



TOWN OF  
**PEACE RIVER**  
ALBERTA

## **99 Avenue West Trail Development**

Town of Peace River  
9911 100 St,  
Peace River, AB T8S 1S4

April 20, 2023

<b>Section</b>	<b>Pages</b>
<b>DIVISION 00 – PROCUREMENT AND CONTRACTING REQUIREMENTS</b>	
Section 00 01 10 – Table of Contents	3
Section 00 01 15 – List of Drawings	1
Section 00 11 16 – Tender Invitation	2
Section 00 21 13 – Instructions to Bidders	9
Section 00 41 00 – Tender Form	9
Section 00 43 13 – Bid Bond	1
Section 00 45 15 – Certificate of Insurance	1
Section 00 45 17 – Consent of Surety	1
Section 00 52 00 – Contract Agreement	4
Section 00 61 13.13 – Performance Bond	2
Section 00 61 13.15 – Labour and Material Payment Bond	3
Section 00 72 00 – General Conditions	51
Section 00 73 00 – Supplementary Conditions	4
Section 00 91 13 – Addenda	TBD
<b>DIVISION 01 – GENERAL REQUIREMENTS</b>	
Section 01 11 00 – Summary of the Work	1
Section 01 22 00 – Measurement and Payment	9
Section 01 23 00 – Alternates	1
Section 01 31 19 – Project Meetings	2
Section 01 33 00 – Submittal Procedures	2
Section 01 33 23 – Shop Drawings, Product Data and Samples	2
Section 01 35 26 – Safety Requirements	2
Section 01 41 00 – Regulatory Requirements	1
Section 01 42 13 – Abbreviations and Acronyms	3
Section 01 45 00 – Quality Control	3
Section 01 52 00 – Construction Facilities	7

---

Section 01 61 00 – Common Product Requirements	1
Section 01 74 23 – Final Cleaning	1
Section 01 78 39 – Project Record Documents	1
DIVISION 31 – EARTHWORK	
Section 31 01 00 – Mobilization & Demobilization	1
Section 31 23 00 – Excavation & Fill	6
Section 31 23 23 – Trenching & Backfilling	10
DIVISION 32 – EXTERIOR IMPROVEMENTS	
Section 32 01 90 –Maintenance of Planting	11
Section 32 91 19 – Landscape Grading	5
Section 32 92 19 – Seeding	6
Section 32 92 23 – Sodding	5
DIVISION 33 – UTILITIES	
Section 33 05 13 – Manholes and Structures	6
Section 33 43 00 – Culvert	6
DIVISION 34 – TRANSPORTATION	
Section 34 01 00 – Subgrade Preparation	3
Section 34 01 03 – Roadway Membrane	5
Section 34 01 26.81 – Concrete Paving Removal	2
Section 34 02 00 - Aggregate	3
Section 34 02 01 – Granular Base	3
Section 34 12 16 – Asphalt Paving	9
Section 34 16 00 – Curbs, Gutters, and Sidewalks	6
Section 34 16 01 – Concrete for Curbs, Gutters, and Sidewalks	9
Section 34 16 02 – Formwork for Curbs, Gutters, and Sidewalks	3

Section 34 16 03 – Reinforcing for Curbs, Gutters, and Sidewalks	3
Section 34 17 23.13 – Painted Pavement Marking	4
Appendix	
Drawings	5

- END OF SECTION 00 01 10 -

**Drawing Number    Drawing Title**

Standard Drawings	
L000	COVER
L001	KEY PLAN
L101	SITE PREPARATION PLAN
L102	GRADING & LAYOUT PLAN
L301	DETAILS

- END OF SECTION 00 01 15 -



## 99 AVE W TRAIL DEVELOPMENT

Tenders, clearly marked as to content, will be received by the Town of Peace River at 9911 - 100 Street, P.O. Box 6600, Peace River, AB, T8S 1S4 **up to 2:00:00 pm hours local time on Thursday, May 11, 2023**. Digital submissions to Chelsea Allan – Project Manager at [callan@mcelhanney.com](mailto:callan@mcelhanney.com) may accompany the tender, but **a physical copy delivered to the Town is mandatory**. Opening of tenders will be held immediately following the tender deadline.

The Work to be undertaken is generally described as: 99 Ave W Trail Development in the Town of Peace River. Includes approximately:

### Site Works & Removals

- Existing Rip Rap Removal & Reinstallation – 60 cu.m
- Topsoil Stripping – 150 cu.m
- Borrow Excavation – 50 cu.m
- Common Excavation – 150 cu.m
- Rough and Fine Grading – 1 L.S
- Mobilization and Demobilization – 1 L.S
- Traffic Accommodation – 1 L.S
- Locate & Safeguard Existing Utilities – 1 L.S

### Hard Surface – Supply & Install

- Concrete Curb Ramp – 2 each
- 3m Asphalt Trail, 150mm prepared Subgrade, and 300mm compacted Granular Base (20mm crush – Des 3, Class 20) – 155 l.m

### Sod / Seed c/w Imported Topsoil

- 150mm depth Topsoil in Seed & Sod Areas – 85 cu.m
- Restoration Seed Area – 290 sq.m
- Restoration Sod Area – 260 sq.m

### Site Features

- 900mm Corrugated Steel Pipe – 14 l.m
- 150mm Corrugated Steel Pipe – 7 l.m
- Adjust Manhole Elevation – 1 each
- Pavement Markings (Crosswalk) – 2 each
- New Signage including posts, brackets, hardware – 3 each
- Regulatory Rapid Flashing Beacon (RRFB), both sides of road – 1 each

Starting 2:00:00 pm, local time, Thursday, April 20, 2023, Tender Documents and Drawings may be obtained by Alberta Purchase Connection.

Bidders must regularly check Alberta Purchase Connection for addendums.

Bidders are completely responsible for ensuring that their bids reach the correct final location prior to the bid submission deadline.

A bid bond or certified cheque for the amount of ten percent (10%) of the Tender Price is to accompany each Tender. Submission of a Tender by the Bidder gives the City the right to require the Bidder to execute the Contract and to perform the Work as set out within the Tender

Documents. Tenders may not be withdrawn at or after the Tender submittal deadline and will be irrevocable and open for acceptance by the Town for a period of sixty (60) days following the Tender submittal deadline.

The bidder acknowledges and will be willing to accept the role of prime contractor pursuant to the occupational health and safety act requirements and by submission of a bid acknowledges that it has the capability of fulfilling this requirement.

***The Town reserves the right, without prejudice, to reject any or all Tenders.***

Inquiries regarding the Tender Document and/or Drawings shall be by email only and directed to [callan@mcelhanney.com](mailto:callan@mcelhanney.com). The deadline for contractor questions will be received up to 2:00 p.m. on Monday, May 8, 2023. Any inquires after this time will remain unanswered.

- END OF SECTION 00 11 16 -

In addition to directions contained in Section 00 11 16 – Tender Invitation, the following Articles govern the tenders received:

## 1.0 Definitions

In addition to the definitions provided in Article 1.1 of Section 00 72 00 – General Conditions, definitions for the Instructions to Bidders are as follows:

- .1 “Addendum” refers to a written communication issued by the Town or the Town’s designated representative during the Tender Period informing Bidders of changes or clarifications to the Tender Documents. “Addenda” is the plural form of Addendum.
- .2 “Bidder” means an individual, partnership, or corporation that provides a Tender in response to the Town’s Tender Invitation.
- .3 “Tender” means the bid submitted by the Bidder.
- .4 “Tender Documents” include all documents, listed as follows, that form an integral part of the Tender:
  - Tender Invitation
  - Instructions to Bidders
  - Tender Form
  - Bond and Insurance Forms
  - Contract Agreement
  - General Conditions
  - Supplementary Conditions
  - Technical Specifications
  - Drawings and Plans
  - Town of Peace River Municipal Engineering Standards (where applicable)
  - Appendices
  - Addenda (where applicable)
- .5 “Tender Period” means the period of time from the date and time that Tender Documents are available for pickup until the date and time of the Tender submittal deadline.
- .6 “Tender Price” means the Total Tender Price submitted by the Bidder in the Tender Form excluding applicable federal Goods and Services Tax (G.S.T.).

## 2.0 Preparation of Tender

It shall be the responsibility of the Bidder to ascertain that a full and complete set of said Tender Documents has been obtained.

The Tender shall be made on the supplied Tender Form. In order to ensure consideration, all required supporting documentation shall be appended to the Tender Form and marked:

TO: Director of Engineering & Infrastructure  
Town of Peace River  
9911 100 ST  
Peace River, AB T8S 1S4

TENDER FOR: 99 Ave W Trail Development



### **3.0 Interpretation of Estimated Quantities**

General directions and descriptions of the Work given in the Technical Specifications are not necessarily repeated in the Schedule of Quantities and Prices and reference to the Technical Specifications should be made for this information.

The rates and prices to be inserted in the Schedule of Quantities and Prices are to be the full inclusive value of the work described under the several items, including all costs and expenses which may be required in and for the execution of the work described, together with all risks, liabilities, and obligations set forth or implied in the Tender Documents. Items against which no price is entered are deemed to be covered in other rates or prices in the Schedule of Quantities and Prices.

The quantities shown on the Tender Form are to be considered approximate only and are intended to provide a basis for comparison of the Tenders. Payment to the Contractor will be made only for the actual measured pay quantities of work performed or materials furnished in accordance with the Contract. The scheduled quantities of work to be done and materials to be furnished may each be increased or decreased. Such increase or decrease, regardless of the extent of the increase or decrease, shall not, in any way, invalidate the unit prices tendered.

The Town reserves the right to award the contract in whole or in parts at its sole discretion.

### **4.0 Site Conditions**

In preparation of a Tender, the Bidder must examine the site of the Work, either personally or through a representative, and be satisfied as to the nature and location of the Work, all conditions, soil structure and topography at the site of the Work, the nature and quality and quantity of the materials to be used, the equipment and facilities needed preliminary to and during the prosecution of the Work, the means of access to the site, on-site accommodation, all necessary information as to risks, contingencies and circumstances as may affect the Bid, and all other matters which can, in any way, affect the Work under the Contract. The Bidder is fully responsible for obtaining all information required for preparation of the Tender and for the execution of the Work.

In submitting a Tender, the Bidder accepts all environmental risks and conditions, all legal requirements applicable to the Work, all labour conditions, including productivity, availability and qualifications, and all conditions affecting safety.

The Bidder is not entitled to rely on any data or information included in the Tender Documents as to site or subsurface conditions or test results indicating the suitability, quantity or otherwise of site or subsurface materials for any use in carrying out the construction of the Work, including backfilling.

If the Bidder requires additional time to conduct independent investigations or is of the opinion either that the site or subsurface conditions or that the site or subsurface materials differ materially from that indicated by data or information included in the Tender Documents, the Bidder shall promptly request such additional time or notify the Town, in writing, of the Bidder's opinion before the time of Tender submission. The Town may, at its sole discretion, either extend the time for submission of Tenders to enable Bidders to carry out further investigation or issue an addendum modifying the Tender Documents or both as the circumstances may permit.

## **5.0 Subdivision of Work**

The Bidder shall note that the Drawings and specific articles of the Technical Specifications may have been arranged into various sections or subdivisions to better describe the Work to be carried out under this Contract. The Contractor to be named in the Agreement shall be solely responsible for all work under the Contract and for the allocation of work to subcontractors when necessary.

The Contractor shall be responsible for the administration and subdivision of the Work to subcontractors, and all disputes as to scope of the Work to be carried out by various subcontractors shall be resolved by the Contractor so that all work is carried out in accordance with the Contract Documents. No claims for extras will be allowed on the basis that the subcontractors did not include same in their scope of work due to any subdivisions of work expressed or implied in the Drawings or Technical Specifications.

## **6.0 Alternative Materials – Owner Requested**

Where called for, the Bidder must submit prices for all alternatives shown in the places provided in the Tender Form. The Tender Price shall be the extension of the lesser of the alternate prices, but the Town reserves the right to award the Contract on the basis of any alternative shown.

## **7.0 Omissions or Discrepancies**

It is the responsibility of the Bidder to carefully examine the Tender Documents. Any errors, omissions, discrepancies, or articles requiring clarification must be reported to the Town in writing at least seven (7) days prior to the date of the Tender submission deadline.

No changes or modifications to the Tender Documents shall be valid unless such changes or modifications are issued by the Town in writing.

The Town also reserves the right to amend or revise the Tender Documents prior to the date of the Tender submission deadline. Bidders will be informed of all such changes through addenda. Any addenda issued with respect to the Tender shall form part of the Tender Documents and shall be included in the Tender Price.

It is the sole responsibility of the Bidder to ensure all suppliers and subcontractors are provided with all information from the Tender Documents regarding their subdivision of the Work.

## **8.0 Electronic Documents**

Electronic versions of the Tender Documents, if provided, are to be used for information purposes only. Bidders are recommended to review hardcopy originals of the Tender Documents during Tender preparation. Tender Documents can be obtained as outlined in the Tender Invitation.

## **9.0 Supporting Documentation**

Upon Tender award the successful Bidder may be requested to provide the following documentation within 10 days;

- a) Evidence demonstrating the Bidder's applicable past experience in projects related to the Work, and evidence that the Bidder is prepared to use the

necessary personnel and equipment to carry out the Work satisfactorily and within the time stated in the Tender Form.

- b) Indicate the manufacturer or product brand name of the items listed together with the name of the supplier or distributor from which each item will be purchased. Where more than one supplier or manufacturer is listed or specified, the name of the selected supplier or manufacturer shall be inserted. After the Contract is awarded, manufacturers and suppliers shall not be changed from those shown in the Tender Form without the written authorization of the Town.
- c) Equipment intended for use in the Work. The equipment listed must be used unless otherwise authorized by the Town. The words "As Required", or similar wording will not be sufficient to describe the equipment. The Tender must be accompanied by a rate table detailing hourly rates for the equipment the Bidder proposes to use in the performance of the Work.
- d) Names of all subcontractors proposed for the Work. The subcontractors may not be changed without the written consent of the Town. The Town may require the Bidder to submit evidence of the competence and experience of proposed subcontractors prior to acceptance of the project.
- e) A rate table detailing regular and overtime hourly labour rates for the Bidder's proposed work force.

#### **10.0 Date for Completion**

The Bidder shall state, in the Completion Schedule of the Tender Form, the proposed start date for the Work, milestone dates for project component completion, and the duration and date anticipated for project completion.

#### **11.0 Alternate or Equal – Bidder Supplied**

Where the Technical Specifications or Drawings stipulate that a particular kind or make of material or equipment shall be used, and allow for an equal or alternate material or equipment to be substituted, any proposed substitution must be submitted in writing, with sufficient supporting documentation, to the Town for evaluation. No applications for approval of substitutions will be accepted within seven (7) days of the Tender submission deadline. Approvals under this section will be communicated to all Bidders by addenda.

When a request to substitute allegedly equal material or equipment is made to the Town, the Town may approve the substitution either as an equal or an alternate. If an item is approved as equal, the Bidder may use that item in place of the specified item. If the item is approved as an alternate, the Bidder shall base the price upon the specified item and may indicate in the Tender the price which will apply if use of the alternate item is accepted.

In submission of alternatives or equals to items of material mentioned in the Technical Specifications, the Bidder shall, in the Tender, make consideration for any changes required in the Work to accommodate such alternatives or equals. A claim for an addition to the Contract Price because of changes in the Work necessitated by the use of alternatives or equals will not be considered.

## **12.0 Federal Goods and Services Tax (G.S.T.)**

The Bidder shall not include G.S.T. in the tendered unit prices, lump sum prices or in the Tender Price.

## **13.0 Tenders to be Under Seal**

All Tenders shall be signed and sealed. In the case of a body corporate, the Tender shall be under the corporate seal; in the case of an individual person, the Tender shall be under the seal of that person, and in the case of an association of persons or a firm, each member of the association or firm shall affix their seals to the Tender.

The Bidder's legal status must be disclosed and business address given near signatures in the Tender Form.

## **14.0 Bid Security**

The Tender must be accompanied by a certified cheque, bid bond, or irrevocable letter of credit from a recognized financial institution payable to the Town in the amount of ten percent (10%) of the Tender Price for the Work. If a bid bond is provided, one of the conditions of the bond obligation shall be that the Bidder shall leave the Tender open for acceptance for a period of sixty (60) days from the date of the Tender submission deadline. The Bid Bond template provided in Section 00 43 13 or the Canadian Construction Documents Committee (CCDC) Form 220 (CCDC 220) shall be the only forms acceptable. The bid security of the unsuccessful Bidders will be returned as soon as possible after the award of the Contract, or if no Contract is awarded, after such decision is reached by the Town, or at the time the Tenders expire.

## **15.0 Contract Bonding**

The Tender must also be accompanied by consent of surety agreement by a surety company stating that it is prepared to execute a Performance Bond and Labour and Materials Payment Bond in accordance with Article 11.0 of Section 00 72 00 – General Conditions, or as stipulated in Section 00 73 00 – Supplementary Conditions. A Consent of Surety template is provided in Section 00 45 17.

The Consent of Surety will be required whether the Bidder uses a certified cheque, bid bond, or irrevocable letter of credit from a recognized financial institution under the provisions of Article 14.0 – Bid Security.

In lieu of a consent of surety agreement, the bidder may provide a performance bond and a labor & material payment bond each in the amount of 50% of the contract price in the form provided in Section 00 61 13.13 or CCDC 221.

## **16.0 Insurance**

A Certificate of Insurance certifying that the insurance, as required in Section 00 72 00 – General Conditions, is in place, shall be included with each Tender. The Certificate of Insurance template provided in Section 00 45 15, or similar format clearly indicating the required coverage, shall be the only forms acceptable.

If the required insurance is not in place, a letter from the Bidder's insurance broker certifying that the required insurance will be issued to the Bidder if the said Bidder is the successful Bidder, shall be included with the Tender.

### **17.0 Withdrawal of Tenders**

Permission will be given to a Bidder to withdraw the Tender without prejudice, provided a request in writing, signed by a person authorized to execute the Tender as set forth in Article 13.0 – Tenders to be Under Seal, is filed at the office of the Town of Peace River Engineering Services before the date and time of the Tender submission deadline.

### **18.0 Modification of Prices**

A Bidder may, without prejudice, modify or correct any unit price on the Tender on or before the submission deadline if the notice of modification or correction complies with the following:

- .1 The notice must be in writing;
- .2 The notice must be hand delivered; electronic and facsimile notices will not be accepted;
- .3 The notice must identify the project;
- .4 The notice must distinctly identify the item in the original Tender that is to be modified or corrected, and shall clearly specify the modification or correction to be made;
- .5 The notice must be signed by a person authorized to execute the Tender as set forth in Article 13.0 – Tender to be Under Seal of these Instructions to Bidders; and
- .6 The notice must be filed at the office of the Town of Peace River Engineering and Infrastructure, 9911 – 100 Street, P.O Box 6600, Peace River, AB T8S 1S4 on or before the date and time of the Tender submission deadline. The notice must be clearly marked as to content with the project name and submitting company name.

