



# ALBERNI-CLAYOQUOT REGIONAL DISTRICT

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**Contract Documents for**

**Alberni Valley Regional Airport  
& Long Beach Airport  
Winter Equipment & Sand Storage Shed**

**Tender Code: APS01-22**

**Reference: 2689  
November 2022**

**Prepared by:  
McGill & Associates Engineering Ltd.  
Port Alberni, B.C.  
Ph: 250-724-3400**



**Alberni Clayoquot Regional District**

**ALBERNI VALLEY REGIONAL AIRPORT  
& LONG BEACH AIRPORT  
WINTER EQUIPMENT & SAND STORAGE SHED  
Tender Code: APS01-22**

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**Invitation to Tenderers**

**ALBERNI CLAYOQUOT REGIONAL DISTRICT**

**Contract: AVRA & LBA WINTER EQUIPMENT & SAND STORAGE SHED  
APS01-22**

**Reference No.:** 2689

The Owner invites tenders for:

Construction of a 3,750 sq.ft pre-fabricated steel frame maintenance building at Long Beach Airport, and a 2,400 sq.ft pre-fabricated steel frame maintenance building at Alberni Valley Regional Airport.

Each building can be bid separately or a bid submitted for both.

This tender will be available on BC Bid and tenders will be accepted through BC Bid. An electronic copy of the Tender Submission must be submitted in accordance with BC Bid Instructions for e-bidding. Only pre-authorized e-bidders registered on the BC Bid System can submit electronic bids.

Tenders will also be available on the ACRD website: <https://www.acrd.bc.ca/bidopportunities>

Bids are to be submitted via BCBid portal, email, or by paper to the office of the ACRD.

Tenders are scheduled to close at:

***Tender Closing Time:*** 10:30 am local time

***Tender Closing Date:*** December 7th, 2022 at:

**Address:** ALBERNI CLAYOQUOT REGIONAL DISTRICT  
3008 Fifth Avenue  
Port Alberni, B.C. V9Y 2E3

The Owner reserves the right to reject any or all bids, or accept other than the lowest bid from the general contractor or any of his subcontractors.

If a tender contains a defect or fails in some way to comply with the requirements of the Tender Documents, which in the sole discretion of the Owner is not material, the Owner may waive the defect and accept the Tender.

Michael McGregor, Land & Resources Coordinator  
250-720-2712

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## INSTRUCTIONS TO BIDDERS

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### 1. DOCUMENTS

#### 1.1 DOCUMENTS

1. Carefully examine the following information. Failure to follow these instructions may result in bid disqualification.
2. Project information:
  - .1 Project/Contract No. 2689
  - .2 Project/Contract: AVRA & LBA Winter Equipment & Sand Storage Sheds APS01-22  
Each building may be bid separately or as one bid for both.

#### 1.2 BID DOCUMENTS

- (a) Invitation to Bid
- (b) Instructions to Bidders
- (c) Bid Form;
- (d) Articles of Agreement (CCDC 2 – 2008)
- (e) General Conditions (CCDC 2 – 2008)
- (f) Supplementary Conditions
- (g) Project Specific Amendments, if any;
- (h) General Requirements;
- (i) Drawings and Specifications
- (j) Addenda and Appendices, if any.

#### 1.3 CONTRACT DOCUMENTS

1. Upon award of the contract the Contract Documents consist of only (b) to (j) above.

### 2. PRE-BID INQUIRIES

#### 2.1 Direct inquiries relating to Bid Documents, only to the Consultant at:

Brad West, P.Eng.  
McGill & Associates Engineering Ltd.  
4610 Elizabeth St.  
Port Alberni, B.C. V9Y 6L7  
Tel: (250) 724-3400  
email: bwest@mcgilleng.com

### 3. PARTICULARS AFFECTING BID PRICE

#### 3.1 MATERIALS

1. Establish the Bid Price based on the use of materials as specified in Drawings and Specifications.
2. Proposed alternatives to materials specified will be considered during the bidding period only if full descriptive data are submitted in writing to the Consultant at least 5 Working Days before the bid closing date.
3. Approved alternatives will be incorporated in the Drawings and Specifications by issuance of an Addendum.

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## INSTRUCTIONS TO BIDDERS

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### 3.2 CONDITIONS RELATED TO THE WORK

1. Become familiar with the site and existing conditions prior to submitting a bid and make allowances for conditions related to the *Work*.
2. Claims for an increase in Contract Price or Contract Time arising from observable conditions will be rejected by the Owner.

### 3.3 TAXES

1. The Bid Price includes all applicable taxes in force at the time of bidding and related to the progress of the *Work* except Value Added Tax (GST).
2. The successful Bidder agrees to:
  1. Pay applicable taxes in force during and related to progress of the *Work*.
  2. Pay Social Services Tax (PST) on materials incorporated into the *Work* and on machinery, equipment and supplies used to carry out the Contract. This tax is payable whether or not the materials, machinery, equipment or supplies have been purchased in British Columbia.
  3. Allow the Owner to conduct an audit of the BC Ministry of Finance Consumer Tax Database (or, if the successful bidder is not a BC registered company, the equivalent in the Province of which the successful bidder is incorporated) to determine if the successful bidder is in compliance with the *Social Service Tax Act*.
  4. Submit a statutory declaration at *Substantial Performance* of the *Work*, stating Social Services taxes have been paid in full to date when requested to do so by the Owner.

## 4. COMPLETION OF BID FORM

### 4.1 COMPLETION OF BID FORM

1. Complete the bid on the Bid Form included with the Bid Documents in a non-erasable medium and execute in accordance with provisions of Clause 5 of the Instructions to Bidders – EXECUTION OF THE BID.
2. If required, state the number of weeks within which the bidder will Substantially Perform the *Work*.
3. Initial erasures or corrections to entries on the Bid Form.
4. Indicate receipt of Addenda.
5. The Owner may reject the Bid if the Bid Form has alterations, qualifications, or omissions.

## 5. EXECUTION OF THE BID

### 5.1 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 signature(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 shall sign in the presence of a witness who shall also sign and date the Form; or

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## INSTRUCTIONS TO BIDDERS

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3. Sole Proprietor: Print the business name and the name of the sole proprietor in the spaces provided. The sole proprietor shall sign and date the Form in the presence of a witness who shall also sign and date the Form.

### 6. DELIVERY OF THE BID

#### 6.1 DELIVERY OF THE BID

1. For submissions by paper, enclose the properly completed and executed Bid Form in a properly addressed envelope.
2. Ensure the envelope is clearly marked "ITT – AVRA and LBA Winter Equipment & Sand Storage Shed – APS01-22". Seal the envelope and deliver it to the Alberni Clayoquot Regional District at 3008 5<sup>th</sup> Ave, Port Alberni BC, V9Y 2E3 and directed to Shane Koren prior to the time and date specified for the closing of bids.
3. The Owner will immediately record the date and time on envelopes containing bids and on bid revisions received by email.
4. Faxed submissions will **NOT** be accepted.
5. Proponents may submit their Tender electronically using BC Bid before the Closing Date and Time. Tenders must be submitted in accordance with the BC Bid requirements and e-bidding key requirements (found at <https://www.bcbid.gov.bc.ca>). Only pre-authorized electronic bidders registered on the BC Bid system can submit an electronic response using the BC Bid system.
6. Proponents may also submit an electronic copy of their Tender to the office of the ACRD to the attention of: Shane Koren, Procurement Coordinator, email: [procurement@acrd.bc.ca](mailto:procurement@acrd.bc.ca) 3008 5<sup>th</sup> Ave, Port Alberni, BC V9Y 2E3
7. Tender copies submitted by email must include the subject line "ITT– AVRA and LBA Winter Equipment & Sand Storage Shed – APS01-22" to Shane Koren [procurement@acrd.bc.ca](mailto:procurement@acrd.bc.ca). If the proponent chooses to submit by email, the following risks are assumed:
  - a. Delays in delivery
  - b. Rejection of the email
  - c. Emails may be delayed or rejected due to spam, virus software, or malware
  - d. Inboxes may become too full
  - e. The email may be missed and not identified as a submission
8. Bids and other related documents received after the stated time and date of closing will not be considered by the Owner.
9. The Owner is neither liable nor responsible for costs incurred by bidders in the preparation, submission or presentation of the Bid. Bid documents become the property of the Owner.

### 7. REVISION OF THE BID

#### 7.1 REVISION OF THE BID

1. A Bid Form already delivered to the Owner may only be revised in the manner described in paragraph 7.2 of this clause, and to qualify, the revision(s) shall be received by the Owner at the address stated in the Invitation to Bid prior to the time and date specified there for the closing of bids. Ensure revision(s) plainly refers to a particular bidder.

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**INSTRUCTIONS TO BIDDERS**

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2. Revisions will be accepted by either: signed letter delivered to the address stated in the Invitation to Bid, or emailed to the address designated in the Invitation to Bid.
3. Only the bidders entries on the delivered Bid Form may be revised; the revision shall state only the amount by which a bid figure is to be increased or decreased (except itemized, alternative or unit prices as described in 7.4) or specific directions as to the exclusion or inclusion of particular words.
4. Where itemized, alternative, or unit prices are being revised, submit a new price that replaces the previously submitted price.

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## INSTRUCTIONS TO BIDDERS

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### 8. SECURITY REQUIREMENTS

#### 8.1 BID BONDS

1. Ensure the Bid Form is accompanied by a bid bond in the amount of ten percent (10%) of the Bid Price. Certified cheques and guaranteed letters of credit will also be accepted.
2. This bid security can be converted to the labour and materials, and performance security.
3. Ensure a Bid Bond is issued on a CCDC 220 Bid Bond form or other form approved by the Surety Association of Canada and issued by a Surety acceptable to the Owner.
4. For submissions via email or BCBid please provide a scanned copy of the bid bond with submission, and the original bid bond is to be delivered to ACRD office within 3 business days after closing.
5. If a successful Bidder declines to enter a Contract within the period set out in the Bid Form, or a further agreed period of time, the principal and surety will be required to pay to the Owner a sum equivalent to the difference between the principal's bid and the accepted bid or ten percent (10%) of the principal's bid, whichever is the lesser.

#### 8.2 PERFORMANCE BONDS AND LABOUR AND MATERIAL PAYMENT BONDS

1. The successful bidder agrees to:
  1. Provide a Performance Bond and a Labour and Materials Payment Bond in the amount of ten percent (10%) of the Contract Price. The submitted bid security can be converted to this performance Labour and Material Bond.
  2. Provide these bonds within ten (10) Working Days of the Contract Award. Maintain bonds in good standing until Contract fulfilment. Ensure requirements of GC 12.3 – Warranty are met and payment obligations arising under the Contract are made while bonds are still in place.
  3. Include bonding costs in the Bid Price.
  4. Ensure the obligee on the bonds is the Owner.

### 9. ACCEPTANCE OF THE BID

#### 9.1 ACCEPTANCE OF THE BID

1. The lowest or any bid will not necessarily be accepted.
2. The Owner reserves the right to reject any or all bids, or accept other than the lowest bid from the general contractor or any of his subcontractors. Other criteria that will determine the selected general contractor are:
  - The Contractor's ability and agreement to complete the said work within the outlined project schedule.
  - The Contractor's presentation of improvement to critical completion dates identified in the project outline schedule that benefit the owner.
  - The Contractor's ability to effectively manage and work the project based on the submitted subcontractors and job specific staff.
  - The Contractor's teams ability to work with the owners, consultants and representatives.
  - The Contractor's and the Contractor's subcontractors team history with respect to quality of work, schedule and change orders.



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### INSTRUCTIONS TO BIDDERS

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- The Contractor's understanding of the scope of work.
  - The Contractor's proposed unit prices, alternate prices, add and delete prices.
  - The Contractor's presentation of cost saving opportunities that are acceptable to the consultant and the owner.
3. The Owner, at its sole discretion, may accept or reject any or all of the Alternative Prices submitted in the Bid Documents. Alternative Prices will not be considered in determining the successful bidder.
  4. Alternative prices listed in the Bid Documents shall 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.
  5. 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.
  6. The Owner retains the separate right to waive irregularities in the Bid Form, if, at the Owner's discretion, such irregularities are of minor or technical nature and have not provided the bidder with a competitive advantage. Errors of a clerical or technical nature are not grounds for a bidder to revoke a bid.
  7. In the event 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 revision 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.
  8. The Owner has the right to enter into over budget negotiations with the lowest compliant bidder or a single bidder, without cancellation of all bids or consideration to other bidders, and to require that bidder to negotiate with Subcontractors names on their Bid Form.

#### 10. OWNER PROVIDED INSURANCE

- 10.1 Refer to GC 11.1 – INSURANCE, GC 12.1 INDEMNIFICATION and Supplementary Condition(s).

#### 11. CONTRACTOR PROVIDED INSURANCE

- 11.1 Refer to GC 11.1 – Insurance, GC 12.1 – Indemnification and Supplementary Condition(s)
- 12 11.1 The Successful Tenderer will indemnify and save harmless the Alberni Clayoquot Regional District and McGill & Associates Engineering Ltd., from all fines, suits, proceedings, claims, demands or actions of any kind or nature or from anyone whomsoever arising or otherwise connected with the performance of its covenants herein contained, and further will, prior to the commencement of operation, and thereafter at all times during the term of this Agreement, at his own expense, keep in force by advance payment of premiums, a general liability insurance policy in an amount not less than FIVE MILLION (\$5,000,000) dollars (the Alberni Clayoquot Regional District and McGill & Associates Engineering Ltd, will be additional named insured on said policy. The Regional District will be notified of any material change to the said policy. The insurance will be in a form satisfactory to the Regional District and a copy of the current policy will be retained on file with the Regional District); Automotive Liability Insurance (owned and non-owned units) in an amount not less than THREE Million

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**INSTRUCTIONS TO BIDDERS**

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(\$3,000,000); and insurance on Contractor supplied equipment.

