- .1 Provide temporary controls in order to execute Work expeditiously.
- .2 Remove from site all such work after use.

1.3 HOARDING

- .1 Erect temporary site enclosure using metal interlocking fencing, 2.0m in height.
- .2 Provide tree protection fencing around trees and plants designated to remain. Protect from damage by equipment and construction procedures.

1.4 GUARD RAILS AND BARRICADES

- .1 Provide secure, rigid guard rails and barricades around deep excavations, open shafts, open stair wells, and open edges of floors and roofs
- .2 Provide as required by governing authorities.

1.5 WEATHER ENCLOSURES

- .1 Provide weather tight closures to unfinished door and window openings, tops of shafts and other openings in floors and roofs.
- .2 Close off floor areas where walls are not finished; seal off other openings; enclose building interior work for temporary heat.
- .3 Design enclosures to withstand wind pressure and snow loading.

1.6 DUST TIGHT SCREENS

- .1 Provide dust tight screens or [insulated] 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.

1.7 ACCESS TO SITE

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

1.8 PUBLIC TRAFFIC FLOW

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

1.9 FIRE ROUTES

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

1.10 PROTECTION FOR OFF-SITE AND PUBLIC PROPERTY

- .1 Protect surrounding private and public property from damage during performance of Work.
- .2 Be responsible for damage incurred.

1.11 PROTECTION OF BUILDING FINISHES

- .1 Provide protection for 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 3 days prior to installation.
- .4 Be responsible for damage incurred due to lack of or improper protection.

Part 2 Products

2.1 NOT USED

- .1 Not Used.

Part 3 Execution

3.1 NOT USED

- .1 Not Used.

END OF SECTION

Part 1 General

1.1 SUMMARY

- .1 Work in this Section includes requirements for temporary site controls during construction activities, including: temporary controls of soil erosion and sediment loss, control of pests, control of pollution entering the soil, prevention of pollution in stormwater, control of site dust, and site security.

1.2 ABBREVIATIONS

- .1 ESCP: Erosion and Sedimentation Control Plan
- .2 SWPCP: Stormwater Pollution Control Plan

1.3 REFERENCE STANDARDS

- .1 Department of Justice Canada (Jus):
 - .1 Canadian Environmental Protection Act (CEPA), 1999
- .2 Green Building Initiative (GBI):
 - .1 Green Globes for New Construction [2013] [2019] Technical Reference Manual

1.4 TEMPORARY EROSION AND SEDIMENT CONTROL

- .1 Create and implement a site-specific erosion and sedimentation control plan (ESCP) in accordance with EPA, Construction General Permit and NPDES, Stormwater Discharges from Construction Activities as the basis of the plan. Include additional municipal requirements where they are more stringent than Construction General Permit and NPDES, Stormwater Discharges from Construction Activities. ESCP shall:
 - .1 Identify area of disturbance
 - .2 Summarize design requirements that include amount, frequency, intensity, and duration of precipitation.
 - .3 Identify stormwater runoff and run-on at the site, including expected flow and controls to minimize peak and total stormwater volume.
 - .4 Provide information on soils present on the site.
 - .5 Describe stormwater discharge areas to maximize infiltration and increase sediment removal.
 - .6 Summarize installation of stormwater controls for each phase of earth disturbance. Include good engineering practice and adherence to manufacturer's recommendations.
 - .7 Include plans for erosion and sediment control maintenance during construction, including inspection and repair schedules.
- .2 Create and implement a training program to educate persons on site about ESCP protocols.

- .3 Provide temporary erosion and sedimentation control measures to prevent soil erosion and discharge of soil bearing water runoff or prevent airborne dust to adjacent properties, roadways and walkways in accordance with requirements of authority having jurisdiction (AHJ) and as indicated in the Sedimentation Control Plan.
- .4 Temporary Vehicle Wash-Down Area:
 - .1 Prevent mud and soil from accumulating on public roadways.
 - .2 Establish a wash down area for vehicles to remove mud and soil before crossing walkways or entering roadways.
 - .3 Equip wash down area with sedimentation control devices and temporary water supply.
 - .4 Establish a filtering system to prevent harmful fluids (antifreeze, diesel fuel, gasoline) from being flushed into surface drainage system.
- .5 Temporary Sedimentation Control Basins, Silt Fences, and Erosion Control Blankets:
 - .1 Establish one of the following:
 - .1 A sedimentation pond of sufficient size.
 - .2 Geotextile filtering system to control sedimentation from entering surface drainage.
 - .3 Street drainage and sewerage systems.
 - .2 Regularly remove silt accumulations. Dispose off-site at a recognized waste facility.
 - .3 Reapply erosion control polymer as it biodegrades or when worn away.
 - .4 Firmly embed silt fence posts in ground. Secure erosion control fabric to posts.
 - .5 Weigh and peg erosion control blankets so that blankets are in full contact with ground.
- .6 Temporary Stabilized Construction Entrance:
 - .1 Establish a clean gravel pad at each construction entrance of sufficient length and depth to trap clay and excavation debris.
 - .2 Clean gravel on a regular basis to prevent build-up of clay and prevent sediment from being tracked onto roadways.

1.5 TEMPORARY PEST CONTROL

- .1 Perform pest control to minimize attraction and harboring of rodents, insects, and other pests. Perform extermination and control procedures at regular intervals.
- .2 Project shall be free of pests and their residues at Substantial Performance of the Work.
- .3 Perform pest control in accordance with integrated pest management principles with no hazardous or toxic substances released into stormwater or environment.

1.6 TEMPORARY ENVIRONMENTAL CONTROLS

- .1 Use construction methods that comply with environmental regulations and minimize possible air, waterway, and subsoil contamination and pollution.
- .2 Meetings: Train persons on equipment fuelling, spill prevention and response, good housekeeping protocols, material handling, and waste material handling before their first day on site.

- .3 Management:
 - .1 Monitor and repair leaks of polluting liquids on vehicles. Prevent leaks of antifreeze, brake fluid, diesel fuel, gasoline, oil, transmission fluid, and other liquids that may be harmful to the environment or storm drainage systems.
 - .2 Store petroleum products in clearly labelled sealed containers. Provide spill kits and impermeable tarps at fuelling and maintenance areas.
 - .3 Supply a collection skid or similar material for waste materials.
 - .4 Tightly seal and store paint containers, sealers, and curing compounds in a protected location when not required. Prevent excess materials from discharging into storm drainage system.
 - .5 Prevent concrete trucks from discharging surplus concrete or drum wash water on site.
 - .6 Place absorbent materials to soak up excess form release agents. Replace absorbent materials when saturated
 - .7 When applying fertilizer, minimize the discharge of pollutants into stormwater.

1.7 TEMPORARY STORMWATER POLLUTION CONTROL

- .1 Create and implement a site-specific stormwater pollution control plan (SWPCP) in accordance with Construction General Permit and NPDES, Stormwater Discharges from Construction Activities as the basis of the plan. When more stringent, include additional municipal requirements.
- .2 Include a description of SWPCP theory and goals.
- .3 Create and implement an education program for persons on site about the SWPCP protocols.

1.8 TEMPORARY SITE DUST CONTROL

- .1 Provide measures to prevent airborne dust to adjacent properties and walkways according to requirements of AHJ and meeting requirements of Construction General Permit and NPDES, Stormwater Discharges from Construction Activities.
- .2 Create and implement a site-specific dust control plan.
- .3 Dust Control Windbreaks: Geotextile fabric attached to snow or temporary site fencing with fence posts and tie wires. Other measures will be considered.

1.9 TEMPORARY SECURITY

- .1 Temporary Site Security:
 - .1 Site Fencing: Before beginning excavation and before construction activities begin, provide temporary site enclosure fencing with lockable gates to prevent unauthorized access.
 - .2 Extent of Fencing: To enclose entire Project site or a portion sufficient to accommodate construction activities.
 - .3 Distribute gate keys to authorized personnel only. Supply Departmental Representative with one set of keys.
- .2 Temporary Building Security:

- .1 Install temporary enclosure around partially completed areas of construction. Provide lockable entrances to prevent unauthorized access, vandalism, theft, and similar security violations.
- .2 Distribute building entrance keys to authorized personnel only. Supply Departmental Representative..

1.10 ACTION AND INFORMATIONAL SUBMITTALS

- .1 Submit information in accordance with Section 01 33 00 - Submittal Procedures.
- .2 Before starting work of this Section, submit the following:
 - .1 Stormwater Pollution Control Plan (SWPCP): Submit SWPCP indicating methods, plans, and details of controls including:
 - .1 SWPCP coordinator information and their responsibilities
 - .2 Stormwater pollution prevention team to assist in implementation of SWPCP during construction
 - .3 Description of existing site conditions, including:
 - .4 Stormwater management controls and various Best Management Practices required to reduce erosion, sediment, and pollutants in stormwater discharge.
 - .5 Proposed waste water management equipment and materials.
 - .6 Facility monitoring plan and how controls will be coordinated with construction activities.
 - .7 Schedule and allowances to amend the plan if required.
 - .8 Sample inspection log.
 - .2 Erosion and Sedimentation Control Plan:
 - .1 Submit drawings indicating location of erosion and dust control methods,
 - .2 Describe methods for maintaining, cleaning and repairing erosion and dust control methods, and
 - .3 Submit product data indicating actual materials including:
- .3 During the course of work, submit detailed digital photographs indicating temporary sediment and erosion control measures.
- .4 Site Quality Control Submittals: Submit logs of inspection and maintenance of control measures.

Part 2 Products

2.1 REGULATORY REQUIREMENTS

- .1 Protect storm sewers and roadways in accordance with local municipal requirements.
- .2 Protect waterways and ground water in accordance with AHJ.

2.2 TEMPORARY MATERIALS

- .1 Erosion and Dust Control Polymer: Polymer-based, biodegradable, non-dissipating, non-leaching, non-tracking soil stabilizer and dust control agent that binds soil particles. Specifically manufactured for maximum bonding to clay soil particles to decrease erosion potential of exposed earth excavations.
- .2 Sediment Traps: Geotextile filter fabric, straw bales, or other similar filtration materials, or silt fence assembly held in place and bound to wood stakes.
- .3 Storm Drain Inlet Protection: Permeable plastic berm designed specifically for erosion and sediment control with erosion control blanket to reduce water velocity and trap sediment.

Part 3 Execution

3.1 CLOSEOUT ACTIVITIES

- .1 Remove temporary control measures shortly before Substantial Performance of the Work or when acceptable to Consultant.
- .2 Restore landscape areas that were damaged by temporary control measures.

3.2 MAINTENANCE

- .1 Inspection and Maintenance:
 - .1 Inspect, repair, and maintain temporary control measures during construction.
 - .2 Inspect control measures weekly to prevent unwanted situations such as odours, mosquitoes, and weeds. Confirm control measures are working properly. Repair or replace when required.
 - .3 Repair silt fences and erosion control fabric when damaged.
 - .4 Perform non-routine inspection and maintenance arising from unplanned incidents such as repairs after severe weather and accidental damage.
 - .5 Record each inspection and maintenance event in a daily log. Keep a copy of logs at the Project site. Maintain permanent file of logs until final acceptance of the Work.

END OF SECTION

Part 1 General

1.1 REFERENCE STANDARDS

- .1 Canadian Construction Documents Committee (CCDC)
 - .1 CCDC 2 - 2020, Stipulated Price Contract.
- .2 Within text of each specifications section, reference may be made to reference standards for ea
- .3 Conform to these reference standards, in whole or in part as specifically requested in specifications.
- .4 If there is question as to whether products or systems are in conformance with applicable standards, Consultant reserves right to have such products or systems tested to prove or disprove conformance.
- .5 Cost for such testing will be born by Consultant in event of conformance with Contract Documents or by Contractor in event of non-conformance.

1.2 QUALITY

- .1 Refer to CCDC 2 – 2020, and
- .2 Products, materials, equipment and articles incorporated in Work shall be new, not damaged or defective, and of best quality for purpose intended. If requested, furnish evidence as to type, source and quality of products provided.
- .3 Procurement policy is to acquire, in cost effective manner, items containing highest percentage of recycled and recovered materials practicable consistent with maintaining satisfactory levels of competition. Make reasonable efforts to use recycled and recovered materials and in otherwise utilizing recycled and recovered materials in execution of work.
- .4 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 own expense and be responsible for delays and expenses caused by rejection.
- .5 Should disputes arise as to quality or fitness of products, decision rests strictly with Consultant based upon requirements of Contract Documents.
- .6 Unless otherwise indicated in specifications, maintain uniformity of manufacture for any particular or like item throughout building.
- .7 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.

1.3 AVAILABILITY

- .1 Immediately upon signing Contract, review product delivery requirements and anticipate foreseeable supply delays for items. If delays in supply of products are foreseeable, notify Consultant of such, in order that substitutions or other remedial action may be authorized in ample 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.

1.4 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 when applicable.
- .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, when used for grout or mortar materials, clean and dry. Store sand on wooden platforms and cover with waterproof tarpaulins during inclement weather.
- .6 Store sheet materials, lumber on flat, solid supports and keep clear of ground. Slope to shed moisture.
- .7 Store and mix paints in heated and ventilated room. Remove oily rags and other combustible debris from site daily. Take every precaution necessary to prevent spontaneous combustion.
- .8 Remove and replace damaged products at own expense and to satisfaction of Consultant.
- .9 Touch-up damaged factory finished surfaces to Consultant's satisfaction. Use touch-up materials to match original. Do not paint over name plates.

1.5 TRANSPORTATION

- .1 Pay costs of transportation of products required in performance of Work.
- .2 Transportation cost of products supplied by Owner will be paid for by the Owner. Unload, handle and store such products.

1.6 MANUFACTURER'S INSTRUCTIONS

- .1 Unless otherwise indicated in specifications, install or erect products in accordance with manufacturer's 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 that Consultant will establish course of action.
- .3 Improper installation or erection of products, due to failure in complying with these requirements, authorizes Consultant to require removal and re-installation at no increase in Contract Price or Contract Time.

1.7 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.

1.8 CO-ORDINATION

- .1 Ensure co-operation of workers in laying out Work. Maintain efficient and continuous supervision.
- .2 Be responsible for coordination and placement of openings, sleeves and accessories.

1.9 CONCEALMENT

- .1 In finished areas conceal pipes, ducts and wiring in floors, walls and ceilings, except where indicated otherwise.
- .2 Before installation inform Consultant if there is interference. Install as directed by Consultant.

1.10 REMEDIAL WORK

- .1 Refer to CCDC 2- 2020, and,
- .2 Perform remedial work required to repair or replace parts or portions of Work identified as defective or unacceptable. Co-ordinate adjacent affected Work as required.
- .3 Perform remedial work by specialists familiar with materials affected. Perform in a manner to neither damage nor put at risk any portion of Work.

1.11 LOCATION OF FIXTURES

- .1 Consider location of fixtures, outlets, and mechanical and electrical items indicated as approximate.
- .2 Inform Consultant of conflicting installation. Install as directed.

1.12 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, or any other organic material plugs are not acceptable.
- .5 Keep exposed fastenings to a minimum, space evenly and install neatly.
- .6 Fastenings which cause spalling or cracking of material to which anchorage is made are not acceptable.

1.13 FASTENINGS - EQUIPMENT

- .1 Use fastenings of standard commercial sizes and patterns with material and finish suitable for service.
- .2 Use heavy hexagon heads, semi-finished unless otherwise specified. Use No. 304 stainless steel for exterior areas.
- .3 Bolts may not project more than one diameter beyond nuts.
- .4 Use plain type washers on equipment, sheet metal and soft gasket lock type washers where vibrations occur. Use resilient washers with stainless steel.

1.14 PROTECTION OF WORK IN PROGRESS

- .1 Prevent overloading of parts of building. Do not cut, drill or sleeve load bearing structural member, unless specifically indicated without written approval of Consultant.

1.15 EXISTING UTILITIES

- .1 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, and pedestrian and vehicular traffic.
- .2 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.

Part 2 Products

2.1 NOT USED

- .1 Not Used.

Part 3 Execution

3.1 NOT USED

- .1 Not Used.

END OF SECTION

Part 1 General

1.1 SECTION INCLUDES

- .1 Common requirements for installing, applying, and erecting products. Includes procedures and submittals for cutting and patching to existing conditions, and required repairs arising from tests and destructive inspections.

1.2 ACTION AND INFORMATIONAL SUBMITTALS

- .1 Submit in accordance with Section 01 33 00 - Submittal Procedures.
- .2 Submit proof of anchor and fastener load carrying capacity for a work result, when requested.
- .3 Submit written request before cutting or altering to existing conditions which may affect the following:
 - .1 structural integrity of existing elements: Submit structural details and calculations performed by a professional structural engineer registered or licensed in British Columbia, Canada. Include evidence of unsatisfactory structural integrity of the elements according to Consultant.
 - .2 integrity of weather-exposed and moisture-resistant elements
 - .3 efficiency, maintenance, safety, or accessibility of operational elements
 - .4 visual qualities of sight-exposed elements.
 - .5 Work of Owner and other contractor(s).
- .4 Submit a request for cutting or altering which includes:
 - .1 identification of the Project; and
 - .2 location and description of affected existing conditions including changes to structural elements, function of elements, and visual appearance of existing elements; and the location and identification of utilities that will be temporarily out of service during cutting and patching activities.
- .5 Submit site plan drawings indicating relative location of various services and equipment upon the request of Consultant.
- .6 Submit a work plan including:
 - .1 a statement why cutting or altering is unavoidable and describe alternatives to cutting and patching if available;
 - .2 a description of proposed work and proposed Products;
 - .3 the effect of cutting or altering on work by Owner or other contractors;
 - .4 written acknowledgement by other contractors affected by cutting or altering, if applicable; and
 - .5 proposed date(s) [and time(s)] work will be executed.

1.3 QUALIFICATIONS

- .1 Licensed Professionals: Engage a structural engineer licensed at the Place of the Work, to submit details and calculations when altering existing structural elements.

Part 2 Products

2.1 MATERIALS

- .1 Patching Materials: If possible, use the same materials found in the existing conditions, except in fire-resistance rated materials and assemblies.
- .2 Materials Visible from the Floor Area: Use materials that visually match existing adjacent surfaces, and match existing functional performance.

Part 3 Execution

3.1 COMMON INSTALLATION/APPLICATION/ERECTION REQUIREMENTS

- .1 Fit several parts together, to integrate with other Work.
- .2 Remove and replace defective and non-conforming Work.
- .3 Unless otherwise indicated in specifications, install, or erect products in accordance with manufacturer's instructions. Do not rely on labels or enclosures provided with products. Obtain written instructions directly from manufacturers.
- .4 Notify Consultant in writing, of conflicts between specifications and manufacturer's instructions, so that Consultant will establish course of action.
- .5 Improper installation or erection of products, due to failure in complying with these requirements, authorizes Consultant to require removal and re-installation at no increase in Contract Price or Contract Time.
- .6 Provide openings in non-structural elements for penetrations of mechanical and electrical work.
- .7 Conceal pipes, ducts and wiring in floor, wall, partition, and ceiling assemblies in finished areas, except where indicated otherwise.
- .8 In addition to the manufacturer's recommendations for safety, access, accessibility, and maintenance, locate equipment, fixtures, and distribution systems where it shall provide minimal interference and shall maximize on usable space.
 - .1 Location of equipment, fixtures, and outlets indicated on Drawings and specifications are approximate.
 - .2 Notify Consultant of impending installation and obtain approval for actual locations.

3.2 BRACING AND ANCHORING

- .1 Anchors and Fasteners: Unless otherwise indicated elsewhere:
 - .1 Provide any necessary anchors and fasteners to fasten each component securely for its intended purpose. Allow for building movement, including from thermal expansion and contraction of materials and assemblies;
 - .2 prevent electrolytic reaction between dissimilar metals and materials;
 - .3 Provide stainless steel anchors and fasteners for securing exterior work;
 - .4 locate anchors and fasteners within individual load limit or shear capacity. Ensure anchors and fasteners are permanently secured;

- .5 Where exposed to view, evenly distribute anchors and fasteners in a single area; and
- .6 Where exposed to view, provide metal anchors, fasteners, and related accessories with the same texture, colour, and finish as adjacent materials.
- .2 Non-Conforming Work: Anchors and fasteners installed which cause substrate cracks or spalling is not acceptable.

3.3 CUTTING AND PATCHING

- .1 Proceed with cutting and patching after the review and acceptance by the Consultant of all submittals listed in Article 1.03, Actions and Informational Submittals.
- .2 Perform cutting, fitting, and patching including excavation and fill, to complete Work in accordance with related technical specification Sections.
- .3 Use special techniques to avoid damaging existing conditions that will remain, and which will result in proper surfaces to receive patching and finishing.
- .4 Employ original installer to perform cutting and patching for weather-exposed elements, moisture-resistant elements, and surfaces exposed to view.
- .5 Cut rigid materials using masonry saw, core drill, or other tool recommended by the product manufacturer or applicable industry association. Pneumatic or impact tools are not allowed on masonry work without the approval of Consultant.
- .6 Fit Work airtight to pipes, sleeves, ducts, conduit, and other penetrations through surfaces.
- .7 Refinish surfaces to match adjacent finishes. Refinish continuous surfaces to nearest intersection (e.g., edges of partition). Refinish assemblies by refinishing entire unit. Provide entire surface with uniform finish, colour, and texture.

3.4 ADJUSTING

- .1 Remove and replace patching that is visually unsatisfactory to Consultant.

END OF SECTION

Part 1 General

1.1 REFERENCE STANDARDS

- .1 Canadian Construction Documents Committee (CCDC)
 - .1 CCDC 2-2020, Stipulated Price Contract.