### **19.0 Rejection of Tenders**

Tenders that are unsigned, incomplete, conditional, illegible, unbalanced, obscure, or that contain additions not called for, reservations, erasures, alterations, or irregularities of any kind, may be rejected.

On Unit Price Tenders, if there is a discrepancy found between the unit prices and the total amount, the unit price shall be considered as representing the intention of the Bidder and the Tender Price will be recalculated and incorporated into the Tender.

**20.0 Tender Review and Evaluation**

- .1 Mandatory Criteria Stage 1 (Pass/Fail)
  - a) Mandatory requirements will be assessed on a pass/fail basis. Any submissions that have any mandatory criteria assessed as a fail may be disqualified from further evaluation.

<b>Mandatory Criteria</b>	<b>Yes/No</b>	<b>Pass/Fail</b>
Certificate of Insurance	Yes	
Consent of Surety	Yes	
Bid Security	Yes	
Bidders acknowledgement of COR	Yes	
Proof of Worker's Compensation Board (WCB)	Yes	
Completed and Authorized Tender Form	Yes	

- .2 The Town Reserves the right to contact any current or previous client, whether referenced or not, to obtain information required regarding the quality of service provision and to use this information in its sole discretion in the evaluation of the submission. The Town Reserves the right to disqualify proponents based on references.
- .3 Once the mandatory information is confirmed the tender will be evaluated and awarded to the highest scoring bidder according to the criteria weighting table below:

<b>Criteria</b>	<b>Documents Required</b>	<b>Weight</b>	<b>Score</b>
Price	Total tender standardized to the total site occupation days in schedule	30%	3.0
Project Experience	Tenderer to provide information on 3-5 projects inclusive of the Tender Amount, Contract Amount, Tender Timeline, Actual Timeline, and Project Sponsor.	15%	1.5
Personnel Experience	Tenderer to provide information on LAST 3-5 recent projects inclusive of the Tender Amount, Contract Amount, Tender Timeline, Actual Timeline, and Project Sponsor.	15%	1.5
Schedule	Tenderer to provide the project schedule timeline and complete with site occupation days within the restrictions of the tender.	10%	1.0
Project Comprehension	Tenderer to confirm and comment on critical components of the project that they foresee.	10%	1.0
Local Involvement	Tenderer to provide 3 business references of work conducted in and around the Peace River region. The Town will abide by the NW Partnership Trade Agreement and agreements of internal trade on evaluation.	10%	1.0
Financial Resources	Tenderer is to provide COR, Bid Bond, Consent of Surety, etc. (Above Pass/Fail Chart)	10%	1.0
<b>Total</b>			<b>10.0</b>

## **21.0 Tenders Exceeding Budget**

- .1 If the lowest compliant Tender provides a Tender Price that exceeds the amount the Town has budgeted for the Work, the Town may reject all Tenders.
- .2 If the lowest compliant Tender provides a Tender Price that exceeds the amount the Town has budgeted for the Work, the Town retains the right to proceed as follows:
  - a) Cancel the Tender, and
  - b) Cancel the Project; or
  - c) Retender the Project with a revised scope, or
  - d) Enter into negotiations with the vendor that submitted the “lowest compliant Tender”.
- .3 If the Town elects to negotiate with the vendor that submitted the “lowest compliant tender”:
  - a) All statements made by the Town and the Bidder in the course of negotiations are without prejudice and confidential;
  - b) The Town will not attempt to obtain a lower price for the same work, but may attempt to obtain a lower price for an altered scope of work. In no event will the Town be obliged to disclose the amount budgeted for the work.
- .4 If the Town is unable to reach an agreement with the vendor that submitted the “lowest compliant Tender” then the Town retains the right to:
  - a) Cancel the Tender, and
  - b) Cancel the Project, or
  - c) Retender the Project with a revised scope, or
  - d) Enter into negotiations with any vendor
- .5 Under no circumstances shall the Town be obligated to award the Contract for either the original or the lower negotiated price.

## **22.0 Acceptance of a Tender**

Acceptance of a Tender will be by notice in writing signed by Town officials, and no other act of the Town shall constitute the acceptance of a Tender. This notice will be given as soon as possible following the Tender Period closing and, unless otherwise specified, no later than sixty (60) days following the Tender Period closing. Acceptance of a Tender shall bind the successful Bidder to execute the Contract and be bound by all the provisions of the Contract Documents.

## **23.0 Certificate of Recognition (C.O.R.) Safety Program**

The Town shall reject a Bid submitted by a Bidder who has not obtained a C.O.R. or S.E.C.O.R. appropriate to their industry issued by the Alberta Construction Safety Association or other applicable organization.

A copy of the successful Bidder's C.O.R. or a copy of the Bidder's name and certificate number on either the Government of Alberta Employment and Immigration's certification list or other applicable organizations certification list, current at the time of Tender closing, shall be submitted to the Town within 5 days of tender closing.

A Bidder may submit a valid Temporary Letter of Certification (TLC) issued by the Alberta Construction Safety Association or other applicable organization.

#### **24.0 Return of Tender Documents**

The Tender Documents shall remain, at all times, the property of the Town. Bidders shall return Tender Documents to the Town within ten (10) days of contract award or decision by the Town not to award the Contract if requested.

#### **25.0 Contract Execution and Commencement of Work**

The successful Bidder, who's Tender, is accepted, will be required to execute the Contract Agreement within five (5) days after notice that the Contract has been awarded. Failure or neglect to do so shall constitute a breach of the Agreement affected by the acceptance of the Tender.

The Contractor shall commence work on the project within five (5) days of a "Notice to Proceed", unless other arrangements have been approved by the Town in writing.

#### **26.0 Workers' Compensation**

- .1 Within 10 days of the successful contract award the Bidder is to submit a letter of Account from the Workers' Compensation Board (WCB) – Alberta, including the Bidder's WCB rates and frequency of lost time incidents (LTIs) for the past two years (Frequency of LTIs = Number of LTIs x 200,000 / Total Annual Employee Hours).
- .2 Bidders who do not have an account with the Workers' Compensation Board – Alberta shall provide evidence of a subcontractor or other company that will carry such coverage on their behalf.
- .3 If the Bidder is performing work in an exempt industry as defined under the Workers' Compensation Act - Alberta and does not carry coverage, the Bidder acknowledges that the Town is subject to a deeming order under the Workers' Compensation Act - Alberta.

- END OF SECTION 00 21 13 -



Date: \_\_\_\_\_

Bidder: \_\_\_\_\_

Street Address: \_\_\_\_\_

City/Town: \_\_\_\_\_ Province: \_\_\_\_\_ P.C \_\_\_\_\_

Representative: \_\_\_\_\_ Phone: \_\_\_\_\_

Fax Number: \_\_\_\_\_ Email Address: \_\_\_\_\_

For: 99 Ave W Trail Development

G.S.T. Registration Number: \_\_\_\_\_

TO: Town of Peace River  
C/O: Director of Engineering and Infrastructure  
9911 100 St,  
Peace River, AB T8S 1S4

Tender Summary

TENDER PRICE (excluding G.S.T.) \$ \_\_\_\_\_

1.0 The Bidder submits the following with the Tender:

- .1 Completed and Authorized Tender Form
- .2 Bid Security equal to ten percent (10%) of the Tender Price in the form of:
  - a) A certified cheque, or;
  - b) A Bid Bond in the form provided in Section 00 43 13 or CCDC 220, or;
  - c) An irrevocable letter of credit from a recognized financial institution.
- .3 Certificate of Insurance (or verification of same as per Section 00 21 13, Article 16.0) in the form provided in Section 00 45 15.
- .4 Consent of Surety in the form provided in Section 00 45 17. In lieu of a consent of surety agreement, the bidder may provide a performance bond and a labor & materials payment bond each in the amount of 50% of the contract price in the form provided in Section 00 61 13.13 or CCDC 221.
- .5 The Bidder acknowledges by checking the box below they have a Certificate of Recognition pursuant to Article 23.0 of Section 00 21 13 – Instructions to Bidders.
- .6 **All tenders submitted without the required documentation as specified in the above items 2.0.1 to 2.0.5 inclusive shall be considered non-compliant and will be rejected.**

By checking this box the bidder confirms the firm represented has a valid COR.

**Incomplete tenders will not be accepted.**

2.0 The Bidder hereby acknowledges receipt of the following addenda:

Addendum No.	No. of Pages	Dated

3.0 The Bidder understands that if selected as the successful Bidder for this Tender, the Town shall provide written notice to the Bidder to the address provided by the Bidder in this Tender Form.

4.0 If selected as the successful Bidder, the Bidder shall:

- .1 Execute the Contract within five (5) days of receipt of the Contract from the Town and return the Contract to the Town.
- .2 If the Bidder fails or declines to execute the Contract, the Bid Security shall be forfeited to the Town as compensation for damages that the Town may suffer by reason of the Bidder's failure to execute the Contract. The Bidder acknowledges that the forfeiture of the Bid Security shall not limit or restrict the Town's right to recover from the Bidder damages suffered in excess of the amount of the Bid Security.
- .3 Provide all requested information as specified in section 00-21-13 Instructions to bidder within 10 days of contact award.

5.0 The Bidder hereby represents to the Town that the Bidder:

- .1 Has carefully examined the Tender Documents.
- .2 Has carefully examined the site of the Work and accepts the provisions of Article 4.0 of the Section 00 21 13 – Instructions to Bidders.
- .3 Have the resources, skills and ability to perform the Work in accordance with the Contract.

6.0 The Bidder understands and agrees that:

- .1 The Town reserves the right to increase, decrease, delete or vary any portion of the Work, and the Bidder agrees to comply with any such change in the Work subject to valuation and adjustment as provided in the Contract.
- .2 The quantities, if any, listed by the Town in the schedule herein are approximate only and are for the purpose of comparing Tenders. In arriving at the Unit Prices set forth in this Tender form, the Bidder has made his own estimates of the respective quantities involved and has not relied upon the estimates shown in the Schedule of Quantities and Prices. The Bidder shall have no claim for any loss of anticipated profits or other costs, extras or losses resulting from any excess or

- deficiency in the quantities shown, regardless of the extent of any excess or deficiency.
- .3 Payment under the Contract will be made on the basis of completed work, or portions thereof, measured and accepted by the Town and valued at the applicable unit prices, or applicable lump sum prices or portions thereof.
- .4 The Town may order extra work not covered by the Schedule of Quantities and Prices. Compensation for extra work will be determined in accordance with the General Conditions.
- .5 Where a Contingency Allowance is included in the Schedule of Quantities and Prices, only actual expenditures for such items as extra work, changes in the work, unclassified work, or others, made upon the written authority of the Town, will be paid out of such allowance, and that the Contract Price will be changed in the amount by which the Contingency Allowance either exceeds or is exceeded by such expenditures.
- 7.0 The Bidder declares that with respect to federal commodity tax instructions, the Tender Documents have been duly observed and adhered to; the goods and services tax status of the goods involved has been properly determined; and all rates and entitlements provided for in the relevant tax statutes as affecting the Town have been duly considered.
- 8.0 The Bidder represents and warrants to the Town that the several declarations and matters stated in this Tender Form and this Bid are true and binding in all respects, and that this Bid has been compiled by the Bidder with full knowledge and understanding of all matters and things called for insofar as they relate to the Tender Documents.
- 9.0 The Bidder acknowledges that payment for work performed under the Contract shall be on the basis of unit prices.
- 10.0 The Bidder is prepared to begin work on the date specified in the Completion Schedule and to prosecute the Work in such a manner as to achieve completion as indicated, including all clean up and rectification of all deficiencies, also in accordance with the Completion Schedule. The Bidder understands that time is of the essence for completion of the Work. Should the undersigned fail to complete the Work within the specified calendar days plus any extension of time granted by the Town for additional work done, then the undersigned shall be required to pay liquidated damages to the Town. Such damages shall cover all additional Engineering costs and expenses, Town

overhead costs, and any other applicable costs that may be incurred by the Town as a result of each delay.

- 11.0 That no person, firm or corporation other than the Bidder has any interest in this Tender or in the proposed Contract for which this Tender is made and to which it relates.
- 12.0 That this Tender is made by the Bidder without any connection, knowledge, comparison of figures or arrangement with any other person or persons making a Tender for the same Contract, and is in all respects fair and without collusion or fraud.
- 13.0 Unless and until the formal agreement is prepared and executed, it is understood that this Tender together with the Notice of Acceptance shall constitute a binding Contract between the Town and the successful Bidder.
- 14.0 Schedule of Quantities and Prices

The Bidder agrees that the Tender Price includes all items as outlined in the Technical Specifications or Drawings or otherwise required to complete the Work, but is not necessarily limited to the following items. The following cost breakdown shall be used in evaluation of bids and for future progress payment purposes.

99 AVE WEST TRAIL DEVELOPMENT				McElhanney	
Code	Description	Unit	Qty.	Unit Price	Total
<b>1.00</b>	<b>SITE WORKS &amp; REMOVALS</b>				
1.01	Existing Rip Rap Removal & Reinstallation	sq.m	60		
1.02	Topsoil Stripping (assume depth of 150mm)	cu.m	150		
1.03	Borrow Excavation	cu.m	50		
1.04	Common excavation (150mm)	cu.m	150		
1.05	Rough and Fine Grading	L.S.	1		
1.06	Mobilization & Demobilization	L.S.	1		
1.07	Traffic Accomodation	L.S.	1		
1.08	Locate & Safeguard Existing Utilities (to include line locators/hydrovacating if required)	L.S.	1		
	<b>SUBTOTAL OF 1.00</b>				
<b>2.00</b>	<b>HARD SURFACE - SUPPLY &amp; INSTALL</b>				
2.01	Concrete Curb Ramp - Supply & Install	ea.	2		
2.02	3m Trail c/w 75mm depth Asphalt, 150mm prepared subgrade and 300mm compacted granular base (20mm crush - Des 3, Class 20)	l.m.	155		
	<b>SUBTOTAL OF 2.00</b>				
<b>3.00</b>	<b>SOD / SEED c/w IMPORTED TOPSOIL - SUPPLY AND INSTALL</b>				
3.01	150mm depth topsoil in seed & sod areas (550 sq.m approx.)	cu.m	85		
3.02	Restoration Seed Area	sq.m	290		
3.03	Restoration Sod Area	sq.m	260		
	<b>SUBTOTAL OF 3.00</b>				
<b>4.00</b>	<b>SITE FEATURES - SUPPLY AND INSTALL</b>				
4.01	900mm Corrugated Steel Pipe	l.m	14		
4.02	150mm Corrugated Steel Pile	l.m	7		
4.03	Adjust Existing Manhole Elevation	ea.	1		
4.04	Pavement Markings - Crosswalk	L.S	2		
4.05	Supply and Install of New Signs including posts, brackets, hardware as required	ea.	3		
4.06	Regulatory Rapid Flashing Beacon (RRFB) - both sides of road	ea.	1		
	<b>SUBTOTAL OF 4.00</b>				

99 AVE WEST TRAIL DEVELOPMENT				McElhanney	
Code	Description	Unit	Qty.	Unit Price	Total
<b>PROVISIONAL ITEMS</b>				<b>McElhanney</b>	
<b>Code</b>	<b>Description</b>	<b>Unit</b>	<b>Qty.</b>	<b>Unit Price</b>	<b>Total</b>
5.00	<b>GEOTEXTILE - SUPPLY AND INSTALL</b>				
5.01	Geotextile Roadway Membrane 3.8m roll - Supply & Install (Nilex 2006 or approved equivalent) (140 l.m approx.)	sq.m	532		
<b>SUBTOTAL OF 5.00</b>					
<b>99 AVE WEST TRAIL DEVELOPMENT SUMMARY</b>					
SUBTOTAL 1.00 SITE WORKS & REMOVALS					
SUBTOTAL 2.00 HARD SURFACE - SUPPLY AND INSTALL					
SUBTOTAL 3.00 SOD / SEED c/w IMPORTED TOPSOIL - SUPPLY AND INSTALL					
SUBTOTAL 4.00 SITE FEATURES - SUPPLY AND INSTALL					
<b>CONSTRUCTION TOTAL (A)</b>					
SUBTOTAL 5.00 GEOTEXTILE - SUPPLY AND INSTALL					
<b>PROVISIONAL TOTAL</b>					
1ST YEAR WARRANTY & MAINTENANCE					
2ND YEAR WARRANTY & MAINTENANCE					
<b>WARRANTY AND MAINTENANCE TOTAL (B)</b>					
CONTRACT SUB TOTAL (A+B)					
GST (5%)					
<b>CONTRACT TOTAL (Including G.S.T.)</b>					

15.0 Completion Schedule

The Bidder offers the following completion schedule (attach additional sheets as required). Project start date by 31/05/23 (dd/mm/yy). A more detailed schedule will be required of the successful Bidder following Contract Award.

Project Component	Period to Completion in Calendar Days or By Date

Completion of the entire project must be done in 92 calendar days, by **31/08/23** (dd/mm/yy).

16.0 Equipment

The Bidder offers the following list of equipment that will be employed for the Work (attach additional sheets as required).

Equipment Type	Model	Year of Manufacture	Owned or Leased

17.0 Bidder's Experience

The Bidder offers the following list of previous experience with projects of similar size and nature (attach additional sheets as required) completed in the last 5 years.

Project Name	Location	Year	Consulting Engineer

18.0 References

The Town Reserves the right to contact any current or previous client, whether referenced or not, to obtain information required regarding the quality of service provision and to use this information in it's sole discretion in the evaluation of the submission. The Town Reserves the right to disqualify proponents based on references.

The Bidder offers the following list of client references (minimum 3) for projects completed in similar size and nature (attach additional sheets as required) completed in the last 5 years.

Project Name	Location	Contact Name	Phone Number

19.0 Subcontractors

The Bidder offers the following list of subcontractors who will be employed for the Work (attach additional sheets as required). The Work shall be completed by the Bidder’s own work forces unless otherwise indicated below. This list is intended for information purposes only. The Town assumes no responsibility to protect subcontractors from bid-shopping or to otherwise assist subcontractors in enforcing their legal rights.

Subcontractor Name	Contact Name	Project Role

20.0 Suppliers

The Bidder offers the following list of suppliers who will supply materials and/or equipment for the Work (attach additional sheets as required). This list is intended for information purposes only. The Town assumes no responsibility to protect suppliers from bid-shopping or to otherwise assist suppliers in enforcing their legal rights.