- 13 11.2 The Owner makes no representation or warranty with respect to the extent or adequacy of the insurance protection afforded by the policies above. It shall be the full responsibility of the Contractor to determine their own additional insurance coverages, that are necessary and advisable for its own protection or to fulfil its obligations under this contract. Any such additional insurance shall be provided and maintained by the Contractor at the Contractor's own expense.

**12. WORKERS' COMPENSATION BOARD LETTER**

- 12.1 After bid closing, upon request, the lowest compliant bidder agrees to provide a WorkSafe BC Letter of Good Standing within forty-eight (48) hours.

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## INSTRUCTIONS TO BIDDERS

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### 13. ADDITIONAL INSTRUCTIONS TO BIDDERS

- 13.1.1 In the hiring and employment of labour engaged on the project, no person shall be refused employment or otherwise discriminated against in regard to employment because of that person's race, colour, religion, political affiliation or national origin, nor because the person has made a complaint, or given information with respect to an alleged failure to comply with the provisions of this clause.
- 13.1.2 Bidder and his agents are warned that Alberni Clayoquot Regional District submissions, or personal solicitations of individual members and/or staff members, in regard to the award of this Contract, may jeopardize the favourable consideration of his tender.
- 13.1.3 Conflict of Interest The Bidder shall disclose to the Owner prior to awarding of the contract any actual, potential or apparent conflict of interest. If such a conflict of interest does exist, the Owner may at its discretion, withhold the Contract from the Bidder until the matter is resolved to the satisfaction of the Owner.
- 13.1.4 Addenda Addenda will be issued via email or by courier delivery. Oral addenda will not be issued and no responsibility will be accepted for oral instructions. To ensure that all Addenda are received, bidders are required to sign and courier the receipt provided with the Addenda to the issuer within 24 hours of receipt of the Addenda. In addition, bidders are required to complete the blanks on the Form of Tender to signify that all Addenda issued have been taken into account in the preparation of the Tender and that all Addenda will become a part of the Contract Documents. Each bidder shall ensure their name is registered with McGill & Associates Engineering Ltd. as a "plan and document holder" to ensure that all addenda and other relevant documents can be forwarded during the tender process.

**STIPULATED PRICE BID FORM**

**Project/Contract:** Alberni Clayoquot Regional District  
AVRA & LBA Winter Equipment & Sand Storage Shed  
APS01-22

**Project/Contract No.:** 2689

**From (Bidder):**

\_\_\_\_\_ company name

\_\_\_\_\_ street address or postal box number

\_\_\_\_\_ city/town, province and postal code

**Bidders Ph:** \_\_\_\_\_

**Bidders Fax:** \_\_\_\_\_

**To (Owner):**

We, the undersigned, having examined the Bid Documents for the above named project/contract, including Addendum Number (s) \_\_\_\_\_, and having visited the Place of the Work, hereby offer to perform the Work in accordance with the Bid Documents, for stipulated bid price of:

**Alberni Valley Regional Airport:**

\$ \_\_\_\_\_

(amount in writing)

\_\_\_\_\_ in Canadian dollars, excluding Value Added Taxes.

**Long Beach Airport:**

\$ \_\_\_\_\_

(amount in writing)

\_\_\_\_\_ in Canadian dollars, excluding Value Added Taxes.

**Combined bid for both Alberni Valley Regional Airport and Long Beach Airport:**

\$ \_\_\_\_\_

(amount in writing)

\_\_\_\_\_ in Canadian dollars, excluding Value Added Taxes.

We, the undersigned, declare that:

- (a) we agree to attain Substantial Performance of the Work within \_\_\_\_\_ weeks after receiving notice of contract award, and acknowledge that the construction duration may

be considered by the Owner in evaluating the bid and determining contract award. The date of contract award shall be the date the letter is sent to the bidder.

- (b) we have arrived at this bid without collusion with any competitor,
- (c) this bid is open to acceptance by the Owner for a period 60 days from the date of bid closing
- (d) all bid form supplements called for by the Bid Documents form an integral part of this bid.

**Signatures:**

Signed and submitted by:

\_\_\_\_\_  
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** \_\_\_\_\_



**Appendix 'B' - ALTERNATIVE PRICES**

**Project/Contract:**                 **Alberni Clayoquot Regional District  
AVRA & LBA Winter Equipment & Sand Storage Shed  
APS01-22**

**Project/Contract No.:**       **2689**

**From (Bidder):**                     \_\_\_\_\_   
  company name

We, the above named bidder, offer the alternative prices requested below. The amount to be added to, or deducted from, our bid price (as entered in the Bid Form) is entered for each alternative requested. These prices do **NOT** include Value Added Taxes. If there is no change to the bid price for an alternative, we have so indicated. It is understood that:

- (a) the Owner may accept any of the alternatives and corresponding alternative prices in any order or combination, including all or none,
- (b) alternatives and alternative prices are open for acceptance by the Owner for the same period of time as the bid price, notwithstanding the award of the Contract.
- (c) 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
- (d) acceptance of any alternatives will not affect the bid price contract completion time, unless we have specifically indicated an increase or decrease in time, in numbers of days, on account of a particular alternative.

**Description of Alternative**

**Effect on Bid Price**  
**Add                 Deduct**

Alternate Price No. 1

	\$ _____	\$ _____
Time (in Days)	_____	_____

Alternate Price No. 2

	\$ _____	\$ _____
Time (in Days)	_____	_____



<b>Standard Schedule of Quantities and Prices for Construction</b>					
<i>Item No.</i>	<i>Description</i>	<i>Unit</i>	<i>Quantity</i>	<i>Unit Price</i>	<i>Total</i>
<b>Overhead Doors</b>					
1	20' Overhead Door x12' high c/w Vision Panels	Each	2		
2	12' Overhead Door x12' high c/w Vision Panels	Each	1		
<b>Special Construction</b>					
3	Metal Building Supplied & Erected, including Primary Framing, Secondary Framing, Cladding and Roofing, Gutters and RWLs, Insulation, and Accessories	Lump Sum	1		
<b>Clearing and Grubbing</b>					
4	Site – Clearing & Grubbing	Square Metre	1,214		
5	Building Footprint – Clearing & Grubbing	Square Metre	223		
6	Stripping (150mm)	Cubic Metre	182.1		
<b>Excavation, Trenching, Backfill/Grading</b>					
7	Site - Excavation	Cubic Metre	545		
8	Building Footprint - Excavation	Cubic Metre	52		
9	Mechanical/Plumbing/Trenching	Lump Sum	1		
10	Building Footprint – Backfill/Grading	Cubic Metre	22.3		
<b>Exterior Improvements</b>					
11	25mm minus Crush Gravel	Cubic Metre	182.1		
12	75mm minus Subbase Gravel	Cubin Metre	303.5		
<b>Storm Drain &amp; Water</b>					
13	100mm PVC Pipe DR 35 – includes Trenching & Backfilling	Lineal Metre	7.4		
14	150mm PVC Pipe DR 35 – includes Trenching & Backfilling	Lineal Metre	63		
15	200mm PVC Pipe DR 35 – includes Trenching & Backfilling	Lineal Metre	200		
16	50mm PE Water	Lineal Metre	9		
17	Catch Basin 600mm diameter	Each	2		
18	Sandbag Headwall	Each	1		

Tenderer's Initials \_\_\_\_\_

<i>Item No.</i>	<i>Description</i>	<i>Unit</i>	<i>Quantity</i>	<i>Unit Price</i>	<i>Total</i>
<b>Foundation</b>					
19	Foundation Slab	Lump Sum	1		
20	Foundation (footings)	Lump Sum	1		
<b>Other</b>					
21	Mobilization/Demobilization, Onsite Facilities	Lump Sum	1		
22	Electrical	Lump Sum	1		
23	Oil/Grit Separator	Lump Sum	1		
24	Bollards	Each	6		

Sub Total: \_\_\_\_\_

GST: \_\_\_\_\_

Total (Incl. GST) \_\_\_\_\_

<i>Item No.</i>	<i>Description</i>	<i>Unit</i>	<i>Quantity</i>	<i>Unit Price</i>	<i>Total</i>
<b>Provisional Items</b>					
25	Asphalt Pavement	Square Metre	78		

Sub Total: \_\_\_\_\_

GST: \_\_\_\_\_

Total (Incl. GST) \_\_\_\_\_

Tenderer's Initials \_\_\_\_\_

<b>Standard Schedule of Quantities and Prices for Construction</b>					
<i>Item No.</i>	<i>Description</i>	<i>Unit</i>	<i>Quantity</i>	<i>Unit Price</i>	<i>Total</i>
<b>Overhead Doors</b>					
1	20' Overhead Door x12' high c/w Vision Panels	Each	2		
2	16' Overhead Door x12' high c/w Vision Panels	Each	2		
<b>Special Construction</b>					
3	Metal Building Supplied & Erected, including Primary Framing, Secondary Framing, Cladding and Roofing, Gutters and RWLs, Insulation, and Accessories	Lump Sum	1		
<b>Clearing and Grubbing</b>					
4	Site – Clearing & Grubbing	Square Metre	2,109		
5	Building Footprint – Clearing & Grubbing	Square Metre	348		
6	Stripping (150mm)	Cubic Metre	316.4		
<b>Excavation, Trenching, Backfill/Grading</b>					
7	Site - Excavation	Cubic Metre	486		
8	Building Footprint - Excavation	Cubic Metre	64.5		
9	Mechanical/Plumbing/Trenching	Lump Sum	1		
10	Building Footprint – Backfill/Grading	Cubic Metre	34.8		
<b>Exterior Improvements</b>					
11	25mm minus Crush Gravel (150mm)	Cubic Metre	316.4		
12	75mm minus Subbase Gravel (250mm)	Cubin Metre	527.3		
<b>Storm Drain &amp; Water</b>					
13	150mm PVC Pipe DR 35 –Includes Trenching & Backfilling	Lineal Metre	112		
14	50mm PE Water	Lineal Metre	20		
15	Catch Basin (600mm diameter)	Each	3		
16	Sandbag Headwall	Each	1		
17	Manhole (1050mm diameter)	Each	2		

Tenderer's Initials \_\_\_\_\_

<i>Item No.</i>	<i>Description</i>	<i>Unit</i>	<i>Quantity</i>	<i>Unit Price</i>	<i>Total</i>
<b>Foundation</b>					
18	Foundation Slab	Lump Sum	1		
19	Foundation (footings)	Lump Sum	1		
<b>Other</b>					
20	Mobilization/Demobilization, Onsite Facilities	Lump Sum	1		
21	Electrical	Lump Sum	1		
22	Oil/Grit Separator	Lump Sum	1		
23	Remove Existing Concrete Foundation	Lump Sum	1		
24	Bollards	Each	8		

Sub Total: \_\_\_\_\_  
 GST: \_\_\_\_\_  
 Total (Incl. GST) \_\_\_\_\_

<i>Item No.</i>	<i>Description</i>	<i>Unit</i>	<i>Quantity</i>	<i>Unit Price</i>	<i>Total</i>
<b>Provisional Items</b>					
25	Asphalt Pavement (75mm)	Square Metre	105.4		

Sub Total: \_\_\_\_\_  
 GST: \_\_\_\_\_  
 Total (Incl. GST) \_\_\_\_\_

Tenderer's Initials \_\_\_\_\_

## Appendix 'D' – SOCIAL PROCUREMENT ASSESSMENT

	<b>Social Procurement Principles or</b>	<b>Yes</b>	<b>No</b>	<b>Describe where applicable</b>
1	Does your company pay Fair Wages and / or Living Wages?			
2	Does your company support gender equity?			
3	Does your company participate in apprenticeships or any other employee training and development programs?			
4	Does your company have an environmental and social governance policy?			
5	Does your company work with employment support services within the communities you operate?			
6	Does your company work with Social Enterprises in any manner?			
7	Does your company provide other services which would support our social procurement values?			
8	Does your company track diversity in its supply chain?			

**SUPPLEMENTARY GENERAL CONDITIONS  
FOR THE STIPULATED PRICE CONTRACT CCDC 2, 2008**

The Standard Construction Document for Stipulated Price Contract, 2008 English Version, consisting of the Agreement Between *Owner* and *Contractor*, Definitions, and General Conditions of the Stipulated Price Contract, Parts 1 to 12 inclusive, governing same is hereby made part of these *Contract Documents*, with the following amendments, additions and modifications:

**DEFINITIONS**

Add the following definition:

- 19a Submittals  
Submittals are documents or items required by the *Contract Documents* to be provide by the *Contractor*, such as,
- *Shop Drawings*, samples, models, mock-ups, to indicate details or characteristics, before the portion of the *Work* that they represent can be incorporated into the work; and
  - Record Drawings and manual to provide instructions to the operation and maintenance of the *Work*.

**PART 1 GENERAL PROVISIONS**

- 1.1 Where a General Condition or paragraph of General Conditions of the Stipulated Price Contract is deleted by these Supplementary Conditions, the numbering of the remaining General Conditions or paragraphs shall remain unchanged, and the numbering of deleted item will be retained, unused.