1.2 PROJECT CLEANLINESS

- .1 Maintain Work in tidy condition, free from accumulation of waste products and debris, including that caused by Owner or other Contractors.
- .2 Remove waste materials from site at daily regularly scheduled times or dispose of as directed by Consultant. Do not burn waste materials on site.
- .3 Make arrangements with and obtain permits from authorities having jurisdiction for disposal of waste and debris.
- .4 Provide on-site containers for collection of waste materials and debris.
- .5 Provide and use marked separate bins for recycling.
- .6 Dispose of waste materials and debris off site at Contractor's expense.
- .7 Clean interior areas prior to start of finishing work, and maintain areas free of dust and other contaminants during finishing operations.
- .8 Store volatile waste in covered metal containers, and remove from premises at end of each working day.
- .9 Provide adequate ventilation during use of volatile or noxious substances. Use of building ventilation systems is not permitted for this purpose.
- .10 Use only cleaning materials recommended by manufacturer of surface to be cleaned, and as recommended by cleaning material manufacturer.
- .11 Schedule cleaning operations so that resulting dust, debris and other contaminants will not fall on wet, newly painted surfaces nor contaminate building systems.

1.3 FINAL CLEANING

- .1 When Work is Substantially Performed remove surplus products, tools, construction machinery and equipment not required for performance of remaining Work.
- .2 Remove waste products and debris other than that caused by others, and leave Work clean and suitable for occupancy.
- .3 Prior to final review remove surplus products, tools, construction machinery and equipment.
- .4 Remove waste products and debris including that caused by Owner or other Contractors.
- .5 Remove waste materials from site at regularly scheduled times or dispose of as directed by Consultant. Do not burn waste materials on site.
- .6 Make arrangements with and obtain permits from authorities having jurisdiction for disposal of waste and debris.

- .7 Clean and polish glass, mirrors, hardware, wall tile, stainless steel, chrome, porcelain enamel, baked enamel, plastic laminate, and mechanical and electrical fixtures. Replace broken, scratched or disfigured glass.
 - .8 Remove stains, spots, marks and dirt from decorative work, electrical and mechanical fixtures, furniture fitments, walls, and floors.
 - .9 Clean lighting reflectors, lenses, and other lighting surfaces.
 - .10 Vacuum clean and dust building interiors, behind grilles, louvres and screens.
 - .11 Wax, seal, shampoo or prepare floor finishes, as recommended by manufacturer.
 - .12 Inspect finishes, fitments and equipment and ensure specified workmanship and operation.
 - .13 Broom clean and wash exterior walks, steps and surfaces; rake clean other surfaces of grounds.
 - .14 Remove dirt and other disfiguration from exterior surfaces.
 - .15 Clean and sweep roofs, gutters, areaways, and sunken wells.
 - .16 Sweep and wash clean paved areas.
 - .17 Clean equipment and fixtures to sanitary condition; clean or replace filters of mechanical equipment.
 - .18 Clean roofs, downspouts, and drainage systems.
 - .19 Remove debris and surplus materials from crawl areas and other accessible concealed spaces.
 - .20 Remove snow and ice from access to building.
- 1.4 WASTE MANAGEMENT AND DISPOSAL**
- .1 Separate waste materials for reuse and recycling.

Part 2 Products

2.1 NOT USED

- .1 Not Used.

Part 3 Execution

3.1 NOT USED

- .1 Not Used.

END OF SECTION

Part 1 General

1.1 REFERENCE STANDARDS

- .1 Canadian Construction Documents Committee (CCDC)
 - .1 CCDC 2-2020, Stipulated Price Contract.
- .2 Canadian Environmental Protection Act (CEPA)
 - .1 SOR/2008-197, Storage Tank Systems for Petroleum Products and Allied Petroleum Products Regulations.

1.2 ADMINISTRATIVE REQUIREMENTS

- .1 Acceptance of Work Procedures:
 - .1 Contractor's Inspection: Contractor: conduct inspection of Work, identify deficiencies and defects, and repair as required to conform to Contract Documents.
 - .1 Notify Consultant in writing of satisfactory completion of Contractor's inspection and submit verification that corrections have been made.
 - .2 Request Consultant's inspection.
 - .2 Consultant's Inspection:
 - .1 Consultant and Contractor to inspect Work and identify defects and deficiencies.
 - .2 Contractor to correct Work as directed.
 - .3 Completion Tasks: submit written certificates in English that tasks have been performed as follows:
 - .1 Work: completed and inspected for compliance with Contract Documents.
 - .2 Defects: corrected and deficiencies completed.
 - .3 Equipment and systems: tested, adjusted and balanced and fully operational.
 - .4 Certificates required by Boiler Inspection Branch Fire Commissioner Utility companies: submitted.
 - .5 Operation of systems: demonstrated to Owner's personnel.
 - .6 Work: complete and ready for final inspection.
 - .4 Final Inspection:
 - .1 When completion tasks are done, request final inspection of Work by Consultant, and Contractor.
 - .2 When Work incomplete according to Owner and Consultant, complete outstanding items and request re-inspection.
 - .5 Declaration of Substantial Performance: when Consultant considers deficiencies and defects corrected and requirements of Contract substantially performed, make application for Certificate of Substantial Performance.

- .6 Commencement of Lien and Warranty Periods: date of Owner's acceptance of submitted declaration of Substantial Performance to be date for commencement for warranty period and commencement of lien period unless required otherwise by lien statute of Place of Work.
- .7 Final Payment:
 - .1 When Consultant considers final deficiencies and defects corrected and requirements of Contract met, make application for final payment.
 - .2 Refer to CCDC 2: when Work deemed incomplete by Consultant, complete outstanding items and request re-inspection.
- .8 Payment of Holdback: after issuance of Certificate of Substantial Performance of Work, submit application for payment of holdback amount in accordance with contractual agreement and AHJ.

1.3 FINAL CLEANING

- .1 Clean in accordance with Section 01 74 00 - Cleaning.
 - .1 Remove surplus materials, excess materials, rubbish, tools and equipment.
- .2 Waste Management: separate waste materials for reuse and recycling.

Part 2 Products

2.1 NOT USED

- .1 Not Used.

Part 3 Execution

3.1 NOT USED

- .1 Not Used.

END OF SECTION

Part 1 General

1.1 REFERENCE STANDARDS

- .1 Canadian Environmental Protection Act (CEPA):
 - .1 SOR/2008-197, Storage Tank Systems for Petroleum Products and Allied Petroleum Products Regulations

1.2 ADMINISTRATIVE REQUIREMENTS

- .1 Pre-warranty Meeting:
 - .1 Convene meeting one week before Contract completion with contractor's representative, Departmental Representative and Consultant, in accordance with Section 01 31 19 - Project Meetings to:
 - .1 Verify Project requirements.
 - .2 Review manufacturer's installation instructions and warranty requirements.
 - .2 Consultant to establish communication procedures for:
 - .1 Notifying construction warranty defects.
 - .2 Determine priorities for type of defects.
 - .3 Determine reasonable response time.
 - .3 Contact information for bonded and licensed company for warranty work action: provide name, telephone number and address of company authorized for construction warranty work action.
 - .4 Ensure contact is located within local service area of warranted construction, is continuously available, and is responsive to inquiries for warranty work action.

1.3 ACTION AND INFORMATIONAL SUBMITTALS

- .1 Provide submittals in accordance with Section 01 33 00 - Submittal Procedures.
- .2 Two weeks before Substantial Performance of the Work, submit to the Owner, two final copies of operating and maintenance manuals in English.
- .3 Provide spare parts, maintenance materials and special tools of same quality and manufacture as products provided in Work.
- .4 Provide evidence, if requested, for type, source and quality of products supplied.

1.4 FORMAT

- .1 Organize data as instructional manual.
- .2 Binders: Vinyl, hard covered, 3 'D' ring, loose leaf [219 x 279] mm with spine and face pockets.
- .3 When multiple binders are used correlate data into related consistent groupings.
 - .1 Identify contents of each binder on spine.
- .4 Cover: Identify each binder with type or printed title 'Project Record Documents'; list title of project and identify subject matter of contents.

- .5 Arrange content by systems, under Section numbers and sequence of Table of Contents.
- .6 Provide tabbed fly leaf for each separate product and system, with typed description of product and major component parts of equipment.
- .7 Text: manufacturer's printed data, or typewritten data.
- .8 Drawings: Provide with reinforced punched binder tab.
 - .1 Bind in with text; fold larger drawings to size of text pages.
- .9 Provide 1:1 scaled CAD files in dwg format on USB drive.

1.5 CONTENTS - PROJECT RECORD DOCUMENTS

- .1 Table of Contents for Each Volume: provide title of project;
 - .1 Date of submission; names.
 - .2 Addresses, and telephone numbers of Consultant and Contractor with name of responsible parties.
 - .3 Schedule of products and systems, indexed to content of volume.
- .2 For each product or system:
 - .1 List names, addresses and telephone numbers of subcontractors and suppliers, including local source of supplies and replacement parts.
- .3 Product Data: mark each sheet to identify specific products and component parts, and data applicable to installation; delete inapplicable information.
- .4 Drawings: supplement product data to illustrate relations of component parts of equipment and systems, to show control and flow diagrams.
- .5 Typewritten Text: As required to supplement product data.
 - .1 Provide logical sequence of instructions for each procedure, incorporating manufacturer's instructions specified in Section 01 45 00 - Quality Control.

1.6 AS-BUILT DOCUMENTS AND SAMPLES

- .1 Maintain, in addition to requirements in General Conditions, at site for Owner one record copy of:
 - .1 Contract Drawings.
 - .2 Specifications.
 - .3 Addenda.
 - .4 Change Orders and other modifications to Contract.
 - .5 Reviewed shop drawings, product data, and samples.
 - .6 Site test records.
 - .7 Inspection certificates.
 - .8 Manufacturer's certificates.
- .2 Store record documents and samples in site office apart from documents used for construction.
 - .1 Provide files, racks, and secure storage.

- .3 Label record documents and file in accordance with Section number listings in List of Contents of this Project Manual.
 - .1 Label each document "PROJECT RECORD" in neat, large, printed letters.
- .4 Maintain record documents in clean, dry and legible condition.
 - .1 Do not use record documents for construction purposes.
- .5 Keep record documents and samples available for inspection by Consultant.

1.7 RECORDING INFORMATION ON PROJECT RECORD DOCUMENTS

- .1 Record information on set of black line drawings,.
- .2 Use felt tip marking pens, maintaining separate colours for each major system, for recording information.
- .3 Record information concurrently with construction progress.
 - .1 Do not conceal Work until required information is recorded.
- .4 Contract Drawings and shop drawings: mark each item to record actual construction, including:
 - .1 Measured depths of elements of foundation in relation to finish first floor datum.
 - .2 Measured horizontal and vertical locations of underground utilities and appurtenances, referenced to permanent surface improvements.
 - .3 Measured locations of internal utilities and appurtenances, referenced to visible and accessible features of construction.
 - .4 Site changes of dimension and detail.
 - .5 Changes made by change orders.
 - .6 Details not on original Contract Drawings.
 - .7 Referenced Standards to related shop drawings and modifications.
- .5 Specifications: mark each item to record actual construction, including:
 - .1 Manufacturer, trade name, and catalogue number of each product actually installed, particularly optional items and substitute items.
 - .2 Changes made by Addenda and change orders.
- .6 Other Documents: Maintain manufacturer's certifications, inspection certifications, site test records, required by individual specifications Sections.
- .7 Provide digital photos, if requested, for site records.

1.8 FINAL SURVEY

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

1.9 EQUIPMENT AND SYSTEMS

- .1 For each item of equipment and each system include description of unit or system, and component parts.
 - .1 Give function, normal operation characteristics and limiting conditions.

- .2 Include performance curves, with engineering data and tests, and complete nomenclature and commercial number of replaceable parts.
- .2 Panel board circuit directories: provide electrical service characteristics, controls, and communications.
- .3 Include installed colour coded wiring diagrams.
- .4 Operating Procedures: include start-up, break-in, and routine normal operating instructions and sequences.
 - .1 Include regulation, control, stopping, shut-down, and emergency instructions.
 - .2 Include summer, winter, and any special operating instructions.
- .5 Maintenance Requirements: include routine procedures and guide for trouble-shooting; disassembly, repair, and reassembly instructions; and alignment, adjusting, balancing, and checking instructions.
- .6 Provide servicing and lubrication schedule, and list of lubricants required.
- .7 Include manufacturer's printed operation and maintenance instructions.
- .8 Include sequence of operation by controls manufacturer.
- .9 Provide original manufacturer's parts list, illustrations, assembly drawings, and diagrams required for maintenance.
- .10 Provide installed control diagrams by controls manufacturer.
- .11 Provide Contractor's coordination drawings, with installed colour coded piping diagrams.
- .12 Provide charts of valve tag numbers, with location and function of each valve, keyed to flow and control diagrams.
- .13 Provide list of original manufacturer's spare parts, current prices, and recommended quantities to be maintained in storage.
- .14 Additional requirements: As specified in individual specification Sections.

1.10 MATERIALS AND FINISHES

- .1 Building products, applied materials, and finishes: Include product data, with catalogue number, size, composition, and colour and texture designations.
 - .1 Provide information for re-ordering custom manufactured products.
- .2 Instructions for cleaning agents and methods, precautions against detrimental agents and methods, and recommended schedule for cleaning and maintenance.
- .3 Moisture-protection and weather-exposed products: Include manufacturer's recommendations for cleaning agents and methods, precautions against detrimental agents and methods, and recommended schedule for cleaning and maintenance.
- .4 Additional requirements: As specified in individual specifications Sections.

1.11 MAINTENANCE MATERIALS

- .1 Spare Parts:
 - .1 Provide spare parts, in quantities specified in individual specification Sections.
 - .2 Provide items of same manufacture and quality as items in Work.

- .3 Deliver to location as directed; place and store.
- .4 Receive and catalogue items.
 - .1 Submit inventory listing to Consultant.
 - .2 Include approved listings in Maintenance Manual.
- .5 Obtain receipt for delivered products and submit before final payment.
- .2 Extra Stock Materials:
 - .1 Provide maintenance and extra materials, in quantities specified in individual specification Sections.
 - .2 Provide items of same manufacture and quality as items in Work.
 - .3 Deliver to location as directed; place and store.
 - .4 Receive and catalogue items.
 - .1 Submit inventory listing to Departmental Representative.
 - .2 Include approved listings in Maintenance Manual.
 - .5 Obtain receipt for delivered products and submit before to final payment.
- .3 Special Tools:
 - .1 Provide special tools, in quantities specified in individual specification Section.
 - .2 Provide items with tags identifying their associated function and equipment.
 - .3 Deliver to location as directed; place and store.
 - .4 Receive and catalogue items.
 - .1 Submit inventory listing to Departmental Representative.
 - .2 Include approved listings in Maintenance Manual.

1.12 DELIVERY, STORAGE, AND HANDLING

- .1 Store spare parts, maintenance materials, and special tools in manner to prevent damage or deterioration.
- .2 Store in original and undamaged condition with manufacturer's seal and labels intact.
- .3 Store components subject to damage from weather in weatherproof enclosures.
- .4 Store paints and freezable materials in a heated and ventilated room.
- .5 Remove and replace damaged products at own expense and for review by Consultant.

1.13 WARRANTIES AND BONDS

- .1 Develop warranty management plan to contain information relevant to Warranties.
- .2 Submit warranty management plan, 30 days before planned pre-warranty conference, to Consultant approval.
- .3 Warranty management plan to include required actions and documents to assure that Departmental Representative receives warranties to which it is entitled.
- .4 Provide plan in narrative form and contain sufficient detail to make it suitable for use by future maintenance and repair personnel.
- .5 Submit, warranty information made available during construction phase, to Consultant for approval before each monthly pay estimate.

- .6 Assemble approved information in binder, submit upon acceptance of work and organize binder as follows:
 - .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 principal.
 - .3 Obtain warranties and bonds, executed in duplicate by Subcontractors, suppliers, and manufacturers, within ten days after completion of applicable item of work.
 - .4 Verify that documents are in proper form, contain full information, and are notarized.
 - .5 Co-execute submittals when required.
 - .6 Retain warranties and bonds until time specified for submittal.
- .7 Except for items put into use with Owner's permission, leave date of beginning of time of warranty until Date of Substantial Performance is determined.
- .8 Conduct joint 4 month and 9 month warranty inspection, measured from time of acceptance, by Consultant.
- .9 Include information contained in warranty management plan as follows:
 - .1 Roles and responsibilities of personnel associated with warranty process, including points of contact and telephone numbers within the organizations of Contractors, Subcontractors, manufacturers, or suppliers involved.
 - .2 Listing and status of delivery of Certificates of Warranty for extended warranty items, to include roofs.
 - .3 Provide list for each warranted equipment, item, feature of construction or system indicating:
 - .1 Name of item.
 - .2 Model and serial numbers.
 - .3 Location where installed.
 - .4 Name and phone numbers of manufacturers or suppliers.
 - .5 Names, addresses and telephone numbers of sources of spare parts.
 - .6 Warranties and terms of warranty: include one-year overall warranty of construction. Indicate items that have extended warranties and show separate warranty expiration dates.
 - .7 Cross-reference to warranty certificates as applicable.
 - .8 Starting point and duration of warranty period.
 - .9 Summary of maintenance procedures required to continue warranty in force.
 - .10 Cross-Reference to specific pertinent Operation and Maintenance manuals.
 - .11 Organization, names and phone numbers of persons to call for warranty service.
 - .12 Typical response time and repair time expected for various warranted equipment.

- .4 Contractor's plans for attendance at 4 and 9 month post-construction warranty inspections.
- .5 Procedure and status of tagging of equipment covered by extended warranties.
- .6 Post copies of instructions near selected pieces of equipment where operation is critical for warranty and/or safety reasons.
- .10 Respond in timely manner to oral or written notification of required construction warranty repair work.
- .11 Written verification to follow oral instructions.
 - .1 Failure to respond will be cause for the Departmental Representative to proceed with action against Contractor.

1.14 WARRANTY TAGS

- .1 Tag, at time of installation, each warranted item. Provide durable, oil- and water-resistant tag approved by Departmental Representative.
- .2 Attach tags with copper wire and spray with waterproof silicone coating.
- .3 Leave date of acceptance until project is accepted for occupancy.
- .4 Indicate the following information on tag:
 - .1 Type of product/material.
 - .2 Model number.
 - .3 Serial number.
 - .4 Contract number.
 - .5 Warranty period.
 - .6 Inspector's signature.
 - .7 Construction Contractor.

Part 2 Products

2.1 NOT USED

- .1 Not Used.

Part 3 Execution

3.1 NOT USED

- .1 Not Used.

END OF SECTION

Part 1 General

1.1 INTENT

- .1 Requirements for demolishing, salvaging, and removing wholly or in part, various items designated to be removed or partially removed.

1.1 REFERENCE STANDARDS

- .1 Canadian Construction Documents Committee (CCDC).
- .2 City of Parksville Engineering Standards and Specifications, Current Edition.

1.1 VISIT AND EXAMINE SITE

- .1 Visit and examine the site and become familiar with all features and characteristics affecting the work. No allowances will be made for any difficulties encountered due to any features or peculiarities of the site or existing conditions which existed at the time of examination prior to submission of bid.
- .2 Inspect premises to determine the conditions under which the work is to be done and the amount of materials and debris to be removed.

1.2 PROTECTION

- .1 Protect existing items designated to remain and materials designated for salvage. In the event of damage to such items, immediately replace or make repairs to approval of Consultant and at no cost to Owner.
- .2 Ensure that selective demolition work does not adversely affect adjacent watercourses, groundwater and wildlife, or contribute to excess air and noise pollution.
- .3 Do not dispose of waste or volatile materials including but not limited to, mineral spirits, oil, petroleum based lubricants, or toxic cleaning solutions into watercourses, storm or sanitary sewers.
- .4 Ensure proper disposal procedures are maintained throughout the project.
- .5 Do not pump water containing suspended materials into watercourses, storm or sanitary sewers or onto adjacent properties. Any required pumping should be prior approved by Contract Administrator.
- .6 Control disposal or runoff of water containing suspended materials or other harmful substances in accordance as directed by Consultant and in accordance with local authorities having jurisdiction.
- .7 Protect trees, plants and foliage on site and adjacent properties where indicated.

Part 2 Products

2.1 NOT APPLICABLE

Part 3 Execution

3.1 PREPARATION

- .1 Inspect site and verify with Consultant items designated for removal and items to remain.
- .2 Keep comprehensive and accurate records including photos (including metadata properties such as creation date and time) of pre-construction condition of adjoining property, existing structures and pavement condition of adjacent streets to be used as haul routes.
- .3 Locate and protect utility lines. Preserve in operating condition active utilities traversing site.
- .4 Notify utility companies before starting demolition and coordinate any required removals, shut offs, and installation as required. A Contractor's request for remuneration for project delay in schedule resulting from not completing utility coordination at the beginning of the project will be rejected.

3.2 SAWCUTTING

- .1 Sawcuts are to be made with a concrete or asphalt saw capable of providing a true straight joint of consistent depth, as specified.
- .2 Sawcuts in concrete work are to be made at a construction or surface joint at each end of the designated repair area.
- .3 Sawcuts in asphalt adjacent to designated areas of concrete removal shall be parallel to the edge of concrete work at a minimum distance of 200 mm and a maximum distance of 500mm from the lip of gutter.