Equipment/Material to be Supplied	Supplier Name

21.0 Work Plan

The Successful Bidder will be required to submit the following general plan and approach to completing the Work (attach additional sheets as required).

---



---



---



---

\_\_\_\_\_

This Tender Form is executed under seal at \_\_\_\_\_

This \_\_\_\_ day of \_\_\_\_\_ 20\_\_.

**FOR CORPORATION:**

The Corporate Seal of:

\_\_\_\_\_  
(Bidder – Print Name) (Affix Seal)

was affixed by the following duly authorized signing authority:

\_\_\_\_\_  
(Print Name) (Signature)

\_\_\_\_\_  
(Print Title)

additional authorized signing authority if required:

\_\_\_\_\_  
(Print Name) (Signature)

\_\_\_\_\_  
(Print Title)

**FOR INDIVIDUAL OR PARTNERSHIP:**

Signed, sealed and delivered by:

\_\_\_\_\_  
(Bidder – Print Name) (Bidder - Signature)

in the presence of:

\_\_\_\_\_  
(Witness - Print Name) (Witness - Signature)

\_\_\_\_\_  
(Witness - Print Title) (Witness - Print Address)

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_



Notes: Should the Bidder not execute this Tender Form under corporate seal, the signing authorities of the company shall sign the Tender before a Witness who will then sign as a witness to the left of the authorities' signatures. The Witness will then complete an Affidavit of Execution before a Commissioner for Oaths and the affidavit shall be attached to the Tender.

If the Bidder is not registered to do business in the Province of Alberta, the Bidder shall also provide with the Tender evidence that the individuals who signed on behalf of the company are the proper signing authorities of the Company.

If the Company signs the Tender without a seal and such Tender is from outside the Province of Alberta, then the Affidavit of Execution must be signed before a Notary Public.

If the Bidder is not a Corporation but rather a partnership or sole proprietorship, then the individual(s) who sign must do so before a Witness in the same format as a company who signs without a corporate seal.

If the Tender is by a joint venture, add additional forms of execution for each member of the joint venture in the appropriate form or forms as above.

- END OF SECTION 00 41 00 -

Bond No. \_\_\_\_\_  
KNOW ALL BY THESE PRESENTS THAT

as Principal, and hereinafter called the Principal, and

as Surety, hereinafter called the Surety, are jointly and severally held and firmly bound unto the Town of Peace River, in the province of Alberta, as Obligee, hereinafter called the Obligee, in the amount of

**10% (Ten Percent) of the Tender Price** DOLLARS (\$ \_\_\_\_\_)

lawful money in Canada, for the payment of which sum, well and truly to be made to the Obligee, its heirs, executors, administrators, successors, and assigns, the Principal and the Surety bind themselves, their heirs, executors, administrators, successors, and assigns, jointly and severally, firmly by these presents.

WHEREAS the Principal has submitted a written tender to the Obligee for Tender No. \_\_\_\_\_

Which tender closes on the \_\_\_\_\_ day of \_\_\_\_\_ 20\_\_ for the following work:

NOW, THEREFORE, THE CONDITION OF THIS OBLIGATION is such that if the Tender of the aforesaid Principal shall be accepted within \_\_\_\_\_ days from the closing date of tender and the said Principal will, within the time required, enter into a formal Contract and give good and sufficient Bonds to secure the performance of the terms and conditions of the Contract, then this obligation shall be null and void; otherwise, the Principal and Surety will pay unto the Obligee the difference in money between the amount of the bid of the said Principal and the amount for which the Obligee legally contracts with another party to perform the work if the latter amount is in excess of the former.

Any suit under this Bond must be instituted within one (1) year from the date of the Bond. The Surety shall not be liable for a greater sum than the specified amount of this Bond. The Surety shall be and remain bound on the obligation of this Bond whether or not the same has been executed by the Principal and whether or not there is any defect or insufficiency in the execution thereof by the Principal.

IN TESTIMONY WHEREOF, the Principal has hereto set its hand and affixed its seal, and the Surety has caused these presents to be sealed with its corporate seal duly attested by the signature of its duly authorized signing authority, this \_\_\_\_\_ day of \_\_\_\_\_ 20\_\_.

Principal

Surety

(Authorized Officer – Signature)

(Authorized Officer – Signature)

(Name of Authorized Officer – Please Print)

(Name of Authorized Officer – Please Print)

(Position of Authorized Officer – Please Print)

(Position of Authorized Officer – Please Print)

(Affix Seal)

(Affix Seal)

**This certificate is issued as a matter of information only and confers no rights upon the certificate holder. This certificate does not amend, extend, or alter the coverage afforded by the policies listed below.**

Name and Address of Agency	Companies Affording Coverages
	Company Letter A
	Company Letter B
Name and Address of Insured	Company Letter C
	Company Letter D

This is to certify that policies of insurance listed below have been issued to the insured named and are in force at this time.

Type of Insurance	Policy Number	Expiration Date	Limits of Liability in Thousands (000)		
			Type	Each Occurrence	Aggregate
<b>General Liability</b>					
Comprehensive Form			Bodily Injury		
Contractual Liability					
Independent Contractors					
Products and Completed Operations			Property Damage		
Excavation, Collapse, Shoring, and Underpinning					
Broad Form Property Damage			Bodily Injury and Property Damage Combined		
Employees as Additional Insureds					
Occurrence Property Damage			Fire Damage		
Cross Liability					
Contingent Employers Liability					
Premises and Operations Liability					
Wrap-Up					
Fire Damage			Personal Injury		
Others (specify):					
<b>Automobile Liability</b>					
Comprehensive Form			Bodily Injury (each person)		
Owned			Bodily Injury (each accident)		
Hired			Property Damage		
Non-Owned					
Garage Liability			Bodily Injury and Property Damage Combined		
Others (specify):					
<b>Excess Liability</b>					
Umbrella Form			Bodily Injury and Property Damage Combined		
Other Than Umbrella Form					
<b>Other:</b>					
Course of Construction			All Risk Property Damage		
Environmental Liability					
Professional Liability					
			\$ _____ each claim or in the aggregate with a		
			\$ _____ each claim deductible.		

DESCRIPTION OF OPERATIONS/LOCATIONS/VEHICLES

TOWN OF PEACE RIVER PROJECT NAME:

**The Town of Peace River is named as Additional Insured. The Named Insured's coverage is primary and other insurance is excess and non-contributory. Waiver of Subrogation is included.**

Cancellation: The issuing company represents that these policies are endorsed to provide thirty (30) days prior written notice, to the below named certificate holder, of any cancellation or material change.

CERTIFICATE HOLDER:  
Town of Peace River c/o Planning & Infrastructure  
9911 100 ST  
Peace River, AB T8S 1S4

(Authorized Representative – Signature)

(Name of Representative – Please Print)

(Date)

Should it be required, \_\_\_\_\_, hereinafter called the Surety, in executing this Consent, hereby agrees if the Tender is awarded to \_\_\_\_\_, hereinafter called the Principal, within \_\_\_\_ days from the closing date of the tender, to become bound as Surety in both a Performance Bond and a Labour and Material Payment Bond with the Principal, each to be in the form, with all required provisions, and executed as required by the Contract Documents for \_\_\_\_\_ ( \_\_\_\_%) of the Contract Price, not exceeding an amount of \_\_\_\_\_ DOLLARS (\$\_\_\_\_\_)

for the fulfillment of the Contract for the work described and specified by the Contract Documents at the prices set forth in the attached Tender, unto the Town of Peace River, as Obligee. The Surety, having an office at \_\_\_\_\_ in the Province of Alberta and satisfactory to the Town and allowed by the laws of the Province of Alberta to issue Performance Bonds in Alberta, is worth, over and above its present liabilities, the amount of the Bond required by the Contract Documents to be provided by the Principal.

Surety

\_\_\_\_\_  
(Authorized Officer – Signature)

\_\_\_\_\_  
(Name of Authorized Officer – Please Print)

\_\_\_\_\_  
(Position of Authorized Officer – Please Print)

(Affix Seal)

Notes: The Performance Bond shall be in the form provided in Section 00 61 13.13 or CCDC 221, and the Labour and Material Payment Bond shall be in the form provided in Section 00 61 13.15 or CCDC 222.

The Surety issuing this Consent must have an office in the Province of Alberta or be represented by an Agent with an office in the Province of Alberta.

- END OF SECTION 00 45 17 –

This Agreement, made on the \_\_\_\_\_ day of \_\_\_\_\_, 2023 between:

THE TOWN OF PEACE RIVER  
(hereinafter called the Town),  
a Municipal Corporation,  
PARTY OF THE FIRST PART,

and

\_\_\_\_\_  
(hereinafter called the Contractor),  
PARTY OF THE SECOND PART

WITNESSETH that the Contractor and the Town, for the considerations hereinafter named, agree as follows:

1.0 Scope of Work

The Contractor shall:

- 1.1 Furnish all of the materials (except as otherwise specified to be supplied by others) and all of the equipment and labour necessary to perform the Work described in the Contract Documents, all in accordance with the requirements and provisions of the Contract for the project entitled:

**99 Ave W Trail Development**

prepared by the Town of Peace River and signed in triplicate by both parties.

- 1.2 Perform, provide, and fulfill all requirements of the Contract.
- 1.3 Provide all Bonds and Insurance Certificates in accordance with the Contract.
- 1.4 Commence and perform the Work within the time provided in Article 25.0 of Section 00 21 13 – Instructions to Bidders, unless other arrangements have been approved by the Town in writing.
- 1.5 Attain Substantial Performance of the Work by July 31, 2023, subject to any adjustments in schedule as provided for in the Contract Documents
- 1.6 Warranty the Work as set out in Article 5.7 of Section 00 72 00 – General Conditions, or as otherwise stipulated in Section 00 73 00 – Supplementary Conditions.

2.0 Contents of the Contract

Contract Documents include all documents, listed as follows, that form the contents of the Contract:

- Tender Invitation
- Instructions to Bidders
- Tender Form
- Bid Bond
- Certificate of Insurance

- Consent of Surety
- Contract Agreement
- Performance Bond (where applicable)
- Labour and Material Payment Bond
- Certificate of Recognition or Temporary Letter of Certification
- Letter of Account from Workers' Compensation Board, rates, and LTI frequencies
- General Conditions
- Supplementary Conditions
- Technical Specifications
- Drawings and Plans
- Town of Peace River Municipal Engineering Standards (where applicable)
- Appendices
- Addenda (where applicable)

### 3.0 Payment

If the Contractor promptly, faithfully, and properly fulfills the terms and conditions of the Contract in every detail to the satisfaction of the Town, the Town shall pay to the Contractor in lawful money of Canada the sum of \$ \_\_\_\_\_ (hereinafter called the Contract Price) subject to such adjustments, additions, and deductions as provided in the Contract. The quantities contained in the schedule in the Tender are approximate only and the final payment shall be made for the actual quantities that are incorporated in or made necessary by the work covered by the Contract. Any payment made to the Contractor shall be less all applicable holdbacks, including Builders' Lien Holdbacks.

### 4.0 Assignment and Transfer

The Contractor shall not, without the prior written consent of the Town, assign or transfer in any manner whatsoever the rights, liabilities, obligations and benefits of the Contract.

### 5.0 Extension of the Contract

Unless the Contractor and the Town expressly agree otherwise, all provisions of the Contract shall apply to any extension of the Contract.

### 6.0 Laws of Alberta

The Contract shall be construed in accordance with the laws of the Province of Alberta, and the Courts of Alberta shall have the exclusive jurisdiction to entertain any action arising under the Contract. If any provision of the Contract in any way contravenes the laws of the Province of Alberta, such provisions shall be severed from the Contract and the remaining provisions shall continue in force and effect. The Contract shall ensure to the benefit of and be binding upon the parties hereto, their respective heirs, executors, administrators, successors, and assigns.

### 7.0 Remedies

All remedies which the Contract confers upon the Town shall be deemed cumulative and no one exclusive of the other, or of any remedy conferred by law.

8.0 Notice

If either party is required to give notice to the other party under or in connection with the Contract, such notice will be effectively given if sent by registered mail or hand delivered to the Contractor at:

Attn:

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

and to the McElhaney at:

Attn: Chelsea Allan

\_\_\_\_\_

McElhaney Ltd.

\_\_\_\_\_

9410 100 St

\_\_\_\_\_

Peace River, AB T8S 1H7

\_\_\_\_\_

and if sent by registered mail will be considered as having been received by the party to whom it is directed seven (7) days after the mailing of such.

**In witness whereof** the parties hereto have executed this Agreement by the hands of their duly authorized representatives.

SIGNED AND DELIVERED

in the presence of:

**FOR INDIVIDUAL OR PARTNERSHIP:**

_____	_____
(Contractor Name – Please Print)	(Witness Name and Position – Please Print)
_____	_____
(Contractor – Signature)	(Witness – Signature)

**FOR LIMITED COMPANY:**

The Corporate Seal of:

_____	_____
(Contractor Name – Please Print)	
_____	_____
(Name and Position of Authorized Officer – Please Print)	
_____	_____
(Signature of Authorized Officer)	(Contractor's Seal – Affix Seal)
_____	_____
(Name and Position of Authorized Officer – Please Print)	(Witness Name and Position – Please Print)
_____	_____
(Signature of Authorized Officer)	(Witness – Signature)

Note: If the Tender is by a joint venture, add additional forms of execution for each member of the joint venture in the appropriate form or forms as above.

**FOR THE TOWN:**

Town of Peace River	
_____	
(Name and Position of Authorized Officer – Please Print)	
_____	_____
(Signature of Authorized Officer)	(Town's Seal – Affix Seal)
_____	_____
(Name and Position of Authorized Officer – Please Print)	(Witness Name and Position – Please Print)
_____	_____
(Signature of Authorized Officer)	(Witness – Signature)



Bond No. \_\_\_\_\_

KNOW ALL BY THESE PRESENTS THAT

\_\_\_\_\_ as Principal, and hereinafter called the Principal, and

\_\_\_\_\_ as Surety, hereinafter called the Surety, are jointly and severally held and firmly bound unto the Town of Peace River, in the province of Alberta, as Obligee, hereinafter called the Obligee, in the amount of

\_\_\_\_\_ DOLLARS (\$\_\_\_\_\_ )  
lawful money in Canada, for the payment of which sum, well and truly to be made to the Obligee, its heirs, executors, administrators, successors, and assigns, the Principal and the Surety bind themselves, their heirs, executors, administrators, successors, and assigns, jointly and severally, firmly by these presents.

WHEREAS the Principal has entered into a written contract, hereinafter called the Contract, with the Obligee dated the \_\_\_\_\_ day of \_\_\_\_\_ 20\_\_, pursuant to which the Principal has agreed to carry out the following work:

\_\_\_\_\_ in accordance with the terms and conditions of the Contract, the Contract being by reference made a part hereof.

NOW, THEREFORE, THE CONDITION OF THIS OBLIGATION is such that if the Principal shall promptly and faithfully perform the Contract including, without limiting the generality of the foregoing, its obligation to indemnify and save harmless the Obligee and to maintain the work for a full period in accordance with the Contract, then this obligation shall be null and void; otherwise it shall remain in full force and effect.

Whenever the Principal shall be, and declared by the Obligee to be, in default under the Contract, the Obligee having performed the Obligee's obligations thereunder, the Surety may promptly remedy the default, or shall

- 1) Complete the Contract in accordance with its terms and conditions; or
- 2) Obtain a bid or bids for submission to the Obligee for completion of the Contract in accordance with its terms and conditions, and upon determination by the Obligee and Surety of the lowest responsible Bidder, arrange for a contract between such Bidder and Obligee (hereinafter referred to as the "contract of completion") and make available as work progresses (even though there should be a default, or a succession of defaults, under the contract of completion) sufficient funds to pay the cost of completion less the balance of the Contract price; but not exceeding, including other costs and damages for which the Surety may be liable hereunder, the amount set forth in the first article hereof. The term "balance of Contract price", as used in this article, shall mean the total amount payable by the Obligee to the Principal under the Contract, less the amount properly paid by the Obligee to the Principal.

Any suit under this Bond must be instituted before the expiration period of two (2) years from the date on which final payment under the Contract falls due.

The Surety shall not be liable for a greater sum than the specified amount of this Bond.

The Surety shall be and remain bound on the obligation of this Bond whether or not the same has been executed by the Principal and whether or not there is any defect or insufficiency in the execution thereof by the Principal.

No right of action shall accrue on this Bond to or for the use of any person or corporation other than the Obligee named herein, or the heirs, executors, administrators, or successors of the Obligee.

IN WITNESS WHEREOF, the Principal has hereto set its hand and affixed its seal, and the Surety has caused these presents to be sealed with its corporate seal duly attested by the signature of its duly authorized signing authority, this \_\_\_\_\_ day of \_\_\_\_\_ 20\_\_.

**PRINCIPAL:**

\_\_\_\_\_  
(Contractor Name – Please Print)

\_\_\_\_\_  
(Name and Position of Authorized Officer – Please Print)

\_\_\_\_\_  
(Signature of Authorized Officer) (Contractor's Seal – Affix Seal)

\_\_\_\_\_  
(Name and Position of Authorized Officer – Please Print) (Witness Name and Position – Please Print)

\_\_\_\_\_  
(Signature of Authorized Officer) (Witness – Signature)

**SURETY:**

\_\_\_\_\_  
(Surety Name – Please Print)

\_\_\_\_\_  
(Name and Position of Authorized Officer – Please Print)

\_\_\_\_\_  
(Signature of Authorized Officer) (Surety's Seal – Affix Seal)

\_\_\_\_\_  
(Name and Position of Authorized Officer – Please Print) (Witness Name and Position – Please Print)

\_\_\_\_\_  
(Signature of Authorized Officer) (Witness – Signature)

Bond No. \_\_\_\_\_  
KNOW ALL BY THESE PRESENTS THAT

\_\_\_\_\_ as Principal, and hereinafter called the Principal, and

\_\_\_\_\_ as Surety, hereinafter called the Surety, are jointly and severally held and firmly bound unto the Town of Peace River, in the province of Alberta, as Obligee, hereinafter called the Obligee, in the amount of

\_\_\_\_\_ DOLLARS (\$\_\_\_\_\_ )

lawful money in Canada, for the payment of which sum, well and truly to be made to the Obligee, its heirs, executors, administrators, successors, and assigns, the Principal and the Surety bind themselves, their heirs, executors, administrators, successors, and assigns, jointly and severally, firmly by these presents.

WHEREAS the Principal has entered into a written contract, hereinafter called the Contract, with the Obligee dated the \_\_\_\_\_ day of \_\_\_\_\_ 20\_\_, pursuant to which the Principal has agreed to carry out the following work:

\_\_\_\_\_ in accordance with the terms and conditions of the Contract, the Contract being by reference made a part hereof.