**GC 1.1 CONTRACT DOCUMENTS**

- .1 Add new subparagraph 1.1.7.5:  
1.1.7.5 In case of discrepancies, noted materials and annotations shall take precedence over graphic indications in the *Contract Documents*.

**PART 2 ADMINISTRATION OF THE CONTRACT**

**GC 2.2 ROLE OF THE CONSULTANT**

- .1 Delete paragraph 2.2.4 in its entirety.
- .2 Add the word "schedules" after the word "techniques" in paragraph 2.2.6.
- .3 Add to the end of the second sentence of paragraph 2.2.6 "or to adhere to the construction schedule".
- .4 Add at the end of paragraph 2.2.9 "The Owner and the Contractor shall waive any claims against the Consultant arising out of the making of such interpretations and findings in accordance with paragraphs 2.2.7, 2.2.8 and 2.2.9."
- .5 Delete the comma after the word "submittals" and add the words "which are provided" before the words "in accordance" in paragraph 2.2.14.
- .6 Add new sentence to end of paragraph 2.2.11 "The Consultant's obligation to make findings on a large claim or large number of claims is subject to the terms and conditions of the Owner/Consultant agreement."

**SUPPLEMENTARY GENERAL CONDITIONS  
FOR THE STIPULATED PRICE CONTRACT CCDC 2, 2008**

**GC 2.3 REVIEW AND INSPECTION OF THE WORK**

2.3.2 Add, in the first sentence “review,” before the word “tests”.

2.3.4 In the first sentence replace “special” with “review,” and add “review,” before the third instance of “inspections”.

Add:

2.3.8 Should the *Consultant* be required to make more than one review of rejected work or should the *Consultant* perform additional reviews due to failure of the Work to comply with the application for status of completion made by the *Contractor* is required to compensate the *Owner* for such additional *Consultant* services including expenses incurred. Adjustment for such compensation should be made as outlined under PART 6 CHANGES IN THE WORK

**GC 2.4 DEFECTIVE WORK**

.1 Add new subparagraphs 2.4.1.1 and 2.4.1.2

2.4.1.1 The *Contractor* shall rectify, in a manner acceptable to the *Owner* and the *Consultant*, all defective work and deficiencies throughout the *Work*, whether are not they are specifically identified by the *Consultant*.

2.4.1.2 The *Contractor* shall prioritize the correction of any defective work which, in the sole discretion of the *Owner*, adversely affects the day to day operation of the *Owner*.

**PART 3 EXECUTION OF THE WORK**

**GC 3.1 CONTROL OF THE WORK**

.1 Add the work “schedules” after the word “techniques” in paragraph 3.1.2.

.2 Add new paragraph 3.1.3:

3.1.3 Prior to commencing individual procurement, fabrication and construction activities, the *Contractor* shall verify, at the *Place of Work*, all relevant measurements and levels necessary for proper and complete fabrication, assembly and installation of the *Work* and shall further carefully compare such field measurements and conditions with the requirements of the *Contract Documents*. Where dimensions are not included or exact locations are not apparent, the *Contractor* shall immediately notify the *Consultant* in writing and obtain written instructions from the *Consultant* before proceeding with any part of the affected work.

**GC 3.2 CONSTRUCTION BY OWNER OR OTHER CONTRACTORS**

Delete:

3.2.2.2 Delete this clause in its entirety.

Add:

3.2.3.4 as it applies to the applicable health and construction safety legislation at the *Place of the Work* the *Contractor* shall assume overall responsibility and be designated as the “Prime Contractor”.

**SUPPLEMENTARY GENERAL CONDITIONS  
FOR THE STIPULATED PRICE CONTRACT CCDC 2, 2008**

**GC 3.4 DOCUMENT REVIEW**

- .1 Delete paragraph 3.4.1 in its entirety and substitute new paragraph 3.4.1:
- 3.4.1 The *Contractor* shall review the *Contract Documents* and shall report promptly to the *Consultant*, any error, inconsistency or omission the *Contractor* may discover. Such review by the *Contractor* shall comply with the standard of care described in paragraph 3.14.1 of the *Contract*. Except for its obligation to make such review and report the result, the *Contractor* does not assume any responsibility to the *Owner* or to the *Consultant* for the accuracy of the *Contract Documents*. The *Contractor* shall not be liable for damage or costs resulting from such errors, inconsistencies, or omissions in the *Contract Documents*, which the *Contractor* could not reasonably have discovered. If the *Contractor* does discover any error, inconsistency or omission in the *Contract Documents*, the *Contractor* shall not proceed with the work affected until the *Contractor* has received corrected or missing information from the *Consultant*.

**GC 3.6 SUPERVISION**

- 3.6.1 Add after the last sentence:  
"The appointed *Contractor* representative shall not be changed except for valid reason. The appointed *Contractor* representative shall not be changed without consultation with and written acceptance of the *Owner*. This acceptance shall not be unreasonably withheld."

**GC 3.7 SUBCONTRACTORS AND SUPPLIERS**

- .1 Delete the words "through the Consultant" in paragraph 3.7.6.
- 3.7.4 Add at the end of the sentence " , as outlined in GC 6.3 – CHANGE DIRECTIVE

**GC 3.8 LABOUR AND PRODUCTS**

- .1 Add new paragraph 3.8.4:
- 3.8.4 The *Contractor* is responsible for the safe on-site storage of *Products* and their protection (including *Products* supplied by the *Owner* and other contractors to be installed under the *Contract*) in such ways as to avoid dangerous conditions or contamination to the *Products* or other persons or property and in locations at the *Place of Work* to the satisfaction of the *Owner* and the *Consultant*. The *Owner* shall provide all relevant information on the *Products* supplied by the *Owner*.

**GC 3.10 SHOP DRAWINGS**

- .1 Add the words "AND OTHER SUBMITTALS" To the title after SHOP DRAWINGS.
- .2 Add "and Submittals" after the words "Shop Drawings" in paragraphs 3.10.1, 3.10.2, 3.10.4, 3.10.7, 3.10.8, 3.10.9, 3.10.10, 3.10.11, and 3.10.12.
- .3 Delete 3.10.3 in its entirety and substitute new paragraph 3.10.3.
- 3.10.3 The *Contractor* shall prepare a schedule of the dates for provision, review and return of *Shop Drawings and Submittals* and submit it to the *Consultant* for review.
- .4 Delete the last sentence in paragraph 3.10.9.
- .5 Delete the words "so as to cause no delay in the performance of the Work" in paragraph 3.10.12.



**SUPPLEMENTARY GENERAL CONDITIONS  
FOR THE STIPULATED PRICE CONTRACT CCDC 2, 2008**

**GC 3.14 PERFORMANCE BY CONTRACTOR**

- .1 Add new General Condition 3.14 PERFORMANCE BY CONTRACTOR

Add new paragraph 3.14.1

3.14.1 In performing its services and obligations under the *Contract*, the *Contractor* shall exercise a standard of care, skill and diligence that would normally be provided by an experienced and prudent contractor supplying similar services for similar projects. The *Contractor* acknowledges and agrees that throughout the *Contract*, the *Contractor's* obligations, duties and responsibilities shall be interpreted in accordance with this standard. The *Contractor* shall exercise the same standard of due care and diligence in respect of any *Products*, personnel, or procedures which it may recommend to the *Owner*.

Add new paragraph 3.14.2

3.14.2 The *Contractor* further represents, covenants and warrants to the *Owner* that:

- .1 The personnel it assigns to the *Project* are properly experienced;
- .2 It has a sufficient staff of qualified and competent personnel to replace its designated supervisor and project manager, subject to the *Owner's* approval, in the event of death, incapacity, removal or resignation.

**PART 4 ALLOWANCES**

**GC 4.1 CASH ALLOWANCES**

- 4.1.2 Add, after the first sentence "Unless noted otherwise, none of the work included in the drawings and specifications is intended to be paid for by the cash allowances. The cash allowances are for the *Owner's* sole discretion."

**PART 5 PAYMENT**

**GC 5.2 APPLICATIONS FOR PROGRESS PAYMENT**

- .1 Delete paragraph 5.2.7 in its entirety and substitute new paragraph 5.2.7
- 5.2.4 Add, after the first sentence:  
"A second schedule, stating the anticipated monthly progress payments, to be submitted upon request."
- 5.2.7 Payment shall not be made for materials or products purchased by the *Contractor* but not yet incorporated into the *Work* at the place of the *Work*.
- Add:
- 5.2.8 An application for payment shall be deemed received only if submitted complete with required supporting documentation as determined by the *Consultant*.
- Add:
- 5.2.9 The *Contractor* shall with each and every application for payment subsequent to the first, submit a current CCDC 9A Statutory Declaration of Progress Payment Distribution by Contractor, which shall be completed and sworn before a Notary Public or a Commissioner of Oaths for the Province of British Columbia.

**SUPPLEMENTARY GENERAL CONDITIONS  
FOR THE STIPULATED PRICE CONTRACT CCDC 2, 2008**

**GC 5.3 PROGRESS PAYMENT**

- .1 Delete subparagraph 5.3.1.1 in its entirety.
- 5.3.1.2 Add,  
"If, after a certificate of payment has been issued to the *Owner* (and prior to payment by the *Owner*), the *Consultant* determines on the basis of new information that the amount certified for payment is inappropriately high or low relative to the value of the work performed, then the *Consultant* shall issue a revised certificate of payment."
- 5.3.1.3 Delete in its entirety and replace with,  
"The *Owner* shall make payment to the *Contractor*, on account, in the amount certified by the *Consultant* as provided in Article A-5 of the Agreement – PAYMENT, on or before the later of:
  - twenty calendar days after receipt by the *Consultant* of the application for payment, or
  - twenty-eight calendar days after the last day of the payment period for which the *Contractor's* application for payment is made."

**GC 5.4 SUBSTANTIAL PERFORMANCE OF THE WORK**

- Add:
  - 5.4.4 Subject to the requirements of the Builders Lien Act relative to the date of issuance by the *Consultant* of the certificate of completion pursuant to paragraph 5.4.2.
- .1 the *Consultant* shall issue to the *Owner* and copy to the *Contractor* a certificate of payment for an amount equal to the *Contract Price* less:
  - .1 twice the value of any deficiencies shown on the comprehensive list of items to be completed or corrected as in GC 5.4.1, as determined by the *Consultant*;
  - .2 the value of incomplete work as determined by the *Consultant*; and
  - .3 the amounts of all previous certificates of payment.
- .2 The *Owner* shall make payment of the *Contractor* in accordance with the provisions of GC 5.3.1.3
- Add:
  - 5.4.5 The *Owner* reserves the right to take possession of and use completed or partially completed portion of the *Work*, in addition to occupancy conditions included in the Contract, providing:
    - .1 the portion of the *Work* is ready to be used for the purpose intended to the satisfaction of the *Consultant* and authorities having jurisdiction; and
    - .2 the *Owner's* possession and use do not interfere with the *Contractor's Work*; and
    - .3 the *Consultant* conducts a review prior to possession by the *Owner*, and
    - .4 any extra costs are borne by the *Owner*, subject to the provisions of GC 6.5 Delays
- Add:
  - 5.4.6 An application for *Substantial Performance of the Work* shall be deemed complete only if submitted with required supporting documentation, including those requirements in GC 5.2.8, as determined by the *Consultant*.

**SUPPLEMENTARY GENERAL CONDITIONS  
FOR THE STIPULATED PRICE CONTRACT CCDC 2, 2008**

**GC 5.5 PAYMENT OF HOLDBACK UPON SUBSTANTIAL PERFORMANCE OF THE WORK**

Add:

- 5.5.1.3 When applying for release of holdback the *Contractor* shall submit a current CCDC 9B Statutory Declaration of Progress Payment Distribution by *Subcontractor* from each of the *Subcontractors* and a Worker's Compensation Board Letter of Good Standing.

**GC 5.6 PROGRESSIVE RELEASE OF HOLDBACK**

Add:

- 5.6.4 An application for progressive release of holdback will not be considered complete until all related documentation required for the *Consultant's* review is received, including those requirements in GC 5.2.8

**GC 5.7 FINAL PAYMENT**

- 5.7.4 Delete'  
"no later than 5 calendar days after the issuance of a final certificate for payment,"

Add:

- 5.7.5 Partial payment may not be made for the completion or correction of any deficiencies shown on the comprehensive list of items to be completed or corrected prior to the date of the issuance of the final certificate of payment.

**PART 6 CHANGES IN THE WORK**

**GC 6.2 CHANGE ORDER**

Add:

- 6.2.3 The following shall determine *Contractor* markup on *Change Orders* by percentage:

- .1 To the cost of the *Work* performed by the *Contractor* directly, the *Contractor* may add a maximum of 20% markup for overhead and profit combined.
- .2 To the cost of the *Work* performed by *Subcontractors* for the *Contractor*, before the *Subcontractor's* markup, the *Contractor* may add a maximum of 10% markup for overhead and profit combined.
- .3 On *Work* deleted from the *Contractor*, not covered by unit prices, the credit to the *Owner* shall be the cost of the *Work* as set out in GC 6.3 – CHANGE DIRECTIVE, article 6.3.7.
- .4 For a detailed list of what the *Contractor* may include in the cost of the work before adding markups, refer to GC 6.3 CHANGE DIRECTIVE, article 6.3.7.