3.3 REMOVAL

- .1 Remove items as indicated.
- .2 Do not disturb adjacent items designated to remain in place.
- .3 In removal of pavements, curbs and gutters:
 - .1 Square up adjacent surfaces to remain in place by saw cutting or other method approved by Consultant.
 - .2 Protect adjacent joints and load transfer devices.
 - .3 Protect underlying granular materials.
 - .4 When removing curbs and gutters adjacent to pavement, sawcut as per Clause 3.2 of this Section and remove asphalt and granular material in order to complete form work.
- .4 Remove all materials to indicated subgrades, including, but not limited to, any concrete, rock, and cementous materials.
- .5 Remove branches, trunks stumps, and all subsurface roots of trees.
- .6 When removing pipes under existing or future pavement area, excavate at least 300 mm below pipe invert.
- .7 Disconnect and cap all services to be abandoned which are not affected by the work; comply with utilities having jurisdiction. Remove and dispose of abandoned utility lines, and lines to be abandoned which are in direct line with individual sections of work.

3.4 SALVAGE

- .1 Carefully dismantle items containing materials for salvage and deliver salvaged materials to the City of Parksville operations yard at 1116 Herring Gull Way, Po Box 1390 Parksville, BC or as directed by Consultant.

3.5 DISPOSAL OF MATERIALS

- .1 Dispose of materials not designated for salvage or re-use in work, off-site at an approved facility.
- .2 Trim disposal areas to approval of Consultant.

3.6 RESTORATION

- .1 Upon completion of work, remove debris, trim surfaces, and leave work site clean.
- .2 Re-instate areas and existing works outside areas of demolition to conditions that existed prior to commencement of work, as outlined in specific sections for each type of work.

END OF SECTION

Part 1 General

1.1 REFERENCE STANDARDS

- .1 Canadian Construction Documents Committee (CCDC)
- .2 City of Parksville Engineering Standards and Specifications, Current Edition

1.1 REFERENCES

- .1 Canadian Environment Protection Act, 1999 (CEPA 1999).
 - .1 Export and Import of Hazardous Waste Regulations (SOR/2002-300).
- .2 Health Canada/Workplace Hazardous Materials Information System (WHMIS).
 - .1 Material Safety Data Sheets (MSDS).
- .3 National Fire Code of Canada 2015.
- .4 Transportation of Dangerous Goods Act (TDG Act) (1999), (c. 34).
- .5 Transportation of Dangerous Goods Regulations (T-19.01-SOR/2003-400).

1.2 DEFINITIONS

- .1 Dangerous Goods: product, substance, or organism that is specifically listed or meets hazard criteria established in Transportation of Dangerous Goods Regulations.
- .2 Hazardous Material: product, substance, or organism that is used for its original purpose; and that is either dangerous goods or a material that may cause adverse impact to environment or adversely affect health of persons, animals, or plant life when released into the environment.
- .3 Hazardous Waste: any hazardous material that is no longer used for its original purpose and that is intended for recycling, treatment or disposal.
- .4 Workplace Hazardous Materials Information System (WHMIS): Canada-wide system designed to give employers and workers information about hazardous materials used in workplace. Under WHMIS, information on hazardous materials is provided on container labels, material safety data sheets (MSDS), and worker education programs. WHMIS is put into effect by combination of federal and provincial laws.

1.2 SUBMITTALS

- .1 Provide submittals in accordance with Section 01 33 00 - Submittal Procedures. Inspect premises to determine the conditions under which the work is to be done and the amount of materials and debris to be removed.
- .2 Product Data:
 - .1 Submit product data in accordance with Section 01 33 00 - Submittal Procedures.
 - .1 Submit to Consultant current Material Safety Data Sheet (MSDS) for each hazardous material prior to bringing hazardous material on site.
 - .2 Submit hazardous materials management plan to Consultant that identifies hazardous materials, their use, their location, personal

protective equipment requirements, and disposal arrangements.

1.3 DELIVERY, STORAGE, AND HANDLING

- .1 Co-ordinate storage of hazardous materials with Consultant and abide by internal requirements for labelling and storage of materials and wastes.
- .2 Store and handle hazardous materials and wastes in accordance with appliances; federal and provincial laws, regulations, and guidelines.
- .3 Store and handle flammable and combustible materials in accordance with current Nation Fire Code of Canada requirements.
- .4 Keep no more than 45 liters of flammable and combustible liquids such as gasoline, kerosene and naphtha for ready use.
 - .1 Store flammable and combustible liquids in approved safety cans bearing the Underwriters' Laboratory of Canada or Factory Mutual seal approval.
 - .2 Store of quantities of flammable and combustible liquids exceeding 45 litres for work purposes requires written approval from the Consultant.
- .5 Transfer of flammable and combustible liquids is prohibited within buildings.
- .6 Do not transfer flammable and combustible liquids in vicinity of open flames or heat producing devise.
- .7 Do not use flammable liquids having flash point below 38 degrees C, such as naptha or gasoline as solvents or cleaning agents.
- .8 Store flammable and combustible waste liquids for disposal in approved containers located in safe, ventilated area. Keep quantities to minimum.
- .9 Observe smoking regulations, smoking is prohibited in areas where hazardous materials are stored, used, or handled.
- .10 Storage requirements for quantities of hazardous materials and wastes in excess of 5 kg for solids, and 5 litres for liquids:
 - .1 Store hazardous materials and wastes in closed and sealed containers.
 - .2 Label containers of hazardous materials and wastes in accordance with WHMIS.
 - .3 Store hazardous materials and wastes in containers compatible with that material or waste;
 - .4 Segregate incompatible materials and wastes
 - .5 Store hazardous materials and wastes in secure storage area with controlled access.
 - .6 Maintain clear egress from storage areas.
 - .7 Store hazardous materials and wastes in location that will prevent them from spilling into the environment.
 - .8 Have appropriate emergency spill response equipment available near storage areas, including personal protective equipment.
- .11 Maintain inventory of hazardous materials and wastes, including product name, quantity, and date when storage began.
- .12 Ensure personnel have been trained in accordance with Workplace Hazardous Materials Information System (WHMIS) requirements.

- .13 Report spills or accidents immediately to Consultant. Submit a written spill report to Consultant within 24 hours of incident.

1.4 TRANSPORTATION

- .1 Transport hazardous materials and wastes in accordance with federal Transportation of Dangerous Goods Act Transportation of Dangerous Goods Regulations, and applicable provincial regulations.
- .2 If exporting hazardous waste to another country, ensure compliance with federal Export and Import of Hazardous Waste Regulations.
- .3 If hazardous waste is generated on site:
 - .1 Co-ordinate transportation and disposal with Consultant.
 - .2 Ensure compliance with applicable federal, provincial and municipal laws and regulations for generators of hazardous waste.
 - .3 Use licensed carrier authorized by provincial authorities to accept subject material.
 - .4 Prior to shipping material obtain written notice from intended hazardous waste treatment or disposal facility that it will accept material and that it is licensed to accept this material.
 - .5 Label container(s) with legible, visible safety marks as prescribed by federal and provincial regulations.
 - .6 Ensure that trained personnel handle, offer for transport, or transport dangerous goods.
 - .7 Provide photocopy of shipping documents and waste manifests to Consultant.
 - .8 Track receipt of completed manifest from consignee after shipping dangerous goods. Provide a photocopy of completed manifest to Consultant.
 - .9 Report discharge, emission, or escape of hazardous materials immediately to Consultant and appropriate provincial authority. Take reasonable measures to control release.

1.5 Measurement and Payment

- .1 No measurement or payment will be made. All work to be considered incidental to the contract.

Part 2 Products

2.1 MATERIALS

- .1 Only bring on site quantity of hazardous materials required to perform work.
- .2 Maintain MSDS in proximity to where materials are being used. Communicate this location to personnel who may have contact with hazardous materials.

Part 3 Execution

3.1 DISPOSAL

- .1 Dispose of hazardous waste materials in accordance with applicable federal and provincial acts, regulations, and guidelines.
- .2 Recycle hazardous wastes for which there is approved, cost effective recycling process available.
- .3 Send hazardous wastes to authorized hazardous waste disposal or treatment facilities.
- .4 Burning, diluting, or mixing hazardous wastes for purpose of disposal is prohibited.
- .5 Disposal of hazardous materials in waterways, storm or sanitary sewers, or in municipal solid waste landfills is prohibited.
- .6 Dispose of hazardous wastes in timely fashion in accordance with applicable provincial regulations.
- .7 Minimize generation of hazardous waste to maximum extent practicable. Take necessary precautions to avoid mixing clean and contaminated wastes.
- .8 Identify and evaluate recycling and reclamation options as alternatives to land disposal, such as:
 - .1 Hazardous waste recycled in manner constituting disposal.
 - .2 Hazardous waste burned for energy recovery.
 - .3 Lead-acid battery recycling.
 - .4 Hazardous wastes with economically recoverable precious metals.

END OF SECTION

Part 1 General

1.1 INTENT

- .1 Precast Concrete Unit Paving as indicated on the drawings.

1.1 REFERENCE STANDARDS

- .1 Canadian Construction Documents Committee.
- .2 City of Parksville Engineering Standards and Specifications, Current Edition.
- .3 This section, along with the drawings, forms part of the contract documents and is to be read, interpreted, and coordinated with all other parts.
- .4 Cooperate and coordinate with the requirements of other units of work specified in other Sections.
- .5 American Society of Civil Engineers:
 - .1 58-10 Structural Design of Interlocking Concrete Pavement for Municipal Streets and Roadways.
- .2 ASTM International (ASTM):
 - .1 ASTM C33/C33M-16e1, Standard Specification for Concrete Aggregates.
 - .2 ASTM C136/C136M-14, Standard Test Method for Sieve Analysis of Fine and Coarse Aggregates.
 - .3 ASTM C140/C140M-16, Standard Test Methods for Sampling and Testing Concrete Masonry Units and Related Units.
 - .4 ASTM C144-11, Standard Specification for Aggregate for Masonry Mortar.
 - .5 ASTM C936/C936M-16, Standard Specification for Solid Concrete Interlocking Paving Units.
 - .6 ASTM D698-12e2, Standard Test Methods for Laboratory Compaction Characteristics of Soil Using Standard Effort (12,400 ft-lbf/ft³ (600 kN-m/m³)).
 - .7 ASTM D1557-12e1, Standard Test Methods for Laboratory Compaction Characteristics of Soil Using Modified Effort (56,000 ft-lbf/ft³ (2,700 kN-m/m³)).
 - .8 ASTM D2940/D2940M-15, Standard Specification for Graded Aggregate Material For Bases or Subbases for Highways or Airports.
- .3 CSA International (CSA):
 - .1 CSA A231.1-14/A231.2-14, Precast concrete paving slabs/Precast concrete pavers.
 - .2 CSA A23.1-14/A23.2-14, Concrete materials and methods of concrete construction / Test methods and standard practices for concrete, Includes Update No. 1 (2015).
 - .3 CAN/CSA A179-14, Mortar and Grout for Unit Masonry.
- .4 Interlocking Concrete Pavement Institute (ICPI)
 - .1 ICPI Tech Spec technical bulletins.

1.2 RELATED SECTIONS

- .1 Section 32 16 00 Concrete Paving
- .2 Section 32 91 19.13 Topsoil placement and grading
- .3 Section 32 33 00 Site Furniture

1.3 SUBMITTALS

- .1 Duplicate full size samples of each type and colour of paving stone and product data. Colours to be provided include Shadow and Charcoal.
- .2 Material samples and source. Submit sieve analysis for gradation of duplicate bedding and joint sand materials as requested by Consultant.
- .3 Current certified test results from an independent testing laboratory certifying that interlocking paving stones comply with specified CSA test requirements.
- .4 Sieve analysis per ASTM C 136 / CSA A23.2A for grading of bedding and polymeric joint sand.
- .5 Concrete Pavers:
 - .1 Four representative full-size samples of each paver type, thickness, colour, finish that indicate the range of colour variation and texture expected in the finished installation. Colour(s) selected by Consultant from manufacturer's available in stock colours or custom colour capacity.
 - .2 Accepted samples become the standard of acceptance for the work.
 - .3 Test results from an independent testing laboratory for compliance of paving unit requirements to ASTM C 936 / CSA A231.2.
 - .4 Manufacturer's certification of concrete pavers by ICPI as having met applicable ASTM / CSA standards.
 - .5 Manufacturer's catalog product data, installation instructions, and material safety data sheets for the safe handling of the specified materials and products.
- .6 Paver Installation Subcontractor:
 - .1 A copy of Subcontractor's current certificate from the Interlocking Concrete Pavement Institute Concrete Paver Installer Certification program.
 - .2 Job references from projects of a similar size and complexity. Provide Owner / Client / General Contractor names and phone numbers.
- .7 Submit shop drawings in accordance with Section 01 33 00 Submittal Procedures:
 - .1 Indicate layout, pattern colour and relationship of paving joints to fixtures and project formed contours and details.

1.4 MOCK-UP

- .1 Construct sample paving 3x3meter mock-up of paving stone area as directed by the Consultant off site, to determined joint sizes, lines, colours, and laying patterns. Once mock up off site has been approved, a final mock up will be erected on site for final approval, and may be retained as part of finished work if acceptable to Consultant. Mock

up to include paving areas adjacent to pavers laid on a radius in both sample and final mock ups.

1.5 QUALITY ASSURNACE

- .1 Installation of paving stonework shall be performed by experienced qualified personnel employed by a firm regularly engaged in installation of interlocking paving stones.

1.6 DELIVERY, STORAGE, AND HANDLING

- .1 Deliver concrete pavers and accessories to site in such a matter that no damage occurs during shipping, handling, and storage.
- .2 Refer to Manufacturer's ordering instructions and lead-time requirements to avoid construction delays.
- .3 Cover bedding and joint sand delivered to site with waterproof covering to prevent exposure to rain or removal by wind. Secure covering in place.
- .4 Delivery: Deliver materials in manufacturer's original, unopened, undamaged containers packaging with identification labels intact.
 - .1 Coordinate delivery and paving schedule to minimize interference with normal use of buildings adjacent to paving.
 - .2 Deliver concrete pavers to the site in steel banded, plastic banded or plastic wrapped packaging capable of transfer by fork lift or clamp lift.
 - .3 Unload pavers at job site in such a manner that no damage occurs to the product.
- .5 Storage and Protection: Store materials protected such that they are kept free from mud, dirt, and other foreign materials.
- .6 Storage and Handling Requirements: Store paver units on elevated platforms in a dry location; stacked so that structural design loads of floor or pavement structures are not exceeded and as follows:
 - .1 Cover tops and sides of stacks with waterproof sheeting securely tied to pallets if units are not stored in an enclosed location; do not wrap pavers completely, ensure that air can circulate around pavers.
 - .2 Store aggregates where grading and other required characteristics can be maintained; store to prevent contamination by substances deleterious to performance and appearance.
- .7 Place paver pallets and other materials without exceeding load bearing capacity, or otherwise detrimentally affecting installations. Unload and store on dry, level areas.

1.7 EXTRA MATERIALS

- .1 Provide Owner with spare paving stone units of each type and colour for future maintenance and repair from same supply of materials as installed on site. Supply sufficient units for approximately 10 m² of each paver type.

1.8 MEASUREMENT FOR PAYMENT

- .1 The stipulated bid price shall include the cost of all products, materials, labour, equipment, delivery, storage, handling, statutory charges, overhead and profit, other related charges, and inclusive of all duties and taxes applicable, except Value Added

Taxes, and all other chares on account of the Work, measured in place for all parts of the Work.

Part 2 Products

2.1 UNSUITABLE SUB-GRADE

- .1 75mm minus Pit Run Gravel: 150mm depth to be uniformly spread under all hardscape areas. The over excavation, supply and install of this material and work will be directed by Engineer upon field review of subgrade quality and compaction testing of a sample area of 5.0m².

75mm minus pit run	
US Standard Sieve Size	Total Percent Passing by weight
75mm	100
25mm	50-85
0.150mm	0-15
0.075mm	0-8

- .1 No oversized material shall be tolerated.

2.2 GEOTEXTILE FABRIC

- .1 Geotextile Fabric: black woven geotextile complete with manufacture’s installation accessories to meet the follow minimum physical properties or as approved by the Consultant. Comply with CAN/CCSB-148.1 standards.

- .1 Nilex 4546 or approved equal.

2.3 SUB-BASE

- .1 Sub-base shall consist of crushed stone or gravel that’s consists of hard, durable, angular particles and shall be free of clay lumps, cementation, organic material, frozen material and other deleterious materials.
- .2 Gradation shall be within the following limits when tested to ASTM C-117 with sieve sizes to CAN/CGSBD 8-GP-2M, and shall have a smooth curve without sharp breaks when plotted on a semi log grading chart.

- .1 75mm minus pit run

75mm minus pit run	
US Standard Sieve Size	Total Percent Passing by weight
75mm	100
25mm	50-85
0.150mm	0-15
0.075mm	0-8

- .2 20mm minus crushed gravel

20mm minus pit run	
US Standard Sieve Size	Total Percent Passing by weight
19mm	100
12.5mm	75-100
9.5mm	60-90
4.75mm	40-70
2.36mm	27-55
0.850mm	10-35
0.300mm	5-20
0.075mm	2-8

2.4 BEDDING SAND

- .1 Bedding Sand: Determine bedding sand hardness as follows:
 - .1 Randomly select single 1.4kg sample from sand source.
 - .2 Dry sample for 24 hours at 115 degrees C to 121 degrees C.
 - .3 Obtain 3 sub-sample each weighing 0.2 kg by passing original sample several times through riffle box.
 - .4 Carry out sieve analysis test on each sub-sample in accordance with CSA 23.2.
- .2 Bedding sand: fine dry sand free of soluble salts or contaminates, clean, non-plastic, free from deleterious of foreign matter, natural or manufactured from crushed rock or gravel. Do not use limestone screenings or stone dust. Sand shall comply with the following CSA gradation requirements:

Sieve Size	Percent Passing	Sieve Size	Percent Passing
3/8 in.	100%	10.0 mm	100%
No. 4 (4.75 mm)	95% to 100%	5.0 mm	95% to 100%
No. 8 (2.36 mm)	80% to 100%	2.5 mm	80% to 100%
No. 16 (1.18 mm)	50% to 85%	1.25 mm	50% to 90%
No. 30 (0.6 mm)	25% to 60%	630 µm	25% to 65%
No. 50 (0.3 mm)	5% to 30%	315 µm	10% to 35%
No. 100 (0.15 mm)	0% to 10%	160 µm	1% to 10%
No. 200 (0.075 mm)	0% to 1%	80 µm	0% to 1%

- .3 Polymeric Jointing Sand: Product shall be Techniseal Hp Nextgel Jointing Sand, or approved equal:
 - .1 Joint sand product to reduce dust and haze during installation.
 - .2 Techniseal Nextgel minimum joint width to be 1.5mm, and minimum depth to be 40mm.
 - .3 Conform to the grading requirements of ASTM C144 / CSA A179 as shown in the below table:

Sieve Size	Percent Passing	Sieve Size	Percent Passing
3/8 in.	100%	10.0 mm	100%
No. 4 (4.75 mm)	95% to 100%	5.0 mm	100%
No. 8 (2.36 mm)	70% to 100%	2.5 mm	90% to 100%
No. 16 (1.18 mm)	40% to 75%	1.25 mm	85% to 100%

No. 30 (0.6 mm)	10% to 35%	630 µm	65% to 95%
No. 50 (0.3 mm)	2% to 15%	315 µm	15% to 80%
No. 100 (0.15 mm)	0% to 10%	160 µm	0% to 35%
No. 200 (0.075 mm)	0% to 5%	80 µm	0% to 10%

2.5 DRY PACK UNIT PAVER (SITE PAVER)

- .1 Manufacturers of concrete pavers: Abbotsford Concrete Products
 - .1 Product: Classic Standard Series by Belgard.
- .2 Concrete paver sizes and colours:
 - .1 Field Paver – Double standard; 225mm x 225mm x 60mm for pedestrian areas; 225mm x 225mm x 80mm for vehicular areas. Colour TBD – Possible colours include Natural, Shadow, Charcoal, Harvest, Tofino Grey and Mountain Ash.
 - .2 Border – Half Standard; 112.5mm x 112.5mm x 60mm for pedestrian areas; 112.5mm x 112.5mm x 80mm for vehicular areas. Colour TBD – Possible colours include charcoal, shadow, or mountain ash.
- .3 Concrete Paving Stones shall comply to CSA A231.1-06/A231.2-06 and meet the following physical performance requirements:
 - .1 Compressive strength: minimum 55 MPa average of test samples with no unit less than 50 MPa.
 - .2 Water Absorption: maximum 5% average of test samples with no unit greater than 7%.
 - .3 Freeze/Thaw Resistance: units shall have no breakage and maximum 1% dry weight loss for any individual paver when subjected to 50 cycles freezing and thawing.
 - .4 Size Tolerances: variation in size dimensions not to exceed 1.5mm in length in length or width and 3mm in height from standard dimensions.
 - .5 Colour: as selected from manufacturer's standard range.
 - .6 Dimensions: full size stones to manufacturer's specified dimensions for each selected shape and pattern of stone including standard, edging and 50% edging stone and to specific stone dimensions where detailed.
 - .7 All concrete paving stones shall be sound and free of cracks, chips and defects that would interfere with proper placing of units or impair strength or permanence of construction.

Part 3 Execution

3.1 PREPARATION

- .1 Temporary erosion and sedimentation control: Refer to Section 01 57 01 – Environmental Protection.
- .2 Protection of in-place conditions:
 - .1 Protect excavations from freezing.
 - .2 Keep excavations clean, free of standing water, and loose soil.
 - .3 Where soil is subject to significant volume change due to change in moisture

content, cover and protect to Consultant's approval.