NOW, THEREFORE, THE CONDITIONS OF THIS OBLIGATION are such that if the Principal shall make payment to all claimants for all labour and material used or reasonably required for use in the performance of the Contract and should payment be properly made, then this obligation shall be null and void; otherwise, it shall remain in full force and effect, subject to the following conditions:

1. For the purpose of this bond:
  - a) "claimant" means a person, including a body corporate, or a partnership, and the heirs, executors, administrators, or other legal representatives of a person to whom the context can apply according to law, who has provided labour and material and who has not been paid for the same by the Principal or a subcontractor, in accordance with the Principal's or Subcontractor's obligation to do so, provided that a person who rents equipment to the Principal or a subcontractor to be used in the performance of the Contract under a contract which provides that all or a part of the rent is to be applied towards the purchase thereof, shall only be a claimant to the extent of the prevailing Obligee rental rates for the period during which the equipment was used in the performance of the Contract.
  - b) "labour and material" means labour, equipment, materials or services used or reasonably required for use in the performance of the Contract.
  - c) "services" means water, gas, electrical power, light, heat, oil, gasoline, steam, telephone, architectural services, engineering services, technical services, construction camp rental, catering, and other similar services consumed or incurred by the Principal or a subcontractor in the performance of the Contract.
  - d) "subcontractor" means a person, firm, or corporation not contracting with, or employed directly by, the Obligee for the doing of any work by contracting with, or employed by, the Principal, or by another subcontractor of the Principal, to perform the Work, or a portion thereof.
2. The Surety acknowledges that "Surety" means a person, firm, or corporation that guarantees to the Obligee the payment of creditors.
3. The Principal and the Surety hereby jointly and severally agree with the Obligee, as Trustee, that every claimant who has not been paid as provided for under the terms of the claimant's contract with the Principal or subcontractor before the expiration of

- a period of ninety (90) days after the date on which the last of such claimant's labour was performed or materials were furnished, may, as beneficiary of the trust herein provided for, sue on this Bond, prosecute the suit to final judgment for such sum or sums as may be justly due to such claimant under the terms of the claimant's contract with the Principal or subcontractor, and have execution thereon, provided that the Obligee is not obliged to do or take any act, action, or proceeding against the Surety on behalf of any claimant to enforce the provisions of this Bond. If any act, action, or proceeding is taken, either in the name of the Obligee or by joining the Obligee as a party to such proceeding, then such act, action, or proceeding shall be taken on the understanding and basis that the claimant who takes such act, action, or proceeding shall indemnify and save harmless the Obligee against all costs, charges, and expenses or liabilities incurred thereon, and any loss or damage resulting to the Obligee by reason thereof; provided still further that, subject to the foregoing terms and conditions, a claimant may use the name of the Obligee to sue on and enforce the provisions of this Bond.
4. No suit or action shall be commenced pursuant to Clause 3 hereof by any claimant unless such claimant provides notice, within the time limits hereinafter set forth, to each of the Principal, Surety, and Obligee, stating the amount that is claimed. Such notice shall be served by mailing the same to the Principal, Surety, and Obligee at the addresses indicated in this Bond, or served in any manner in which legal process may be served in the Province of Alberta. Such notice shall be given:
    - a) In respect of any claim for the amount or any portion thereof required to be held back from the claimant by the Principal or subcontractor under the terms of the claimant's contract with the Principal or subcontractor, within one hundred and twenty (120) days after such claimant should have been paid in full under the claimant's contract with the Principal or subcontractor;
    - b) In respect of any claim other than for the holdback or portion thereof, referred to in the foregoing, within one hundred and twenty (120) days after the date upon which such claimant did or performed the last of the work, or furnished the last materials for which such claim was made under the claimant's contract with the Principal or subcontractor.
  5. Any suit by a claimant under this Bond shall be instituted before the expiration of a period of one (1) year from the date on which the Principal ceased work on the Contract, including work under the warranties and guarantees provided in the Contract, and shall be institutes in a court of competent jurisdiction in the Province of Alberta.
  6. Upon receipt by the Surety, at the address shown in this Bond, of a notice of claim from a claimant, the Surety shall immediately commence its investigation of the claim and, within fifteen (15) days, send, to the claimant and the Obligee, written acknowledgement of the notice of claim and a statement of the procedures to be followed by the claimant in order to attempt to settle the claim.
  7. Pursuant to Clause 6 hereof, and:
    - a) Providing the claim is not disputed, the Surety, Principal, or both shall make payment to the claimant within thirty (30) days after the date of agreement on the quantum of the claim; or
    - b) In the event the claim is disputed, the Surety, Principal, or both shall, within thirty (30) days, provide written notice to the claimant and the Obligee of the dispute, setting out the grounds of dispute.
  8. Any material change in the Contract between the Principal and the Obligee shall not prejudice the rights or interests of any claimant under this Bond, who is not bringing about or has not caused such change.

9. The amount of this Bond shall be reduced by, and to the extent of, any payment or payments made in good faith, and in accordance with the provisions hereof, by the Surety.
10. Where the aggregate of claims appears to the Obligee to exceed the sum of the bond amount and money due and payable to the Principal, the Obligee and the Surety may agree to suspend payment until all claimants have substantiated their claims.
11. The Surety shall not be liable for a greater sum than the specified amount of this Bond.

IN WITNESS WHEREOF, the Principal has hereto set its hand and affixed its seal, and the Surety has caused these presents to be sealed with its corporate seal duly attested by the signature of its duly authorized signing authority, this \_\_\_\_\_ day of \_\_\_\_\_ 20\_\_.

**PRINCIPAL:**

\_\_\_\_\_  
(Contractor Name – Please Print)

\_\_\_\_\_  
(Name and Position of Authorized Officer – Please Print)

\_\_\_\_\_  
(Signature of Authorized Officer)

\_\_\_\_\_  
(Contractor's Seal – Affix Seal)

\_\_\_\_\_  
(Name and Position of Authorized Officer – Please Print)

\_\_\_\_\_  
(Witness Name and Position – Please Print)

\_\_\_\_\_  
(Signature of Authorized Officer)

\_\_\_\_\_  
(Witness – Signature)

**SURETY:**

\_\_\_\_\_  
(Surety Name – Please Print)

\_\_\_\_\_  
(Name and Position of Authorized Officer – Please Print)

\_\_\_\_\_  
(Signature of Authorized Officer)

\_\_\_\_\_  
(Surety's Seal – Affix Seal)

\_\_\_\_\_  
(Name and Position of Authorized Officer – Please Print)

\_\_\_\_\_  
(Witness Name and Position – Please Print)

\_\_\_\_\_  
(Signature of Authorized Officer)

\_\_\_\_\_  
(Witness – Signature)

- END OF SECTION 00 61 13.15 -

---

1.0	GENERAL .....	3
1.1	Definitions.....	3
1.2	Scope of Work .....	5
1.3	Contract Documents .....	5
1.4	Drawings and Specifications .....	7
1.5	Clarifications .....	7
1.6	Ownership of Specifications, Drawings, and Models .....	8
2.0	CONTRACTOR .....	8
2.1	Superintendent .....	8
2.2	Employees, Wages, and Working Conditions .....	8
2.3	Subcontractors .....	9
2.4	Other Contractors .....	10
3.0	PRODUCTS .....	10
3.1	Products and Equipment.....	10
3.2	Delivery and Storage of Products .....	11
4.0	EXECUTION OF THE WORK .....	11
4.1	General.....	11
4.2	Water.....	12
4.3	Surveys and Plans.....	13
4.4	Shop Drawings .....	13
4.5	Utilities.....	14
4.6	Cutting and Remedial Work .....	14
4.7	Site Conditions .....	15
4.8	Subsurface or Concealed Conditions.....	15
4.9	Inspection of the Work .....	16
4.10	Rejected Work .....	16
4.11	Cleaning Up.....	17
4.12	Force Majeure .....	17
4.13	Delays .....	18
4.14	Delay Costs .....	18
4.15	Completion Schedule.....	18
4.16	Contractor's Work Plan.....	19
4.17	Work on Roads.....	19
4.18	Notifying Affected Parties.....	19
4.19	Allowable Working Hours on the Site.....	20
4.20	Use of Completed Portions .....	20
5.0	PAYMENTS AND CERTIFICATES.....	20
5.1	Applicable Taxes .....	20
5.2	Applications for Progress Payment .....	21
5.3	Holdbacks.....	23
5.4	Substantial Completion Certificate .....	23
5.5	Construction Completion Certificate.....	24
5.6	Release of Holdback.....	24
5.7	Warranty.....	25
5.8	Liability for Landscaping, Trees, and Shrubs Under Warranty .....	25
5.9	Final Acceptance Certificate .....	26

---

5.10	Non-Waiver of Responsibility .....	26
5.11	Audits .....	26
5.12	Electronic Payment .....	27
6.0	CHANGES .....	27
6.1	General.....	27
6.2	Change Order.....	27
6.3	Change Directive .....	28
6.4	Valuation of Change .....	28
6.5	Quantity Variation .....	30
7.0	RIGHTS AND REMEDIES.....	30
7.1	Town’s Right to do Work.....	30
7.2	Town’s Right to Stop Work or Terminate Contract .....	31
7.3	Contractor’s Right to Stop Work or Terminate Contract .....	32
8.0	DISPUTES .....	32
8.1	Negotiation .....	32
8.2	Notice of Dispute .....	33
8.3	Referee’s Review.....	33
8.4	Referee Costs.....	34
8.5	Arbitration .....	34
9.0	PROTECTION OF WORK, PROPERTY, AND LIFE .....	35
9.1	Use of Premises and Overloading .....	35
9.2	Protection of Work, Property and Life .....	35
9.3	Construction Work at or Near Pipelines and Transmission Lines .....	36
9.4	Hazardous Products and Chemicals.....	36
9.5	Emergencies.....	37
10.0	APPLICABLE LAWS .....	37
10.1	Laws, Notices, Permits, and Fees.....	37
10.2	Workers’ Compensation.....	38
10.3	Occupational Health and Safety.....	39
10.4	Patent Fees .....	39
10.5	Importing Fees and Indemnity .....	40
10.6	Credits or Grants Applicable to the Work .....	40
10.7	Licensing .....	40
11.0	BONDS AND INSURANCE .....	41
11.1	Performance Bond.....	41
11.2	Labour and Material Payment Bond.....	41
11.3	Contractor’s Insurance.....	41
12.0	DAMAGES AND INDEMNITY .....	42
12.1	Damages and Mutual Responsibility .....	42
12.2	Indemnification .....	43
12.3	Waiver of Claims .....	44
	<b>Schedule A – Rules of Arbitral Procedure .....</b>	<b>45</b>

## 1.0 GENERAL

### 1.1 Definitions

- a) “Applicable Laws” means all statutes, laws, bylaws, regulations, ordinances, orders, directives, permits, licenses and requirements of governmental or other public authorities having jurisdiction, and all amendments thereto, relating to the Work or the performance of the Work.
- b) “Cash Allowance” shall mean the amount included in the Contract price for work that is partially defined but not detailed or specified.
- c) Certificates:
  - i) “Progress Payment Certificates” shall mean certificates issued by the Town periodically, based on which payment on account are made.
  - ii) “Substantial Completion Certificate (SCC)” shall mean a certificate issued by the Town upon Substantial Performance of the Work.
  - iii) “Construction Completion Certificate (CCC)” shall mean a certificate issued by the Town upon actual completion of the Work as provided in the Contract Documents.
  - iv) “Release of Holdback Certificate” shall mean a certificate issued by the Town upon expiration of the lien period. The sums included on this certificate shall constitute Final Payment.
  - v) “Final Acceptance Certificate (FAC)” shall mean a certificate issued by the Town within ten (10) days of the end of the Warranty Period provided the conditions of the Contract have been fulfilled.
- d) Changes:
  - i) “Change” means any change in, addition to, or deletion from the Work.
  - ii) “Change Directive” means a written instruction from the Town directing a Change prior to the Owner and the Contractor agreeing on an adjustment in the Contract Price.
  - iii) “Change Order” means a written communication issued by the Town, duly signed by the Town and the Contractor, authorizing a change in the Work in accordance with the Contract.
  - iv) “Change Quotation” means a written quotation from the Contractor for an adjustment in the Contract Price or Completion Schedule, or both, in response to a Contemplated Change Notice.
  - v) “Contemplated Change Notice” is a written communication from the Town to the Contractor requesting the Contractor’s proposed adjustments to the Contract Price or Completion Schedule, or both, for contemplated changes to the Work.
- e) “Town” means the Corporation of the Town of Peace River. The Town may designate the Engineer or another party to act on behalf of the Town as the Town’s representative from time to time.
- f) “Completion Date” means the date by which the Work is to be completed as stipulated in Article 1.5 of Section 00 52 00 – Contract Agreement.



- g) "Completion Schedule" means the schedule for completion of the various portions and phases of the Work.
- h) "Contract" or "Contract Documents" shall mean and include all documents that are integral to the Contract Agreement as listed in Article 2.0 of Section 00 52 00 – Contract Agreement.
- i) "Contract Drawings", "Drawings", or "Plans" shall mean all plans, details, profiles, drawings, sketches, or copies exhibited or used in connection with the Work and integral to the Contract Documents.
- j) "Contract Price" means the amount indicated in Article 3.0 of Section 00 52 00 – Contract Agreement, which may be amended by Change Order, representing the amount that the Town will pay the Contractor for the performance of the Work in accordance with the Contract.
- k) "Contractor" means the person, firm, or corporation which has been awarded this Contract as identified in the Contract Agreement and authorized by the Town to proceed with the Work as outlined herein.
- l) "Day" or "Working Day" means days other than Saturdays, Sundays, and Statutory Holidays.
- m) "Engineer" means the Director of Engineering and Infrastructure for the Town of Peace River or such other professional consultant appointed by the Town.
- n) "Event of Force Majeure" means any occurrence, other than the financial capability of a party or an event constituting a delay under Article 4.12 – Force Majeure, which is beyond the control and without the fault or negligence of the party relying on such occurrence, and which by the exercise of reasonable diligence that party could not at the time of bidding have reasonably contemplated happening and is unable to prevent or provide against.
- o) "Field Order" is a written communication issued by the Town, at the site and duly signed by the Contractor, authorizing a minor change in the Work, clarifying the Contract Documents, issuing instructions, or requesting information.
- p) "Force Account" means the method of calculating payment the Contractor shall receive for work performed as set out in Article 6.4 b.
- q) "Other Contractor" shall mean any person, firm, or corporation employed by or having a Contract directly or indirectly with the Town otherwise than through the Contractor. This includes the Town's own forces conducting work directly or indirectly related to the Work.
- r) "Products" means materials, machines, equipment, and fixtures as required by the Contract but does not include machinery and equipment used for preparation, fabrication, conveying, and erection of the Work as typically referred to as construction machinery and equipment.
- s) "Shop Drawings" means drawings, diagrams, illustrations, schedules, performance charts, brochures, and data that are provided by the Contractor to illustrate details of a portion of the Work.
- t) "Site", "Work Site", or "Worksite" means the land and other places on, into, or through which the Work is to be executed under the Contract or any adjoining land, path, or street which may be allotted or used for the purpose of carrying out the Contract.

- u) “Specifications” and “Technical Specifications” refer to those portions of the Contract Documents, wherever located and whenever issued, consisting of written requirements and standards for Products, systems, workmanship, and the services necessary for the performance of the Work.
- v) “Subcontractor” includes only the person, firm, or corporation having a Contract with the Contractor for the execution of a part or parts of the Work.
- w) “Substantial Performance” or “Substantial Completion” shall refer to the definition of “substantial performance” as provided in the Prompt Payment and Construction Lien Act of Alberta.
- x) “Supplier” means the person, firm, or corporation supplying equipment or material to the Work.
- y) “Utility” or “Utilities” has the same meaning as the words “public utility” in the Municipal Government Act – Alberta and shall, in addition, include gas and oil pipelines and telecommunications lines and any other privately owned utilities.
- z) “Warranty Period” shall be the period of time as stated in Article 1.6 of Section 00 52 00 – Contract Agreement immediately following the date indicated in the Construction Completion Certificate (CCC).
- aa) “Work” or “Works” means the doing of all things, whether temporary or permanent, that are to be done by the Contractor pursuant to the terms and provisions of the Contract and in particular, but without limiting the generality of the foregoing, includes the furnishing of all labour, products, and equipment necessary or incidental to the performance of the Contract, including all extra or additional Work or materials, matters or things which may be ordered by the Town as herein provided.

Words in the singular include the plural, and words in the plural include the singular where the context so requires. The use of the third personal or impersonal pronouns in the Contract Documents may refer to the same party when used in that sense.

## 1.2 Scope of Work

In signing the Contract Agreement, the Contractor understands the scope of Work to be performed and that the Work, as specified, will be carried out in accordance with the terms and conditions of the Contract Documents. The Contractor shall be bound by the Tender Prices submitted by the Contractor in the Tender Form for carrying out of the Work in accordance with Contract Documents. The Contract Documents constitute the entire agreement between the parties with respect to the Work and supersedes all previous communications, representations, warranties and agreements, either written or verbal.

## 1.3 Contract Documents

- a) It is understood by all Bidders that the Town will not enter into a contract agreement with a firm that is in litigation with the Town either directly or indirectly. Once the litigation has been finalized and provided that the Contractor is not on a no bid list, said Contractor is free to continue to submit bids for Town work.
- b) The Contractor and the Town shall sign and seal at least three original copies of the Contract Documents. The Town will retain two copies of the executed contract documents and at least one copy will be provided to the Contractor.

- c) The Work is intended to be a complete Work in every respect. The Contractor shall abide and comply with the Contract Documents taken as a whole, as these are intended to comprise everything necessary for completion of each branch of the Work. The Contractor shall not deviate from the Work described in the Contract Documents unless the Town issues a Change Order authorizing a change in the Work.
- d) The Contract Documents are complementary and what is called for on one shall be as binding as if called for by all. The intention of the Contract Documents is to include all labour, products, equipment, supervision, and transportation necessary for the proper execution and performance of the Work. Materials or Work described in words which so applied have a well-known technical or trade meaning, shall be held to refer to such recognized meanings and standards.
- e) Should there be any conflict or inconsistency within the Contract Documents, the Contractor shall notify the Town within ten (10) days of discovering such conflict or inconsistency. Where the Contractor fails to do so, the Contractor shall be held responsible for correcting the Work in accordance with the Town's requirements. The Contractor shall bear all the cost of such corrections.