**GC 6.4 CONCEALED OR UNKNOWN CONDITIONS**

- .1 Add new paragraph 6.4.5

- 6.4.5 The *Contractor* confirms that, prior to bidding the *Project*, it carefully investigated the *Place of the Work* and applied to that investigation the degree of care and skill described in paragraph 3.14.1, given the amount of time provided between the issue of the bid documents and the actual closing of bids, the degree of access provided to the *Contractor* prior to submission of bid, and the sufficiency and completeness of the information provided by the *Owner*. The *Contractor* is not entitled to compensation or to an extension of the *Contract Time* for conditions which could reasonably have been ascertained by the *Contractor* by such careful investigation undertaken prior to the submission of the bid.

**SUPPLEMENTARY GENERAL CONDITIONS  
FOR THE STIPULATED PRICE CONTRACT CCDC 2, 2008**

**GC 6.5 DELAYS**

6.5.3.3 Add the word “local” after the word “adverse”

Add:

6.5.6 The party making the claim shall submit to the Consultant, within 10 Working Days, a detailed account of the Contract Time extension claimed and the grounds upon which the claim is based complete with required supporting documentation as determined by the Consultant.

Add:

6.5.7 Should the *Consultant*, in consultation with the *Contractor*, determine the *Contractor* is delayed in performance of the *Work*, or any part thereof, by the *Contractor's* inaction, or by delay or inaction of anyone employed or engaged by the *Contractor* directly or indirectly, and the *Contract Time* is compromised:

- .1 Then the *Contractor* shall accelerate the *Work* as required to meet the *Contract Time*.
- .2 The *Consultant* will promptly give *Notice in Writing* of such determination to the *Owner* and the *Contractor*.
- .3. The *Contractor* shall then promptly give the *Owner* and the *Consultant Notice in Writing* of specific changes to the construction scheduling and construction processes the *Contractor* will implement to accelerate the *Work*.
- .4 The *Contractor* shall not be entitled to payment for costs to accelerate the *Work* to meet the *Contract Time*.

**GC 6.6 CLAIMS FOR A CHANGE IN CONTRACT PRICE**

6.6.1 Add “in no case more than 10 Working Days from the event or series of events giving rise to the claim.”

.1 Add new paragraph 6.6.7

6.6.7 The *Owner* may make claims arising out of the costs incurred for additional services provided by the *Consultant* resulting from the *Contractor's* failure to reasonable perform the *Work* in accordance with the terms and conditions of the *Contract*, including the *Contractor's* issuance of unnecessary Requests for information. The *Consultant* will notify the *Owner* and the *Contractor* where it has been determined that additional services will be required or have been provided in order not to cause a delay. The *Owner* shall make claims based on the *Consultant's* invoices.

**PART 7 DEFAULT NOTICE**

**GC 7.1 OWNER'S RIGHT TO PRFORM THE WORK, STOP THE WORK, OR TERMINATE THE CONTRACT**

7.1.5 In the first sentence, after “paragraph 7.1.5, replace “and” with “or”.

**SUPPLEMENTARY GENERAL CONDITIONS  
FOR THE STIPULATED PRICE CONTRACT CCDC 2, 2008**

**PART 9 PROTECTION OF PERSONS AND PROPERTY**

**GC 9.1 PROTECTION OF WORK AND PROPERTY**

- .1 Delete paragraph 9.1.1.1 in its entirety and substitute new subparagraph 9.1.1.1:  

9.1.1.1 errors in the *Contract Documents* which the *Contractor* could not have discovered applying the standard of care described in paragraph 3.14.1;
- .2 Delete paragraph 9.1.2 in its entirety and substitute the following new paragraph 9.1.2:  

9.1.2 Before commencing any work, the *Contractor* shall determine the locations of all underground utilities and structures indicated in or reasonable determinable from the *Contract Documents*, or that are reasonably determinable from an inspection of the *Place of Work* exercising the degree of care and skill described in paragraph 3.14.1.

**GC 9.2 TOXIC AND HAZARDOUS SUBSTANCES**

- .1 Add to paragraph 9.2.6 after the word “responsible”, the following new words:  

or whether any toxic or hazardous substances or materials already at the *Place of Work* (and which were then harmless or stored, contained or otherwise dealt with in accordance with legal and regulatory requirements) were dealt with by the *Contractor* or anyone for whom the *Contractor* is responsible in a manner which does not comply with legal and regulatory requirements, or which threatens human health and safety or the environment, or material damage to the property of the *Owner* or others.
- .2 Add “and the *Consultant*” after the word “*Contractor*” in subparagraph 9.2.7.4.
- .3 Add to paragraph 9.2.8 after the word “responsible”, the following new words:  

or that any toxic or hazardous substances or materials already at the *Place of Work* (and which were then harmless or stored, contained or otherwise dealt with in accordance with legal and regulatory requirements) were dealt with by the *Contractor* or anyone for whom the *Contractor* is responsible in a manner which does not comply with legal and regulatory requirements, or which threatens human health and safety or the environment, or material damage to the property of the *Owner* or others.
- .4 Add “and the *Consultant*” after the word “*Owner*” in subparagraph 9.2.8.4.

**GC 9.5 MOULD**

- .1 Add “and the *Consultant*” after *Owner* in subparagraph 9.5.2.4.
- .2 Add “and the *Consultant*” after *Contractor* in subparagraph 9.5.3.4.

**PART 10 GOVERNING REGULATIONS**

**GC 10.2 LAWS, NOTICES, PERMITS AND FEES**

Add:

10.2.8 The *Contractor* shall provide to the *Consultant* copies of all inspection reports from the various authorities having jurisdiction within two *Working Days* of their receipt.

**GC 10.4 WORKERS' COMPENSATION**

Add:

10.4.3 The *Contractor* is formally designated as the “Prime Contractor.”

**SUPPLEMENTARY GENERAL CONDITIONS  
FOR THE STIPULATED PRICE CONTRACT CCDC 2, 2008**

**PART 11 INSURANCE AND CONTRACT SECURITY**

**GC 11.1 INSURANCE**

11.1.1 The owner will accept general liability insurance with limits of not less than 5 million (\$5,000,000) per occurrence.

**GC 11.2 CONTRACT SECURITY**

Add:

11.2.3 The *Contractor* shall give the *Owner Notice in Writing* of any material change in the surety within 15 days of occurrence.

**PART 12 INDEMNIFICATION, WAIVER OF CLAIMS AND WARRANTY**

**GC 12.1 INDEMNIFICATIONS**

.1 Add "and the Consultant" after the words "hold harmless the other" in paragraph 12.1.1.

**GC 12.3 WARRANTY**

12.3.4 Add, "In effecting a correction of defects or deficiencies, the *Contractor* shall also bear all costs involved in removing, replacing, repairing, or restoring aspects of the *Work* that may be affected in the process of making the correction."

Add:

12.3.7 Where a material, product or installation covered by warranty fails, the stipulated warranty and warranty period shall be renewed for the specific work being preplaced or repaired, with the exception of warranties referred to in GC 12.3.6.

PART 1 - GENERAL

1.1 RELATED REQUIREMENTS

- .1 Section 01560 – Temporary Barriers and Enclosures.

1.2 EXISTING SERVICES

- .1 Notify, Engineer and Owner of intended interruption of services and obtain required permission.
- .2 Where Work involves breaking into or connecting to existing services, give Engineer 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 015600 - Temporary Barriers and Enclosures.

PART 2 - PRODUCTS

2.1 NOT USED

- .1 Not Used.

PART 3 - EXECUTION

3.1 NOT USED

- .1 Not Used.

PART 1 - GENERAL

1.1 RELATED SECTIONS

- .1 Section 01450 – Quality Control
- .2 Section 01820 – Demonstration & Training
- .3 Section 01780 – Closeout Submittals

1.2 REFERENCES

- .1 Canadian Construction Documents Committee (CCDC).  
.1 CCDC2-2008, Stipulated Price Contract.

1.3 ADMINISTRATIVE

- .1 Submit to Engineer 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 Work affected by submittal shall not proceed until review is complete.
- .3 Present shop drawings, product data, samples and mock-ups in SI Metric units.
- .4 Where items or information is not produced in SI Metric units converted values are acceptable.
- .5 Review submittals prior to submission to Engineer. This review represents that necessary requirements have been determined and verified, or will be, and that each submittal has been checked and co-ordinated 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 Engineer, in writing at time of submission, identifying deviations from requirements of Contract Documents stating reasons for deviations.
- .7 Verify field measurements and affected adjacent Work are co-ordinated.
- .8 Contractor's responsibility for errors and omissions in submission is not relieved by Engineer's review of submittals.
- .9 Contractor's responsibility for deviations in submission from



requirements of Contract Documents is not relieved by Engineer review.

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

1.4 SHOP DRAWINGS  
AND PRODUCT DATA

- .1 Refer to CCDC 2 GC 3.10.
- .2 The term "shop drawings" means drawings, diagrams, illustrations, schedules, performance charts, brochures and other data which are to be provided by Contractor to illustrate details of a portion of Work.
- .3 After Engineer's review, distribute copies.
- .4 Submit electronic copy of shop drawings for each requirement requested in specification Sections and as Consultant may reasonably request.
- .5 Submit electronic copies of product data sheets or brochures for requirements requested in specification Sections and as requested by Engineer where shop drawings will not be prepared due to standardized manufacture of product.
- .6 Delete information not applicable to project.
- .7 Supplement standard information to provide details applicable to project.
- .8 If upon review by Engineer, 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.

1.5 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 Engineer's office.
- .3 Notify Engineer 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 Engineer are not intended to change Contract Price. If adjustments affect value of Work, state such in writing to Engineer prior to proceeding with Work.

- .6 Make changes in samples which Engineer 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.

PART 2 - PRODUCTS

2.1 NOT USED

- .1 Not Used.

PART 3 - EXECUTION

3.1 NOT USED

- .1 Not Used.

PART 1 - GENERAL

- 1.1 RELATED REQUIREMENTS .1 Section 01330 – Submittal Procedures.
- 1.2 REFERENCES
- .1 Canada Labour Code, Part 2, Canada Occupational Safety and Health Regulations.
- .2 Engineer will review Contractor's site-specific Health and Safety Plan and provide comments to Contractor within 5 days after receipt of plan. Revise plan as appropriate and resubmit plan to Engineering Consultant] within 3 days after receipt of comments from Engineer.
- .3 Engineer'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.
- .4 Medical Surveillance: where prescribed by legislation, regulation or safety program, submit certification of medical surveillance for site personnel prior to commencement of Work, and submit additional certifications for any new site personnel to Engineer.
- 1.3 FILING OF NOTICE .1 File Notice of Project with Provincial authorities prior to beginning of Work.
- 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 Engineer and Owner prior to commencement of Work.
- 1.6 REGULATORY REQUIREMENTS .1 Do Work in accordance with Department of Transport Laws, Policy, Regulations and Statutes.

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- 1.7 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 Engineer may respond in writing, where deficiencies or concerns are noted and may request re-submission with correction of deficiencies or concerns.
- 1.8 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.
- .2 Comply with and enforce compliance by employees with safety requirements of Contract Documents, applicable federal, provincial, territorial and local statutes, regulations, and ordinances, and with site-specific Health and Safety Plan.
- 1.9 COMPLIANCE REQUIREMENTS .1 Comply with Workers Compensation Act, Occupational Health & Safety Regulation B.C. Reg.
- .2 Comply with Canada Labour Code, Canada Occupational Safety and Health Regulations.
- 1.10 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 Engineer verbally and in writing.
- 1.11 HEALTH AND SAFETY CO-ORDINATOR .1 Employ and assign to Work, competent and authorized representative as Health and Safety Co-ordinator. Health and Safety Co-ordinator must:
- .1 Have minimum 2 years site-related working experience specific to activities associated with wood frame construction.
- .2 Have working knowledge of occupational safety and health regulations.
- .3 Be responsible for completing Contractor's Health and Safety Training Sessions and ensuring that personnel not successfully completing required training are not permitted to enter site to perform Work.
- .4 Be responsible for implementing, enforcing daily and

monitoring site-specific Contractor's Health and Safety Plan.

- 1.12 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 Engineer.
- 1.13 CORRECTION OF NON-COMPLIANCE .1 Immediately address health and safety non-compliance issues identified by authority having jurisdiction or by Engineer.
- .2 Provide Engineer with written report of action taken to correct non-compliance of health and safety issues identified.
- .3 Engineer may stop Work if non-compliance of health and safety regulations is not corrected.
- 1.14 BLASTING .1 Blasting or other use of explosives is not permitted without prior receipt of written instruction by Engineer.
- 1.15 POWDER ACTUATED DEVICES .1 Use powder actuated devices only after receipt of written permission from Engineer.
- 1.16 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 .1 Not used.

PART 3 - EXECUTION

3.1 NOT USED

.1 Not used.

PART 1 - GENERAL

1.1 FIRES

- .1 Fires and burning of rubbish on site are not permitted.

1.2 DRAINAGE

- .1 Provide temporary drainage and pumping as necessary to keep excavations and site free from water.
- .2 Ensure pumped water into waterways, sewer or drainage systems is free of suspended materials.
- .3 Control disposal or runoff of water containing suspended materials or other harmful substances in accordance with local authority requirements.