- .4 Protect natural and man-made features required to remain undisturbed. Unless otherwise indicated or located in an area to be occupied by new construction, protect existing trees from damage.
- .5 Protect buried services that are required to remain undisturbed.

3.2 FIELD QUALITY CONTROL

- .1 Testing of materials and compaction of backfill will be carried out by testing laboratory designated by the Consultant.
- .2 Not later than one week minimum before backfilling, submit to designated testing agency, samples of backfill.
- .3 Do not begin backfilling until material has been approved for use by the Consultant.
- .4 No later than 48 hours before backfilling or filling with approved material, notify Consultant to allow compaction tests to be carried out by designated testing agency.

3.3 EXCAVATION & SUB-GRADE PREPARATION

- .1 Excavate as required to subgrade levels to carry out work.
- .2 Do not disturb soil or rock below bearing surfaces.
- .3 Remove snow, ice, construction debris, organic soil and standing water from spaces to be compacted and filled.
- .4 Compact existing native subgrade to same compaction as sub-base.
- .5 Where compaction is not met, contractor to provide plan to remediate at Contractor expense.
- .6 Notify Consultant when excavations are complete.
- .7 Compact sub-grade to 98% SPD as indicated on the drawings.
- .8 If bearings and compaction testing is unsatisfactory, additional excavation will be authorized in writing and paid for as additional work (contingent item).
- .9 Excavation taken below depths shown without Consultant's written authorization are to be filled with fill and compacted at the Contractor's expense.

3.4 GRADING

- .1 Grade so water will drain away from buildings, walls, and paved areas, to catch basins, planters, and other disposal areas.

3.5 EXAMINATION

- .1 Check and verify that subgrade structural surfaces to receive paving stones are in compliance with specifications. Verify site grading and elevation requirements.
- .2 Verify that structural surfaces conform to levels required for installation of unit pavers. If discrepancies occur, notify Consultant and do not commence work until instructed by Consultant.
- .3 Verify that top of structural surface (top of base) does not exceed plus or minus 10mm of grade over 3.0m straight edge.

- .4 Ensure that structural surface is not frozen and standing water is not present during installation.
- .5 Verify that geotextiles have been placed according to data assembly drawing and specifications.

3.6 GEOTEXTILE FABRIC

- .1 Place woven geotextile fabric to completely cover approved compacted subgrade. Install fabric according to manufacturer's instructions.
- .2 Stretch fabric taut and free of wrinkles, folds and creases. Overlap each successive strip of fabric 500 mm over previously laid strip. Turn geotextile up against vertical surfaces.
- .3 Where surface materials transition ensure geotextile laps by 300mm in each direction to provide structural bridge, refer to drawings.
- .4 Anchor geotextile using manufacturer's installation accessories and instructions
- .5 Remove and replace damaged or deteriorated fabric.
- .6 Verify that base and geotextile is ready to support sand and pavers and imposed loads.

3.7 SUB-BASE & BASE PREPARATION

- .1 Construct granular sub-base to depth and grade in areas indicated.
- .2 Ensure no frozen material is placed.
- .3 Place material only on clean unfrozen surface, free from snow and ice.
- .4 Begin spreading base material on crown line of on high side of a one way slope.
- .5 Place material using methods which do not lead to segregation or degradation of aggregate.
- .6 Ensure compaction equipment is capable of obtaining required material densities.
- .7 Compact to density not less than 95% standard proctor density.
- .8 Shape and roll alternatively to obtain smooth, even and uniformly compacted base.
- .9 Apply water as necessary during compaction to obtain specified density.
- .10 In areas not accessible to rolling equipment, compact to specified density with mechanical tampers.
- .11 Correct surface irregularities by loosening and adding or removing material until surface is within specified tolerance.

3.8 SAND BEDDING COURSE

- .1 Spread and screed bedding sand evenly over subbase structural surface to a uniform and consistent depth of 25mm to 40mm after compaction. Depth of bedding sand layer shall not exceed 40mm.
- .2 Screed sand to a smooth even surface. Once screed and levelled to required contours and grades, the sand laying course shall not be disturbed.
- .3 Do not install frozen sand or sand over wet or frozen base.
- .4 Place and screed only enough sand that will be covered with paving units the same day.

3.9 CONCRETE PAVING STONE INSTALLATION

- .1 Match exactly to drawings provided.
- .2 Overall intent is to use full size paving stone units with minimal cutting where possible.
- .3 Install clean paving stones, tight and level, on undisturbed dry sand base to patterns as indicated on drawings.
- .4 Place and align stone true to grade, lines, and layout pattern. String lines shall be used to hold pattern lines true.
- .5 Butt paving stone units together with maximum 6mm joints on curved banding and 3mm joints for field pavers.
- .6 Cut stones shall fit accurately and neatly. Cutting shall provide a straight even surface without cracks or chips using a double bladed splitter or a diamond blade masonry saw. When cutting precision designed paving stone areas a masonry saw shall be used.
- .7 Embed, tamp, and level paving units into sand base by compacting with mechanical flat-plate vibrator. Do not vibrate within 1m of unrestrained edges of paving units.
- .8 Vibrate all paving stones laid the same day.
- .9 Keep skid steer and forklift equipment off newly laid pavers that have not received initial compaction and joint sand.
- .10 Use a low-amplitude plate compactor capable of at least minimum of 5,000 lbf (22 kN) at a frequency of 75 to 100 Hz to vibrate the pavers into the sand. Remove any cracked or damaged pavers and replace with new units.
- .11 Simultaneously spread, sweep and compact polymeric joint sand into joints continuously until full, as per manufacturer's written recommendations. This will require at least 4 passes with a plate compactor. Do not compact within 6 ft (2 m) of unrestrained edges of paving units.
- .12 Work within 6 ft. (2 m) of the lying face must be left fully compacted with sand-filled joints at the end of each day or compacted upon acceptance of the work. Cover the lying face or any incomplete areas with plastic sheets overnight if not closed with cut and compacted pavers with joint sand to prevent exposed bedding sand from becoming saturated from rainfall.
- .13 Finish surface: final paving stone surface shall be free of depressions, provide positive drainage, be laid flush with adjacent finished surfaces and shall be true to line and grades

3.10 FIELD QUALITY CONTROL

- .1 The final surface tolerance from grade elevations shall not deviate more than $\pm 3/8$ in. (10 mm) over 10 ft (3 m). Use a straightedge, flexible straightedge or transit depending on surface slope and contours.
- .2 Check final surface elevations for conformance to drawings. *Note: For installations on a compacted aggregate base and soil subgrade, the top surface of the pavers may be uniformly 1/8 in. to 1/4 in. (3 to 6 mm) above the final elevations after compaction. This helps compensate for possible minor settling normal to pavements.
- .3 Lippage: No greater than 1/8 in. (3 mm) difference in height between adjacent pavers.
- .4 Polymeric joints to be a standard 3mm width.

- .1 For pavers within the 'banding' that follow the curves only, polymeric joints may be a minimum of 2mm and a maximum of 6mm.
- .2 Where pavers abut other surface materials such as building foundation, concrete, metal or wood decking, polymeric joints may be a maximum of 10mm in width.

3.11 CLEANUP REPAIR, AND PROTECTION

- .1 Broom clean excess sand from finished paving stones and wash free stains, discolouration, dirt and other foreign debris to provide a clean finished paved surface.
- .2 Remove and replace all loose, chipped, broken, stained or otherwise damaged paving units and stones not laid true to line and grade as directed by the Consultant. Install new stones to comply with specifications. All repairs shall be completed prior to acceptance of work by Consultant.
- .3 Remove surplus material and debris from site.
- .4 Protect work from damage during subsequent construction activities until project acceptance.

END OF SECTION

Part 1 General

1.1 SUMMARY

- .1 This section includes materials and execution information for construction of gravel pathways with aggregate.

1.2 RELATED SECTIONS

- .1 32 14 13.16 Precast Concrete Pavers
- .2 Section 32 91 19.13 Topsoil placement and grading
- .3 Section 32 92 23 Sodding

1.3 REFERENCES

- .1 ASTM C136 / C136M – 14, Standard Test Method for Sieve Analysis of Fine and Coarse Aggregates, ASTM International, West Conshohocken, PA, 2014, www.astm.org
- .2 ASTM D2419 – 14, Standard Test Method for Sand Equivalent Value of Soils and Fine Aggregates, ASTM International, West Conshohocken, PA, 2014, www.astm.org
- .3 ASTM F1951 – 14, Standard Specification for Determination of Accessibility of Surface Systems Under and Around Playground Equipment, ASTM International, West Conshohocken, PA, 2014, www.astm.org

1.4 SUBMITTALS

- .1 Submit in accordance with Section 01 33 00 - Submittal Procedures:
- .2 Manufacturer's product data sheet.
- .3 500g sample of crushed gravel.
- .4 Stabilized crushed aggregate gradation indicating that the product meets specifications.
- .5 Manufacturer's Material Safety Data Sheet.

1.5 SITE CONDITIONS

- .1 Ensure that the subgrade and base are properly graded and compacted to required specifications.
- .2 Protect all nearby surfaces, plants, and structures from possible contamination from materials or damage by equipment.
- .3 It is not recommended to install when temperatures are below 40 degrees Fahrenheit (5 degrees Celsius).

1.6 TEST PLOT

- .1 Install 2.0m x 2.0m minimum test plot of crushed gravel including base course, at location approved by Consultant.
- .2 Allow Consultant to view test plot for approval before proceeding with rest of stabilized crushed aggregate paving.

-
- .3 Approved mock-up may remain as part of completed Work.

1.7 FIELD QUALITY CONTROL

- .1 Inspection and testing of crushed stone paving: carried out by a designated testing laboratory.
- .2 Once the contractor confirms the sub-base and subgrade have reached the density required, they shall notify the Consultant.
- .3 The **Owner** shall provide third party testing confirming that the granular topping has been compacted to indicated strengths. If the test fails, the Contractor is responsible for all rectification actions, and will pay the costs for any and all additional third party testing required to confirm density has been achieved.

1.8 STORAGE

- .1 Protect stabilized crushed aggregate mix from contamination. Store undercover. If the blended and hydrated aggregate is sitting for long periods of time (longer than 48 hours), or when subject to rainfall, it needs to be turned with a skid steerer or loader to ensure consistent moisture content throughout prior to installation.
- .2 Verify hydration level with snowball test before installation. For any questions regarding storage, contact the manufacturer or local dealer.

1.9 MEASUREMENT FOR PAYMENT

- .1 The stipulated bid price shall include the cost of all preparation, excavation, products, materials, labour, equipment, delivery, storage, handling, statutory charges, overhead and profit, other related charges, and inclusive of all duties and taxes applicable, except Value Added Taxes, and all other charges on account of the Work, measured in place for all parts of the Work.

Part 2 Products

2.1 MATERIALS

- .1 Crushed Gravel Pathway:
 - 1. Cart Path Chip – ¼” minus crushed rock
- .2 Base Material:
 - 1. Base shall consist of crushed stone or gravel that consists of hard, durable, angular particles and shall be free of clay lumps, cementation, organic material, frozen material and other deleterious materials.
 - 2. Gradation shall be within the following limits when tested to ASTM C-117 with sieve sizes to CAN/CGSBD 8-GP-2M and shall have a smooth curve without sharp breaks when plotted on a semi log grading chart.

.3 20mm minus crushed gravel

20mm minus pit run	
US Standard Sieve Size	Total Percent Passing by weight
19mm	100
12.5mm	75-100
9.5mm	60-90
4.75mm	40-70
2.36mm	27-55
0.850mm	10-35
0.300mm	5-20
0.075mm	2-8

3. Gradation, in accordance with ASTM C136.

.3 Sub-Grade (if native sub-grade is unsuitable for compaction):

1. 75mm minus Pit Run Gravel: 150mm depth to be uniformly spread under all hardscape areas. The over excavation, supply and install of this material and work will be directed by Engineer upon field review of subgrade quality and compaction testing of a sample area of 5.0m².

75mm minus pit run	
US Standard Sieve Size	Total Percent Passing by weight
75mm	100
25mm	50-85
0.150mm	0-15
0.075mm	0-8

2. No oversized material shall be tolerated.

Part 3 Execution

3.1 PREPARATION

.1 Temporary erosion and sedimentation control: Refer to Section 01 57 01 – Environmental Protection.

.2 Protection of in-place conditions:

.1 Protect excavations from freezing.

.2 Keep excavations clean, free of standing water, and loose soil.

.3 Where soil is subject to significant volume change due to change in moisture content, cover and protect to Consultant’s approval.

.4 Protect natural and man-made features required to remain undisturbed. Unless

otherwise indicated or located in an area to be occupied by new construction, protect existing trees from damage.

- .5 Protect buried services that are required to remain undisturbed.

3.2 FEILD QUALITY CONTROL

- .1 Testing of materials and compaction of backfill will be carried out by testing laboratory designated by the Consultant.
- .2 Not later than one week minimum before backfilling, submit to designated testing agency, samples of backfill.
- .3 Do not begin backfilling until material has been approved for use by the Consultant.
- .4 No later than 48 hours before backfilling or filling with approved material, notify Consultant to allow compaction tests to be carried out by designated testing agency.

3.3 EXCAVATION & SUB-GRADE PREPRATION

- .1 Excavate as required to subgrade levels to carry out work.
- .2 Do not disturb soil or rock below bearing surfaces.
- .3 Remove snow, ice, construction debris, organic soil and standing water from spaces to be compacted and filled.
- .4 Compact existing native subgrade to same compaction as sub-base.
- .5 Where compaction is not met, contractor to provide plan to remediate at Contractor expense.
- .6 Notify Consultant when excavations are complete.
- .7 Compact sub-grade to 98% SPD as indicated on the drawings.
- .8 If bearings and compaction testing is unsatisfactory, additional excavation will be authorized in writing and paid for as additional work (contingent item).
- .9 Excavation taken below depths shown without Consultant's written authorization are to be filled with fill and compacted at the Contractor's expense.

3.4 BASE PREPARATION

- .1 Construct granular base to depth and grade in areas indicated.
- .2 Ensure no frozen material is placed.
- .3 Place material only on clean unfrozen surface, free from snow and ice.
- .4 Begin spreading base material on crown line of on high side of a one way slope.
- .5 Place material using methods which do not lead to segregation or degradation of aggregate.
- .6 Ensure compaction equipment is capable of obtaining required material densities.
- .7 Compact to density not less than 95% standard proctor density.
- .8 Shape and roll alternatively to obtain smooth, even and uniformly compacted base.
- .9 Apply water as necessary during compaction to obtain specified density.

- .10 In areas not accessible to rolling equipment, compact to specified density with mechanical tampers.
- .11 Correct surface irregularities by loosening and adding or removing material until surface is within specified tolerance.

3.5 GRAVEL PATHWAY

- .1 Place ¼” minus crushed rock to compacted thickness as indicated on drawings.
- .2 Place material in uniform layer not to exceed 50mm compacted thickness.
 - 1. Compact layers to 98% Standard Density in accordance with ASTM D698.

3.6 GRADING

- .1 Grade so water will drain away from buildings, walls, and paved areas, to catch basins, planters, and other disposal areas.

3.7 CLEANING

- .1 Progress Cleaning: clean in accordance with Section 01 74 00 - Cleaning
 - .1 Leave Work area clean at end of each day.
- .2 Final Cleaning: upon completion remove surplus materials, rubbish, tools and equipment in accordance with Section 01 74 00 - Cleaning.

3.8 PROTECTION

- .3 Prevent damage to landscaping, curbs, sidewalks, trees, roads and adjacent property.
 - .1 Repair damages incurred.

END OF SECTION

Part 1 General

1.1 INTENT

- .1 The following sections includes:
 - .1 Concrete pad for outdoor shower.

1.2 REFERENCE STANDARDS

- .1 City of Parksville Engineering Standards and Specifications, Current Edition

1.3 RELATED SECTIONS

- .1 Section 32 14 12.16 Precast Concrete Unit Paving Slab
- .2 Section 32 33 00 Site Furniture

1.4 SUBMITTALS

- .1 Comply materials and methods of concrete construction: CSA A23.1/A23.2-04.
- .2 Methods of Test for Concrete: CSA A23.1/A23.2-04
- .3 Cut sheet for synthetic fiber reinforcement.
- .4 Proposed concrete mix schedule.

1.5 TESTING

- .1 The Contract Administration may appoint and pay for services of testing agency to do the following:
 - .1 Test fine and coarse aggregate.
 - .2 Take three test cylinders from load, or fraction thereof, of each type of concrete placed in any one day. Test cylinders will be cured on job-site under same conditions as concrete it represents.
 - .3 Test one cylinder in 7 days and remaining two cylinders in 28 days.
 - .4 Take at least one slump test and one entrained air test for each set of test cylinders taken.
 - .5 Take one additional test cylinder when the temperature is likely to fall below 5°C within 48 hours after placement and no provisions have been made to heat the concrete to greater than 10°C. Test cylinder will be cured on job-site under same conditions as concrete it represents and to be tested in 7 days.
 - .6 Immediately report results of field tests to the Contractor, for information only.
- .2 Submit the following to testing firm's laboratory:

- .1 Proposed concrete mix design.
- .2 Samples of fine and coarse aggregate, obtained in accordance with CSA A23.2-94, Sampling Aggregates For Use in Concrete.
- .3 Results of Petrographic Examination to CSA A23.2-94, of aggregate representative of materials to be used for project.
- .4 Advise testing firm in advance of concrete placement.
- .5 The Contract Administration may order additional testing at any time. Pay for those tests which indicate failure to comply with requirements.

1.6 SAMPLE PANELS

- .1 Construct sample panels, of the size shown, of the following finishes and colours:
 - .1 Medium Broom: .5 m x .5 m.
- .2 Cast samples at the site before the particular finish is to be used, indicating the following:
 - .1 The specified concrete finish.
 - .2 The amount and nature of concrete finish treatment.
 - .3 Keep accepted samples visible and accessible until all landscape concrete is completed and accepted, then remove from the site.
 - .4 If the samples are not of an acceptable standard, provide additional samples for approval. Remove rejected samples from the site as soon as final samples are approved. Remove all samples from site on completion.

1.7 MEASUREMENT AND PAYMENT

- .1 The stipulated bid price shall include the cost of all preparation, excavation, products, materials, labour, equipment, delivery, storage, handling, statutory charges, overhead and profit, other related charges, and inclusive of all duties and taxes applicable, except Value Added Taxes, and all other charges on account of the Work, measured in place for all parts of the Work.

Part 2 Products

2.1 MATERIALS

- .1 Concrete: Refer to City of Parksville Engineering Standards and Specifications sections 7.21 and 7.32
- .2 Sub-grade (if native sub-grade is unsuitable for compaction) :
 - .1 75mm minus Pit Run Gravel: 150mm depth to be uniformly spread under all concrete areas. The over excavation, supply, and install of this material and work will be directed by the Geotechnical Engineer upon field review of subgrade quality and compaction testing.

75mm minus pit run	
US Standard Sieve Size	Total Percent Passing by weight
75mm	100
25mm	50-85

0.150mm	0-15
0.075mm	0-8

.2 No oversized material shall be tolerated.

.3 Base:

.1 Base shall consist of crushed stone or gravel that consists of hard, durable, angular particles and shall be free of clay lumps, cementation, organic material, frozen material and other deleterious materials.

.2 Gradation shall be within the following limits when tested to ASTM C-117 with sieve sizes to CAN/CGSBD 8-GP-2M, and shall have a smooth curve without sharp breaks when plotted on a semi log grading chart.

.3 20mm minus crushed gravel

20mm minus pit run	
US Standard Sieve Size	Total Percent Passing by weight
19mm	100
12.5mm	75-100
9.5mm	60-90
4.75mm	40-70
2.36mm	27-55
0.850mm	10-35
0.300mm	5-20
0.075mm	2-8

.4 Portland Cement: to CAN/CSA-A5-93, grey colour.

.5 Aggregates for concrete: to CSA A23.1-04 and as follows:

.1 Ironstone content of aggregate shall not exceed the following percentage by mass when tested to ASTM C295-90: Course Aggregate, maximum 1%; Fine Aggregate, retained on 2.5mm sieve: maximum 1.5%

.6 Water: to CSA A23.1-04.

.7 Air Entrained Admixture: to CAN3-A266.1-M78.

2.2 REINFORCEMENT

.1 Fibre Reinforcement: Synthetic fibres, 100% virgin polypropylene in collated, fibrillated form, alkali resistant, non-absorptive and completely noncorrosive. Comply with ASTM C1116, Standard Specification for fibre – reinforced concrete and shotcrete

.2 Tie Bar for Construction Joints: plain steel bars to CSA G30.18-M92.

2.3 CONCRETE MIX

.1 Conform to CSA A23.1-94 except as otherwise specified.

.2 Supply concrete mix as follows:

- .1 Temperature of concrete mix at placing shall be no less than 10 degrees Celsius and no greater than 27 degrees Celsius. Provide mix toward lower end of temperature range during hot weather and toward higher end of temperature range during cold weather, in accordance with CSA A23.1-04.
- .3 Use of admixtures, other than air-entraining admixtures, are not permitted without prior written approval of the Consultant.

2.4 ACCESSORIES

- .1 Form oil: non-staining mineral type.
- .2 FormWork: premanufactured and profiled steel or wood forms.
- .3 Poured Joint Filler: Asphalt elastic compound to ASTM D1190-96.
- .4 Preformed Joint Filler: asphalt impregnated type to ASTM D1751-83.
- .5 Curing Compound: to ASTM C309-97, Type 2 white pigmented, Class B resin-based, liquid membrane-forming type.