In the event of an inconsistency or conflict in the provisions of the drawings or specifications, such provisions shall take precedence and govern in the following order:

- i) Contract Agreement
- ii) Addenda (if any)
- iii) Supplementary Conditions
- iv) General Conditions
- v) Detailed Specifications
- vi) Project Specific Drawings
- vii) Executed Tender Form
- viii) Instructions to Bidders
- ix) Tender Invitation

Should any dispute arise with regard to the Contract Documents or should any portion of the Contract Documents be obscure or capable of more than one interpretation, the dispute shall be decided by the Town whose decision shall be final unless the Contractor disputes the decision and refers the disputed decision for resolution in accordance with Article 8.0 – Disputes.

- f) The apparent generality of the Contract Documents as to any detail or the apparent omission from them of a detailed description shall be regarded as meaning that only the best general practice is to prevail and that only material and workmanship of the first quality are to be used.
- g) The Contractor shall assume full responsibility for the interpretation of the Contract Documents for Subcontractors.
- h) Contract Documents are grouped into divisions and subdivisions for the convenience of the Town. The Contractor is solely responsible for the appointment of the Work, and the coordination thereof, among Subcontractors

and Suppliers. The Contractor shall have no claims arising from the Contractor's failure to adequately apportion or coordinate the Work among Subcontractors and Suppliers.

- i) All portions of the Work shall conform to the requirements of the Contract Documents, Applicable Laws, or applicable Town of Peace River – Municipal Engineering Standards (where specified), whichever is the most stringent. Where the Contractor is uncertain as to the most stringent of these requirements, the Contractor shall refer the issue to the Town whose decision shall be final unless the Contractor disputes the decision and refers the disputed decision for resolution in accordance with Article 8.0 – Disputes.
- j) In addition to the executed copy of the Contract Documents, the Town will furnish to the Contractor, without charge, up to six (6) copies of the Contract Documents, or as stated in the Supplementary Conditions.
- k) The Contractor shall maintain one (1) copy of the Contract Documents, submittals, reports, and records of meetings on the Site, in good order and marked to record all changes made during construction. These shall be made available to the Town. These documents shall be delivered to the Town upon completion of the Work.

#### 1.4 Drawings and Specifications

- a) The Work in the Contract is detailed in the Specifications and accompanying Drawings, together with such other working and detailed drawings as may be furnished to the Contractor from time to time during the progress of the Work.
- b) Unless expressly excluded, any portion of the Work or Product shown on the Drawings and not described in the Specifications, or any portion of the Work or Product described in the Specifications and not shown on the Drawings, which is reasonably implied by and evidently necessary and usually provided for each portion of the Work, shall be done or supplied by the Contractor as if it were both shown on the Drawings and described in the Specifications.
- c) Any references to recognized standard specifications, such as C.S.A. or A.S.T.M., shall be to the then current edition as of the closing date of the Tender Period, unless specifically noted in the reference.
- d) Notes on the Drawings shall be considered part of the Specifications.

#### 1.5 Clarifications

- a) The Town may, on its own initiative or upon request of the Contractor, provide clarifications, by means of drawings, Field Orders, or otherwise, which are necessary for the execution of any aspect of the Work. All clarifications shall be consistent with the Contract and the Work shall be executed in conformity with the clarifications. In providing such clarifications, the Town shall have authority to make minor changes in the Work, consistent with the Contract.
- b) If either the Contractor or the Town so requests, they shall jointly prepare a revised schedule incorporating the clarifications. In the event that the clarifications require a change to the Contract Price or changes to the Completion Schedule for the Work or portions of the Work, then the Contractor shall provide the information required for the issuance of a Change Order in accordance with Article 6.0 – Changes.

- c) If a Change Order is not issued, there shall be no allowance for changes to the Completion Schedule for the Work or portions of the Work, or for any change to the Contract Price.

#### 1.6 Ownership of Specifications, Drawings, and Models

- a) All Drawings, Specifications, designs, samples, and copies thereof and all models or samples furnished by the Town are, and shall remain, the property of the Town. The Contractor shall not use such Drawings, Specifications, designs, samples, copies, or models for any other purpose except to complete the Work as required by the Contract.
- b) Any models or designs furnished by the Contractor to the Town in the performance of the Work shall become the property of the Town and shall be provided to the Town at the Town's request. The Contractor shall not use such models or designs for any other purpose except to complete the Work as required by the Contract.
- c) The Contractor represents and warrants that the Contractor has the right to provide the Town with such models or designs, and that the Contractor will pay for any required licenses, permits, or fees that may be applicable to the Town's use of such models or designs.

### 2.0 CONTRACTOR

It is understood by all Contractors and their associated Sub-contractors that the Town will not enter into a contract agreement with a firm that is in litigation with the Town either directly or indirectly. Once the litigation has been finalized and provided that the Contractor is not on a no bid list, said Contractor or Sub-contractor are free to continue to submit bids for Town work.

#### 2.1 Superintendent

- a) The Contractor shall provide sufficient supervision to the Work.
- b) The Contractor shall ensure that a competent superintendent and any necessary assistants, all qualified and experienced in matters concerning safety, efficiency, and quality of the Work, are at the Site during the progress of the Work. The superintendent shall be satisfactory to the Town and shall not be changed without the written consent of the Town, unless the superintendent proves to be unsatisfactory to the Contractor, or ceases to be in the Contractor's employ. The Town shall have the right to require the Contractor to replace the superintendent at any time in the event that the Town is of the opinion that the superintendent is unqualified or unsatisfactory.
- c) The superintendent shall represent the Contractor on the Site. Any written directions, instructions, or orders relating to the Work that are provided by the Town to the superintendent shall be considered sufficient notice of such directions, instructions, or orders to the Contractor.

#### 2.2 Employees, Wages, and Working Conditions

- a) The Contractor shall provide a sufficient number of qualified personnel to enable timely and proper execution and completion of the Work. All such personnel shall

be competent, literate in English, and qualified by education, training, and experience, and in all other respects capable of carrying out the tasks to which each is assigned. The Contractor shall be responsible to maintain good order and discipline among the Contractor's employees engaged on the Work.

- b) Being under the influence of, or in the possession or use of intoxicating beverages or drugs on the Worksite shall be sufficient reason to declare an employee as unfit. Should any employee, at any time during the performance of the Work, be deemed by the Town to be incompetent or unfit, the Contractor shall replace the employee at the Town's request.
- c) The Contractor covenants and agrees that wages and working conditions of all persons employed by the Contractor or by any Subcontractor shall be fair and reasonable, having regard to the general level of wage rates and working conditions prevailing in the Alberta Capital Region for the duration of the Contract.
- d) The Contractor shall employ Canadian Labour Standards to the fullest extent possible.
- e) The Contractor shall ensure that no person under the Contractor's employ is discriminated against.

### 2.3 Subcontractors

- a) The Contractor agrees that the list of names of Subcontractors provided upon contract award is the list of Subcontractors that the Contractor proposes to use to carry out those portions of the Work noted. The Contractor shall not make any changes to the list of Subcontractors without the prior written approval of the Town.
- b) The Town reserves the right to object to any Subcontractor provided by the successful bidder. If the Town objects to a Subcontractor proposed by a Contractor, the Contractor shall nominate another Subcontractor acceptable to the Town. If the Town requires the Contractor to nominate another Subcontractor, the Contract Price and Schedule shall be adjusted by the differences occasioned by such required change. The Contractor shall not be required to employ as a Subcontractor, any person or firm to which the Contractor may reasonably object.
- c) The Town may, at the request of a Subcontractor, provide said Subcontractor with information of the amounts certified to the Subcontractor's account.
- d) The Contractor shall be responsible to the Town for the acts and omissions of Subcontractors and persons directly or indirectly employed by them.
- e) Nothing contained within the Contract shall create any contractual relation between any Subcontractor and the Town.
- f) The Contractor shall bind every Subcontractor to the terms and conditions of the Contract to the extent that those terms and conditions apply to the portion of the Work to be carried out by the Subcontractor. The Contractor must provide the Town with proof of this action at the project kick off meeting.

## 2.4 Other Contractors

- a) The Town reserves the right to award separate contracts or to use its own forces in connection with the undertaking, of which the Work is a part, and the Contractor shall properly connect and coordinate the Work with that of Other Contractors to whom contracts are awarded.
- b) If any part of the Work to be performed by the Contractor depends, for its proper execution or result, upon the work of any Other Contractor, as outlined in Article 2.4a), the Contractor shall promptly report to the Town in writing any unfinished work or defects in the work of the Other Contractor that may interfere with the proper execution of the Work. Should the Contractor fail to report the defects, the Contractor shall have no claim against the Town by reason of the defective or unfinished work of any Other Contractor except for latent defects not reasonably noticeable at the time of the commencement of the Work.
- c) In awarding separate contracts, the Town shall be responsible for coordinating insurance coverage.
- d) Disputes and other matters in question between the Contractor and Other Contractors shall be dealt with in accordance with Article 8.0 - Disputes.

## 3.0 PRODUCTS

### 3.1 Products and Equipment

- a) Unless stipulated otherwise in the Contract, the Contractor shall provide and pay for all Products, material, labour, light, power, heating, water, temporary works, and everything else necessary for the execution of the Work.
- b) Unless stipulated otherwise in the Contract, Products to be incorporated into the Work shall be new and workmanship and Products shall be of good and merchantable quality, and not less than the quality specified.
- c) In the absence of other standards stipulated by the Contract Documents, all work, materials, and equipment shall conform to, or exceed, the applicable standards of the latest editions of the Canadian Government Specification Board, the Canadian Standards Association, or the National Building Code of Canada, whichever is most stringent.
- d) The Contractor shall, if required by the Town, furnish satisfactory evidence of such quality of the Products to be incorporated in the Work. The Contractor shall furnish, for the Town's approval, such samples as the Town may reasonably require. The Work shall be in accordance with approved samples.
- e) If the Contractor provided the Town with a list of Product manufacturers or suppliers in the Contractor's Tender, the Contractor shall not change from those Product manufacturers or suppliers without the written consent of the Town. Nothing contained within the Contract shall create any contractual relation between any Product manufacturer or supplier and the Town.
- f) The Town reserves the right to object to any product manufacturer or supplier provided by the successful bidder upon contract award. If the Town objects, the Contractor shall nominate an alternative acceptable to the Town. If the Town requires the Contractor to nominate an alternative manufacturer or supplier, the Contract Price and Schedule shall be adjusted by the differences occasioned by

such required change. The Contractor shall not be required to use as a manufacturer or supplier, any person or firm to whom the Contractor may reasonably object.

### 3.2 Delivery and Storage of Products

- a) The Contractor shall be responsible for the delivery and storage of Products.
- b) The Contractor shall be liable for the loss or destruction of Products or equipment supplied by the Town while they are on the Site.
- c) The Contractor and the Town shall examine the Products and equipment supplied by the Town at the time of delivery to the Site, and shall jointly prepare a statement of acceptance, noting the value of delivered Products and rejecting any Product that does not meet the requirements provided in the Specifications.
- d) The Town will not pay for Products at the Site that have not been incorporated into the Work.

## 4.0 EXECUTION OF THE WORK

### 4.1 General

- a) The Contractor agrees to:
  - i) Efficiently and expeditiously perform all Work in accordance with the Contract Documents;
  - ii) In the performance of the Work, exercise a standard of care and skill normally exercised by contractors performing this type of construction work; and
  - iii) Perform the Work in a safe and environmentally sound manner and in compliance with Applicable Laws.
- b) The Contractor represents and warrants to the Town that:
  - i) The Contractor has the experience, resources, personnel, and capability to expeditiously and diligently perform the Work;
  - ii) The Contractor is duly incorporated and validly existing under the laws of the Province of Alberta;
  - iii) Has all required permits, licenses, and authorizations necessary to carry on its business and to be obtained by it to conduct the Work; and
  - iv) The title to any and all plant, products, materials, and equipment, which are to be provided by the Contractor for incorporation into the Work, shall, upon delivery to the site, be free from any and all claims, liens, charges, encumbrances, or security interests of any kind whatsoever.
- c) The Contractor shall have complete control of the Work except as provided in Article 9.5 – Emergencies. The Contractor shall direct and supervise its employees, subcontractors, and suppliers, and inspect their work to ensure that all portions of the Work conform, in each and every respect, to the Contract Documents and to good and proper construction practices.
- d) The Contractor shall be solely responsible for the design, erection, operation, maintenance, and removal of all temporary structures and other construction



facilities and the design and execution of construction methods required in their use. Where required by Applicable Laws or by the Contract Documents, the Contractor shall engage and pay for the services of a Professional Engineer, registered to practice in the Province of Alberta and skilled in the appropriate discipline, to design such structures and facilities.

- e) Neither acceptance of any part of the Work by the Town, nor payment to the Contractor, shall relieve the Contractor from its responsibilities under these Contract Documents, whether pursuant to any of the warranties or guarantees expressed or implied herein, or otherwise.
- f) The Contractor shall provide the Town with verbal or written reports in reasonable detail promptly upon the reasonable request of the Town, and shall attend meetings as required by the Contract Documents, or as otherwise requested by the Town.
- g) The Contractor shall ensure that no activities or actions are undertaken in the performance of the Work by the Contractor, its subcontractors, or its suppliers which would adversely affect, restrict, or limit in any way the continued operation of the Town's facilities or plant which are in operation, unless required to perform the Work and done in accordance with the Completion Schedule or otherwise authorized by the Town.

#### 4.2 Water

- a) Where performance of the Work requires water supply, the Contractor may obtain water from the Town's fire hydrants provided the following conditions are met:
  - i) Contractor shall coordinate with Town of Peace River Public Works department for water access.
  - ii) Contractor shall not operate any hydrant valves; this is to be handled by Public Works department.
  - iii) A list of hydrants used by the Contractor (and subcontractors) shall be submitted by the Contractor to the Town on a weekly basis, identifying the location of the hydrant, company name of user, and the date of use;
  - iv) The Contractor shall be responsible for all claims arising from the misuse of Town hydrants by the Contractor; and
  - v) Access to fire hydrants must be maintained at all times for emergency services.
- b) Provide all necessary temporary piping and, upon completion of the Work, remove all such temporary piping.
- c) Failure to meet the preceding conditions may result in penalties and related costs, incurred by the Town, to be charged to the Contractor.
- d) The Contractor is not authorized to operate any existing main valve in the Town's water distribution system. The Utilities Department must be contacted to operate any existing main valve.
- e) The contractor is responsible for the cost of water as stated in Article 3.1a)

#### 4.3 Surveys and Plans

- a) The Town will provide digital files and plans describing the limits of the Site, easements, rights-of-way, site features and alignments.
- b) The Contractor shall, at the Contractor's own expense, provide all surveys as required for the performance and execution of the Work, and shall, on request, provide to the Town copies of plans of those surveys.

#### 4.4 Shop Drawings

- a) The Contractor shall provide Shop Drawings as required in the Contract Documents.
- b) The Contractor shall review all Shop Drawings prior to submission to the Town. The Contractor represents by this review that:
  - i) The Contractor has determined and verified all field measurements, field construction conditions, materials, Product requirements, catalogue numbers, and similar data or will do so; and
  - ii) The Contractor has checked and coordinated each Shop Drawing with the requirements of the Contract Documents.
- c) The Contractor shall confirm the review of each Shop Drawing by stamp, date, and signature of the person responsible for the review. At the time of submission the Contractor shall notify the Town in writing of any deviations in the Shop Drawings from the requirements of the Contract Documents.
- d) The Contractor shall submit Shop Drawings to the Town to review in orderly sequence and sufficiently in advance so as to cause no delay in the Work or in the work of Other Contractors. Upon request of the Contractor or the Town, they jointly shall prepare a schedule of the dates for submission and return of Shop Drawings. Shop Drawings which require approval of any legally constituted authority having jurisdiction shall be submitted to such authority by the Contractor for approval.
- e) The Contractor shall submit Shop Drawings in the form specified or as the Town may direct. The Town will review and return Shop Drawings in accordance with the schedule agreed upon or otherwise with reasonable promptness so as to cause no delay. The Town's review is for conformity to the design concept and for general arrangement only. The Town's review shall not relieve the Contractor of responsibility for errors or omissions in the Shop Drawings or for meeting all requirements of the Contract Documents unless the Town expressly notes the acceptance of a deviation on the Shop Drawings.
- f) Upon the Town's request, the Contractor shall revise and resubmit Shop Drawings which the Town rejects as inconsistent with the Contract Documents, unless otherwise directed by the Town. The Contractor shall notify the Town in writing of any revisions to the resubmission other than those requested by the Town.

#### 4.5 Utilities

- a) If it is necessary to work on or near any Utilities, the Contractor shall, at the Contractor's own expense, support the Utility to maintain uninterrupted service. Any damage caused by the Contractor's operations must be made good at the

expense of the Contractor, and the Contractor shall be liable for any and all claims against or by the Town arising in any way from interference with the Utility by the Contractor.

- b) No additional compensation shall be payable to the Contractor for any delays, inconvenience, or damage sustained due to interference from any Utility or the operation of moving a Utility whether temporarily or permanently, and the interference or move shall be given due consideration in the scheduling of the Work and shall be undertaken at the scheduled time unless alternate arrangements are made with the Town. The Contractor shall be solely responsible for all costs and time required for work around any Utility.
- c) The Contractor shall notify the operator of any Utility affected by the Work at least 48 hours in advance of work on or near the Utility. The Contractor shall comply with all directions and requirements issued by the Utility operator in relation to the Utility.
- d) The Contractor shall notify all Utility operators and ensure that Utility lines are staked in advance of work on or near the Utility. Such staking shall not be deemed to be a representation or warranty by the Town that the Utility has been properly located.
- e) The Town and Utility operator give no representation or warranty that the location of any such Utility line or structure is marked correctly or marked at all on the Drawings.

#### 4.6 Cutting and Remedial Work

- a) The Contractor shall perform any cutting and remedial work required to ensure the several parts of the Work fit together properly.
- b) The Contractor shall coordinate the Completion Schedule for the Work to ensure that the cutting and remedial work and time are kept to a minimum.
- c) Should the Town or anyone employed by the Town be responsible for ill-timed work necessitating cutting or remedial work to be performed, the cost of such cutting or remedial work shall be valued as provided herein and added to the Contract Price through issuance of a Change Order.
- d) The Contractor shall not endanger any existing work by cutting, digging, or otherwise and shall not cut or alter the work of any Other Contractor unless otherwise directly by the Town.

#### 4.7 Site Conditions

- a) The Contractor accepts the Site and the obligation to perform the Work in the condition existing at the close of the Tender Period. The Contractor acknowledges that the Contractor has investigated the site is satisfied as to:
  - i) The nature of the Work;
  - ii) The location of, and all conditions relating to, the site including, but not limited to, accessibility, general character, surface conditions, utilities, roads, uncertainties of seasonal weather, and all other physical, topographical, and geographical conditions;

- iii) The general character, quality, quantity, and availability of equipment and materials required to execute and complete the Work;
  - iv) All environmental risks, conditions, Applicable Laws, and restrictions applicable to the Contractor or the Work that might affect the Work;
  - v) All conditions affecting labour including, but not limited to, availability, productivity, and administrative practices including those relating to safety, prevailing at or applicable to the Work; and
  - vi) The magnitude of the construction work required to execute and complete the Work;
- b) Any failure by the Contractor to discover matters which affect or could affect the Work shall not relieve the Contractor from its obligations under these Contract Documents or otherwise affect the Contract Price.