1.3 SITE CLEARING  
AND PLANT PROTECTION

- .1 Protect trees and plants on site and adjacent properties as indicated.
- .2 Wrap in burlap, trees and shrubs adjacent to construction work, storage areas and trucking lanes, and encase with protective wood framework from grade level to height of 2 m minimum.
- .3 Protect roots of designated trees to dripline during excavation and site grading to prevent disturbance or damage. Avoid unnecessary traffic, dumping and storage of materials over root zones.
- .4 Minimize stripping of topsoil and vegetation.
- .5 Restrict tree removal to areas indicated or designated by Engineer.

1.4 WORK ADJACENT  
TO WATERWAYS

- .1 Design and construct temporary crossings to minimize erosion to waterways.
- .2 Do not skid logs or construction materials across waterways.

1.5 POLLUTION CONTROL

- .1 Maintain temporary erosion and pollution control features installed under this Contract.
- .2 Control emissions from equipment and plant to local authorities' emission requirements.

- .3 Prevent sandblasting and other extraneous materials from contaminating air beyond application area, by providing temporary enclosures.
- .4 Cover or wet down dry materials and rubbish to prevent blowing dust and debris. Provide dust control for temporary roads.

PART 2 - PRODUCTS

2.1 NOT USED .1 Not Used.

PART 3 – EXECUTION .1 Not Used.



PART 1 - GENERAL

- 1.1 RELATED SECTIONS .1 Section 01560 – Temporary Barriers and Enclosures.
- 1.2 INSTALLATION & REMOVAL .1 Provide temporary utilities controls in order to execute work expeditiously.  
.2 Remove from site all such work after use.
- 1.3 DEWATERING .1 Provide temporary drainage and pumping facilities to keep excavations and site free from standing water.
- 1.4 WATER SUPPLY .1 Owner will provide a reasonable continuous supply of potable water for construction use.
- 1.5 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 non-flameless 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 C 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 Owner will pay utility charges when temporary heat source is existing building equipment].

.7 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.

.8 Be responsible for damage to Work due to failure in providing adequate heat and protection during construction.

1.6 TEMPORARY  
POWER AND LIGHT

.1 Temporary power for electric cranes and other equipment requiring in excess of above is responsibility of Contractor.

.2 Provide and maintain temporary lighting throughout project. Ensure level of illumination on all floors and stairs is not less than 162 lx.

.3 Electrical power and lighting systems installed under this Contract may be used for construction requirements only with prior approval of Engineer provided that guarantees are not affected. Make good damage to electrical system caused by use under this Contract. Replace lamps which have been used for more than 3 months.

1.7 TEMPORARY  
COMMUNICATION FACILITIES

.1 Provide and pay for temporary telephone hookup, line(s) equipment necessary for own use and use.

1.18 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 .1 Not Used.

PART 1 - GENERAL

1.1 SECTION INCLUDES

- .1 Barriers.
- .2 Environmental Controls.
- .3 Traffic Controls.
- .4 Fire Routes

1.2 REFERENCES

- .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 Canadian Standards Association (CSA International)
  - .1 CSA-O121-M1978 (R2003), Douglas Fir Plywood.
- .3 Public Works Government Services Canada (PWGSC) Standard Acquisition Clauses and Conditions (SACC)-ID: R0202D, Title: General Conditions 'C', In Effect as Of: May 14, 2004.

1.3 GUARD RAILS  
AND BARRICADES

- .1 Provide secure, rigid guard rails and barricades around deep excavations.
- .2 Provide as required by governing authorities.

1.4 ACCESS TO SITE

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

1.5 FIRE ROUTES

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

1.6 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.

1.7 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 Engineer 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.

PART 1 - GENERAL

- 1.1 RELATED SECTIONS .1 Section 01770 Closeout Procedures.
- 1.2 REFERENCE STANDARDS .1 Canadian Construction Documents Committee (CCDC)  
CCDC 2-2008, Stipulated Price Contract.
- 1.3 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 Engineer.
  - .3 Clear snow and ice from access to building,
  - .4 Make arrangements with and obtain permits from authorities having jurisdiction for disposal of waste and debris.
  - .5 Remove waste material and debris from site at end of each working day.
  - .6 Clean interior areas prior to start of finishing work, and maintain areas free of dust and other contaminants during finishing operations.
  - .7 Store volatile waste in covered metal containers, and remove from premises at end of each working day.
  - .8 Provide adequate ventilation during use of volatile or noxious substances. Use of building ventilation systems is not permitted for this purpose.
  - .9 Use only cleaning materials recommended by manufacturer of surface to be cleaned, and as recommended by cleaning material manufacturer.
  - .10 Schedule cleaning operations so that resulting dust, debris and other contaminants will not fall on wet, newly painted surfaces nor contaminate building systems.

1.4 FINAL CLEANING

- .1 Refer to CCDC 2, GC 3.13.
- .2 When Work is Substantially Performed remove surplus products, tools, construction machinery and equipment not required for performance of remaining Work.
- .3 Remove waste products and debris other than that caused by others, and leave Work clean and suitable for occupancy.
- .4 Prior to final review remove surplus products, tools, construction machinery and equipment.
- .5 Remove waste products and debris including that caused by Owner or other Contractors.
- .6 Remove waste materials from site at regularly scheduled times or dispose of as directed by Engineer.
- .7 Make arrangements with and obtain permits from authorities having jurisdiction for disposal of waste and debris.
- .8 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.
- .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.

PART 2 - PRODUCTS

2.1 NOT USED .1 Not Used.

PART 3 - EXECUTION

3.1 NOT USED .1 Not Used.



PART 1 - GENERAL

1.1 REFERENCES

- .1 Canadian Construction Documents Committee (CCDC)  
CCDC 2-2008, Stipulated Price Contract.

1.2 INSPECTION & DECLARATION .1

- .1 Contractor's Inspection: Contractor and all subcontractors shall conduct inspection of Work, identify deficiencies and defects, and repair as required to conform to Contract Documents.
- .1 Notify Engineer in writing of satisfactory completion of Contractor's inspection and submit verification that corrections have been made.
- .2 Request Engineer's inspection.
- .2 Engineer's Inspection: Engineer and Contractor will perform inspection of Work to identify obvious defects or deficiencies. Contractor shall correct Work accordingly.
- .3 Completion: submit written certificate that the following have been performed:
- .1 Work has been completed and inspected for compliance with Contract Documents.
- .2 Defects have been corrected and deficiencies completed.
- .3 Equipment and systems have been tested, adjusted and balanced and are fully operational.
- .4 Certificates required by Fire Commissioner Utility companies have been submitted.
- .5 Operation of systems have been demonstrated to Owner's personnel.
- .6 Work is complete and ready for Final Inspection.
- .7 Provide BCBC Schedules B & C forms from the structural engineer for the steel frame building above the foundation level.
- .4 Final Inspection: When completion tasks are done, request final inspection of Work by Owner, Engineer, and Contractor.
- .2 When Work is deemed incomplete by Engineer, complete outstanding items and request re-inspection.
- .5 Declaration of Substantial Performance: when Owner and Engineer consider deficiencies and defects have been corrected and it appears requirements of Contract have been 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 shall be dated for commencement for warranty period and commencement of lien period unless required otherwise by lien statute of Place of Work.

.7 Final Payment: When Owner and Engineer considers final deficiencies and defects have been corrected and requirements of Contract have been totally performed, make application for final payment.

.8 Payment of Holdback: after issuance of Certificate of Substantial Performance of Work, submit application for payment of holdback amount in accordance with CCDC 2.

1.3 FINAL CLEANING

- .1 Clean in accordance with Section 01 74 11 - Cleaning.  
.1 Remove surplus materials, excess materials, rubbish, tools and equipment.

PART 2 - PRODUCTS

2.1 NOT USED

- .1 Not Used.

PART 3 - EXECUTION

3.1 NOT USED

- .1 Not Used.

PART 1 - GENERAL

1.1 EXISTING CONDITION .1 Known underground and surface utility lines and buried objects are as indicated on site plan.

1.2 PROTECTION .1 Protect and/or transplant existing bench marks, buildings, surface or underground utility lines which are to remain as directed by Engineer. If damaged, restore to original or better condition unless directed otherwise.  
.2 Maintain access roads to prevent accumulation of construction related debris on roads.

PART 2 - PRODUCTS

2.1 MATERIALS .1 Fill material: 75 mm minus crushed granular material compacted as shown on drawings.  
.2 Excavated or graded material existing on site may be suitable to use as fill for grading work if approved by Engineer.

PART 3 - EXECUTION

3.1 STRIPPING OF SURFACE SOLS TO BEDROCK .1 Do not handle surface soils while in wet or frozen condition or in any manner in which soil structure is adversely affected as determined by Engineer.  
.2 Commence stripping of areas as directed by Engineer after area has been cleared of brush weeds and grasses and removed from site.  
.3 Strip to top of existing bedrock as directed by Engineer. Rototill weeds and grasses and retain as topsoil on site. Avoid mixing topsoil

with subsoil.

- .4 Stockpile in locations as directed by Engineer. Stockpile height not to exceed 2 m.
- .5 Dispose of unused soil off site.

3.2 GRADING

- .1 Rough grade to levels, profiles, and contours allowing for surface treatment as indicated.
- .2 Slope rough grade away from building 1:50 minimum as indicated.
- .3 Prior to placing fill over existing ground, scarify surface to depth of 150 mm. Maintain fill and existing surface at approximately same moisture content to facilitate bonding.
- .4 Compact filled and disturbed areas to corrected maximum dry density to ASTM D 698, as follows:
  - .1 85% under landscaped areas.
  - .2 95 % under road and walk areas.
- .5 Do not disturb soil within branch spread of trees or shrubs to remain.

3.3 TESTING

- .1 Inspection and testing of soil compaction will be carried out by testing laboratory designated by ULC.
- .2 Submit testing procedure, frequency of tests, testing laboratory as designated by ULC or certified testing personnel to Engineer for review.

3.4 SURPLUS MATERIAL

- .1 Remove surplus material and material unsuitable for fill, grading or landscaping off site.

PART 1 - GENERAL

PART 2 - PRODUCTS

2.1 INSULATION .1 Batt and blanket mineral fibre R20 rating for walls and roof.

2.2 ACCESSORIES .1 Tape: as recommended by manufacturer.

PART 3 - EXECUTION

- 3.1 INSULATION INSTALLATION .1 Install insulation to maintain continuity of thermal protection to building elements and spaces.
- .2 Install insulation with factory applied vapour barrier facing warm side of building spaces and vapour permeable membrane facing cold side. Lap ends and side flanges of membrane over framing members. Tape seal butt ends and lapped side flanges. Do not tear or cut vapour barrier.
- .3 Fit insulation closely around electrical boxes, pipes, ducts, frames and other objects in or passing through insulation.
- .4 Do not compress insulation to fit into spaces.
- .5 Keep insulation minimum 75 mm from heat emitting devices.
- .6 Do not enclose insulation until it has been inspected and approved by Engineer.

PART 1 - GENERAL

1.1 DESIGN REQUIREMENTS

- .1 Design exterior frame assembly to accommodate to expansion and contraction when subjected to minimum and maximum surface temperature of -35 degrees C to 35 degrees C.

1.2 SHOP DRAWINGS

- .1 Submit shop drawings: in accordance with Section 01 33 00 - Submittal Procedures.
- .2 Indicate each type of door, material, steel core thicknesses, mortises, reinforcements, location of exposed fasteners, openings, glazed, arrangement of hardware and fire rating and finishes.
- .3 Indicate each type frame material, core thickness, reinforcements, glazing stops, location of anchors and exposed fastenings and reinforcing fire rating finishes.
- .4 Include schedule identifying each unit, with door marks and numbers relating to numbering on drawings and door schedule.
- .5 Submit test and engineering data, and installation instructions.

1.3 QUALITY ASSURANCE

- .1 Metal doors and frames shall conform with the Canadian Steel Door and Frame Manufacturers Association (CSDFMA) Manufacturing Specification for steel doors and frames.
- .2 Air Tighteners
  - .1 Fixed Sections: maximum air leakage of 0.25 m<sup>3</sup>/hr/m of frame perimeter, A3 minimum.
- .3 Water Tightness
  - .1 Fixed lites: B5; able to resist a pressure differential of 500 Pa for 15 min.

PART 2 - PRODUCTS

2.1 MATERIALS

- .1 Hot dipped galvanized steel sheet: to ASTM A 653M, ZF75, minimum base steel thickness in accordance with CSDMA Table 1 - Thickness for Component Parts.
- .2 Reinforcement channel: to CSA G40.20/G40.21, Type 44W, coating designation to ASTM A 653M, ZF75.
- .3 Composites: balance of core materials used in conjunction with lead: in accordance with manufacturers' proprietary design.

2.2 DOOR CORE MATERIALS

- .1 Honeycomb construction:
  - .1 Structural small cell, 24.5 mm maximum kraft paper 'honeycomb', weight: 36.3 kg per ream minimum, density: 16.5 kg/m<sup>3</sup> minimum sanded to required thickness.
- .2 Stiffened: face sheets welded, honeycomb insulated core.
  - .1 Polyurethane: to CGSB51-GP-21M rigid, modified poly/isocyanurate, closed cell board. Density 32 kg/m<sup>3</sup>.

PART 3 - EXECUTION

3.1 INSTALLATION GENERAL

- .1 Install doors and frames to CSDMA Installation Guide.