Part 3 Execution

3.1 EXAMINATION

- .1 Examine test pit report.
- .2 Before commencing work, establish locations of buried services on and adjacent to site.

3.2 PREPARATION

- .1 Temporary erosion and sedimentation control: Refer to Section 01 57 01 – Environmental Protection.
- .2 Protection of in-place conditions:
 - .1 Protect excavations from freezing.
 - .2 Keep excavations clean, free of standing water, and loose soil.
 - .3 Where soil is subject to significant volume change due to change in moisture content, cover and protect to Consultant's approval.
 - .4 Protect natural and man-made features required to remain undisturbed. Unless otherwise indicated or located in an area to be occupied by new construction, protect existing trees from damage.
 - .5 Protect buried services that are required to remain undisturbed.

3.3 FIELD QUALITY CONTROL

- .1 Testing of materials and compactions of backfill will be carried out by testing laboratory designated by the Consultant.
- .2 Not alter than one week minimum before backfilling, submit designated testing agency, samples of backfill.
- .3 Do not begin backfilling until material has been approved for use by the Consultant.
- .4 No later than 48 hours before backfilling or filling with approved material, notify Consultant to allow compaction to be carried out by designated testing agency.

3.4 EXCAVATION & SUB-GRADE PREPARATION

- .1 Excavate as required to subgrade levels to carry out work.
- .2 Do not disturb soil or rock below bearing surfaces.
- .3 Remove snow, ice, construction debris, organic soil and standing water from spaces to be compacted and filled.
- .4 Compact existing native subgrade to same compaction as sub-base.
- .5 Where compaction is not met, contractor to provide plan to remediate at Contractor expense.
- .6 Notify Consultant when excavations are complete.
- .7 Compact sub-grade to 98% SPD as indicated on the drawings.
- .8 If bearings and compaction testing is unsatisfactory, additional excavation will be authorized in writing and paid for as additional work (contingent item).
- .9 Excavation taken below depths shown without Consultant's written authorization are to be filled with fill and compacted at the Contractor's expense.

3.5 BASE PREPARATION

- .1 Ensure no frozen material is placed.
- .2 Place material only on clean unfrozen surface, free from snow and ice.
- .3 Begin spreading sub-base material on crown line of on high side of a one-way slope.
- .4 Place material using methods which do not lead to segregation or degradation of aggregate.
- .5 Ensure compaction equipment is capable of obtaining required material densities.
- .6 Compact to density not less than 95% standard proctor density.
- .7 Shape and roll alternatively to obtain smooth, even and uniformly compacted base.
- .8 Apply water as necessary during compaction to obtain specified density.
- .9 In areas not accessible to rolling equipment, compact to specified density with mechanical tampers.
- .10 Correct surface irregularities by loosening and adding or removing material until surface is within specified tolerance.

3.6 PLACING CONCRETE

- .1 Obtain the Contract Administration's representatives approval of form Work and reinforcement before placing concrete.
- .2 Moisten crushed gravel base to prevent absorption of water from freshly placed concrete.
- .3 Coat surfaces of manholes and catch basins with form oil to prevent bond with concrete.
- .4 Place concrete in accordance with requirements of CSA A23.1-94 unless otherwise specified.
- .5 Do not place concrete on, or against, any surface that is at less than 5°C or will lower the temperature of the concrete in place, below the values specified in CSA A23.1-94.

- .6 Vibrate by means of vibrating screed or pencil vibrator.
- .7 Ensure reinforcement, inserts, embedded parts, and formed joints are not disturbed during concrete placement.
- .8 Screed concrete and float. Do not float while bleed water is still present.
- .9 End all pours using construction joints coinciding with surface or contraction joints.

3.7 JOINTS

- .1 For layout of all jointing types refer to plans.
- .2 Construct joints true to line with faces perpendicular to surface of paving. Construct transverse joints at right angles to paving centreline and longitudinal joints, unless otherwise indicated.
- .3 Expansion Joints At Building Face or Other Vertical Abutments: place 12 mm wide preformed joint filler and trim flush to surface of walk.
- .4 Trowelled Control Joints For Concrete Paving: construct 35 mm deep by 6 mm wide joints where shown on drawings by means of marking tool or other approved method.
- .5 Align curb, gutter, and sidewalk joints.

3.8 FINISHING

- .1 Refer to drawings for all concrete surface finishes.
- .2 Do not trowel surfaces while bleed water is still present. Work surfaces as little as possible to achieve finish.
- .3 Edge Finishing: finish edges, including joints, with 50 mm wide edging tool having 6 mm radius edge.
- .4 Where broom finish specified, use approved nylon brush to provide uniform texture and pattern.
- .5 Do not add water before or during finishing operation.

3.9 CURING AND PREPARATION

- .1 Cure freshly deposited concrete in accordance with CSA A23.1-04.
- .2 When ambient air temperature is at or below 5°C, or when there is a probability of it falling to 5°C within 24 hours of placing, provide cold weather protection until a period of 7 days of concrete temperature at or above 10°C has been attained. Protection shall meet requirements of CSA A23.1-04.
- .3 Estimate rate of surface moisture evaporation in accordance with CSA A23.1-04 and provide protection from drying as required.
- .4 Keep vehicular traffic off paved areas until paving has cured sufficiently to support such loads.

3.10 TOLERANCES

- .1 Meet following criteria for exposed concrete surfaces:

- .1 Trueness of surface: 6 mm maximum deviation in 3 m length.
- .2 Elevation: 15 mm maximum deviation from drawings.
- .3 Alignment: 25 mm maximum deviation from drawings.

END OF SECTION

Part 1 General

1.1 INTENT

- .1 Site furniture supply, mounting intent, and install.

1.2 RELATED SECTIONS

- .1 Section 32 16 00 Concrete Paving
- .2 Section 32 14 13.16 Precast Concrete unit Paving slabs

1.3 REFERENCE STANDARDS

- .1 City of Parksville Engineering Standards and Specifications, Current Edition

1.4 ACTION AND INFORMATIONAL SUBMITTALS

- .1 Provide in accordance with Section 01 33 00 - Submittal Procedures.
- .2 Product Data:
 - .1 Provide manufacturer's instructions, printed product literature and data sheets for furniture and include product characteristics, performance criteria, physical size, finish and limitations.
- .3 Shop Drawings:
 - .1 Submit shop drawings indicating dimensions, sizes, assembly, anchorage and installation details for each furnishing specified.

1.5 CLOSEOUT SUBMITTALS

- .1 Provide maintenance data for care and cleaning of site furnishings for incorporation into manual specified in Section 01 78 00 - Closeout Submittals.

1.6 DELIVERY, STORAGE AND HANDLING

- .1 Deliver, store and handle materials in accordance with Section 01 61 00 - Common 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.
- .3 Storage and Handling Requirements:
 - .1 Store materials off ground and in accordance with manufacturer's recommendations in clean, dry, well-ventilated area.
 - .2 Store and protect furnishings from nicks, scratches, and blemishes.
 - .3 Replace defective or damaged materials with new.

1.7 MEASUREMENT FOR PAYMENT

- .1 The stipulated bid price shall include the cost of all preparation, excavation, products, materials, labour equipment, delivery, storage, handling, statutory charges, overhead and profit, other related charges, and inclusive of all duties and taxes applicable, except Value Added Taxes, and all other charges on account of the Work, measured in place for all parts of the Work.

Part 2 Products

2.1 REMOVABLE BOLLARD (SUPPLY AND INSTALLED BY CONTRACTOR)

- .1 Manufacturer: Wishbone Site Furnishings
- .2 Contact: N/A
- .3 Model: Modena Bollard - MB-37-R (removeable)
- .4 Mounting: Per manufacturer's instructions for in ground concrete base with sleeve. No concrete to show.
- .5 Colour: TBD
- .6 Wood: Red Cedar, stained with cutek clear stain, 2 coats
- .7 Finish: Powder coat, colour TBD

2.2 WATER FOUNTAIN

- .1 Manufacturer: Elkay
- .2 Model: (LK) 4420BF1UDB
- .3 Mounting: Per manufacturer's instructions and surface mount to subsurface concrete mudslab.
- .4 Colour: Black
- .5 Finish: N/A

2.3 OUTDOOR SHOWER

- .1 Manufacturer: Bradley
- .2 Model: Column Beach Showers COL-3B
- .3 Details: --
- .4 Mounting: As indicated on cut sheet. Mounting and foundation per manufacturer's instructions to concrete surface.
- .5 Colour: N/A
- .6 Finish: Type 304 stainless steel

2.4 SHADE UMBRELLA

- .1 Manufacturer: Shade Sails Canada – Shade Umbrellas
- .2 Contact: brian@playclean.ca; 1.416.806.9769
- .3 Model: 14 x 14 Single Post Playshade Umbrella.

- .4 Details: Per submittal; concrete footing to be designed and engineered by manufacturer to suit site soil conditions. Mounting and foundation per manufacturer's instructions.
 - .1 Shade fabric to be commercial grade heavy, GSM:376, UVR: 84-98%, 100% monofilament (no tape).
- .5 Shade sail Colour: a selection / combination of orange, bright green, purple, and turquoise. Final combination TBD.
- .6 Metal Post Colour and Finish: Metal to be powder coated, colour TBD.

Part 3 Execution

3.1 EXAMINATION

- .1 Verification of Conditions: verify that conditions of substrate previously installed under other Sections or Contracts are acceptable for exterior site furnishing installation in accordance with manufacturer's written instructions.
 - .1 Visually inspect substrate in presence of Consultant.
 - .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 PREPARATION

- .1 Locate and protect utility lines.
- .2 Notify and acquire written acknowledgement from utility authorities before beginning installation Work

3.3 INSTALLATION

- .1 Assemble furnishings in accordance with manufacturer's written recommendations.
- .2 Install furnishing true, plumb, anchored firmly supported, as indicated on Drawings and by Consultant.
- .3 Touch-up damaged finishes to approval of Consultant.

3.4 CLEANING

- .1 Progress Cleaning: clean in accordance with Section 01 74 00 - Cleaning.
 - .1 Leave Work area clean at end of each day.
- .2 Final Cleaning: upon completion remove surplus materials, rubbish, tools and equipment in accordance with Section 01 74 00 - Cleaning.

3.5 PROTECTION

- .1 Protect installed products and components from damage during construction.
- .2 Repair damage to adjacent materials caused by site furnishings installation.

END OF SECTION

Part 1 General

1.1 INTENT

- .1 This is a design build item. The intent of this scope of work is to realign existing valves and lines impacted by construction and provide additional coverage to proposed tree and shrub beds. The irrigation system shall be designed and installed to provide a properly operating automatic irrigation system to cover all sodded areas, trees, and shrubs within the existing irrigation zone and the proposed scope of work. Irrigation system within scope of work, must consider and ensure proper function of the system outside scope of work.
- .2 Supply and installation of irrigation sleeves, mainlines, lateral lines, electronic control valves, sprinkler, controller, and all necessary items to ensure the proposed tree and shrub beds can be added to the existing irrigation system.
- .3 Maintenance of irrigation system.

1.2 RELATED REQUIREMENTS

- .1 Section 32 91 19.13 - Topsoil Placement and Grading
- .2 Section 32 92 23 – Sodding
- .3 Section 32 93 10 – Trees, shrubs, and planting
- .4 Section 32 99 00 - Exterior Landscape Maintenance

1.3 DOCUMENTS

- .1 This section, along with the drawings, forms part of the contract documents and is to be read, interpreted, and coordinated with all other parts.
- .2 Cooperate and coordinate with the requirements of other units of Work specified in other Sections.

1.4 PRE-QUALIFICATIONS

- .1 The irrigation design and installation work shall be done by members in good standing of The Irrigation Association, having experienced, trained, and insured personnel qualified for the scope of work. “Qualified” means certified, formally trained, or licensed.

1.5 QUALITY ASSURANCE

- .1 The irrigation design and installation shall conform to the Turf & Landscape Irrigation Best Management Practices prepared in April, 2002, by the Water Management Committee of The Irrigation Association.
- .2 The irrigation system shall be designed to be at least 70% efficient in the distribution uniformity (DU) of the water. Efficiency is determined by a combination of sprinkler layout, sprinkler characteristics, matched precipitation rates, pressure regulation, and zoning.
- .3 The irrigation system shall be installed as per the irrigation design specifications.
- .4 The irrigation system shall be regularly maintained to keep the integrity of the design and to sustain the efficient and uniform distribution of water.

- .5 The irrigation schedule shall be regularly managed to meet and not exceed varying seasonal plant water requirements.
- .6 A written guarantee of the installed irrigation system shall be provided to the Client covering workmanship and materials for a minimum of two (2) years from the date of Substantial Completion.

1.6 DESIGN

- .1 The designer shall make provisions for future expansion in order to minimize the quantity of water services, mechanical components, and irrigation controllers.
- .2 The irrigation design should consider existing irrigation strategies, function, and layout.
- .3 The irrigation system shall be designed to uniformly distribute the water to minimum 70% efficiency. Specific criteria that shall be considered in the design include, soil type, slope, root depth, plant materials, microclimates, weather conditions, water source (e.g., quantity, quality and pressure), peak demand and the water window.
- .4 The irrigation designer should perform an inventory and analysis of the site prior to commencing with the design.
- .5 The irrigation design shall meet all applicable plumbing and electrical codes.
- .6 The designer shall select appropriate equipment components that meet the site requirements and conform to federal, provincial, and local codes.
- .7 The designer shall consider the mature size of plant materials in sprinkler/hardware selection. Maintain a minimum of 3.0m between trunks of trees and piping, valves and sprinklers.
- .8 Water Services shall be of sufficient size to provide the flow required to meet the peak evapotranspiration rate and landscape water requirements of the site within an allotted irrigation window of maximum 8 hours per day, 3 days per week.
- .9 The irrigation design shall specify the appropriate backflow prevention device in accordance with all plumbing codes.
- .10 The irrigation design shall indicate the static water pressure at the irrigation service and the minimum design pressure required to operate the system at optimum sprinkler pressures as recommended by component manufacturers.
- .11 Pressure regulation devices shall be installed where the static pressure is 10% higher, at the specified sprinkler/emitter inlet, than the optimum pressure recommended by the manufacturer. In-stem pressure regulation devices are mandatory in sprayhead type sprinklers.
- .12 Sprinklers shall be spaced at maximum 50% diameter as recommended by the manufacturer for the specific pressure. All sprinklers must be suitably adjustable and located so as to keep the water within the landscaped area and minimize overthrow.
- .13 All sprinklers grouped into a zone must have the same precipitation rates, matched through the arcs of coverage. The areas of the landscape that have different water requirements must be zoned separately.
- .14 Any low volume irrigation included in a system must be separately zoned. Filtration and pressure control as recommended by the manufacturer of low volume devices must be provided together with suitable controller capabilities.

- .15 The irrigation piping shall be sized so that the pressure variation between any 2 sprinklers in a zone does not exceed 15%. The velocity of water in irrigation piping shall not exceed 5 feet per second (1.52m/s). Pipe routing must take site elevation changes into consideration to minimize low head drainage. Selection of the strength and / or flexibility of the pipe material and its installation criteria must consider site specific requirements such as frost, traffic, soil depth etc.
- .16 The irrigation design shall include a schedule based on historical evapotranspiration rates. The irrigation schedule shall include for each zone the plant type, soil type and depth, precipitation rate (in./hr.), flow rate (gpm), soil type, distribution uniformity, and peak daily run times.
- .17 Specified irrigation controllers shall be reviewed and approved by the Consultant for conformity with existing equipment, these specifications, and for irrigation conservation features.
- .18 Irrigation conservation techniques that shall be considered in design include:
 - .1 Alternative water sources where practical and allowed by law.
 - .2 Low-volume irrigation for long, narrow, ornamental, or irregularly-shaped landscaping.
 - .3 Pressure regulators.
 - .4 Low trajectory sprinkler nozzles with modified head spacing.
 - .5 Climate sensors. Rain sensors are mandatory at every irrigated site.
 - .6 ET sensors or weather stations.
 - .7 Soil moisture sensors.
 - .8 Specify a brass electric master valve and a flow sensor for installation on the mainline at the irrigation point of connection.

1.7 SUBMITTALS

- .1 The Contractor shall submit to the Consultant for review three (1) digital copy and (2) hard copies of an Irrigation Plan that shall include:
 - .1 Site Specific Information
 - .2 key plans, north symbol
 - .3 watermains, existing irrigation
 - .4 Topography and/or key elevations
 - .5 Existing or proposed bodies of water
 - .6 Existing plant material that shall remain and be protected
 - .7 Available Static Pressure, psi
 - .8 Total irrigated landscape area, m2
 - .9 Location of utilities
 - .10 Type, Size and Location of Irrigation Components
 - .11 Point(s) of Connection including water meter, backflow prevention devices, master valves, and flow sensors.
 - .12 Tie into existing irrigation system
 - .13 Zone valves
 - .14 Controllers

- .15 Sprinklers, nozzles, pipe, and miscellaneous valves
 - .16 Details of special trenching or installation techniques
 - .17 Irrigation Schedule
 - .18 Indicate in the irrigation schedule for each zone the:
 - .19 Sprinkler type
 - .20 Design operating pressure, psi
 - .21 Distribution Uniformity, %
 - .22 Zone flow, gpm
 - .23 Precipitation rate, inches/hour
 - .24 Valve size and type
 - .25 Plant types
 - .26 Soil types and depths
 - .27 Peak run time, number of cycles required, and maximum cycle duration.
- .2 Three (3) copies of a suitably scaled as-built drawing shall be submitted upon Final Acceptance. All components of the irrigation system shall be shown as installed, with clear measurements from an identifiable reference point to the location of the controller and its circuit breaker, master valve, zone control valves, main water connection, blow out connection, pump and its electrical connections, and any other similar features.
 - .3 Submit a Testing and Inspection Report for the backflow prevention device at Substantial Completion.
 - .4 Submit a copy of the Plumbing Permit and Electrical Permit at Substantial Completion.
 - .5 At Final Acceptance, submit product manuals, warranty cards, keys to controller, quick coupler valve keys, maintenance and irrigation watering logs.

1.8 MEASUREMENT FOR PAYMENT

- .1 The stipulated bid price shall include the cost of all design, preparation, excavation, products, materials, labour equipment, delivery, storage, handling, statutory charges, overhead and profit, other related charges, and inclusive of all duties and taxes applicable, except Value Added Taxes, and all other charges on account of the Work, measured in place for all parts of the Work.

Part 2 Products

- .1 Refer to City of Parksville approved product list for all irrigation componentry.
- .2 Submit a schedule of parts to the Consultant for review and approval.

Part 3 Execution

3.1 LAYOUT

- .1 Design and layout must consider existing irrigation system, tied in as required.
- .2 Verify with the existence and location of all underground utilities prior to construction. Use standard caution when working near utilities. Make good any damages to utilities at Contractor's expense.

- .3 Stake out the entire system including but not limited to the locations of sprinklers, valves, park water service, backflow device, meter, mainline. Locations of all system components shall be approved by the Consultant prior to excavation.
- .4 The Contractor shall take responsibility for any changes to the system layout, hydraulics, or electrical requirements necessitated by unforeseen circumstances or utility conflicts. Changes to the site plan requiring modifications to the irrigation system shall be approved by the Consultant.

3.2 EXCAVATION

- .1 Ensure that the grade has been set and approved by the Consultant prior to excavation.
- .2 Existing landscape features, plant material, and structures identified for retention shall be protected from damage.
- .3 The trench bottom shall be graded to provide full bearing over the full length of the pipe. Trench grading shall not permit difficult to drain low spots in pipe that may freeze in winter.
- .4 Trench bottoms shall be free from irregularities, lumps, rocks, projections and loose organic material.
- .5 Installation by trenchless methods shall only be permitted on 50mm diameter pipe and smaller.
- .6 No excavation shall be done within the drip zone of existing trees.

3.3 SLEEVING

- .1 Wires shall be installed in conduit adjacent to sleeving for irrigation pipe.
- .2 Extend sleeving minimum 600mm beyond edge of adjacent hard surface. Tape ends of sleeve to prevent filling with debris.

3.4 PIPE LAYING

- .1 Lay the pipe in a straight line between fittings, placing it on firm soil at all points in the trench.
- .2 Prevent dirt from entering exposed ends of pipe.
- .3 All solvent welding is to be done in accordance with manufacturer's recommendations with particular attention to cleanliness, air temperature, moisture, and curing time. Excess cement must be removed from all joints.
- .4 All polyethylene insert fittings in 38mm and larger pipe shall be double-clamped with stainless steel clamps.
- .5 Prevent plugs, caps, ties and bends from moving. Provide minimum 0.05m³ concrete thrust blocking for gasketed pipe 50mm and larger, placed between undisturbed or compacted ground and fitting.

3.5 BACKFILLING

- .1 Backfill with suitable bedding material in 150mm lifts, placing and compacting to 85% S.P.D. until 150mm below finish grade. Place topsoil and seed or sod as specified.
- .2 Allow seven days for concrete thrust blocks to cure.

- .3 Excavated materials not suitable for backfilling shall be hauled offsite and disposed of by the Contractor.
- .4 All sprinklers shall be adjusted and set flush with final grade using a triple swing assembly. Adjust sprinklers to the correct spray angle to minimize over spraying onto adjacent surfaces.

3.6 WATER LINE FLUSHING

- .1 Flush all irrigation mains in satisfactory manner to remove all accumulation of dirt and other foreign materials.
- .2 Flush all laterals in accordance with sprinkler manufacturer's instructions to prevent clogging of sprinkler screens and nozzles.