#### 4.8 Subsurface or Concealed Conditions

- a) If the Contractor discovers subsurface or concealed conditions at the Site are substantially different from those indicated in the Contract Documents or otherwise represented by the Town to the Contractor, and such conditions may affect the execution of the Work with respect to time, material, cost, or otherwise, then the Contractor shall immediately notify the Town and confirm such notification in writing within two (2) days of finding such substantial difference in conditions.
- b) The notice provided by the Contractor must include a description of the subsurface or concealed conditions and the Contractor's estimate as to the effect such conditions will have on the execution of the Work with respect to time, material, cost, or otherwise.
- c) The Town will promptly investigate such conditions and if it is found that the subsurface or concealed conditions are substantially different from those indicated in the Contract Documents then the Town will issue a Change Order or Change Directive. The Contractor shall not be entitled to an adjustment in Contract Price or the Completion Schedule if it is found that such conditions were adequately described in the Contract Documents or reasonably apparent or represented by the Town prior to the close of the Tender Period.
- d) If the Contractor fails to notify the Town of any substantial difference in site conditions as required in Article 4.7a), the Town may not authorize a change to the Contract Price and the Contractor shall be solely responsible for any increased cost or delay that is associated with the substantial difference in site conditions.

#### 4.9 Inspection of the Work

- a) The Town shall be entitled to access the Site for inspection at all times. The Contractor shall provide to the Town proper facilities for such access and inspection. Any such inspection will be directed toward providing assurance that the performance of the Work conforms to the requirements of the Contract Documents.

- b) The Contractor shall, upon request, provide the Town with any reasonable help which they may require at any time in the inspection of the Work. No specific payment will be made to the Contractor for such Work or assistance given.
- c) If the Specifications, Field Orders, Change Orders, or an Applicable Law requires any portion of the Work to be specially tested or approved, the Contractor shall give the inspecting authority timely notice when that portion of the Work is ready for inspection. Inspection by the Town shall be promptly made. If the inspection is by an authority other than the Town, the Contractor shall provide notification to the Town of the date and time fixed for the inspection.
- d) If any portion of the Work requiring inspection is covered up without inspection, the Contractor shall, if required by the Town, uncover that portion of the Work for inspection by the Town or relevant inspecting authority at the Contractor's expense.
- e) The Contractor shall promptly furnish two (2) copies of all certificates and inspection reports related to the Work to the Town.
- f) No portion of the Work shall be covered until the Town has completed inspection. In the event that a portion of the Work is covered prior to the Town's complete examination of such, the Contractor shall pay the costs of uncovering, examination, and reinstatement.
- g) Any inspection, testing, or witnessing of any of the Work or tests by the Town or any other applicable inspecting authority, or omission or failure on the part of the Town or any other applicable inspecting authority to inspect or test any of the Work shall not be construed to be an acceptance of any such Work or as relieving the Contractor of its responsibilities pursuant to this Contract or otherwise.

#### 4.10 Rejected Work

- a) The Contractor will be notified of any portion of the Work that the Town has determined does not conform to the Contract, regardless of cause.
- b) The Contractor shall promptly remove from the Site and replace or re-execute defective work that has been rejected by the Town as failing to conform to the Contract Documents, whether or not the defective work has been incorporated into the Work and whether or not the defect is the result of poor workmanship, use of defective products, or damage through carelessness, or other act or omission of the Contractor.
- c) The Contractor shall, at the Contractor's sole expense, rectify the rejected work within the timeframe required by the Town. The Contractor shall be responsible for the costs of any re-testing or inspections required with respect to rectifying rejected work.
- d) If the Contractor does not rectify the rejected work within the timeframe required, the Town may replace such Work in accordance with Article 7.1 – Town's Right to do Work.
- e) The Contractor shall be responsible for any costs or expenses incurred in repairing or redoing the work of Other Contractors destroyed or damaged by the rectification.

- f) If, in the opinion of the Town, it is not expedient to correct rejected work, the Town may deduct from the Contract Price the difference in value between the work as done and that called for in the Contract, the amount of which shall be determined by the Town.

#### 4.11 Cleaning Up

The Contractor shall at all times maintain the Site free from accumulation of waste material and debris. At the completion of the Work, the Contractor shall remove unwanted and unused material, tools, and equipment from the Site and leave the Site clean. The Town may remove unwanted or unused material, tools, and equipment left at the Site after completion of the Work and charge the cost of such removal to the Contractor.

#### 4.12 Force Majeure

- a) Either the Town or Contractor may claim that an Event of Force Majeure has taken place, by giving the other party verbal notice within 24 hours of the Event of Force Majeure, and notice, together with a proposed plan of corrective action, in writing to resolve or minimize the effect of the Event of Force Majeure, within 48 hours of the Event of Force Majeure.
- b) If the Town has given notice of an Event of Force Majeure or agrees with the Contractor that the Work or any portion thereof is affected as a result of an Event of Force Majeure, then the Town shall:
  - i) Cause the Contractor to complete the Work, with such adjustments to Completion Schedule as are required by the Event of Force Majeure;
  - ii) Suspend the Work or any portion thereof in accordance with Article 7.2 – Town’s Right to Stop Work or Terminate Contract; or
  - iii) Terminate this Contract or any portion thereof in accordance with Article 7.2 - Town’s Right to Stop Work or Terminate Contract.
- c) If the Town does not agree that the Work or any portion thereof is affected as a result of an Event of Force Majeure for which the Contractor has given notice under Article 4.12a), then the Contractor shall complete the Work in accordance with the Completion Schedule and may request an adjustment to the Contract Price and Completion Schedule in the manner provided in Article 6.1d).
- d) If an Event of Force Majeure exists and continues for a period in excess of forty-five (45) days and results in a substantial portion of the Work being stopped or suspended during that period, the Contractor may terminate the Contract and the Town shall pay the Contractor for the Work performed to the date of termination.
- e) Any delay or failure on the part of either the Town or the Contractor, which is a result of an Event of Force Majeure, shall not constitute default hereunder or give rise to any claim for damages. Subject to Article 4.12d), an Event of Force Majeure shall not result in any increase to the Contract Price.

#### 4.13 Delays

- a) If the Contractor is delayed in the performance of the Work by an act or omission of the Town or anyone employed or engaged by the Town directly or indirectly, contrary to the provisions of the Contract Documents, or by the Town taking

possession of or using any partially completed portion of the Work pursuant to Article 4.20 – Use of Completed Portions ahead of the Completion Schedule, then the Completion Schedule shall be extended for such reasonable time as may be necessary to allow the Contractor to make up the delay. The Contractor shall be reimbursed by the Town for reasonable costs incurred by the Contractor as the result of such delay.

- b) If the Contractor is delayed in the performance of the Work by an order issued by a court or other public authority having jurisdiction, and providing that such order was not issued as the result of an act or fault of the Contractor or any person employed or engaged by the Contractor directly or indirectly, then the Completion Schedule shall be extended for such reasonable time as the Town may recommend in consultation with the Contractor. The Contractor shall be reimbursed by the Town for reasonable costs incurred by the Contractor as the result of such delay.
- c) No claim for delay and no extension of time on account of delay shall be made for delay unless notice with a Change Quotation is given to the Town not later than ten (10) days after the commencement of delay, providing however, that in the case of a continuing cause of delay, only one notice of claim shall be necessary.
- d) The Contractor acknowledges that any delays in the Completion Schedule for the Work or portions of the Work may cause delays in the work of Other Contractors. The Contractor will be responsible for any claims from Other Contractors relating to such delays if they are the result of the Contractor's action or inaction.

#### 4.14 Delay Costs

- a) As time is of the essence in this Contract, the Town may incur additional administration costs and expenses ("Overhead Costs") and engineering costs and expenses ("Engineering Costs") if the Contractor has not completed the Work by the Completion Date. Overhead Costs will consist of Town personnel costs associated with the delay, in an amount determined by the Town, and any additional costs or loss of revenue incurred by the Town due to the delay. Engineering Costs will consist of personnel costs and expenses incurred by the Engineer associated with the delay.
- b) The Contractor will be required to pay the Overhead Costs and Engineering Costs if the Contractor fails to complete the Work by the Completion Date. The Town may set off these Overhead Costs and Engineering Costs from any amounts due the Contractor. This right is in addition to any other right or remedy the Town may have in law or equity with respect to the Contractor.

#### 4.15 Completion Schedule

- a) The Contractor shall submit a detailed Completion Schedule, in critical path method format showing all of the principal portions and phases of the Work, upon award of the Contract and at least ten (10) days prior to the commencement of the Work. No Progress Payment Certificate shall be processed until the Town has received an acceptable Completion Schedule.
- b) The Contractor shall update the Completion Schedule monthly against the actual progress of the Work.

- c) If, in the opinion of the Town, any Completion Schedule is inadequate as a control tool or if it does not show the Work being fully completed by the Completion Date, it may be rejected and the Contractor shall be required to provide a Completion Schedule and work program that is acceptable to the Town.
- d) No action or conduct of the Town in monitoring, reviewing, or reporting upon the progress of the Work shall relieve the Contractor of the sole responsibility for planning and managing the Work.

#### 4.16 Contractor's Work Plan

The Contractor shall submit a detailed work plan, accurately and comprehensively describing the Contractor's method and approach to performing the Work, to the Town for review at least ten (10) days prior to commencing the Work.

#### 4.17 Work on Roads

Where performance of the Work requires work on roads:

- a) Contractor shall coordinate road closures with Alberta Transportation and the Town of Peace River.
- b) Where possible, any work to be done within road intersections shall be done at a time of least disruption to traffic, such as off-peak hours, which may include a time period such as early evening or early morning.
- c) No road shall be closed, in whole or in part, for any amount of time.
- d) A Traffic Accommodation Strategy (TAS) plan must be submitted to the Town and Alberta Transportation for review and approval at least ten (10) days in advance and shall not conduct any related work until approval by all stakeholders is granted. Where the road to be worked is a transit route, the Contractor shall include details regarding accommodation of buses in the management plan.
  - i) 99 Avenue West disruptions shall be coordinated with town.
  - ii) Disruptions of Old Highway 2 shall be coordinated with Alberta Transportation.
- e) Asphalt testing shall be coordinated by the Contractor from a local testing agency. All test results are to be submitted to Consultant for Quality Review.
- f) Refer to section 4.0, 00 73 00 Supplementary Conditions.

#### 4.18 Notifying Affected Parties

Where performance of the Work requires disruption to regular traffic patterns on Town or Governed roads, property access, or utility service to the public:

- a) The Contractor shall notify all affected residents on collector and residential streets, in writing, at least 48 hours in advance prior to any work commencing on site and prior to any disruption of traffic, access, or utility service to property. Notice shall include the name and phone number of the Contractor's representative.
- b) The Contractor shall notify Peace River School Division of any potential shutdowns or impacts to traffic that would affect school bus routes.



- c) For all work on arterial roadways, the Contractor shall place appropriate signage on all adjoining roads ten (10) days prior to commencing work.
- d) The cost of notification shall be deemed incidental to the Work and no separate payment shall be made.
- e) A copy of all applicable notices shall be provided to the Town for review at least five (5) days in advance of work commencing in this regard in order for the town to provide updates to residents on their social media channels. Work shall not commence until Town approval is granted.

#### 4.19 Allowable Working Hours on the Site

- a) Allowable working hours within Town limits are from 7:00 AM to 11:00 PM, Monday through Friday, and 9:00 AM to 11:00 PM, weekends and holidays.
  - i) Warming up equipment or any other construction related activity shall not occur outside of allowable working hours.
- b) Refer to Town of Peace River Noise Bylaw.

#### 4.20 Use of Completed Portions

- a) The Town reserves the right to take possession of and use any completed or partially completed portion of the Work, notwithstanding that the Completion Schedule may not have expired, but such possession and use shall not be deemed an acknowledgement or acceptance of completion of any portion of the Work that does not conform to the Contract. If such use of completed portions of the Work delays the Completion Schedule of the Work, then the Completion Schedule shall be extended for such reasonable time as the Town may decide and shall be confirmed through issuance of a Change Order.

### 5.0 PAYMENTS AND CERTIFICATES

#### 5.1 Applicable Taxes

- a) All references to costs, expenses, and payments in the Contract Documents shall be considered exclusive of any G.S.T., other applicable federal, provincial, and municipal taxes, or other noted taxes associated with such costs, expenses, or payments unless noted otherwise.
- b) In each application for payment, the Contractor shall indicate the G.S.T. as a separate amount calculated on the net Contract Price payable on that application, that is, the accrued Contract Price less holdback amount and less the total of previous payment. The G.S.T. on the holdback will be payable together with the release of the holdback.
- c) The Contractor shall be responsible for the payment of:
  - i) All taxes imposed by reason of the performance or completion of the Work including but not limited to license, permit, and registration fees, and the Contractor's income, profit, franchise, business, and personal property taxes;
  - ii) All employment taxes and contributions imposed by Applicable Laws or required to be paid on behalf of the employees of the Contractor, Subcontractors, or suppliers, including, but not limited to, taxes and

contributions for income tax, workers' compensation, unemployment insurance, old age benefits, welfare funds, pensions and annuities, and disability insurance; and

- iii) All customs, sales, and excise taxes and duties owing with respect to any labour, machinery, materials, and equipment supplied by the Contractor for use in the performance of, or to be incorporated into, the Work, except for goods and services tax payable by the Town with respect to payments due to the Contractor.
- d) Any increase in taxes and charges described in Articles 5.1c)i) and 5.1c)ii) shall be the sole responsibility of the Contractor. In the event of a change in taxes or charges described in Article 5.1c)iii), a Change Order shall be issued changing the Contract Price to account for the difference between the amount of tax that would have been payable by the Contractor as of the effective date of this Contract and the actual amount of tax that becomes payable as a result of the change in the tax.
- e) The Contractor shall indemnify and hold harmless the Town from any liability resulting from the Contractor's, Subcontractors', or suppliers' failure to make timely payments of the items referred to in Article 5.1 – Applicable Taxes, or such similar items for which the Contractor is responsible. Any interest, penalties, or other liabilities arising from such failure shall be the sole responsibility of, and be paid for by, the Contractor.

## 5.2 Applications for Progress Payment

- a) Applications for progress payment may be made monthly, as the Work progresses, for the value of Work performed and products incorporated into the Work to a date agreed to between the Town and the Contractor.
- b) Where payment is on the basis on a lump sum price as indicated in the Tender Form, the Contractor shall, before the first application for payment, submit to the Town a schedule of values and projected cash flow for the various portions of the Work. The schedule shall provide a breakdown of the total Contract Price, divided so as to facilitate evaluation of progress claims based on portions or phases of the Work, and be made out in a form and supported by evidence as the Town may direct.
- c) Where payment is on the basis of unit prices as indicated in the Tender Form, the Contractor shall, before the first application for payment, submit to the Town a projected cash flow aggregating the total Contract Price.
- d) Each application for payment shall be accompanied by:
  - i) A statement of amounts claimed based on the schedule of values, including any authorized change, if payment is on the basis of a lump sum price as indicated in the Tender Form;
  - ii) A schedule of work units duly measured and accepted by the Town and valued at the applicable unit prices, including any authorized change, if payment is on the basis of unit prices as indicated in the Tender Form;
  - iii) An updated cash flow projection;
  - iv) Such evidence as the Town may direct showing the Contractor's entitlement to the payment claimed;

- v) Notification of any liability which may fall upon the Town if not paid for by the Contractor;
- vi) A sworn statement, or statutory declaration, that all accounts for labour, subcontracts, products, construction machinery and equipment, and other indebtedness which may have been incurred by the Contractor in the performance of the Work and for which the Town might in any way be held responsible, have been paid in full, except for amounts properly retained as a holdback or as an identified amount in dispute;
- vii) A Letter of Clearance from the Workers' Compensation Board current to the date of the application for payment; and
- viii) Written confirmation that the Contractor has no other claim, including overhead, impact costs, loss, or damages arising from the Work completed as of the date of the application for payment.
- ix) An updated Completion Schedule in accordance with Article 4.15.
- e) The Town will, within twenty (20) days of receiving an application for payment, approve the payment, or advise the Contractor promptly in writing as to why the payment is amended or rejected.
- f) Each application for payment shall become due and payable by the Town within ten (10) days of approval.
- g) Each Progress Payment Certificate shall be determined as the accrued amount approved less the holdback amount as defined in Article 5.3 – Holdbacks, less the total of previous approved payments.
- h) The Contractor shall at all times reimburse, protect, indemnify, and save free and harmless the Town, the Site, and the other lands and property of the Town from and against all liens, claims made, or liability incurred by the Contractor on account of the Work performed or materials supplied by Subcontractors or suppliers, or on account of an exaggerated lien filed by the Contractor including, without limitation, legal fees on a solicitor and own client (indemnity) basis. The Contractor shall cause any such lien or claim which may be filed or made, to be released and discharged forthwith at the expense of the Contractor. If the Contractor fails to release or obtain the release and discharge any such lien or claim, then the Town may, but shall not be obliged to, discharge, release or otherwise deal with the lien or claim, and the Contractor shall pay any and all costs and expenses incurred by the Town in so releasing, discharging or otherwise dealing with the claim or lien, including but not limited to, legal fees on a solicitor and own client (indemnity) basis. Any amounts so paid by the Town may be deducted from any amounts due the Contractor whether under this Contract or otherwise.
- i) No payment shall be made if any lien or charge is filed in respect to the Work performed or Products furnished under the Contract. The Town shall not be obligated to make further payments until the Contractor provides evidence that the Work is clear of Construction Liens and any other charges arising out of the Contractor's execution of the Work.
- j) The Town may review its records with respect to business licensing, taxation, assessment, and other accounts receivables prior to making any payment to the Contractor. The Town may set off any overdue accounts owed by the Contractor

to the Town against any amounts otherwise payable to the Contractor pursuant to the Contract.

### 5.3 Holdbacks

- a) The Town shall be entitled to holdback an amount from payments as may be required by the Prompt Payment & Construction Lien Act – Alberta, or any other Applicable Law.
- b) If the Applicable Laws do not require that the Town maintain a holdback, the Town will maintain a holdback as follows
  - i) 10% of the accrued amount approved will be withheld until 50% of the value of the Work is completed; and
  - ii) 5% of the accrued amount approved will be withheld until the issuance of a Construction Completion Certificate by the Town
- c) In addition to the foregoing, the Town shall have the right to retain an additional holdback to the extent necessary to protect the Town from loss on the account of one or more of the following:
  - i) The Contractor, in the opinion of the Town, is not making satisfactory progress;
  - ii) Rejected work has not been remedied;
  - iii) Claims relating to the Work filed, or reasonable evidence in the opinion of the Town indicating probable filing of claims;
  - iv) Evidence of failure of the Contractor to make payment to Subcontractors for Products or labour; or
  - v) Damage to Other Contractors or the work of Other Contractors.