3.2 FRAME INSTALLATION

- .1 Set frames plumb, square, level and at correct elevation.
- .2 Secure anchorages and connections to adjacent construction.
- .3 Brace frames rigidly in position while building-in. Install temporary horizontal wood spreader at third points of door opening to maintain frame width. Provide vertical support at center of head for openings over 1200 mm wide. Remove temporary spreaders after frames are built-in.
- .4 Make allowances for deflection of structure to ensure structural loads are not transmitted to frames.

- .5 Caulk perimeter of frames between frame and adjacent material.
- .6 Maintain continuity of air barrier and vapour retarder.

3.3 DOOR INSTALLATION

- .1 Install doors and hardware in accordance with hardware templates and manufacturer's instructions
- .2 Provide even margins between doors and jambs and doors and finished floor and thresholds as follows.
  - .1 Hinge side: 2.0 mm.
  - .2 Latchside and head: 2.0 mm.
  - .3 Finished floor, top of flooring noncombustible sill and thresholds: 13 mm.
- .3 Adjust operable parts for correct function.
- .4 Install louvres.

3.4 FINISH REPAIRS

- .1 Touch up with primer finishes damaged during installation.
- .2 Fill exposed frame anchors and surfaces with imperfections with metallic paste filler and sand to a uniform smooth finish.



PART 1 – GENERAL

1.1 SHOP DRAWINGS

- .1 Submit shop drawings in accordance with Section 013300 - Submittal Procedures.
- .2 Indicate sizes, service rating, types, materials, operating mechanisms, glazing locations and details, hardware and accessories, and required clearances.

1.2 DESIGN REQUIREMENTS

- .1 Design exterior door assembly to withstand wind load of 1 kPa with a maximum horizontal deflection of 1/240 of opening width.
- .2 Design door panel assemblies with thermal insulation factor R12

PART 2 – PRODUCTS

2.1 MATERIALS

- .1 Galvanized steel sheet: commercial quality Z275 zinc coating.
- .2 Steel sheet: commercial quality to ASTM A 366M unexposed (U), exposed (E), with 24 gauge ribbed brown galvanized steel exterior finish.
- .3 Primer: to CAN/CGSB-1.181, for galvanized steel surfaces.
- .4 Insulation: to meet design requirements.
- .5 Glazing: Full sash section with 3mm DSB insulated 6 mm plexi glass.
- .6 Chain hoist.

2.2 DOORS

- .1 Fabricate panel frames in a continuous box frame with vertical stiffeners at 600 mm centers.
- .2 Install glazing for door sections. Sizes and number of vision panels as indicated.
- .3 Apply shop coat of primer after fabrication of door.

2.3 HEAVY DUTY  
INDUSTRIAL HARDWARE

- .1 Track: standard low head room hardware with 75 mm size 2.66 mm core thickness galvanized steel track.
- .2 Track Supports: 2.3 mm core thickness continuous galvanized steel angle track supports.
- .3 Spring counter balance: heavy duty oil tempered torsion spring with manufacturer's standard brackets.
  - .1 Drum: 200 mm diameter die cast aluminum.
  - .2 Shaft: 32 mm diameter galvanized steel.
- .4 Top roller carrier: galvanized Steel 3.04 mm thick adjustable.
- .5 Rollers: full floating grease packed hardened steel, ball bearing 75 mm diameter solid steel tire.
- .6 Roller brackets: adjustable, minimum 2.5 mm galvanized steel.

2.4 ACCESSORIES

- .1 Overhead horizontal track and operator supports: galvanized steel, type and size to suit installation.
- .2 Pusher springs.
- .3 Handles:
  - .1 Flat bar door latch.
  - .2 Handles: key operated from inside.
- .4 Two horizontal sliding lock bolts on interior.
- .5 Weather stripping:  
Sills: double contact flexible astragal PVC weather strips.  
Jambs and head: weather seals including pliable blade seal and therma flex seal weather strip to manufacture's standard.
- .6 Finish ferrous hardware items with minimum zinc coating of 300 g/m<sup>2</sup> to CAN/CSA-G164.

2.5 OPERATORS

- .1 Equip doors for operation by:  
Hand, handles on inside face of door.  
Chain hoist with galvanized steel chain.
- .2 Cable fail safe device.
  - .1 Able to stop door immediately if cable breaks on door free fall. Braking capacity 500 kg.

PART 1 - GENERAL

1.1 SYSTEM DESCRIPTION

- .1 Type: rigid frame.
- .2 Roof slope: as shown.
- .3 Wall system: single skin panels.
- .4 Roof system: standing seam panels.

1.2 DESIGN REQUIREMENTS

- .1 Design steel building system to withstand dead loads and live loads including mechanical and electrical systems, material handling systems, as indicated.
- .2 Maximum deflection:
  - .1 Roof cladding under full design load: 1/180 of clear span.
  - .2 Wall cladding under specified wind effects: 1/90 of clear span.
- .3 Thermal insulation: R20 (note that R is different from RSI).
- .4 Design building to allow for thermal movement of component materials caused by ambient temperature range of 40 degrees C without causing buckling, failure of joint seals, undue stress on fasteners or other detrimental effects.
- .5 Ensure total absence of condensation on interior surfaces under following minimum condition:
  - .1 Interior: 22 degrees C, 30% relative humidity (RH), still air.
  - .2 Exterior: -1 degrees C.
- .6 Ensure building is weathertight.
- .7 Provide for positive drainage to exterior of condensation occurring within wall construction and water entering at joints.
- .8 Design building enclosure elements to accommodate, by means of expansion joints, movement in wall and structural movements without permanent distortion, damage to infills, racking of joints, breakage of seals, water penetration or glass breakage.
- .9 Vapour seal building enclosure to withstand, without failure, design RH at design ambient temperature condition, maintained against interior atmospheric pressure of 250 Pa.
- .10 Design for hourly velocity pressure of .68 kPa for 1/50 probability.
  - .1 In addition to uniform live load, design for full live load on leeward half of building frame and zero live load on windward half.

- .11 Design members to withstand, within acceptable deflection limitations:
  - .1 Snow load of  $S_s/50$  1.1 kPa.
  - .2 Earthquake load to BCBC for Tofino.
- .12 Completed building shall have exterior to interior sound attenuation not less than STS 30.
- .13 Design, assemble and secure building elements to building frame to ensure stresses is sealants and seals are within sealant manufacturer's recommended maximum.
- .14 Design building assembly to permit easy replacement of components.
- .15 Allow for ceiling, piping, conduit and other interior dead loads imposed on this structure.
- .16 Building interior environment: heated and cooled to maintain temperature of 20 degrees C minimum to 25 degrees C maximum with relative humidity of 25% to 50%.
- .17 Building lighting: fixtures shall be as shown on electrical drawings.
- .18 Access units, doors, and windows to sizes and locations indicated weather resistant, insulated, and weather stripped.

### 1.3 PERFORMANCE REQUIREMENTS

- .1 Maximum deflection for roofing under full specified live load 1/240 of clear span.
- .2 Maximum deflection for exterior cladding under full specified exterior wind induced loads: 1/180 of clear span.
- .3 Maintain following tolerances for building structure and enclosure elements.
  - .1 Maximum variation from plane or location shown on shop drawings: 1 mm/1 m of length and up to 1 mm'5 m maximum.
  - .2 Maximum offset from true alignment between two adjacent members abutting end to end, in line: 0.75 mm

### 1.4 FABRICATION

- .1 Maintain air and vapour and thermal barrier throughout building enclosure elements.
- .2 Locate vapour barrier on warm side of thermal insulation.
- .3 Locate air barrier as detailed.
- .4 Complete enclosure assembly with exterior skin, glass units, access unit doors, inner air/vapour seal membrane, thermal insulation and interior finish.

- .5 Accurately fit and rigidly frame together joints, corners, and mitres.
  - .1 Match components carefully to produce continuity of line and design.
  - .2 Make joints and connections toward exterior weathertight.
  - .3 Provide hairline joints for materials in contact.
  - .4 Co-ordinate location of visible joints.

#### 1.5 SHOP DRAWINGS

- .1 Submit shop drawings and product in accordance with Section 013300 – Submittal Procedures.

#### 1.6 CERTIFICATES

- .1 BCBC Schedule B forms for the structural system above concrete footings and slab.

#### 1.7 STORAGE & PROTECTION

- .1 Protect prefinished steel sheet during fabrication, transportation, site storage and installation in accordance with CSSBI Bulletin No9.
- .2 Handle and protect galvanized materials from damage to zinc coating.
  - .1 During storage space surfaces of galvanized materials to permit free circulation of air.

### PART 2 - PRODUCTS

#### 2.1 MATERIALS

- .1 Structural steel: to CSA-G40.21, shop primed hot dipped zinc coated to CAN/CSA-G164.
- .2 Bolts: to ASTM A 325M complete with nuts and washers.
- .3 Welding materials: to CSA W59.
- .4 Steel sheet, zinc-coated: to ASTM A 653/A 653M, structural quality grade A with G90 coating.
- .5 Screws: corrosion resistant purpose made, head colour to match attached sheet.
- .6 Plastic sealants and adhesives as recommended by plastics manufacturer.
- .7 Insulation R20.

- .8 Insulation adhesive: purposely made for insulation type and steel liner sheet, incombustible after initial set.
- .9 Vapour barrier and sealing tape: as recommended by steel building systems manufacturer.
- .10 Sealants: as recommended by sealant manufacturer.

## 2.2 COMPONENTS

- .1 Wall System:
  - .1 Exterior sheet-wall: factory preformed steel sheet, zinc coated prefinished from manufacturer's standard profiles. Include closures, gaskets, caulking, flashing and fasteners to effect weathertight installation. Cut ends of sheets square and clean.
  - .2 Exterior corners-wall: of material to match finish and profile of adjacent cladding material, shop cut and brake formed to correct angle.
  - .3 Accessories to exterior wall cladding, brake or bend to shape, of material and finish to match wall cladding, comprising cap flashings, drip flashings, copings and closures for head jamb sill corners.

## 2.3 FABRICATION

- .1 Fabricate structural members in accordance with shop drawings and to CAN/CSA-S16.
  - .1 Tolerance not to exceed those specified in CSSBI 30M.
- .2 Provide holes for attachment of other work, as indicated.
- .3 Reinforce openings to maintain design strength.

## 2.4 FINISHES

- .1 Clean, prepare surfaces and shop prime structural steel to CAN/CSA-S16
- .2 Prefinished steel with factory applied polyvinyl chloride.
  - .1 Baked on 0.7 mil fluoropolymer enamel top coat with a prime coat 2 mil thick, colour selected by Engineer from manufacturer's standard range.
  - .2 Coating thickness: not less than 200 micrometres.
  - .3 Resistance to accelerated weathering for chalk rating of 8, colour fade 5 units or less and erosion rate less than 20% to ASTM D 822 as follows:
    - .1 Outdoor exposure period 5000 hours.
    - .2 Humidity resistance exposure period 5000 hours.

PART 3 - EXECUTION

3.1 ERECTION

- .1 Do work in accordance with CSSBI Standard for Steel Building Systems 30M except where specified otherwise.
- .2 Erect structural frame in accordance with shop drawings and to CAN/CSA-S16.
  - .1 Erection tolerances not to exceed those specified in CSSBI 30M.
- .3 Prepare galvanized structural steel surfaces for field welding by removing zinc before welding.
  - .1 After welding, chip away flux and prime with CGSB 1.40.
- .4 Obtain written permission from Engineer prior to field cutting or altering of structural members.
- .5 Touch up with shop primer bolts, rivets, welds and burned or scratched surfaces where exposed at completion of erection.
- .6 Install wall cladding assemblies ensuring completed installation.
- .7 Secure sub-girts to structural wall supports.
- .8 Secure roof cladding sheets to structural purlins.
  - .1 Terminate sheet ends over structural supports.
- .9 Secure side laps.
- .10 Continuously seal end and side laps.
- .11 Install roof assemblies ensuring completed installation.
- .12 Install interior ceiling and insulation to ensure continuous vapour barrier.
- .13 Install necessary closures, gaskets, caulking sealants and flashings.
- .14 Install insulation and vapour retarder to maintain continuity of thermal and moisture protection to building elements and spaces.
- .15 Fit insulation closely around and behind electrical boxes, pipes, ducts, frames and other objects in or passing through insulation.
- .16 Keep insulation away from hot surfaces chimneys and gas vents.
- .17 Do not compress insulation to fit into spaces.

- .18 For roof system, apply insulation in ceiling to form continuous thermal barrier in conjunction with vapour barrier formed by ceiling panels.
- .19 For roof system, ensure continuous vapour barrier seal by pre-caulking joints of ceiling panel.



PART 1 - GENERAL

- 1.1 MEASUREMENT PROCEDURES .1 Measure following items in square meters within limits as indicated:  
- .1 Clearing.  
.2 Grubbing.
- 1.2 REFERENCES .1 U.S. Environmental Protection Agency (EPA)/Office of Water  
.1 EPA 832R92005, Storm Water Management for Construction  
Activities: Developing Pollution Prevention Plans and Best  
Management Practices.
- 1.3 DEFINITIONS .1 Clearing consists of cutting off trees and brush vegetative growth to  
not more than specified height above ground and disposing of felled  
trees, previously uprooted trees and stumps, and surface debris.  
.2 Grubbing consists of excavation and disposal of stumps and roots  
boulders and rock fragments of specified size to not less than  
specified depth below existing ground surface.
- 1.4 STORAGE & PROTECTION .1 Prevent damage to fencing, bench marks, and water courses which  
are to remain.