3.7 VALVES AND VALVE BOXES

- .1 All valve boxes shall be installed flush with final grade and located in shrub areas or grass areas.
- .2 Valves shall be installed vertically and centered in the box so as to be easily accessible for servicing.
- .3 Valve boxes shall be installed with adequate clearance above the pipe and on a firm base so as not to contact the pipe with settlement or upon being depressed. Valve boxes shall be supported and able to support the weight of expected traffic. Install 150mm depth 25mm gravel in bottom of valve box. Provide minimum 50mm clearance between bottom of valve and top of gravel.
- .4 Supply and install an electric control brass master valve at the point of irrigation connection.

3.8 WIRE

- .1 All wiring shall be installed in accordance with local, provincial and national electrical codes.
- .2 Lay the wire in the trench with sufficient slack to accommodate backfilling. Provide a minimum of 1000 mm coiled loops of wire at all control valves and changes in direction.
- .3 All wire splices shall be contained in a valve box and location recorded on as-built drawing.
- .4 White wire shall be used only as the common wire and other colors shall be consistent from valve to controller.

3.9 CONTROLLER

- .1 The controller cabinet shall be firmly mounted at 1.5m above grade with all wire connections done in the controller or an approved junction box.
- .2 Upon completion, a scaled as-built site plan shall be mounted next to the controller with each zone clearly indicated.
- .3 The installation of any rain/moisture sensor equipment and the location of the controller's circuit breaker shall be noted on the controller.

3.10 PRESSURE AND LEAKAGE TEST

- .1 The Consultant shall be given a minimum of 48 hours notice when a pressure test is required.
- .2 Test mainline prior to connection of any laterals and prior to backfilling.
- .3 Subject water pipe to hydrostatic pressure 50% greater than operating pressure after irrigation main has been filled with water for period of 24 hours and all air has been expelled. Pipe, fittings, and appurtenances shall be inspected while under test pressures. The test shall be conducted in the presence of the Consultant representative and extend over a period of time sufficient to perform complete inspection, but in no case shall the pressure test be less than 1 hour in duration.
- .4 The Contractor shall supply the pumps, connections, gauges and required apparatus for testing.
- .5 Defective material shall be replaced at the Contractor's cost.
- .6 Schedule test to ensure minimum disruption to existing water supply during testing.
- .7 Annually test the backflow prevention device.

3.11 CLEAN UP

- .1 The job site shall be kept in a neat, clean and orderly condition at all times during the irrigation installation.
- .2 All scrap and excess materials shall be regularly removed from the site and not burned, buried, or disposed of into brooks, streams, lakes, or ponds.

3.12 SYSTEM START UP AND WINTERIZATION

- .1 Start Up:
 - .1 The Contractor shall set the system in operation by May 15.
 - .2 The Contractor shall submit and implement a weekly watering schedule for the season, which shall provide moisture to the turf and plant material as site conditions dictate.
 - .3 The Contractor shall perform all maintenance and repair procedures necessary to ensure system is completely functional with head to head coverage and operating to original design intent.
 - .4 Perform the required annual test of the backflow prevention device and submit the report to the Consultant.
- .2 Winterization:
 - .1 When the system is to be closed down for the winter season, the Contractor shall close down and completely drain the system so that damage by frost cannot occur.
 - .2 Drain the backflow prevention device and water meter.
 - .3 The Contractor shall not leave drain valves and test cocks open for the winter.

3.13 SUBSTANTIAL COMPLETION

- .1 The Consultant will endeavour to perform an inspection within 7 business days of receiving an application for Substantial Completion.

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- .2 Items which must be in place and complete for the inspection include:
- .1 Backfilling and landscaping
 - .2 Valves and valve boxes installed as per specifications and clear of debris
 - .3 Water pressure on and flowing freely through the system
 - .4 Irrigation head adjustment and all heads activated and throwing water to provide adequate coverage as per the manufacturer's recommendations and as per the submitted irrigation plan.
 - .5 Receive in writing from Consultant acceptance and approval of the Substantial Completion.

3.14 MAINTENANCE

- .1 Protect & maintain the entire irrigation system from Substantial Completion until Final Acceptance. Include replacement of any defective materials, making all repairs due to faulty workmanship, and conducting autumn blow-down and spring start-up of system. Irrigation system is required to be operated through two full year cycles, including above shut-down and start-up procedures.

3.15 FINAL ACCEPTANCE

- .1 The irrigation system will be inspected by the Consultant at the completion of the Maintenance Period. The Consultant will endeavour to perform an inspection within 7 business days of receiving an application for Final Acceptance.
- .2 Train the Client's maintenance personnel in operation and maintenance of system. Provide Consultant with manufacturer's manuals, basic sprinkler repair tools and detailed instructions for start-up and winterization of system.
- .3 Where it is found that during the guarantee/maintenance period, the irrigation system has been poorly maintained, or there has been a failure to rectify deficiencies within reasonable time, issuance of a Final Acceptance may be withheld or the guarantee/maintenance period may be extended or made conditional upon completion of repairs or improvements, at the discretion of the Consultant and the Client.

END OF SECTION

Part 1 General

1.1 RELATED REQUIREMENTS

- .1 Section 32 93 00 Sodding
- .2 Section 32 93 10 Trees, shrubs, and ground cover planting
- .3 Section 32 99 00 Exterior Landscape Maintenance

1.2 DEFINITIONS

- .1 Compost:
 - .1 Mixture of soil and decomposing organic matter used as fertilizer, mulch, or soil amendment.
 - .2 Compost is processed organic matter containing 40% or more organic matter as determined by Walkley-Black or Loss On Ignition (LOI) test.
 - .3 Product must be sufficiently decomposed (i.e. stable) so that any further decomposition does not adversely affect plant growth (C:N ratio below), and contain no toxic or growth inhibiting contaminants.
 - .4 Composed bio-solids to: CCME Guidelines for Compost Quality, Category A.

1.1 REFERENCE STANDARDS

- .1 City of Parksville Engineering Standards and Specifications, Current Edition
- .1 Agriculture and Agri-Food Canada:
 - .5 The Canadian System of Soil Classification, Third Edition, 1998
- .2 Canadian Council of Ministers of the Environment (CCME):
 - .1 PN1340- Current Edition, Guidelines for Compost Quality
- .3 Canadian Society of Landscape Architects (CSLA)/Canadian Nursery Landscape Association (CNLA):
 - .1 Canadian Landscape Standard, current edition
 - .2 Canadian Nursery Stock Standard, current edition

1.3 SUPPLIED MATERIALS

- .1 Contractor will supply topsoil meeting the requirements of this section.
- .2 Contractor will provide samples as following:

- .1 Each sample shall be double bagged packaged in two plastic zip loc style bags, Each bag shall be clearly marked with the project name, date, contractor's name, telephone number, and product name.
- .2 Samples of all existing site soil, topsoil, coarse sand and compost and planting soil mixes shall be submitted at the same time as the particle size and physical analysis of that materials.
- .3 Samples of the existing site soil that are under existing pavement to be removed may be submitted as soon as possible after the paving is removed.
- .4 Samples will be reviewed for appearances only.
- .5 Provide samples for the following products:
 - .1 One-gallon sample of each type of existing site top soil prior to adding amendments.
 - .2 One-gallon sample of imported top soil.

1.4 TOPSOIL TESTING

- .1 Contractor will arrange and pay for services of accrediting testing laboratory, approved by the Consultant, to perform complete soil quality analysis on imported topsoil. Provide adequate test from all sources of topsoil and submit original copy of analysis to the Consultant.
- .2 Provide a particle size analysis (percent dry weight) and soil texture analysis. Soil testing of planting soil mixes shall also include gradation distribution of gravel, coarse sand, medium sand, and fine sand in addition to silt and clay. Reports of particle size distribution shall use size nomenclature and analysis protocols.
- .3 Provide the following other soil properties:
 - .1 pH and buffer Ph
 - .2 Percent organic content by oven dried weight.
 - .3 Nutrient levels by parts per million including; phosphorus, potassium, magnesium, manganese, iron, zinc, calcium. Nutrient test shall include testing laboratory recommendations for supplemental additions to the soil for optimum growth of the plantings specified.
 - .4 Soluble salt by electrical conductivity of a 1:2 soil water sample measured in Milliohm per cm.
 - .5 Infiltration rate

1.5 ACTION AND INFORMATIONAL SUBMITTALS

- .1 Provide submittals in accordance with Section 01 33 00 - Submittal Procedures.
- .2 Quality control submittals:

- .1 Soil testing: submit certified test reports showing compliance with specified performance characteristics and physical properties as described in PART 2 - SOURCE QUALITY CONTROL.
- .2 Certificates: submit product certificates signed by manufacturer certifying materials comply with specified performance characteristics and criteria and physical requirements.

1.6 QUALITY ASSURANCE

- .1 Pre-installation meetings: Conduct pre-installation meeting to verify Project requirements, installation instructions and warranty requirements in accordance with 01 32 16.19 - Construction Progress Schedule - Bar (GANNT) Chart.
- .2 Qualifications: Submit proof of qualifications when requested by Consultant.
- .3 Contractor Qualifications:
 - .1 Landscape Contractor: To be a Member in Good Standing with on of the following organizations; International Society of Arboriculture, Canadian Nursery Landscape Association, BC Landscape Nursery Association (BCLNA).
 - .2 Landscape Supervisor: Landscape Horticulturist Journey person or Landscape Industry Certified Technician with Softscape Installation designation or equivalent.
- .4 Top Soil Supplier: Soil mixes shall be supplied by a firm that specializes in the production of mixes of planting soils and have at least 5 years experience in providing soil mixes to projects of similar size and scope to this Work.
- .5 Soil Testing Laboratory: The testing laboratory shall specialize in agricultural soil testing. Testing results for soil particle size shall be reported for sand, silt, clay.

1.7 PRODUCT DELIVERY, STORAGE AND HANDLING

- .1 Stockpile topsoil in locations where contamination will not occur.
- .2 Bottom 300mm of stockpiled topsoil shall be hand shoveled when being moved to ensure no contamination of material occurs.

1.8 MEASUREMENT FOR PAYMENT

- .1 The stipulated bid price shall include the cost of all Products, materials, labour equipment, delivery, storage, handling, statutory charges, overhead and profit, other related charges, and inclusive of all duties and taxes applicable, except Value Added Taxes, and all other charges on account of the Work, measured in place for all parts of the Work.

Part 2 Products

2.1 TOPSOIL

- .1 Topsoil for planting beds: mixture of particulates, micro-organisms and organic matter which provides suitable medium for supporting intended plant growth.

- .1 Soil texture based on The Canadian System of Soil Classification, to consist of
 - .1 Sand: 30 to 70 % (larger than 0.05mm, smaller than 2mm)
 - .2 Silt: 10 to 35% (larger than 0.002mm, smaller than 0.05mm)
 - .3 Clay: 2 to 10% (smaller than 0.002mm)
 - .4 Max 35% clay and silt combined
- .2 Not less than 15% organic material by dry weight
- .3 pH value ranging from of 5.5 to 7.5
- .4 Non toxic to plant growth
- .5 Infiltration rate: minimum 40mm per hour infiltration rate
- .6 EC @ 25 degrees Celsius – less then 2.5 dS/m
- .7 SAR: Less than 4
- .8 Contain no toxic elements or growth inhibiting materials.
- .9 Finished surface free from:
 - .1 Debris and stones over 25 mm diameter.
 - .2 Coarse vegetative material, 10 mm diameter and 100 mm length, occupying more than 2% of soil volume.
- .10 Consistency: Friable when moist.
- .11 Max particle size 100% 0.5inch sieve
- .12 Reasonably free from subsoil, plants or their roots, building materials, wood, non-composted wood, wood waste, woody plant parts, insect pests, plant pathogenic organisms, chemical pollutants or substances at levels toxic to plants, stones (in excess of 10mm in maximum dimensions), foreign objects, and other extraneous materials that detract from the desirable physical and chemical properties required for landscaping purposes.

2.2 SOIL AMENDMENTS

- .1 Fertilizer:
 - .1 Fertility: Major soil nutrients present in following amounts:
 - .2 Nitrogen (N): 20 to 40 micrograms of available N per gram of topsoil.
 - .3 Phosphorus (P): 40 to 50 micrograms of phosphate per gram of topsoil.
 - .4 Potassium (K): 75 to 110 micrograms of potassium per gram of topsoil.
 - .5 Calcium, magnesium, sulphur, and micro-nutrients present in balanced ratios to support germination and/or establishment of intended vegetation.
 - .6 pH range of 6.5 to 8.0
- .2 Peatmoss:

- .1 Derived from partially decomposed species of horticultural grade Sphagnum Mosses.
- .2 Texture ranging from porous to spongy fibrous, fairly elastic, and substantially homogeneous.
- .3 Free of wood and deleterious material which could prohibit growth.
- .4 Shredded particle minimum size: 5 mm
- .5 pH range of 3.5 to 6.5
- .3 Sand: washed coarse silica sand, medium to coarse textured.
- .4 Organic matter: Compost Category A in accordance with CCME PN1340, unprocessed organic matter, such as rotted manure, hay, straw, bark residue or sawdust, meeting the organic matter, stability and contaminant requirements.
- .5 Limestone:
 - .1 Ground agricultural limestone.
 - .2 Gradation requirements: percentage passing by weight, 90% passing 1.0 mm sieve, 50% passing 0.125 mm sieve.
- .6 Use industry accepted standard medium containing nitrogen, phosphorous, potassium and other micro-nutrients suitable to specific plant species or application or defined by soil test.

2.3 SOURCE QUALITY CONTROL

- .1 Advise Consultant of sources of topsoil and manufactured topsoil to be used with sufficient lead time for testing.
- .2 Contractor is responsible for amendments to imported soil(s) as specified.
- .3 Conduct soil testing by recognized testing facility for pH, Nitrogen (N), Phosphorous (P), and Potassium (K), and organic matter.
- .4 Carry out testing of topsoil by testing laboratory designated by Consultant.
 - .1 Perform soil sampling, testing and analysis in accordance with applicable Provincial standards.

Part 3 Execution

3.1 STRIPPING OF TOPSOIL

- .1 Begin topsoil stripping of areas as indicated after area has been cleared of stumps, site furniture, utilities, sod and removed from site.
- .2 Strip topsoil to depths as indicated.
 - .1 Avoid mixing topsoil with subsoil where textural quality will be moved outside acceptable range of intended application.
- .3 Stockpile in locations as on site that do not impede site work.

- .1 Stockpile height not to exceed 2 m.
- .2 Protect stockpile from adverse weather conditions, contamination from invasive plant material, and compaction.
- .3 Avoid placing stockpile in low areas where natural drainage or storm water could pond, or erode these materials during inclement weather.
- .4 Dispose of unused topsoil in an environmentally responsible manner but do not use as landfill.

3.2 PREPARATION OF EXISTING GRADE

- .1 Verify that grades are correct.
 - .1 If discrepancies occur, notify Consultant, and do not start work until instructed by Consultant.
- .2 Grade subgrade, eliminating uneven areas and low spots, ensuring subgrade positive drainage to low spot where planter drainage is located and indicated in drawings.
- .3 Remove debris, roots, branches, stones in excess of 50 mm diameter and other deleterious materials.
 - .1 Remove debris which protrudes more than 75 mm above surface.
 - .2 Dispose of removed material off site.
- .4 Scarify compacted subgrade to depth of 150mm – 300mm immediately before placing topsoil.
- .5 Review subgrade conditions to ensure that there is proper drainage in all planting areas and tree pits.

3.3 PLACING AND SPREADING OF TOPSOIL/PLANTING SOIL

- .1 Place topsoil after Consultant has accepted subgrade.
- .2 Spread topsoil in uniform layers (lifts) not exceeding 150 mm.
- .3 Allow to settle or compact by very light rolling such that it is firm against deep footprints. Do not compact soil more than necessary to meet this requirement
- .4 Spread topsoil as indicated to the following minimum depths after settlement.
 - .1 150 mm for sodded areas.
 - .2 450 for shrub beds.
 - .3 900 mm for at grade planters.
- .5 Keep topsoil 15 mm below finished grade for sodded areas.
- .6 Manually spread topsoil/planting soil around trees, shrubs and obstacles.
- .7 Spread when moist (25% to 75% of field capacity) but not wet. Do not spread or grade in wet, frozen, or saturated state.

3.4 FINISH GRADING

- .1 Grade topsoil, eliminating uneven areas and low spots, ensuring positive drainage to low spot where planter drainage is located and indicated in drawings.

- .1 Prepare loose friable bed by means of cultivation and subsequent raking.
- .2 Consolidate topsoil to required bulk density using equipment approved by Consultant.
 - .1 Leave surfaces smooth, uniform and firm against deep foot printing.

3.5 SURPLUS MATERIAL

- .1 Dispose of surplus materials off-site.

3.6 CLEANING

- .1 Proceed with cleaning in accordance with Section 01 74 00 - Cleaning.
 - .1 Leave Work area organized and tidy at end of each day.
 - .2 Keep pavement and area adjacent to site clean and free from mud, dirt, and debris at all times.
- .2 Upon completion remove surplus materials, rubbish, tools and equipment.
 - .1 Clean and reinstate areas affected by Work.
- .3 Waste Management: Separate waste materials for reuse and recycling in accordance with Section 01 74 19 - Waste Management and Disposal.
 - .1 Divert unused fertilizer from landfill to official hazardous material collections site.

END OF SECTION

Part 1 General

1.1 RELATED REQUIREMENTS

- .1 Section 32 91 19.13 - Topsoil Placement and Grading

1.2 REFERENCE STANDARDS

- .1 City of Parksville Engineering Standards and Specifications, Current Edition
- .2 Canadian Society of Landscape Architects (CSLA) / Canadian Nursery Landscape Association (CNLA)
 - .1 Canadian Landscape Standard, current edition,
 - .2 Canadian Nursery Stock Standard, current edition

1.3 ADMINISTRATIVE REQUIREMENTS

- .1 Pre-Installation Meetings: conduct pre-installation meeting to verify project requirements, installation instructions and warranty requirements in accordance with Section 01 31 19 - Project Meetings.
- .2 Scheduling:
 - .1 Schedule sod laying and/or seeding to coincide with preparation of soil surface.
 - .2 Schedule sod/seed installation when frost is not present in ground.

1.4 ACTION AND INFORMATIONAL 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 for fertilizer and include product characteristics, performance criteria, physical size, finish and limitations.
- .3 Samples:
 - .1 Submit:
 - .1 Sod for each type specified.
 - .2 Obtain approval of samples by Consultant.
- .4 Certificates: submit product certificates signed by manufacturer certifying materials comply with specified performance characteristics and criteria and physical requirements of seed mix, seed purity, and sod quality.
- .5 Test Reports: submit certified test reports showing compliance with specified performance characteristics and physical properties of seed mix, seed purity, and sod quality.

1.5 QUALITY ASSURANCE

- .1 Qualifications: Provide proof of qualifications when requested by Consultant.
- .2 Contractor Qualifications:
 - .1 Landscape Contractor: to be a Member in Good Standing of one of the following organizations; International Society of Arboriculture, Canadian Nursery

- .2 Landscape Association, BC Landscape Nursery Association (BCLNA).
- .2 Landscape Sodding Supervisor: Landscape Horticulturist Journeyperson or Landscape Industry Certified Technician with Softscape Installation designation or equivalent.
- .3 Landscape Maintenance Supervisor: Landscape Horticulturist Journeyperson or Landscape Industry Certified Technician with Turf Maintenance designation or equivalent.

1.6 DELIVERY, STORAGE AND HANDLING

- .1 Deliver, store and handle materials in accordance with Section 01 61 00 - Common 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.
- .3 Storage and Handling Requirements:
 - .1 Store materials in accordance with supplier's recommendations.
 - .2 Replace defective or damaged materials with new.
- .4 For palletized sod products:
 - .1 Sod shall not be dumped or dropped from vehicle.
 - .2 Provide wind protection measures to protect sod during transportation against wind exposure and to prevent drying.
 - .3 Ensure sod freshness and healthy conditions when they arrive on site.
 - .4 Provide weather protection measures as required to keep sod fresh and moist, if installation is to be delayed.
 - .5 During the growing season, and where feasible, sod should be delivered to the site within 36 hours of harvest, and be installed within 24 hours of delivery.
 - .6 Allow sod to dry sufficiently after becoming water logged to prevent tearing or damage during handling.

1.7 MEASUREMENT FOR PAYMENT

- .1 The stipulated bid price shall include the cost of all preparation, excavation, products, materials, labour equipment, delivery, storage, handling, statutory charges, overhead and profit, other related charges, and inclusive of all duties and taxes applicable, except Value Added Taxes, and all other charges on account of the Work, measured in place for all parts of the Work.

Part 2 Products

2.1 MATERIALS

- .1 Dash Acres Custom Turf Blend, Canada No.1 Lawn Mixture, or approved equal:
 - 15% Chantilly Creeping Red Fescue
 - 15% Longfellow 3 Chewings Fescue
 - 30% Aspire Perennial Ryegrass
 - 30% Monsieur Perennial Bluegrass
 - 10% Diva Kentucky Bluegrass

- .2 Water:
 - .1 Supplied by Owner at designated source.
 - .2 Free of impurities that would inhibit plant growth.
- .3 Fertilizer:
 - .1 To Canada "Fertilizers Act" and Fertilizers Regulations.
 - .2 Complete, synthetic, slow release with [65] % of nitrogen content in water-insoluble form.

2.2 SOURCE QUALITY CONTROL

- .1 Obtain written approval from Consultant of sod at source.
- .2 When proposed source of sod is approved, use no other source without written authorization from Consultant.