### 5.4 Substantial Completion Certificate

- a) When the Contractor is of the opinion that the Contract is substantially completed as defined by the Prompt Payment and Construction Lien Act – Alberta, the Contractor may apply for a Substantial Completion Certificate to the Town with respect to the Contract.
- b) Where the Contractor and a Subcontractor are of the opinion that the Subcontractor's portion of the Work is substantially complete, the Contractor may apply for a Substantial Completion Certificate to the Town covering the portion of the Work substantially completed by the Subcontractor. The Contractor and Subcontractor shall duly sign this application. The Contractor shall ensure that such portion of the Work is protected until the issuance of the Construction Completion Certificate, and shall be responsible for any defects or outstanding work regardless of whether or not such was apparent when the Substantial Completion Certificate for that portion of the Work was issued.
- c) The Substantial Completion Certificate application delivered to the Town shall list any outstanding deficiencies or other work items, dates for the corrections and completions, and the value of the Work remaining to be completed. Failure to include an item on the list does not alter the responsibility of the Contractor to complete the Work in accordance with the Contract Documents.

- d) Within fifteen (15) days following receipt of the Contractor's Substantial Completion Certificate application, the Town will review the Work to verify the validity of the application. The Town will notify the Contractor whether the Work or designated portion of the Work is substantially performed.
- e) If the Town verifies the Work to be substantially completed, the Town will issue a Substantial Completion Certificate to the Contractor. The certificate will indicate the date of substantial completion of the Work or portion of the Work.
- f) If the Town issues a Substantial Completion Certificate, the Contractor shall, within three (3) days from the date of such issuance, post the certificate on the Site as required by the Prompt Payment and Construction Lien Act – Alberta.

#### 5.5 Construction Completion Certificate

- a) When the Town is satisfied that the Work has been completed, all deficiencies have been corrected, and the Contractor has delivered to the Town all required documentation relating to the Work and required under the Contract, the Town will issue a Construction Completion Certificate to the Contractor.

#### 5.6 Release of Holdback

- a) The Contractor shall submit to the Town, following the issuance of the Substantial Completion Certificate or Construction Completion Certificate, an application for release of holdback accompanied by:
  - i) A statement of the amount claimed;
  - ii) A certificate from the Workers' Compensation Board, dated after the date of issuance of the Substantial Completion Certificate or Construction Completion Certificate, verifying that assessment dues from the Contractor and Subcontractors have been paid;
  - iii) A sworn statement, or statutory declaration, dated after the issuance date of the Substantial Completion Certificate or Construction Completion Certificate, that all accounts for labour, subcontracts, products, construction machinery and equipment, and other indebtedness which may have been incurred by the Contractor in the performance of the Work and for which the Town might in any way be held responsible, have been paid in full;
  - iv) Such reasonable evidence as the Town may require showing the Contractor's entitlement to the payment claimed; and
  - v) A declaration that the Contractor has no other claim arising from the Work, including overhead, impact costs, loss or damages.
- b) The Town will commence approval for payment of the appropriate holdback amount thirty (30) days after the date the Town receives the Substantial Completion Certificate or issues the Construction Completion Certificate. The sums included on this Release of Holdback Certificate shall constitute Final Payment under the Contract.

#### 5.7 Warranty

- a) The Contractor warrants that the Work is and shall be free from any and all defects and deficiencies in workmanship performed, and materials and

equipment supplied, by the Contractor, its Subcontractors, or suppliers for a period of:

- 24 months for underground services and utilities,
- 24 months for uniform fencing,
- 24 months for roads, sidewalks, curbs, and gutters,
- 24 months for trees and shrubs, and
- 24 months for grass and sod

from the date of the Construction Completion Certificate, or such other period as provided in Section 00 73 00 – Supplementary Conditions.

- b) The Town will give notice to the Contractor of any observed defects to the Work within the Warranty Period.
- c) The Contractor shall promptly correct, at the Contractor's expense and to the satisfaction of the Town, any defects observed in the Work during the Warranty Period. The Contractor shall pay for any damage to other work as the result of defects in the Work that arise during the Warranty Period.
- d) If an Applicable Law or Product warranty extends the liability for faulty Products or workmanship beyond the Warranty Period, then the provisions of the Applicable Law or Product warranty shall apply.
- e) Any extended warranties required beyond the applicable Warranty Period, as described in Article 5.7a) or stipulated in Section 00 73 00 – Supplementary Conditions, shall be as specified in the Contract Documents. Extended warranties shall be issued by the warrantor to the benefit of the Town. The Contractor's responsibility with respect to extended warranties shall be limited to obtaining any such extended warranties from the warrantor. The obligations under such extended warranties are solely the responsibility of the warrantor.
- f) If, in the opinion of the Town, an observed defect requires immediate correction during the Warranty period, the Town may perform the correction or cause the correction to be performed by others and the Contractor shall be liable to reimburse the Town for any costs incurred as a result of the correction.

#### 5.8 Liability for Landscaping, Trees, and Shrubs Under Warranty

- a) If the Work includes soft landscaping, the Contractor shall follow the maintenance standards provided in the Contract Documents or applicable Town standards. The Contractor will maintain soft landscaping including all turf, trees, and shrubs during the Warranty Period.
- b) The Contractor acknowledges that proper maintenance will reduce, but never eliminate, the chance that a tree or shrub might die or be damaged through Natural Causes. Natural Causes includes diseases, pests, climatic stress, and any other cause in which human beings are not the main culprits.
- c) The Contractor acknowledges that, if a tree or shrub dies or is damaged through Natural Causes, it is very difficult to prove whether the result could have been prevented by proper maintenance. In order to avoid problems of proof of causation and to ensure that the Contractor has an incentive to properly maintain the trees and shrubs, the Contractor shall be liable for all death or damage to trees and shrubs due to Natural Causes.

- d) The Contractor shall not be liable for the death or damage to trees or shrubs if caused directly by human intervention not resulting from the act or inaction of the Contractor, its employees, agents, or Subcontractors. This may include, but is not limited to, vandalism, vehicle accidents, construction accidents, flooding caused by human activities on or near the Site, chemical contamination, and accidents during maintenance by the Town.
- e) The onus shall be on the Contractor to prove that the death or damage of a tree or shrub was not as a result of Natural Causes.

#### 5.9 Final Acceptance Certificate

Thirty (30) days prior to the expiration of the Warranty Period, the Contractor shall apply to the Town for a Final Acceptance Certificate. The Town shall issue a Final Acceptance Certificate to the Contractor if all observed defects in the Work have been corrected to the satisfaction of the Town. In the event that all observed defects have not been corrected to the Town's satisfaction, the Warranty Period shall remain in effect and the Final Acceptance Certificate shall not be issued until all observed defects have been corrected to the satisfaction of the Town.

#### 5.10 Non-Waiver of Responsibility

- a) Notwithstanding any other term of the Contract, no certificate, payment, or waiver of claims shall relieve the Contractor from liability arising out of the Contractor's failure to comply with the Contract.
- b) No approval of payment, payment, nor any partial or entire use or occupancy of the Work by the Town shall constitute acceptance of the Work or Products which are not in accordance with the Contract Documents.

#### 5.11 Audits

- a) The Town may audit all accounts of the Contractor relating to the Work including, without limitation, timesheets, all reimbursable out-of-pocket expenses, and costs for materials, goods, and equipment claimed by the Contractor.
- b) The Contractor shall, at all times during the term of the Contract and for a period of six (6) years after the end of the Contract, keep and maintain records of the Work performed in accordance with this Contract. This shall include proper records of quotations, contracts, correspondence, invoices, vouchers, and timesheets. The Contractor shall make these records available for inspection by the Town at all reasonable times.

#### 5.12 Electronic Payment

- a) Whenever the Town is obligated to make a payment to the Contractor under the Contract, the Town may, at the Town's sole discretion, transfer funds electronically from the Town directly to the Contractor's account at a financial institution, henceforth referred to as an Electronic Payment Method.
- b) If the Town gives the Contractor notice in writing of the Town's intention to use an Electronic Payment Method, the Contractor shall provide the Town with all information that the Town may reasonably require to carry out an Electronic Payment Method, including the name and address of the Contractor's financial institution and the appropriate account information.

- c) The Town shall keep all such information strictly confidential and will only use it for the purpose of carrying an Electronic Payment Method.

## **6.0 CHANGES**

### **6.1 General**

- a) The Town shall have the right, at any time, to make Changes.
- b) The Town may, without invalidating the Contract, make:
  - i) Changes in the Work consisting of additional, deletions, or other revisions by Change Order or Change Directive, and
  - ii) Changes to the Completion Schedule for the Work by Change Order.
- c) The Contractor shall not perform a change in the Work without a Change Order or Change Directive.
- d) If, during the performance of the Work, the Contractor is of the opinion that any instruction, interpretation, decision, or direction from the Town should have, but has not, resulted in a Contemplated Change Notice or Change Directive being issued, the Contractor shall give the Town ten (10) days notice with a Change Quotation requesting any adjustment in the Contract Price and Completion Schedule required. The Town shall promptly consider the Change Quotation and immediately issue a Change Order, Change Directive, or advise the Contractor that the Contractor's request is denied.

### **6.2 Change Order**

- a) The Town will issue a Contemplated Change Notice to the Contractor when a change in the Work or Completion Schedule is proposed or required.
- b) The Contractor shall provide a Change Quotation to the Town, adequately detailing a method or amount of adjustment of the Contract Price, if any, and the adjustment in the Completion Schedule, if any, for the proposed change.
- c) The method of adjustment of the Contract Price shall be in accordance with Article 6.4.
- d) Upon receipt and acceptance of a Change Quotation by the Town, the Town will issue a Change Order which shall be duly signed by the Town and the Contractor. Where a Change Order includes a change in the value of the Contract Price, such change shall be reflected in subsequent progress payment applications.

### **6.3 Change Directive**

- a) In the event that the Town requires the Contractor to proceed with a Change prior to the Town and the Contractor meeting an agreement on an adjustment in Contract Price or the Completion Schedule, the Town shall issue a Change Directive.
- b) A Change Directive shall only be issued to direct a Change that is within the general scope of the Contract Documents.
- c) Upon receipt of the Change Directive, the Contractor shall promptly proceed with the Change.



- d) The adjustment in Contract Price under a Change Directive shall be determined in accordance with Article 6.4, unless otherwise stipulated in the Supplementary Conditions.
- e) If a Change Directive results in cost savings, the Contractor shall credit the Town in the amount of actual cost savings to the Contractor, without deduction for overhead or profit.
- f) Pending determination of the final amount of a Change Directive, the undisputed value of the work performed under the Change Directive is eligible to be included in progress payments.
- g) At such a time that the Town and the Contractor reach an agreement on the adjustment in Contract Price and Completion Schedule for work performed under a Change Directive, such agreement shall be recorded in a Change Order duly signed by the Town and the Contractor.

6.4 Valuation of Change

- a) The value of any change in the Work shall be determined using one of the following methods (not multiple):
  - i) By unit prices indicated in the Tender Form or, if unit prices indicated in the Tender Form are not directly applicable, by deduced or extrapolated unit prices from those indicated in the Tender;
  - ii) By estimate and acceptance in a lump sum;
  - iii) By cost plus percentage;
  - iv) By cost plus fixed fee;
  - v) As provided for in the Supplementary Conditions; or
  - vi) If none of the above methods can be used, by alternative dispute resolution as set out in Article 8.0 – Disputes.

The value of the Change, calculated in accordance with any manner contemplated in this article, shall include all costs, expenses, overhead, impact costs, loss, or damages associated with the Change, for the prime contractor and any sub contactors.

- b) When the Town orders a change to the Work which requires extra work and it is performed by the Contractor's own forces and valued under Article 6.4a)iii), the Town will pay only for labour, materials, and equipment directly used in the extra work plus mark-ups in accordance with the following table:

Labour:	Labour rates accepted by the Town plus 10% for profit.
Materials:	Actual cost plus 10% overhead allowance, plus 10% for profit.
Equipment:	At rental rates provided by the Alberta Roadbuilders and Heavy Construction Association (ARHCA) Equipment Rental Rates or other similar trade association approved by the Town, for the time when equipment is in use. There shall be no mark-ups on these rates.

Transport:	Transport of equipment will only be allowed if the equipment is not already present at the Site. Transport rates will be based on ARHCA Equipment Rental Rates.
Small tools:	Included in the labour rate. No separate payment shall be made.
Equipment not owned by the Contractor and not covered by ARHCA Equipment Rental Rates:	Actual rental cost plus 10% for overhead and 5% for profit.

- c) For the purpose of Article 6.4b), the labour rates shall be based on those included with the Tender submittal and shall include only the actual wage paid to the employee, plus the payroll burden, plus an overhead allowance of 15%. The payroll burden shall consist of the Contractor's required payment for the Canada Pension Plan, Employment Insurance, Workers' Compensation, employee pension plans, vacation allowance, medical benefits, and any other payments required by law.
- d) If requested by the Town, the Contractor shall provide a detailed breakdown of the proposed labour rates clearly demonstrating how the make-up of the rate conforms to Article 6.4b) and 6.4c). The Town may audit labour rates to ensure compliance.
- e) Unless agreed to in writing by the Town, all extra work will be valued based on regular hourly labour rates.
- f) The Town will not pay for vehicles used to transport workers or for travel time for workers to and from the Site.
- g) For each day on which extra work has been carried out or materials have been supplied, the Contractor shall, within twenty-four (24) hours, submit a statement of labour and equipment time incurred for the extra work to the Town.
- h) When a Subcontractor performs the extra work and the payment to the Contractor is on a cost plus percentage basis, the Town will pay the Contractor:
  - i) An amount equal to the Subcontractor's costs for labour, materials, and equipment used for the extra work, provided that the rates, overhead allowance, and profits do not exceed those outlined in Article 6.4b); and
  - ii) A mark-up for overhead allowance and profit, not exceeding 10%, on the Subcontractor's price for the extra work. This mark-up shall take into account all additional costs excluding approved supervision, required to ensure that the Subcontractor undertakes the extra work in accordance with the Contract.

#### 6.5 Quantity Variation

- a) The Town or the Contractor may request an adjustment to a unit price contained in a Schedule of Prices included in the Tender Form provided that the actual quantity of the item in the Schedule of Prices exceeds or falls short of the estimated quantity by more than 15%.

- b) Where the actual quantity exceeds the estimated quantity by more than 15%, a unit price adjustment shall apply only to the quantity that exceeds 115% of the estimated quantity.
- c) Where the actual quantity falls short of the estimated quantity by more than 15%, a unit price adjustment shall not exceed the unit price that would cause the extended amount to equal the original extended amount derived from the original unit price and estimated quantity.
- d) Without limiting Article 6.5a), if either party requests adjustment of a unit price, both parties shall make all reasonable efforts to agree on a revised unit price. The agreed revised unit price shall be recorded in a Change Order.
- e) If agreement on a revised unit price is not reached, the matter shall be subject to final determination in accordance with Article 8.0 – Disputes. Pending determination of the revised Unit Price, payment for the Work performed shall be included in progress payments based on the original unit price.

## **7.0 RIGHTS AND REMEDIES**

### **7.1 Town's Right to do Work**

- a) If the Contractor neglects to perform the Work properly, or fails to comply with any provision of the Contract, the Town may provide written notice to the Contractor that the Contractor is in default of obligations under the Contract. The Town will instruct the Contractor to correct the default within five (5) days of receiving the notice.
- b) If correction of the default cannot be completed within the five (5) days specified, the Contractor will be considered to be in compliance with the Town's instructions if the Contractor:
  - i) Commences correction of the default within the specified time;
  - ii) Provides the Town with a schedule for the correction which is acceptable to the Town; and
  - iii) Completes the correction in accordance with the schedule submitted.
- c) If the Contractor fails to correct the default as herein required, the Town may, without prejudice to any other right or remedy the Town may have, correct such default and deduct the cost of the correction from any payment due to the Contractor.

### **7.2 Town's Right to Stop Work or Terminate Contract**

- a) The Town has the general and absolute right, upon providing written notice to the Contractor, to terminate the Work at any time and pay the Contractor for all work completed until the point of termination.
- b) If the Contractor:
  - i) Should be adjudged bankrupt;
  - ii) Makes a general assignment for the benefit of creditors on account of the Contractor's insolvency;
  - iii) Acknowledges insolvency, bankruptcy, or liquidation;

- iv) Ceases to carry on business; or
- v) If a receiver is appointed on account of the Contractor's insolvency;  
The Town may, without prejudice to any other right or remedy the Town may have, terminate the Contract upon providing written notice to the Contractor.
- c) Should the Contractor be in default of any obligation provided under the Contract, the Town may provide written notice to the Contractor that the Contractor is in default.
- d) Written notice from the Town will instruct the Contractor to correct the default within five (5) days of receiving the notice.
- e) If correction of the default cannot be completed within the five (5) days specified, the Contractor will be considered to be in compliance with the Town's instructions if the Contractor:
  - i) Commences correction of the default within the specified time;
  - ii) Provides the Town with a schedule for the correction which is acceptable to the Town; and
  - iii) Completes the correction in accordance with the schedule submitted.
- f) If the Contractor fails to correct the default as herein required, the Town may, without prejudice to any other right or remedy the Town may have, stop the Work or terminate the Contract.
- g) If the Town terminates the Contract pursuant to Article 7.2b) or 7.2f), the Town is entitled to:
  - i) Take possession of the Site and Products and utilize the construction machinery and equipment, subject to the rights of third parties, and to finish the Work by whatever method the Town may deem expedient;
  - ii) Withhold any further payments to the Contractor until the Work is completed;
  - iii) Upon final completion of the Work, charge the Contractor the amount by which the cost for completing the Work exceeds the unpaid balance of the Contract Price or, if such cost for completing the Work is less than the unpaid balance of the Contract Price, pay the Contractor the difference;
  - iv) Maintain a reasonable holdback during the Warranty Period which represents the Town's estimate of costs for repair of Work during the Warranty Period; and
  - v) On expiry of the Warranty Period, charge the Contractor the amount by which the cost of corrections during the Warranty Period exceeds the holdback allowance, if any, provided for such corrections, or, if the cost of such corrections is less than the holdback allowance, pay the Contractor the difference.
- h) The Contractor's obligations under the Contract as to quality, correction, and warranty of the work performed by the Contractor up to the time of termination shall continue in force after such termination.