PART 3 - EXECUTION

- 3.1 TEMPORARY EROSION & 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.

3.2 PREPARATION

- .1 Inspect site and verify with owner, items designated to remain.
- .2 Locate and protect utility lines: preserve in operating condition active utilities traversing site.
  - .1 Notify owner immediately of damage to or when unknown existing utility line[s] are encountered.
  - .2 When utility lines which are to be removed are encountered within area of operations, notify owner in ample time to minimize interruption of service.
- .3 Keep roads and walks free of dirt and debris.

3.3 CLEARING

- .1 Clearing includes felling, trimming, and cutting of trees into sections and satisfactory disposal of trees and other vegetation designated for removal, including downed timber, snags, brush, and rubbish occurring within cleared areas.
- .2 Clear as indicated by Consultant, by cutting at height of not more than 300 mm above ground. In areas to be subsequently grubbed, height of stumps left from clearing operations to be not more than 1000 mm above ground surface.

3.4 GRUBBING

- .1 Remove and dispose of roots larger than 7.5 cm in diameter, matted roots, and designated stumps from indicated grubbing areas.
- .2 Grub out stumps and roots to not less than 200 mm below ground surface.
- .3 Grub out visible rock fragments and boulders, greater than 300 mm in greatest dimension, but less than 0.25 m<sup>3</sup>.
- .4 Fill depressions made by grubbing with suitable material and to make new surface conform with existing adjacent surface of ground.

3.5 REMOVAL & DISPOSAL

- .1 Remove cleared and grubbed materials off site.

3.6 FINISHED SURFACE

- .1 Leave ground surface in condition suitable for immediate grading operations to approval of Consultant.

3.7 CLEANING

- .1 Proceed in accordance with Section 01 74 11 - Cleaning.
- .2 On completion and verification of performance of installation, remove surplus materials, excess materials, rubbish, tools and equipment.

PART 1 - GENERAL

1.1 REFERENCES

- .1 American Society for Testing and Materials (ASTM)
  - .1 ASTM D 698-91(1998), Test Method for Laboratory Compaction Characteristics of Soil Using Standard Effort (600 kN-m/m<sup>3</sup>).

1.2 EXISTING CONDITIONS

- .1 Known underground and surface utility lines and buried objects are as indicated on site plan.

1.3 PROTECTION

- .1 Protect and/or transplant existing fencing, bench marks, surface or underground utility lines which are to remain as directed by Consultant. If damaged, restore to original or better condition unless directed otherwise.
- .2 Maintain access roads to prevent accumulation of construction related debris on roads.

PART 2 - PRODUCTS

2.1 MATERIALS

- .1 Excavated or graded material existing on site may be suitable to use as fill for grading work if approved Consultant.

PART 3 - EXECUTION

3.1 GRADING

- .1 Rough grade to levels, profiles, and contours allowing for surface treatment as indicated.
- .2 Slope rough grade away from building as directed.
- .3 Grade ditches to depth required for maximum run-off.
- .4 Prior to placing fill over existing ground, scarify surface to depth of

150 mm. Maintain fill and existing surface at approximately same moisture content to facilitate bonding.

- .5 Compact filled and disturbed areas to maximum dry density to ASTM D 698, as follows:
  - .1 95 % under paved and walk areas.
- .6 Do not disturb soil within branch spread of trees or shrubs to remain.

3.2 SURPLUS MATERIAL

- .1 Remove surplus material and material unsuitable for fill, grading or landscaping off site.

PART 1 - GENERAL

1.1 MEASUREMENT  
PROCEDURES

- .1 Excavated materials will be measured in cubic metres in their original location.
  - .1 Common Unclassified excavation quantities measured will be actual volume removed within following limits:
    - .1 Width for excavation for structures as indicated.
    - .2 Depth from ground elevation and surface of pavement and surface of sidewalk immediately prior to excavation, to elevation as directed by Consultant.
  - .2 Backfilling to authorized excavation limits will be measured in cubic metres compacted in place for each type of material specified.

1.2 REFERENCES

- .1 American Society for Testing and Materials International (ASTM)
  - .1 ASTM C 117-[04], Standard Test Method for Material Finer than 0.075 mm (No.200) Sieve in Mineral Aggregates by Washing.
  - .2 ASTM C 136-[05], Standard Test Method for Sieve Analysis of Fine and Coarse Aggregates.
  - .3 ASTM D 422-63[2002], Standard Test Method for Particle-Size Analysis of Soils.
  - .4 ASTM D 698-[00ae1], Standard Test Methods for Laboratory Compaction Characteristics of Soil Using Standard Effort (600 kN-m/m<sup>3</sup>).
- .2 Canadian General Standards Board (CGSB)
  - .1 CAN/CGSB-8.1-88, Sieves, Testing, Woven Wire, Inch Series.
  - .2 CAN/CGSB-8.2-M88, Sieves, Testing, Woven Wire, Metric.

1.3 DEFINITIONS

- .1 Excavation classes: two classes of excavation will be recognized; common excavation and rock excavation.
  - .1 Rock : solid material in excess of 1.00 m<sup>3</sup> and which cannot be removed by means of heavy duty mechanical excavating equipment with 0.95 to 1.15 m<sup>3</sup> bucket]. Frozen material not classified as rock.
- .2 Waste material: excavated material unsuitable for use in Work or surplus to requirements.
- .3 Borrow material: material obtained from locations outside area to be graded, and required for construction of fill areas or for other portions of Work.
- .4 Recycled fill material: material, considered inert, obtained from alternate sources and engineered to meet requirements of fill areas.

PART 2 - PRODUCTS

2.1 MATERIALS

- .1 Type 1 and Type 2 fill: properties to Section 31 05 16 - Aggregate Materials and the following requirements:  
.1 Crushed, pit run or screened stone, gravel or sand.  
.2 Gradations to be within limits specified when tested to ASTM C 136 and ASTM C 117. Sieve sizes to CAN/CGSB-8.1 CAN/CGSB-8.2.  
.3 Table:

Sieve Designation	% Passing	
	Type 1	Type 2
75 mm		100
50 mm		
37.5 mm		
25 mm	100	
19 mm	75-100	
12.5 mm		
9.5 mm	50-10	
4.75 mm	30-70	22-85
2.00 mm	20-45	
0.425 mm	10-25	5-30
0.180 mm		
0.075 mm	3-8	0-10

- .2 Type 3 fill: selected material from excavation or other sources, approved by Consultant for use intended, unfrozen and free from rocks larger than 75 mm, cinders, ashes, sods, refuse or other deleterious materials.

PART 3 - EXECUTION

3.1 TEMPORARY EROSION  
& 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.

3.2 SITE PREPARATION

- .1 Remove obstructions, ice and snow, from surfaces to be excavated within limits indicated.
- .2 Cut pavement or sidewalk neatly along limits of proposed excavation in order that surface may break evenly and cleanly.

3.3 PREPARATION/PROTECTION

- .1 Protect existing features in accordance with Section 01 56 00 - Temporary Barriers and Enclosures and applicable local regulations.
- .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 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.

3.4 STOCKPILING

- .1 Stockpile fill materials in areas designated by Consultant.
  - .1 Stockpile granular materials in manner to prevent segregation.
- .2 Protect fill materials from contamination.
- .3 Implement sufficient erosion and sediment control measures to prevent sediment release off construction boundaries and into water bodies.

3.5 EXCAVATION

- .1 Advise Consultant at least 7 days in advance of excavation operations for initial cross sections to be taken.
- .2 Excavate to lines, grades, elevations and dimensions as indicated.
- .3 Restrict vehicle operations directly adjacent to open trenches.
- .4 Dispose of surplus and unsuitable excavated material off site.
- .5 Do not obstruct flow of surface drainage or natural watercourses.
- .6 Earth bottoms of excavations to be undisturbed soil, level, free from loose, soft or organic matter.



- .7 Notify Consultant when bottom of excavation is reached.
- .8 Obtain Consultant approval of completed excavation.

3.6 FILL TYPES & COMPACTION

- .1 Use types of fill as indicated or specified below. Compaction densities are percentages of maximum densities obtained from ASTM D 698 ASTM D 155.
  - .1 Exterior side of perimeter walls: use Type [3] fill to subgrade level. Compact to 95% of corrected maximum dry density.
  - .2 Within building area: use Type 2 to underside of base course for floor slabs. Compact to 100 % of corrected maximum dry density.
  - .3 Under concrete slabs: provide 150 mm compacted thickness base course of Type 1 fill topped with shearmat filler as indicated to underside of slab. Compact base course to 100 %.

3.7 BEDDING & SURROUND OF UNDERGROUND SERVICES

- .1 Place bedding and surround material in unfrozen condition.

3.8 BACKFILLING

- .1 Do not proceed with backfilling operations until completion of following:
  - .1 Consultant has inspected and approved installations.
  - .2 Consultant has inspected and approved of construction below finish grade.
  - .3 Inspection, testing, approval, and recording location of underground utilities.
  - .4 Removal of concrete formwork.
- .2 Areas to be backfilled to be free from debris, snow, ice, water and frozen ground.
- .3 Do not use backfill material which is frozen or contains ice, snow or debris.
- .4 Place backfill material in uniform layers not exceeding 150 mm compacted thickness up to grades indicated. Compact each layer before placing succeeding layer.
- .5 Backfilling around installations:
  - .1 Place bedding and surround material as specified elsewhere.
  - .2 Do not backfill around or over cast-in-place concrete within 24 hours after placing of concrete.
  - .3 Place layers simultaneously on both sides of installed Work to equalize loading.
- .6 Place recycled fill in areas as indicated.

PART 1 - GENERAL

1.1 MEASUREMENT  
AND PAYMENT

- .1 Measure granular sub-base in cubic metres measured in place by cross section and calculated by average end area method of material incorporated into Work and accepted by Consultant.

1.2 REFERENCES

- .1 ASTM International
- .1 ASTM C 117-04, Standard Test Methods for Material Finer Than 0.075 mm Sieve in Mineral Aggregates by Washing.
  - .2 ASTM C 131-06, Standard Test Method for Resistance to Degradation of Small-Size Coarse Aggregate by Abrasion and Impact in the Los Angeles Machine.
  - .3 ASTM C 136-06, Standard Test Method for Sieve Analysis of Fine and Coarse Aggregates.
  - .4 ASTM D 422-63 (2007), Standard Test Method for Particle-Size Analysis of Soils.
  - .5 ASTM D 698-07e1, Standard Test Methods for Laboratory Compaction Characteristics of Soil Using Standard Effort (600kN-m/m<sup>3</sup>).
  - .6 ASTM D 1883-07e2, Standard Test Method for CBR (California Bearing Ratio) of Laboratory Compacted Soils.
  - .7 ASTM D 4318-10, Standard Test Methods for Liquid Limit, Plastic Limit and Plasticity Index of Soils.
- .2 Canadian General Standards Board (CGSB)
- .1 CAN/CGSB-8.1-88, Sieves, Testing, Woven Wire, Inch Series.
  - .2 CAN/CGSB-8.2-M88, Sieves, Testing, Woven Wire, Metric.

PART 2 - PRODUCTS

2.1 MATERIALS

- .1 Granular sub-base material:
- .1 Crushed, pit run or screened stone, gravel or sand.
  - .2 Gradations to be within limits specified when tested to ASTM C 136 and ASTM C 117. Sieve sizes to CAN/CGSB-8.1 CAN/CGSB-8.2.

.3 Table

Sieve Designation	% Passing			
100 mm				
75 mm	100	100	100	
50 mm				100
37.5 mm				
25 mm	55-100			60-100
19 mm				
12.5 mm				38-70
9.5 mm				
4.75 mm	25-100	25-85		22-55
2.00 mm	15-80			13-42
0.425 mm	4-50	5-30	0-30	5-28
0.180 mm				
0.075 mm	0-8	0-10	0-8	2-10

.4 Other properties as follows:

- .1 Liquid Limit: to ASTM D 4318, Maximum 25.
- .2 Plasticity Index: to ASTM D 4318, Maximum 6.

PART 3 - EXECUTION

3.1 EXAMINATION

- .1 Verification of Conditions: verify conditions of substrate previously installed under other Sections or Contracts are acceptable for granular sub-base 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.

3.2 PREPARATION

- .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.

3.3 PLACING

- .1 Place granular sub-base after subgrade is inspected and approved by Consultant.
- .2 Construct granular sub-base to depth and grade in areas indicated.
- .3 Ensure no frozen material is placed.
- .4 Place material only on clean unfrozen surface, free from snow or ice.
- .5 Place granular sub-base materials using methods which do not lead to segregation or degradation.
- .6 Place material to full width in uniform layers not exceeding 150 mm compacted thickness.
- .7 Shape each layer to smooth contour and compact to specified density before succeeding layer is placed.
- .8 Remove and replace portion of layer in which material has become segregated during spreading.

3.4 COMPACTION

- .1 Compaction equipment to be capable of obtaining required material densities.
- .2 Compact to density of not less than 98% maximum dry density.
- .3 Shape and roll alternately to obtain smooth, even and uniformly compacted sub-base.
- .4 Apply water as necessary during compaction to obtain specified density.
- .5 In areas not accessible to rolling equipment, compact to specified density with mechanical tampers approved Consultant.
- .6 Correct surface irregularities by loosening and adding or removing material until surface is within specified tolerance.

3.5 CLEANING

- .1 Progress Cleaning: clean in accordance with Section 01 74 11 - 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 11 - Cleaning.