Part 3 Execution

3.1 EXAMINATION

- .1 Verification of Conditions: verify that conditions of substrate previously installed under other Sections or Contracts are acceptable for sod installation in accordance with manufacturer's written instructions.
 - .1 Visually inspect substrate in presence of Contract Administration.
 - .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 PREPARATION

- .1 Verify that grades are correct and prepared in accordance with Section 32 91 19.13 - Topsoil Placement and Grading. If discrepancies occur, notify Consultant and commence work when instructed by Consultant.
- .2 Do not perform work under adverse field conditions such as frozen soil, excessively wet soil or soil covered with snow, ice, or standing water.
- .3 Fine grade surface free of humps and hollows to smooth, even grade, to contours and elevations indicated, to tolerance of plus or minus 8 mm, for Turf Grass Nursery Sod, surface to drain naturally.
- .4 Remove and dispose of weeds; debris; stones 25 mm in diameter and larger; soil contaminated by oil, gasoline and other deleterious materials; off site.

3.3 SOD PLACEMENT

- .1 Lay sod during active growing season for type of sod. Laying sod during dry, freezing, or over frozen soil is unacceptable.
- .2 If growing medium surface is dry, it shall be lightly moistened immediately before laying sod.
- .3 Lay sod flush with adjoining grass areas, paving and top surface of curbs, unless shown otherwise on the drawings.
- .4 Lay sod within 24 hours of being lifted if air temperature exceeds 20 degrees C.

- .5 Lay sod sections in rows, joints staggered a minimum of 30 cm. Butt sections closely without overlapping or leaving gaps between sections. Cut out irregular or thin sections with sharp implements.

3.4 CLEANING

- .1 Progress Cleaning: clean in accordance with Section 01 74 00 - Cleaning.
 - .1 Leave Work area clean at end of each day.
 - .2 Keep pavement and area adjacent to site clean and free from mud, dirt, and debris at all times.
- .2 Final Cleaning: upon completion remove surplus materials, rubbish, tools and equipment in accordance with Section 01 74 00 - Cleaning.
 - .1 Clean and reinstate areas affected by Work.

3.5 PROTECTION BARRIERS

- .1 Protect newly sodded areas from deterioration with snow fence on rigid frame as directed by Consultant.
- .2 Remove protection after inspection as directed by Consultant.
- .3 Maintain protective measures in good conditions until acceptance by Consultant.

3.6 MAINTENANCE DURING ESTABLISHMENT PERIOD

- .1 Perform following operations from time of installation until acceptance.
 - .1 Water sodded areas in sufficient quantities and at frequency required to maintain optimum soil moisture condition to depth of 100 mm.
 - .2 Cut grass to 75 mm when or before it reaching height of 125 mm.
 - .3 Maintain sodded areas weed free to 95%.
 - .4 Fertilize areas in accordance with fertilizing program. Spread half of required amount of fertilizer in one direction and remainder at right angles and water it well.
 - .5 Temporary barriers or signage to be maintained where required to protect newly established sod.

3.7 ACCEPTANCE

- .1 Sod areas will be accepted by Consultant provided that:
 - .1 Sodded areas are properly established.
 - .2 Sod is free of bare and dead spots.
 - .3 No surface soil is visible from height of 1500 mm when grass has been cut to height of 75 mm.
- .2 Areas sodded will be after period of 1 (one) calendar year (12 months) from the date of 'Ready-for-Takeover'.
- .3 When environmental conditions allow, all sodded areas showing shrinkage cracks shall be top-dressed and seeded with a seed mix matching the original.

3.8 CLOSEOUT ACTIVITIES

- .1 Submit sodded areas maintenance reports for review by Consultant.

END OF SECTION

Part 1 General

1.1 INTENT

- .1 This Section covers all plant material as indicated on the contract drawings.

1.2 RELATED REQUIREMENTS

- .1 Section 32 91 19.13 - Topsoil Placement and Grading

1.3 DEFINITIONS

- .1 Mycorrhiza: Association between fungus and roots of plants. This symbiosis, enhances plant establishment in newly landscaped and imported soils.

1.4 REFERENCE STANDARDS

- .1 City of Parksville Engineering Standards and Specifications, Current Edition
- .2 National Resources Canada (NRCan):
 - .1 Canada's Plant Hardiness Zones, current edition
- .3 Canadian Society of Landscape Architects (CSLA)/Canadian Nursery Landscape Association (CNLA):
 - .2 Canadian Landscape Standard, current edition
 - .3 Canadian Nursery Stock Standard, current edition
- .2 Health Canada/Workplace Hazardous Materials Information System (WHMIS)
 - .1 Safety Data Sheets (SDS)

1.5 ADMINISTRATIVE REQUIREMENTS

- .1 Scheduling: obtain approval from Consultant seven (7) days in advance of shipment of plant material.
- .2 Schedule to include:
 - .1 Quantity and type of plant material.
 - .2 Shipping dates.
 - .3 Arrival dates on site.
 - .4 Planting dates.

1.6 ACTION AND INFORMATIONAL 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 for trees, shrubs, ground cover, fertilizer, mycorrhiza, anti-desiccant, anchoring equipment, and mulch and include product characteristics, performance criteria, physical size, finish and limitations.

- .3 Samples:
 - .1 Submit samples of mulch.

1.7 QUALITY ASSURANCE

- .1 Qualifications: Provide proof of qualifications when requested by Consultant.
 - .1 Landscape Contractor: to be a Member in Good Standing of one of the following organizations: International Society of Arboriculture, Canadian Nursery Landscape Association, BC Landscape Nursery Association (BCLNA).
 - .2 Landscape Supervisor: Landscape Horticulturist Journeyperson or Landscape Industry Certified Technician with Softscape Installation designation or equivalent.
 - .3 Landscape Maintenance Supervisor: Landscape Horticulturist Journeyperson or Landscape Industry Certified Technician with Ornamental Maintenance designation or equivalent.

1.8 INSPECTION BY CONTRACT ADMINISTRATOR

- .1 The Consultant will inspect plants at the following stages:
 - .1 Plants at local source of supply or place of growth
 - .2 Proposed plant locations before excavating
 - .3 Installed plants before commencement of maintenance period
 - .4 At end of maintenance period
- .2 Notify Consultant 72 hours in advance of each required inspection. Contractor shall ensure required plants will be available or meet specifications before arranging inspection for selection and tagging of plants.
- .3 Approval of plants at source of supply does not impair the right of Consultant to inspect plants on site during project construction. Any plant that has been damaged, does not conform to specifications, or where Consultant installed tags are missing, will be rejected.

1.9 DELIVERY, STORAGE, AND HANDLING

- .1 Deliver, store, and handle materials in accordance with Section 01 61 00 - Common Product Requirements.
- .2 Delivery and Acceptance Requirements: Deliver materials to site in original factory packaging, labelled with manufacturer's name and address.
 - .1 Protect plant material from frost, excessive heat, wind and sun during delivery.
 - .2 Protect plant material from damage during transportation:
 - .1 Delivery distance is less than 30 km and vehicle travels at speeds under 80 km/h, tie tarpaulins around plants or over vehicle box.
 - .2 Delivery distance exceeds 30 km or vehicle travels at speeds over 80 km/h, use enclosed vehicle where practical.
 - .3 Protect foliage and root balls using anti-desiccants and tarpaulins, where use of enclosed vehicle is impractical due to size and weight of plant material.
- .3 Storage and Handling Requirements:

- .1 Immediately store and protect plant material which will not be installed within one (1) hour.
 - .1 Store in accordance with supplier's written recommendations at a storage location approved by Consultant.
- .2 Protect stored plant material from frost, wind and sun to ensure planting success as follows:
 - .1 For pots and containers, maintain moisture level in containers. Heel-in fibre pots.
 - .2 For balled and burlapped and wire basket root balls, place to protect branches from damage. Maintain moisture level in root zones. Do not install plants whose soil balls have been cracked or broken before or during planting or when burlap ropes required in connection with their transplanting have been removed. Do not use plants during contact with equipment, or plants that are wilted, windburned or stressed.
- .3 Plants not planted within 24 hours may be subject to rejection, at no cost to the Owner.
- .4 Store and manage hazardous materials in accordance with manufacturer's written instructions.
- .5 Handle plants with reasonable care and skill to prevent injuries to trunk, branches, roots, soil balls and containers. Trees with damaged, broken or abraded trunks or branches will be subject to rejection.

1.10 WARRANTY

- .1 Replace plants immediately when found dead or not in healthy and satisfactory growing condition during the maintenance / warranty period.
- .2 Contractor hereby warrants that plant material as itemized on plant list will remain free of defects for 1 full growing season (1 year/12months), providing adequate maintenance has been provided from the start of '*Ready-For-Takeover*'.
- .3 End-of-warranty inspection will be conducted by Consultant.
- .4 Consultant reserves the right to extend Contractor's warranty responsibilities for an additional one year if, at end of initial warranty period, leaf development and growth is not sufficient to ensure future survival.

1.11 MEASUREMENT FOR PAYMENT

- .1 The stipulated bid price shall include the cost of all Products, materials, labour equipment, delivery, storage, handling, statutory charges, overhead and profit, other related charges, and inclusive of all duties and taxes applicable, except Value Added Taxes, and all other charges on account of the Work, measured in place for all parts of the Work.

Part 2 Products

2.1 PLANT MATERIAL

- .1 Type of root preparation, sizing, grading and quality: comply to Canadian Nursery Stock Standard.

- .1 Source of plant material: grown in Zone 7 in accordance with Plant Hardiness Zones in Canada.
- .2 Plant material shall be planted in zone specified as appropriate for its species.
- .3 Plant material in location appropriate for its species.
- .2 Plant material: free of disease, insects, defects or injuries and structurally sound with strong fibrous root system.
- .3 Nursery Grown Plants:
 - .1 All plants shall be No. 1 Grade, nursery grown, under proper cultural practices with respect to fertile soil, ample spacing, regular cultivation, weed, pest and disease control, adequate moisture and pruning in accordance with good horticultural practices as advocated by the Canadian Nursery Trades Association and the
 - .2 Plants true to genus, species and variety, structurally sound, well balanced, healthy, vigorous, of normal growth habits, densely foliated and healthy well developed root system.
 - .3 Plants free of disease, insect infestations, insect eggs, rodent damage, sunscald, frost cracks and other abrasions or scars to bark.
 - .4 Heeled-in plants or plants from cold storage will not be accepted.
 - .5 Plants which have been top Worked, unnaturally sheared or colour treated are not acceptable.
 - .6 Plants from native stands, orchards, wood lots, neglected nurseries or which have not received proper cultural maintenance are not acceptable.

2.2 PLANTS – CHARACTERISTICS

- .1 Deciduous Trees: Straight bodied trees, select upright tree form with naturally higher clearances.
- .2 Double leaders not acceptable. Trunks clean and free of stubs, decay, splits or other damage.
- .3 Shrubs: Natural form, typical of genus, species and variety; minimum of four canes.
- .4 Grasses: Natural form, typical of genus, species and variety; visibly healthy and robust in form
- .5 Perennials: Natural form, typical of genus, species and variety; visibly healthy and robust in form

2.3 PLANT MEASUREMENT

- .1 All plants shall conform to measurements specified in plant list.
- .2 Measure trees and shrubs, in centimeters, with branches in their normal positions.
- .3 Height and spread dimensions, in centimeters, specified refer to main body of plant.
- .4 Caliper size, in millimeters, takes precedence over height. Take caliper measurement 30 cm above ground.
- .5 Supply container grown plant in container size indicated on plant list. Plants supplied in smaller than specified container will be rejected

- .6 Measure vines, ground cover plants, herbaceous plants by:
 - .1 Units of plants of specified age.
 - .2 Size of clump.
 - .3 Number, length of runners in centimeters.

2.4 PLANTS – SOIL BALLS

- .1 Container grown plants:
 - .1 Grown in containers for minimum of three months.
 - .2 Established root system that will ‘hold’ soil when removed from container
 - .3 Container sized in proportion to plant size
 - .4 Root bound plants are not acceptable.
- .2 Balled and burlapped plants:
 - .1 Soil balls tightly secured with burlap, heavy twine and rope, or burlap wire baskets and rope. Plant trunks shall be in centre of the root ball.
 - .2 Protect balls against exposure to elements.
 - .3 Deliver with firm natural ball of soil and free from pernicious perennial plants and their roots.
- .3 Minimum ball sizes for nursery grown deciduous trees:

Caliper (mm)	Min. Ball Diameter (cm)
40	60
50	70
60	70
70	80
80	90
90	90
100	100
125	120
150	150
175	175
200	200

- .4 Minimum ball sizes for nursery grown coniferous trees:

Height (cm)	Min. Ball Diameter (cm)
100	45
125	50
150	60
175	70
200	80
250	90
300	122
350	127

- .5 Adjust ball size according to growing habits of plants. Listed soil ball sizes are minimum and for use on nursery grown trees under proper nursery conditions. Multi-stem trees and pine trees require soil ball minimum two sizes larger.

- .6 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 Trees 150 mm caliper and over shall be root pruned during previous two successive growing seasons prior to delivery.

2.5 WATER

- .1 Free of impurities that would inhibit plant growth.

2.6 STAKES

- .1 T-bar, steel, 40 x 40 x 5 x 2440 mm

2.7 WIRE TIGHTENER

- .1 Type 1: galvanized steel, stamped plate type, rod, triangular shape.
- .2 Type 2: turnbuckle, galvanized steel, 9.5 mm diameter with 270 mm open length.

2.8 GUYING WIRE

- .1 Guy Wire: #12 or #14 pliable galvanized steel wire

2.9 ANCHORS

- .1 Guy wire anchors: t-rail studded 40mm x 40mm metal stakes, minimum 2.1m long.

2.10 GUYING COLLAR

- .1 Tube: plastic 25 mm diameter, nylon reinforced.
 - .1 Ensure that plastic tube to remain soft and pliable under all weather conditions.

2.11 TRUNK PROTECTION

- .1 Wire mesh: galvanized, electrically welded 1.4 mm wire with 25 x 25 mm mesh and fastener.
- .2 Plastic: perforated spiralled strip.
- .3 Burlap: clean 2.5 kg/m² minimum mass and 150 mm minimum wide, and twine fastener.

2.12 MULCH

- .1 Wood chip: varying in size from 25 mm to 50 mm long/wide and 50 to 20 mm thick, free of bark, small branches and leaves.

2.13 FERTILIZER

- .1 Synthetic commercial type as recommended by manufacturer.
 - .1 Ensure new root growth is in contact with mycorrhiza.
 - .2 Use mycorrhiza as recommended by manufacturer's written recommendations.

2.14 ANTI-DESICCANT

- .1 Wax-like emulsion.

2.15 FLAGGING TAPE

- .1 Fluorescent, orange in colour.

2.16 SOURCE QUALITY CONTROL

- .1 Obtain approval from Consultant of plant material before planting.
- .2 Imported plant material shall be accompanied with necessary permits and import licenses. Conform to Federal, Provincial or Territorial regulations.

Part 3 Execution

3.1 EXAMINATION

- .1 Verification of Conditions: Verify conditions of substrate previously installed under other Sections or Contracts are acceptable for planting installation in accordance with manufacturer's written instructions.
 - .1 Visually inspect substrate in presence of Consultant.
 - .2 Inform Administrator 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 PRE-PLANTING PREPARATION

- .1 Proceed only after receipt of written acceptability of plant material from Consultant.
- .2 Remove damaged roots and branches from plant material.
- .3 Apply anti-desiccant to conifers and deciduous trees in leaf in accordance with manufacturer's instructions.
- .4 Locate and protect utility lines.
- .5 Notify and acquire written acknowledgement from utility authorities before beginning excavation of planting pits for trees and shrubs.

3.3 EXCAVATION AND PREPARATION OF PLANTING BEDS

- .1 Establishment of sub-grade for planting beds in accordance with Section 31 22 13 - Rough Grading.
- .2 Preparation of planting beds in accordance with Section 32 91 19.13 - Topsoil Placement and Grading.
- .3 For individual planting holes:
 - .1 Stake out location and obtain approval from Consultant before excavating.
 - .2 Excavate to depth and width as indicated on Drawings.
 - .3 Execute excavation work in accordance with Section 31 23 33.01 - Excavation Trenching and Backfilling.
 - .4 Remove subsoil, rocks, roots, debris and toxic material from excavated material that will be used as planting soil for trees and individual shrubs. Dispose of excess material.

- .5 Scarify sides of planting hole.
- .6 Remove water which enters excavations before planting. Notify Consultant if water source is ground water.

3.4 PLANTING

- .1 For jute burlapped root balls, cut away top one third of wrapping and wire basket without damaging root ball.
 - .1 Do not pull burlap or rope from under root ball.
- .2 For container stock or root balls in non-degradable wrapping, remove entire container or wrapping without damaging root ball.
- .3 Plant vertically in locations as indicated on Drawing..
 - .1 Orient plant material to give best appearance in relation to structure, roads and walks.
- .4 For trees and shrubs:
 - .1 Backfill soil in 150 mm lifts.
 - .1 Tamp each lift to eliminate air pockets.
 - .2 When two thirds of depth of planting pit has been backfilled, fill remaining space with water.
 - .3 After water has penetrated into soil, backfill to finish grade.
 - .2 Form watering saucer as indicated on Drawings or directed by Consultant.
- .5 For ground covers, backfill soil evenly to finish grade and tamp to eliminate air pockets.
- .6 Perform backfilling work in accordance with Section 31 23 33.01 - Excavation Trenching and Backfilling.
- .7 Water plant material thoroughly.
- .8 After soil settlement has occurred, fill with soil to finish grade.

3.5 TRUNK PROTECTION

- .1 Install trunk protection on deciduous trees as indicated on Drawings or directed by Consultant.
- .2 Install trunk protection before installation of tree supports.

3.6 TREE SUPPORTS

- .1 Install tree supports as indicated on Drawings or directed by Consultant.
- .2 Use single stake tree support for deciduous trees less than 3 m in height.
 - .1 Place stake on prevailing wind side and 150 mm minimum from trunk.
 - .2 Drive stake 150 mm minimum into undisturbed soil beneath roots.
 - .1 Ensure stake is secure, vertical and unsplit.
 - .3 Install 150 mm long guying collar 1500 mm above grade.
- .3 Use three (3) guy wires and anchors for deciduous trees greater than three (3) m in height, 12cm caliper and evergreens greater than two (2) m in height.

- .1 Install anchors at equal intervals about tree and away from trunk so guy wire will form 45degree angle with ground. Install anchor at angle to achieve maximum resistance for guy wire.
 - .2 Attach guy wire to anchors. Tension wire and secure by multi-wraps.
 - .3 Install wire tightener ensuring that guys are secure and leave room for slight movement of tree but do not allow for root system to shift into growing medium.
 - .4 Saw tops off wooden anchors which extend in excess of 100 mm above grade or as directed by Consultant.
 - .5 Install flagging tape to guys as indicated on Drawings or directed by Consultant.
- .4 After tree supports have been installed, remove broken branches with clean, sharp tools.

3.7 MULCHING

- .1 Ensure soil settlement has been corrected before mulching.
- .2 Spread mulch as indicated on Drawings or directed by Consultant.

3.8 MAINTENANCE DURING ESTABLISHMENT PERIOD

- .1 Perform following maintenance operations from time of planting to acceptance by Consultant.
 - .1 Water to maintain soil moisture conditions for optimum establishment, growth and health of plant material without causing erosion.
 - .1 Monitor and maintain self watering product during establishment period.
 - .2 Water evergreen plant material thoroughly in late fall before freeze-up to saturate soil around root system.
 - .2 Remove weeds weekly.
 - .3 Replace or re-spread damaged, missing or disturbed mulch.
 - .4 Cultivate non-mulched areas, as required to keep top layer of soil friable.
 - .5 Use appropriate control methods if required, to control insects, fungus and disease, in accordance with federal, provincial and municipal regulations. Obtain product approval from Consultant before application.
 - .6 Remove dead or broken branches from plant material.
 - .7 Keep trunk protection and guy wires in proper repair and adjustment.
 - .8 Remove and replace dead plants and plants not in healthy growing condition. Make replacements in same manner as specified for original plantings.

3.9 CLEANING

- .1 Progress Cleaning: Clean in accordance with Section 01 74 00 – Cleaning.
- .2 Final Cleaning: Upon completion remove surplus materials, rubbish, tools and equipment in accordance with Section 01 74 00 - Cleaning.

3.10 CLOSEOUT ACTIVITIES

- .1 Submit trees, shrubs and other plantings maintenance reports for review by Consultant.

END OF SECTION

Part 1 General

1.1 INTENT

- .1 Exterior Landscape Maintenance for all softscape items on site.
- .2 All exterior Landscape Maintenance must be coordinated with the City of Parksville Park Operations staff.

1.2 DOCUMENTS

- .1 This section, along with the drawings, forms part of the contract documents and is to be read, interpreted, and coordinated with all other parts.
- .2 Cooperate and coordinate with the requirements of other units of work specified in other Sections.

1.3 RELATED STANDARDS

- .1 City of Parksville Engineering Standards and Specifications, Current Edition

1.4 RELATED SECTIONS

- .1 Section 32 92 23 – Sodding
- .2 Section 32 93 10 – Trees, shrubs, and planting
- .3 Section 32 84 00 - Irrigation

1.5 QUALITY ASSURANCE

- .1 All maintenance Work must be directed and supervised on site by a competent, experienced and knowledgeable site supervisor who possess experience in horticulture maintenance practises.