3.6 SITE TOLERANCES

- .1 Finished sub-base surface to be within 10 mm of elevation as indicated but not uniformly high or low.

3.7 PROTECTION

- .1 Maintain finished sub-base in condition conforming to this section until succeeding base is constructed, or until granular sub-base is accepted by Consultant.

PART 1 - GENERAL

1.1 MEASUREMENT  
AND PAYMENT

- .1 Measure granular base in cubic metres measured in place by cross section and calculated by average end area method of material incorporated into Work.

1.2 REFERENCES

- .1 ASTM International
- .1 ASTM C 117-04, Standard Test Methods for Material Finer Than 0.075 mm (No. 200) Sieve in Mineral Aggregates by Washing.
  - .2 ASTM C 131-06, Standard Test Method for Resistance to Degradation of Small-Size Coarse Aggregate by Abrasion and Impact in the Los Angeles Machine.
  - .3 ASTM C 136-06, Standard Test Method for Sieve Analysis of Fine and Coarse Aggregates.
  - .4 ASTM D 698-07e1, Standard Test Methods for Laboratory Compaction Characteristics of Soil Using Standard Effort (600kN-m/m<sup>3</sup>).
  - .5 ASTM D 1557-[09], Test Method for Laboratory Compaction Characteristics of Soil Using Modified Effort (56,000ft-lbf/ft<sup>3</sup>) (2,700kN-m/m<sup>3</sup>).
  - .6 ASTM D 1883-07e2, Standard Test Method for CBR (California Bearing Ratio) of Laboratory Compacted Soils.
  - .7 ASTM D 4318-10, Standard Test Methods for Liquid Limit, Plastic Limit and Plasticity Index of Soils.
- .2 Canadian General Standards Board (CGSB)
- .1 CAN/CGSB-8.1-88, Sieves, Testing, Woven Wire, Inch Series.
  - .2 CAN/CGSB-8.2-M88, Sieves, Testing, Woven Wire, Metric.

PART 2 - PRODUCTS

2.1 MATERIALS

- .1 Granular base:
- .1 Crushed stone or gravel.
  - .2 Gradations to be within limits specified when tested to ASTM C 136 and ASTM C 117. Sieve sizes to CAN/CGSB-8.1 CAN/CGSB-8.2.

.1 Gradation Method #1 to:

Sieve Designation	% Passing		
	(1)	(2)	(3)
100 mm			
75 mm			
50 mm	100		
37.5 mm	70-100		
25 mm		100	
19 mm	50-75		100
12.5 mm		65-100	70-100
9.5 mm	40-65		
4.75 mm	30-50	35-60	40-70
2.00 mm		22-45	23-50
0.425 mm	10-30	10-25	7-25
0.180 mm			
0.075 mm	3-8	3-8	3-8

.2 Gradation Method #2 to: except that percentage finer than 0.075 mm not to exceed 8%.

PART 3 - EXECUTION

3.1 PREPARATION

- .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.

3.2 PLACEMENT AND INSTALLATION

- .1 Place granular base after subgrade surface is inspected and approved in writing by Consultant.
- .2 Placing:
  - .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 Shape each layer to smooth contour and compact to specified density before succeeding layer is placed.
  - .5 Remove and replace that portion of layer in which material becomes segregated during spreading.
  - .3 Compaction Equipment:
    - .1 Ensure compaction equipment is capable of obtaining required material densities.
  - .4 Compacting:
    - .1 Compact to density not less than 100% maximum dry density.
    - .2 Shape and roll alternately to obtain smooth, even and uniformly compacted base.
    - .3 Apply water as necessary during compacting to obtain specified density.
    - .4 In areas not accessible to rolling equipment, compact to specified density with mechanical tampers approved in writing by Consultant.
    - .5 Correct surface irregularities by loosening and adding or removing material until surface is within specified tolerance.
- 3.3 SITE TOLERANCES
- .1 Finished base surface to be within plus or minus 10 mm of established grade and cross section but not uniformly high or low.
- 3.4 CLEANING
- .1 Progress Cleaning: clean in accordance with Section 01 74 11 - 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 11 - Cleaning.
- 3.5 PROTECTION
- .1 Maintain finished base in condition conforming to this Section until succeeding material is applied or until acceptance Consultant.



PART 1 - GENERAL

- 1.1 PRICE AND PAYMENT PROCEDURES
- .1 Measurement procedures:  
.1 Measure supply and installation of storm sewer including testing and including excavation and backfilling and granular bedding and surround horizontally from manhole face to manhole face in metres of each pipe size and depth class installed.
- 1.2 REFERENCES
- .1 ASTM F 794-03(2009), Standard Specification for Poly (Vinyl Chloride) (PVC) Profile Gravity Sewer Pipe and Fittings Based on Controlled Inside Diameter.
- .2 Canadian General Standards Board (CGSB)  
.1 CAN/CGSB-8.1-M89, Sieves, Testing, Woven Wire, Inch Series.  
.2 CAN/CGSB-8.2-M88, Sieves, Testing, Woven Wire, Metric.
- 1.3 SCHEDULING
- .1 Schedule Work to minimize interruptions to existing services and to maintain existing flow during construction.
- 1.4 DELIVERY, STORAGE AND HANDLING
- .1 Deliver, store and handle materials in accordance 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 manufacturer's recommendations.  
.2 Store and protect pipes from damage.  
.3 Replace defective or damaged materials with new.

PART 2 - PRODUCTS

- 2.1 PLASTIC PIPE
- .1 Type PSM Poly Vinyl Chloride (PVC): to ASTM D 3034.  
.1 Standard Dimensional Ratio (SDR): 35.

- .2 Locked-in gasket and integral bell system.
- .3 Nominal lengths: 4 m.
- .2 Large diameter, ribbed PVC sewer pipe and fittings: to ASTM F 794.
- .1 Granular material in accordance with Section 31 05 16 - Aggregate Materials and following requirements:
  - .1 Crushed or screened stone, gravel or sand.
  - .2 Gradations to be within limits specified when tested to ASTM C 136 and ASTM C 117. Sieve sizes to CAN/CGSB-8.1 CAN/CGSB-8.2.
- .2 Table:

Sieve Designation (mm)	% Passing	
	Stone/Gravel	Gravel/Sand
200		
75		
50		
38.1		
25	100	
19		
12.5	65-90	100
9.5		
4.75	35-55	50-100
2.00		30-90
0.425	10-25	10-50
0.180		
0.075	0-8	0-10

- .1 Type 3 in accordance with Section 31 23 33.01 - Excavating, Trenching and Backfilling.

PART 3 - EXECUTION

- .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.

.2 Clean pipes and fittings of debris and water before installation, and remove defective materials from site to approval of Consultant.

### 3.2 TRENCHING

.1 Do trenching Work in accordance with Section 31 23 33.01 - Excavating, Trenching and Backfilling.

.2 Protect trench from contents of sewer.

.3 Trench alignment and depth to approval of Consultant prior to placing bedding material and pipe.

### 3.3 GRANULAR BEDDING

.1 Place bedding in unfrozen condition.

.2 Place granular bedding material in uniform layer(s) not exceeding 150 mm compacted thickness to depth as indicated.

.3 Shape bed true to grade and to provide continuous, uniform bearing surface for pipe.

.1 Do not use blocks when bedding pipes.

.4 Compact each layer full width of bed to at least 95 % maximum density to ASTM D 698.

.5 Fill excavation below bottom of specified bedding adjacent to manholes or catch basins compacted bedding material.

### 3.4 INSTALLATION

.1 Lay and join pipes to: ASTM C 12.

.2 Handle pipe using methods approved by Consultant.

.3 Lay pipes on prepared bed, true to line and grade with pipe inverts smooth and free of sags or high points.

.1 Ensure barrel of each pipe is in contact with shaped bed throughout its full length.

.4 Begin laying at outlet and proceed in upstream direction with socket ends of pipe facing upgrade.

.5 Joint deflection permitted within limits recommended by pipe

manufacturer.

- .6 Water to flow through pipes during construction only as permitted by Consultant.
- .7 Whenever Work is suspended, install removable watertight bulkhead at open end of last pipe laid to prevent entry of foreign materials.
- .8 Install plastic pipe and fittings in accordance with CAN/CSA-B1800.
- .9 When any stoppage of Work occurs, restrain pipes as directed by Consultant, to prevent "creep" during down time.
- .10 Cut pipes as required for special inserts, fittings or closure pieces, as recommended by pipe manufacturer, without damaging pipe or its coating and to leave smooth end at right angles to axis of pipe.
- .11 Make watertight connections to manholes and catch basins.
  - .1 Use shrinkage compensating grout when suitable gaskets are not available.
- .12 Use prefabricated saddles or approved field connections for connecting pipes to existing sewer pipes.
  - .1 Joint to be structurally sound and watertight.
- .13 Temporarily plug open upstream ends of pipes with removable watertight concrete, steel or plastic bulkheads.

### 3.5 PIPE SURROUND

- .1 Place surround material in unfrozen condition.
- .2 Upon completion of pipe laying, and Consultant has inspected pipe joints, surround and cover pipes as indicated.
  - .1 Leave joints and fittings exposed until field testing is completed.
- .3 Hand place surround material in uniform layers not exceeding 150 mm compacted thickness as indicated.
- .4 Place layers uniformly and simultaneously on each side of pipe.
- .5 Compact each layer from pipe invert to mid height of pipe to at least 95 % maximum density to ASTM D 698.
- .6 Compact each layer from mid height of pipe to underside of backfill to at least 90 % maximum density to ASTM D 698.

### 3.6 BACKFILL

- .1 Place backfill material in unfrozen condition.
- .2 Place backfill material, above pipe surround, in uniform layers not

exceeding 150 mm compacted thickness up to grades as indicated.

- .3 Under paving and walks, compact backfill to at least 95 % maximum density to ASTM D 698. In other areas, compact backfill to at least 90 % maximum density to ASTM D 698.

### 3.7 CLEANING

- .1 Progress Cleaning: clean in accordance with Section 01 74 11 - 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 11 - Cleaning.

## PART 1 - GENERAL

### 1.1 REFERENCES

- .1 American Society for Testing and Materials International, (ASTM)
  - .1 ASTM D 698-00a, Standard Test Method for Laboratory Compaction Characteristics of Soil Using Standard Effort 600 kN-m/m<sup>3</sup>.
  - .2 Canadian Standards Association (CSA International)
    - .1 CSA-A23.1/A23.2-00 (June 2001), Concrete Materials and Methods of Concrete Construction/Methods of Test for Concrete.
    - .2 CSA B1800-02, Plastic Non-pressure Pipe Compendium - B1800 Series (Consists of B181.1, B181.2, B181.3, B181.5, B182.1, B182.2, B182.4, B182.6, B182.7, B182.8 and B182.11).
      - .1 CSA B182.2-[02], PVC Sewer Pipe and Fittings (PSM Type).

## PART 2 - PRODUCTS

### 2.1 BEDDING AND SURROUND MATERIALS

- .4 Rigid plastic pipe and fittings: to CSA-B182.1, size NPS 2, 3, 4, 5, 6 complete with fittings.

### 2.2 BACKFILL MATERIAL

- .1 Type 2, in accordance with Section 31 23 33.01 - Excavating, Trenching and Backfilling as indicated.
- .2 Excavated or graded material existing on site may be suitable to use if approved Consultant.

## PART 3 - EXECUTION

### 3.1 EXAMINATION

- .1 Ensure graded subgrade conforms with required drainage pattern before placing bedding material.
- .2 Ensure improper slopes, unstable areas, areas requiring additional compaction or other unsatisfactory conditions are corrected to approval Consultant.
- .3 Ensure foundation wall has been installed and approved by

Consultant before placing bedding material.

3.2 PIPE OR TUBING  
INSTALLATION

- .1 Ensure pipe interior and coupling surfaces are clean before laying.
- .2 Lay perforated pipe level as indicated. For pipe face perforations and coupling slots downward.
- .3 Lay non-perforated pipe as indicated from perforated pipe to disposal area. Make joints watertight.
- .4 Grade bedding to establish pipe slope.
- .5 Install end plugs at ends of collector drains to protect pipe ends from damage and ingress of foreign material.
- .6 Connect non-perforated pipe to drain by appropriate adapters manufactured for this purpose.
- .7 Provide cleanouts on non-perforated [pipe] [tubing] at changes of pipe direction and in runs greater than 15 m.
- .8 Provide flush cleanouts where directed by Consultant.
- .9 Connect drainage system to building [storm] sewers, as indicated.

3.3 PIPE OR TUBING  
SURROUND MATERIAL

- .1 Upon completion of pipe laying and after Consultant has inspected Work in place, surround and cover pipe and install geotextile filter as indicated.
- .2 Hand place surround material in uniform layers not exceeding 150 mm compacted thickness, as indicated.
- .3 Place layers uniformly and simultaneously on each side of pipe.
- .4 Compact each layer from pipe invert to mid-height of pipe to at least 95% maximum density to ASTM D 698.
- .5 Compact each layer from mid-height of pipe to underside of backfill to at least 90% maximum density to ASTM D 698.

3.4 BACKFILL MATERIAL

- .1 Place backfill material above pipe surround in uniform layers not exceeding 150 mm compacted thickness up to grades as indicated.
- .2 Under paving and walks, compact backfill to at least 95% maximum density to ASTM D 698. In other areas, compact to at least 90% maximum density to ASTM D 698.