1.6 HOURS OF WORK

- .1 Perform maintenance work during regular park hours as indicated.

1.7 MAINTENANCE LOG

- .1 Keep daily maintenance log throughout contract. Complete log during each day of maintenance activity. Submit legible and signed copy of maintenance log data to Consultant each week for verification.
- .2 Failure to maintain and submit log to Consultant as required may delay payment of invoice to Contractor.
- .3 Consultant may extend maintenance period at no additional cost or reduce payments: when Contractor fails to keep or submit an accurate log; when inadequate site maintenance occurs; or when unsatisfactory work is performed.
- .4 Record and update all maintenance activities daily including date and time of activities, location where activities were carried out and name of each employee and supervisor on site.
- .5 Detail applications of all chemical pesticides including target weed, insect or other pest,

mode, type, and rates of application and results. Include date, time, weather conditions and name of licensed applicator. Keep and maintain pesticide applicator's log.

1.8 TESTING

- .1 Ensure soil test analysis are completed at commencement of landscape work.
- .2 Record soil test results and corrective measures taken in Maintenance Log.
- .3 Perform additional soil tests, when directed by Consultant, to verify fertilization applications and results of corrective measures taken to improve soil conditions as recommended in soil test reports.
- .4 Use soil moisture meter or probe to test and measure availability of moisture in turf and plant soil areas. Test monthly and record in Log.

1.9 REGULATORY REQUIREMENTS

- .1 Provide Consultant with copies of permits and licences required by regulatory authorities, including current pesticide applicator's license number, Landscape Class.

1.10 DELIVERY, STORAGE AND HANDLING

- .1 Deliver and store fertilizer and seed in waterproof bags showing mass, analysis and name of manufacturer.
- .2 Provide storage space for material and equipment.

1.11 DAMAGE TO PROPERTY

- .1 Repair and pay for damages caused by contractor's personnel and equipment during the term of the Contract.
- .2 Immediately report damages to Consultant.
- .3 The repair of third party damage is the responsibility of the Contractor prior to final acceptance at end of maintenance period. The Owner is responsible for payment for these items.
- .4 Obtain Consultant's approval for repairs and replacements. Return grass areas, plants, equipment, paved surfaces and buildings to their original condition before damage.
- .5 Scalping of turf, mechanical damage to trees and shrubs including tearing of bark, improper pruning of plants, and damages resulting from improper use of chemical pesticides and fertilizers will be considered damage.
- .6 Complete repairs and replacements within seven days from date of approval given for repair or replacement.

1.12 WARRANTY / GUARANTEE PERIOD

- .1 Exterior landscape works: maintain all exterior landscape works during the warranty/guarantee period of 1 (one) calendar year (12 months) from the date of '*Ready-For-Takeover*'.

1.13 MEASUREMENT FOR PAYMENT

- .1 Measurement for site maintenance shall be on a monthly (months) basis.

- .2 Payment for site maintenance shall be on a monthly basis based on the contractors submittal and accepted maintenance logs by the Consultant.
- .3 The work includes:
 - .1 Maintenance of trees, shrubs, perennials, and grasses including the fertilizer applications, topsoil top ups, sod repair, weed control, watering, mowing, and pruning.
 - .2 For precast paver maintenance refer to manufacturers instructions.
 - .3 All incidental work and items required to complete the work for which payment is not specified elsewhere.

Part 2 Products

2.1 FERTILIZER

- .1 11-51-0 at 3 kg/100 m²
27-14-0 at 3 kg/100 m²
16-20-0 at 3 kg/100 m²
10-6-4 at 18 g/ mm of caliper per tree
- .2 Turf fertilizer: according to soil test analysis or as directed by Consultant. Do not use any “weed and feed” fertilizer unless authorized by Contractor Administrator. Type and use of turf fertilizer on site to meet the following:
 - .1 Organic Fertilizer: balanced, high quality, slow release organic granular fertilizer with minimum 35% to 40% of nitrogen content in a water-insoluble form.
 - .2 Commercial Fertilizer: dry quick release mixed chemical granular fertilizer containing two or more recognized plant nutrients that promote plant growth.
 - .3 Plant fertilizer: according to soil test analysis or as directed by Consultant.

2.2 TOPSOIL

- .1 Topsoil for planting beds: mixture of particulates, micro-organisms and organic matter which provides suitable medium for supporting intended plant growth.
 - .1 Soil texture based on The Canadian System of Soil Classification, to consist of
 - .1 Sand: 30 to 70 % (larger than 0.05mm, smaller than 2mm)
 - .2 Silt: 10 to 35% (larger than 0.002mm, smaller than 0.05mm)
 - .3 Clay: 2 to 10% (smaller than 0.002mm)
 - .4 Max 35% clay and silt combined
 - .2 Not less than 15% organic material by dry weight
 - .3 pH value ranging from of 5.5 to 7.5
 - .4 Non toxic to plant growth
 - .5 Infiltration rate: minimum 40mm per hour infiltration rate
 - .6 EC @ 25 degrees Celsius – less then 2.5 dS/m
 - .7 SAR: Less than 4
 - .8 Contain no toxic elements or growth inhibiting materials.
 - .9 Finished surface free from:

- .1 Debris and stones over 25 mm diameter.
- .2 Coarse vegetative material, 10 mm diameter and 100 mm length, occupying more than 2% of soil volume.
- .10 Consistency: Friable when moist.
- .11 Max particle size 100% 0.5inch sieve
- .12 Reasonably free from subsoil, plants or their roots, building materials, wood, non-composted wood, wood waste, woody plant parts, insect pests, plant pathogenic organisms, chemical pollutants or substances at levels toxic to plants, stones (in excess of 10mm in maximum dimensions), foreign objects, and other extraneous materials that detract from the desirable physical and chemical properties required for landscaping purposes.

2.3 PLANT PROTECTION MATERIALS

- .1 Rodent, Animal and Sun Protection:
 - .1 Plastic: perforated spiraled strip extending 600mm up the trunk from finish grade.

2.4 PEST CONTROL

- .1 Chemical Pest Control: supply and apply all required chemical pesticides including herbicides, insecticides and fungicides when necessary to control or suppress pest populations. Provide Owner's Representative/ Landscape Architect/ Engineer with following information for approval:
 - .1 identification of specific pest(s) on site that require control.
 - .2 list of recommended chemical pesticides for use and control.
 - .3 pesticide manufacturer's product information and recommendations for application.
 - .4 name of licensed pesticide applicator and employer that will perform pesticide application on site.
 - .5 at completion of pesticide application on site submit detailed pesticide applicator's log for verification.

Part 3 Execution

3.1 GENERAL WORKMANSHIP

- .1 The Consultant will be the "Sole Judge" for assessing the Contractor's maintenance and workmanship performance.
- .2 Provide Consultant with detailed maintenance schedule at commencement of maintenance. List all regular, weekly and monthly maintenance services that will be completed. Obtain approval of schedule from Consultant.
- .3 Schedule timing of operations to growth, weather conditions and use of site. Do each operation continuously and complete within reasonable time period.
- .4 Do not perform work in any location or manner that may endanger the health and safety of the public.
- .5 Supply sufficient experienced manpower to complete all required maintenance services as scheduled to good horticultural practice and in accordance with specifications.

- .6 Perform all landscape maintenance services in contract under the site direction and supervision of an experienced qualified person knowledgeable in horticulture meeting Consultant approval.
- .7 Provide appropriate well-maintained equipment, tools and other materials necessary to complete all maintenance services to acceptable horticultural standards.
- .8 Collect and dispose of excess material and debris to approved municipal disposal site immediately following collection.
- .9 Coordinate maintenance practices with Consultant. Alter maintenance schedules, when necessary, to accommodate Consultant site activities.
- .10 Contact Consultant immediately when specified maintenance requirements cannot be met for any reason.
- .11 Ensure that all workers use appropriate personal protective equipment where there is a danger of injury and as required by Alberta's Occupational Health and Safety Act. Essential protective equipment must meet CSA approval.

3.2 SPRING CLEAN UP

- .1 Maintenance period will commence in early May on such date as mutually agreed upon by the Consultant and the Contractor.
- .2 Complete spring clean-up by March 15 or as soon as working conditions are favourable.
- .3 Remove and dispose of protective coverings and mulch used in winter protection.
- .4 Clean, collect and remove sand, gravel, salt and debris accumulated during winter months from maintained turf and paved areas. Dispose in approved municipal disposal site.
- .5 Rake, clean and remove all dead vegetation, leaves, debris, and snow mould from turf areas.
- .6 Roll turf areas lightly where grass has lifted due to frost action.
- .7 Clean planting beds and planters of debris and dead plant material and remove from site. Loosen and lightly cultivate soil without disturbing roots of permanent plantings.

3.3 TURF MAINTENANCE

- .1 Aerating to be provided if directed by Consultant:
 - .1 Identify all sprinkler heads and other obstructions with flags before aerating.
 - .2 Use a vertical motion coring aerator with hollow tines that penetrate the lawn, extract and deposit soil cores. Cores must be of minimum 50 mm depth and 90 mm spacing. Extracted cores that are deposited may remain.
 - .3 Aerate lawn areas in early spring every second season except areas of compacted soil on heavily used lawns that require aerating each year.
- .2 Topdressing and Reseeding:
 - .1 Re-seed areas which show root growth failure, deterioration, bare or thin spots, or which have been damaged by any means or cause. Overseed areas that show inadequate or improper sowing of seed from brilliant or other seeding methods.
 - .2 Mow grass to height of 40 mm. After mowing, rake thoroughly, removing loose and dead grass, stones and debris.

- .3 Spread topsoil to maximum thickness of 15 mm, filling in low areas and bare spots. For severely damaged turf areas place sufficient topsoil and rake level with finish grade.
- .4 Overseed areas with seed mixture equivalent to existing grasses and approved by Owner's Representative/ Landscape Architect/ Engineer . Seed at rate of 3 kg/100 m2.
- .5 Rake seed into topsoil. Roll lightly.
- .6 Water to ensure penetration of 80 mm and at frequent intervals to maintain vigorous growth.
- .3 Sod Replacement:
 - .1 Cut out and remove areas of dead, or unhealthy sod or which has been damaged by any means or cause and replace with new healthy sod. All repair areas to be square or rectangular.
 - .2 Rake existing topsoil before installing new sod. Add topsoil to fill uneven and low areas.
 - .3 Butt new sod tightly to adjacent existing sod. Topsoil open and exposed joints.
 - .4 Water to ensure penetration of 80 mm and at frequent intervals to maintain healthy growth.
- .4 Fertilizing:
 - .1 Adjust fertilizer requirements according to soil test analysis or as directed by Consultant.
 - .2 Use only mechanical equipment. Check calibration of spreader to ensure that specified rate is used.
 - .3 Spread 50% of fertilizer in one direction, then 50% at right angles.
 - .4 Organic Fertilizer: apply at rate of 3 kg/100 m2 or according to soils analysis. Fertilize by May 30th in spring and by July 15th in summer.
 - .5 Commercial Fertilizer: apply at rate of 3 kg/100 m2 or according to soils analysis. Fertilize by March 15th in spring, by July 5th in summer and by August 15th in late summer.
 - .6 Water, immediately after fertilizing, according to manufacturer's recommendations; obtain moisture penetration of 50 mm minimum.
 - .7 In areas where water is not available, utilize time fertilizer applications so that rainfall will activate the fertilizer and produce the desired results.
- .5 Mowing - Manicured Areas (Sodded areas):
 - .1 Maintain turf at 60 mm during growing season using mowers with sharp blades to cut turf cleanly. Turf mowed with dull blades that tears and leaves ragged leaf edges is unacceptable.
 - .2 Cut lawn areas on a regularly scheduled weekly basis during periods of active growth and more frequently during accelerated growth periods to maintain lawn at required height. During periods of slower growth cut turf on a biweekly basis or as needed.
 - .3 Mow turf preferably when dry and often enough so that not more than one-third of the grass leaf blade is removed during a single cutting.
 - .4 When necessary during periods of extended moisture and excessive turf height

- increase mower blade height and cut turf. After clippings dry, lower blade height to original height and double cut by mowing lawn a second time.
- .5 Remove excessive clippings that shade and smother the turf and present an unsightly appearance.
- .6 During extended periods of hot dry weather mow turf less frequently. When necessary, increase mowing height and mow during early morning or late evening.
- .7 Leave small and unnoticeable grass clippings on lawns that are mowed regularly and frequently at desired height. Remove heavy clipping deposits that result from infrequent mowing of excessive long turf. Use mulching mower and double cut long clippings when necessary.
- .8 Remove papers, rubbish, rocks, animal waste, and other foreign material before cutting.
- .9 Change direction of cut with each mowing, where practical, to avoid soil compaction and turf wear or ruts from mower wheels.
- .10 Clean and remove clippings from sidewalks, roads, parking lots, windows or building during the same mowing.
- .11 Edge along hard surfaces and lawn abutments once monthly during June, July, August and September.
- .12 Trim grass along tree wells, turf edges, fences and structures using mechanical trimmer at height no lower than 60 mm. Do not scalp turf when using trimmer. Remove grass and debris resulting from trimming operation.
- .13 In newly seeded areas, mow turf areas as necessary or when directed by Consultant to provide weed control. Cut and maintain weed growth to height of 100 mm. Remove weed clippings.
- .14 Consultant reserves the right to modify mowing operations during extreme weather conditions to determine and establish turf watering and fertilization requirements.

3.4 TREE AND SHRUB MAINTENANCE

- .1 Maintenance of Plant Beds:
 - .1 Cultivate non-mulched plant beds in upper 40 mm of soil biweekly to maintain a loose friable soil. Do not damage roots of plants when cultivating.
 - .2 Remove and dispose of debris, rubbish, animal waste, dead and unhealthy plants on a regular weekly basis.
 - .3 Edge plant beds evenly to depth of 100 mm monthly or as required to maintain original line and shape.
 - .4 Remove and eliminate perennial grass and weeds including their roots biweekly. Maintain a weed free appearance in plant beds and tree wells.
 - .5 Spread disturbed mulch or replace to maintain original mulch depth.
 - .6 Install planting media where settlement occurs to maintain original grades.
 - .7 Maintain soil lips around outer edge of plant pit. After completion of warranty period level soil lips.
- .2 Soil Conditioning:
 - .1 Maintain correct soil conditions in plant beds to promote optimum growth and

- health for each plant.
- .2 Supply and add soil amendments and organic matter according to soil analysis.
- .3 Staking and Tree Protection:
 - .1 Keep stakes and guy wires taut and plants plumb for duration of maintenance period
 - .2 Remove support stakes and staking accessories when plants become self-supporting or when directed by Consultant.
 - .3 Install and keep plant protection materials in proper repair and adjustment when required or directed by Consultant.
- .4 Pruning:
 - .1 Obtain and prune in accordance with proper practices and standards described by Pacific Northwest International Society of Arboriculture and as directed by Consultant. Consultant will be the "Sole Judge" for assessing all pruning operations.
 - .2 Prune to provide natural branching structure and to encourage healthy natural growth pattern for each plant.
 - .3 Prune plants with sharp pruning tools and equipment using qualified, experienced and trained personnel. Sterilize pruning tools after completion of each plant cutting operation and especially after pruning any diseased plant.
 - .4 All improperly pruned plants or plants pruned by Contractor without Consultant's authorization will be subject to rejection. Contractor will replace rejected plants or rectify improper pruning as determined and directed by Consultant.
 - .5 Prune plants to remove all dead, diseased, damaged and injured branches, crossing or rubbing branches, stubs, double leaders, suckers, watersprout and multiple shoots.
 - .6 Do not strip lower branches, raise up crown of trees, shear or top any plant. All such improper pruning will result in rejection of work unless authorized by Consultant. Promptly replace all rejected plants at no cost to the Consultant.
- .5 Plant Replacement:
 - .1 Promptly replace plants that die or become unhealthy during the maintenance and warranty periods. All replacement plants shall be noted in maintenance log.
 - .2 All plants must be in healthy and vigorous growing condition at end of maintenance period.
- .6 Fertilization Requirements in Early Spring:
 - .1 Adjust fertilizer requirements according to soil test analysis or when directed by Consultant. Use a slow release non-soluble fertilizer.
 - .2 Apply 10-6-4 or similar fertilizer at rate of 18 g/25 mm of caliper per tree from trunk to dripline of tree.
 - .3 Apply 16-10-9 or similar fertilizer spikes at rate of one spike per 25 mm of caliper per tree at dripline of tree.
 - .4 Apply 10-6-4 or similar fertilizer at rate of 5 kg/100 m² into upper surface of plant beds.

- .5 Apply adequate water after fertilizing to ensure penetration of fertilizer into soil and roots.
- .7 Watering of Plants:
 - .1 Test moisture levels of individual plant species and provide adequate water supply by hand if necessary to augment irrigation system.
 - .2 Hand water all plants whenever irrigation system is inoperative or insufficient.
 - .3 Deep water trees and shrubs thoroughly on a regular basis using a deep root feeder to maintain adequate moisture level within root systems and ensure healthy vigorous growing conditions.
 - .4 Thoroughly hand water all planters weekly or more frequently to maintain adequate moisture within the root systems and to ensure healthy growth.
 - .5 Supply clean water and water truck including all accessories to adequately water and maintain plants where water is not available or inadequate.

3.5 INTEGRATED PEST MANAGEMENT

- .1 Integrated Pest Management (IPM):
 - .1 Manage and control pests using IPM principles as per the “Integrated Pest Management Plan” that utilizes regular monitoring to identify pests, considers various control options (biological, physical, cultural, mechanical and chemical) before implementing an effective, economical and environmentally acceptable solution to prevent and suppress pests.
 - .2 Use IPM principles to reduce or eliminate a reliance on chemical pesticides.
- .2 Provide ongoing and knowledgeable communications with Consultant regarding identified pests on site, controls implemented to manage pest and outcome of treatment actions. Record all information in maintenance log.
- .3 The Contractor shall provide Consultant with at least three days advance notification of intent to spray for weed and insect control.

3.6 PESTS: WEED, INSECT AND DISEASE CONTROL

- .1 General Considerations:
 - .1 Ensure proper, positive identification of infestations and consult with Consultant before taking corrective action. Obtain and apply pest management controls in accordance with “Backyard Pest Management”.
 - .2 Prior to chemical pesticide applications, obtain written approval from Consultant.
 - .3 Determine susceptibility of plant species to pesticide damage before any chemical application.
 - .4 Use equipment and containers free of harmful residues not related to specific control measures applicable to situation.
 - .5 Perform disease, weed and insect control, in accordance with Provincial chemical application legislation. Provide Consultant with three days advance notification of intent to apply chemical pesticides on site.
 - .6 Prepare and apply chemical according to manufacturer's specification. Minimize drift at all times. Erect signs to notify building occupants and the public regarding pesticide use on site.

- .7 Carry out treatment with regard to climatic effect on surroundings and occupants of buildings.
- .2 Weed Control:
 - .1 Apply chemical pesticide to eradicate weeds or perennial grass in driveways, interlocking concrete paving stone areas, along fences, parking lots, gravel and rip-rap stone areas within boundary of site.
 - .2 Repair and pay for damage caused by application of herbicides.
 - .3 Only use soil sterilant when and where approved by Consultant.
 - .4 Effectiveness of treatment program to be determined by inspection by Consultant. Repeat as required.
- .3 Insect and Disease Control:
 - .1 Make weekly inspection of lawns and plants for insect and disease infestations. Apply chemicals based on development stage of insects' life cycles.
 - .2 Repair and pay for damages caused by application of chemicals.
 - .3 Effectiveness of treatment program to be determined by inspection by the Consultant. Repeat as required.
- 3.7 AUTUMN PREPARATION**
 - .1 Rake leaves as they shed and remove from site. Continue to perform this service until leaves cease to fall.
 - .2 Cut back foliage of perennials. Stake locations of perennials if required and deep water. Apply organic mulch around plants.
- 3.8 CLEANLINESS OF GROUNDS**
 - .1 Keep grounds in clean and tidy condition on daily basis or as a need for clean up occurs and when directed by Consultant.
 - .2 Collect and dispose of excess material and debris to municipal disposal site weekly.
- 3.9 MAINTENANCE DUTIES BY OWNER**
 - .1 The City of Parksville will assume a portion of the maintenance duties in keeping with overall park operation strategy. The City of Parksville will provide a maintenance and methodology plan to the Contractor for the Contractor to review and approve. Warranty and liability will remain with the Contractor for following works completed by the City of Parksville:
 - .1 The Contractor will provide scheduling direction to The City of Parksville for irrigation. The City of Parksville will set the irrigation schedule per the Contractor's direction. The Contractor will be responsible for any watering over and above the irrigation schedule provided to ensure health of trees, shrubs, perennials, grasses and sod. The Contractor will provide direction to The City of Parksville when adjustments to the irrigation schedule is required.
 - .2 Empty garbage containers weekly or more often when required based on usage. Supply and replace refuse bags after each removal.
 - .3 Clean hard surface areas and drive aisles weekly or when directed by Consultant. Provide mechanical power wash equipment to wash paved surfaces if directed by

- Consultant to maintain a clean site appearance.
- .4 Clear snow from asphalt, concrete, and paver areas. Snow clearing, sanding, and salting to be as per manufacturer's instructions and noted within the maintenance and methodology plan provided to the Contractor for approval.
 - .5 Make weekly inspections for vandalism and damage. Immediately report vandalism and damage to Consultant and Contractor and rectify in accordance with approved maintenance plan.
- .2 The City of Parksville will take responsibility for any works completed that deviate from the provided maintenance and methodology plan approved by the Contractor.

END OF SECTION