### 7.3 Contractor's Right to Stop Work or Terminate Contract

- a) If the Work should be stopped or otherwise delayed for a period of time of forty-five (45) days or more under an order of any court or other public authority, and providing that such order was not issued as the result of any act or fault of the Contractor or of anyone directly or indirectly employed by the Contractor, the Contractor, without prejudice to any other right or remedy the Contractor may have, terminate the Contract by providing the Town written notification.
- b) If the Town should, within ninety (90) days, fail to pay any sum approved by the Town or awarded by the Referee or Arbitrator to the Contractor, then the Contractor may, upon five (5) days written notice to the Town, stop the Work or terminate the Contract and recover from the Town any outstanding payments for Work completed.

## 8.0 DISPUTES

### 8.1 Negotiation

- a) The Contractor and the Town shall use their best efforts to resolve any disputes arising between them as efficiently and cost effectively as possible.
- b) At all relevant times, the Town and the Contractor shall:
  - i) Make bona fide efforts to resolve all disputes by amicable negotiations; and
  - ii) Provide frank, candid, and timely disclosure of all relevant facts, information, and documents to facilitate those negotiations.
- c) The Contractor and the Town agree that any efforts to resolve their dispute by amicable negotiation or with the assistance of a mediator, at any time during or after the performance of the Work, does not suspend the expiration of any time limitation for taking any act under the Contract unless both parties have specifically agreed in writing to waive or vary such time requirement.
- d) Unless otherwise instructed by the Town in writing, the Contractor shall continue to perform the Work and maintain its progress during any proceedings under Article 8.0 – Disputes.
- e) Upon award of a contract, or at a later date, the Town shall identify three potential referees acceptable to the Town. The Contractor shall have ten (10) days from receipt of the Town's notice to accept one of those referees or identify another Referee acceptable to the Contractor. If the Town is not in agreement with the Contractor's alternate selection for Referee and an agreement cannot be reached on a potential referee, either party may apply to a court or to the Alberta Arbitration and Mediation Society to name a Referee.
- f) If the services of a Referee are required, the Town, Contractor, and Referee will enter into a Referee Services Agreement contract.
- g) Where the Referee is unable to perform the duties as required under the Referee Services Agreement and resigns or is removed by agreement of the parties, a new Referee shall be appointed in accordance with Article 8.1e).
- h) All disputes arising out of or in connection with the Contract, or in respect of any defined legal relationship associated with it or derived from it, shall be referred to

and finally resolved in accordance with the provisions of Article 8.3 – Referee’s Review, Article 8.5 – Arbitration, and the Rules of Arbitral Procedure, attached to the General Conditions as Schedule A.

## 8.2 Notice of Dispute

- a) If the Town provides written notification with reasons of any decision required under the Contract, then the Contractor shall be deemed to have accepted the Town’s decision as final and binding unless the Contractor provides written notice of dispute to the Town within five (5) days after receiving the notification from the Town.
- b) If the Contractor has given notice of a dispute to the Town under Article 8.2a) in respect of any dispute arising with regard to the Contract, the notice of dispute and the Town’s decision shall be referred to a Referee for review pursuant to Article 8.3 – Referee’s Review.

## 8.3 Referee’s Review

- a) If the Contractor has issued notice of dispute to the Town within the time provided in Article 8.2a), any decision of the Referee is final and binding on the parties unless the decision is referred to arbitration as provided in Article 8.5a).
- b) Within five (5) days of notification to the Contractor and the Town from the Referee that the Referee is prepared to commence the review, the Contractor shall deliver to the Referee and the Town:
  - i) A written summary of the facts, information, and arguments; and
  - ii) Copies of all documents relating to the Contract, upon which the Contractor tends to rely.
- c) Within five (5) days after the Town receives the Contractor’s submissions, as required in Article 8.3b), the Town shall deliver to the Referee and the Contractor:
  - i) A written summary of the facts, information, and arguments; and
  - ii) Copies of all documents relating to the Contract, upon which the Town tends to rely.
- d) Within five (5) days of receiving the Town’s submissions, the Contractor shall have the opportunity to retract its referral to the Referee prior to the Referee giving a determination on the matter. In this instance, the Contractor may be responsible for any costs and expenses incurred at the Referees discretion.
- e) The Referee may:
  - i) Require the Town or the Contractor to provide further written explanations or documentation considered necessary, giving each party an opportunity to respond to them;
  - ii) On written application by the Town or the Contractor made before a determination is made, allow the Town or the Contractor to submit additional written information or documentation which was not available when the submissions were made under Articles 8.3b) or 8.3c) and give each party an opportunity to respond to the additional submission; and

- iii) On written application by the Town or the Contractor, extend the time for making a submission under Article 8.3b) or 8.3c) in circumstances that the Referee may consider appropriate.
- f) The Referee shall conduct a review, without oral hearing, of the disputed decision of the Town, taking into account:
  - i) The Town's written decision and reasons given;
  - ii) The submissions of the Contractor and the Town provided under Articles 8.3b) or 8.3c);
  - iii) Any information obtained under Article 8.3e); and
  - iv) The terms of the Contract.
- g) Not later than twenty (20) days following the receipt of the last documentary submission, the Referee shall make a decision, and immediately provide the decision in writing to the Town and the Contractor, with reasons, which may confirm or vary the decision of the Town or substitute another decision. The decision of the Referee is final and binding on the parties unless the decision is referred to arbitration as provided in Article 8.5a).
- h) If the Town has made a decision which affects the schedule or time within which various portions or phases of the Work are to be completed, and the Referee determines that the Contractor ought to have been provided with more time, the Referee shall not make a decision varying or substituting the Town's decision respecting the schedule or time, but may make a decision respecting compensation required to be paid to the Contractor under the Contract.

#### 8.4 Referee Costs

- a) The Town shall bear the costs, if any, of naming and retaining the Referee.
- b) The Town and the Contractor shall equally bear the costs and expenses of any review by the Referee.
- c) Without limiting the generality of Article 8.4b), the Referee may order that the costs and expenses of the review, including the costs and expenses of preparation of submissions by the Town or the Contractor, be paid by either the Town or the Contractor.

#### 8.5 Arbitration

- a) By giving written notice to the other party not later than five (5) days after receipt of the Referee's decision, either party may refer the decision of the Referee to arbitration. Arbitration is mandatory in the event of a dispute with the Referee's decision.
- b) Unless otherwise agreed by the Town and the Contractor, all disputes under the Contract referred to arbitration under Article 8.5a) shall be held in abeyance until the Work has been completed, the Contract has been terminated, or the Contractor has abandoned the Work, whichever is earlier.
- c) Disputes under the Contract shall then be consolidated into a single arbitration before a single arbitrator under the Rules of Arbitral Procedure attached to the General Conditions as Schedule A.

- d) An arbitral award rendered under Article 8.5c) is final and binding on the Town and the Contractor, and there shall be no appeal to the courts.

## **9.0 PROTECTION OF WORK, PROPERTY, AND LIFE**

### **9.1 Use of Premises and Overloading**

- a) The Contractor shall confine equipment, storage, and operation areas to the limits indicated by Applicable Laws, permits, or by the direction of the Town and shall not unreasonably encumber the premises with Products, material, or equipment.
- b) The Contractor shall not load or permit to be loaded any portion of the Work with a weight that may endanger the safety of such portion of the Work.
- c) Where applicable, no portion of the Work shall be loaded after the pouring of concrete unless written approval is received from the Town.
- d) The Contractor shall comply with the direction of the Town regarding signs, advertisements, fires, smoking, sanitation, and storage of inflammable products.

### **9.2 Protection of Work, Property and Life**

- a) The Contractor shall maintain, at the Contractor's expense, continuous and adequate protection of the Work from damage and shall protect the Town's property and adjacent property from damage caused in the performance of the Work. The Contractor shall, at the Contractor's expense, make good any damage to the Work, the Town's property, or adjacent property arising from the performance of the Work.
- b) The Contractor shall not be responsible for any damage to the Work, the Town's property, or adjacent property where such damage occurs as the result of errors in the Contract Documents, or acts or omissions by the Town, its agents, representatives, or employees, or Other Contractors, provided the Contractor has implemented reasonable protective precautions. Where such damage occurs, the Contractor shall make good such damage to the Work and, if the Town so directs, to the Town's property or adjacent property. The Contract Price and Completion Schedule shall be adjusted as provided in Article 6.0 - Changes.
- c) The Contractor shall provide, erect, and maintain all hoarding, barricades, covered ways, guardrails, barriers, lighting, sidewalks, curbs, and other protection as may be necessary for the preservation of public health and safety, or as may be required by Applicable Laws.
- d) The Contractor shall supply and maintain at the Site sufficient facilities and equipment of the type and size suitable for extinguishing fires that may occur in the performance of the Work.
- e) The Contractor shall observe any instruction from the fire department with respect to fire hydrant access during performance of the Work. The Contractor shall inform the fire department of any activity that may hinder the fire department's access to any street or lane during the performance of the Work.



### 9.3 Construction Work at or Near Pipelines and Transmission Lines

- a) If the Work involves excavation or other construction activity near underground pipelines or transmission lines, the Contractor shall, in addition to accepting and receiving information supplied by the Town, take all measures necessary to locate any pipelines or transmission lines. The Contractor acknowledges that the Contractor is aware of all requirements under the Pipeline Act – Alberta. The Contractor shall comply with all requirements of the Pipeline Act, the pipeline crossing agreement, and any other reasonable direction from the Town.
- b) Without limiting the generality of Article 9.3a), if, in performance of the Work, contact is made with a pipeline or transmission line, resulting in a puncture of or a crack in the pipeline or transmission line, the Contractor shall:
  - i) Immediately stop the activity;
  - ii) Immediately phone 911 and give the name of the pipeline or transmission line and location of activity;
  - iii) Immediately advise the pipeline or transmission line company; and
  - iv) Not resume any construction activity without the approval of the pipeline or transmission line company.
- c) Contractor of the sole responsibility for any damage to underground pipelines or transmission lines caused in the performance of the Work.
- d) Breach of any requirement of Article 9.3 – Construction Work at or Near Pipelines and Transmission Lines is considered a substantial breach of the Contract, and the Town may immediately terminate the Contract.

### 9.4 Hazardous Products and Chemicals

- a) The Contractor, its Subcontractors, and its suppliers shall not use, transport, or store hazardous materials, products, or chemicals, as defined by the Occupational Health and Safety Act – Alberta, on the Site except with the prior written approval of the Town. All Hazardous Material used, transported, or stored shall be dealt with in accordance with Applicable Laws, the Contract Documents, and the entire Town's published regulations, guidelines, or publications regarding Hazardous Material.
- b) Before commencing work in any Town facility, the Contractor shall meet with the Town to discuss potentially hazardous material that will be used in the performance of the Work at the Site. This shall include material with the potential to cause hazards of a physical or chemical nature.
- c) Before commencing work, the Contractor shall conduct an assessment of the Site, reviewing existing materials that might contain any hazardous material, and notify the Town in writing of all findings. The Town will direct the Contractor on the appropriate course of action regarding such materials.
- d) If, during the performance of the Work, the Contractor further discovers potentially hazardous material in an area near or part of a portion of the Work, work in that area shall cease, access to the area should be restricted, and any relevant material protected from further deterioration until written authorization to proceed is issued by the Town.

- e) The Contractor shall maintain at the Site copies of all applicable material safety data sheets (MSDS) for all material that will be used in the performance of the Work.

## 9.5 Emergencies

- a) In the event of an emergency, the Town has the right to stop the progress of the Work whenever, in the opinion of the Town, such stoppage may be necessary to ensure the safety of life, the Work or portions of the Work, or property adjacent to the Site. This includes the authority to make Changes to the Work in accordance with the Contract Documents. The Town will immediately provide written confirmation of such instructions. The Contractor shall take such measures, as may be specified by the Town, that the Town considers necessary for the purpose of removing any source of danger or to protect any person, property, or portion of the Work from danger.
- b) The Contractor shall immediately notify the Town in the event of any accident resulting in serious injury, death, or property damage.
- c) The following phone numbers are provided for the Contractor's reference:
  - i) Ambulance, Fire, RCMP, and Environmental Spills (Emergency) 911
  - ii) Fire Services (non-emergency) 780-624-2993
  - iii) RCMP/Municipal Enforcement (non-emergency) RCMP 780-624-6677
  - iv) Peace River Bylaw (Town Office) 780-624-2574
  - v) Peace River Community Hospital 780 624-7500
  - vi) Provincial Spill Reporting 1-800-222-6514
  - vii) Town of Peace River Public Works Department 780-624-3085
  - viii) Alberta Transportation 310-0000
- d) The Contractor shall be responsible for ensuring these numbers are correct at the time of the performance of the Work and for posting such phone numbers and any additional emergency contact information at the Site.

## 10.0 APPLICABLE LAWS

### 10.1 Laws, Notices, Permits, and Fees

- a) The Contractor shall apply and pay for all necessary permits, licenses, inspections, and certificates required for the execution of the Work. This shall not include the obtaining of permanent easements.
- b) The Contractor shall give necessary notices and pay fees required by Applicable Laws and in order to preserve public health and safety. Where two or more Applicable laws govern the Work or portions of the Work, the more restrictive shall apply.
- c) The Contractor shall be responsible for performing the Work in compliance with Applicable Laws. If any substantial modifications to the Work are required as a result of the Contract being at variance with Applicable Laws, or if the Applicable Laws change subsequent to the date of the Contract, any resulting change in the cost shall constitute a corresponding change in the Contract Price. The

Contractor shall promptly provide written notification to the Town requesting immediate direction upon discovery of any variance or changes that affect the Contract or the Work.

- d) If the Contractor fails to provide the Town written notification requesting immediate direction and performs the Work contrary to Applicable Laws, the Contractor shall be responsible for and shall correct any violations and shall bear all costs, expenses, and damages attributable to the Contractor's failure to comply with Applicable Laws.
- e) In the event that the Contractor fails to comply with Applicable Laws and the Town is required to take any steps or pay any sum to rectify non-compliance, the Town may set off any rectification costs against any amounts otherwise payable to the Contractor pursuant to the Contract.
- f) The Contractor acknowledges that the Town is subject to the Freedom of Information and Protection of Privacy Act – Alberta. This act applies to all records relating to or obtained, created, or collected under the Contract which are in the custody or under the control of the Town. The Contractor agrees to comply with the requirements of this act.
- g) The Contractor shall comply with all Applicable Laws with respect to environmental issues including, but not limited to, the Environmental Protection and Enhancement Act – Alberta.

#### 10.2 Workers' Compensation

- a) When requested by the Town, the Contractor shall provide evidence of compliance with all requirements of the Workers' Compensation Act – Alberta, including payments due, as provided in the act, by the Contractor or Subcontractors.
- b) If the Contractor is performing work in an exempt industry within the meaning of the Workers' Compensation Act and does not carry coverage, the Contractor acknowledges that:
  - i) The Town is subject to a deeming order under the Workers' Compensation Act;
  - ii) The deeming order states that all of the Contractor's directors, proprietors, partners, and employees are deemed to be Town employees for the purposes of the Workers' Compensation Act while performing work for the Town; and
  - iii) The effect of the deeming order is that the Contractor's directors, proprietors, partners, and employees who are injured while performing work for the Town under this Contract, have no right to file a suit against anyone with respect to said injury, and are limited to a claim under the Workers' Compensation Act.
- c) The Contractor shall communicate the existence and effect of the deeming order to all of the Contractor's directors, proprietors, partners, and employees who perform work under this Contract.

### 10.3 Occupational Health and Safety

- a) The Contractor shall comply with the provisions of the Occupational Health and Safety Act – Alberta, and shall be responsible for ensuring that all Subcontractors at the Site comply with the requirements of all Applicable Laws. The Contractor shall be the general representative and agent of the Town for the purposes of ensuring compliance with Applicable Laws relating to safety for both the Contractor and Subcontractors. The Contractor shall be responsible for communicating the provisions of the Occupational Health and Safety Act to Subcontractors.
- b) Unless stipulated otherwise in the Supplementary Conditions, the Contractor is assigned the role of Prime Contractor pursuant to the Occupational Health and Safety Act and is responsible for ensuring compliance with all Applicable Laws relating to safety by all employees, Subcontractors, Suppliers, and all other workers on the Site.
- c) Hazard and risk assessments, emergency information, and all other applicable safety documentation must be completed by the Contractor prior to commencing the Work. A copy of this information shall be forwarded to the Town for its records. A copy of this information shall also be kept at the Site.

### 10.4 Patent Fees

- a) The Contractor shall pay all royalties, patent fees, and license fees required for the performance of the Work. The Contractor shall indemnify the Town for all claims, demands, losses, costs, damages, actions, suits, or proceedings arising out of the Contractor's performance of the Work or the Town's use of the Work which attributable to an infringement or an alleged infringement of any patent, copyright, trade secret, or invention. If the Town is legally prevented from using any Product or any portion of the Work, the Contractor shall substitute an equally equitable Product or portion of the Work, subject to the approval of the Town.
- b) The Town shall indemnify the Contractor for all claims, demands, losses, costs, damages, actions, suits, or proceedings arising out of the Contractor's performance of the Work which are attributable to an infringement or alleged infringement of any patent, copyright, trade secret, or invention due to the Contractor's use of models, plans, or designs of which were provided to the Contractor by the Town.
- c) If either the Town or the Contractor receives a claim for an infringement or alleged infringement of any patent, copyright, trade secret, or invention with respect to the Work, the party receiving such claim shall inform the other party in writing within two (2) days of receiving such claim.
- d) The Contractor grants the Town a non-exclusive, royalty-free, perpetual, irrevocable license:
  - i) To use any and all patents, industrial designs, copyrights, and technology related to the Work that the Contractor owns or controls, subject to the Contractor's legal right to do so; and
  - ii) To make, have made, and use the equipment, machinery, materials, compositions, designs, methods, and processes supplied by the Contractor under this Contract, subject to the Contractor's legal right to do so.

#### 10.5 Importing Fees and Indemnity

- a) The Contractor shall undertake all needed operations and pay all relevant fees, charges, penalties, or duties levied in importing any Product, equipment, material, or services for the performance of the Work.
- b) With limiting the generality of Article 10.5a), if the Contractor is required to import Product, equipment, material, or services for the performance of the Work, the Contractor must ensure that the Contractor or Contractor's representative is the "IMPORTER OF RECORD" for Canada Customs and Revenue Agency purposes.
- c) The Contractor shall indemnify the Town for any fees, charges, penalties, or duties levied by the Federal Government related to any Product, equipment, material, or services imported by Contractor for the performance of the Work.
- d) If any import duties relating to Products increase or decrease subsequent to the Tender submittal deadline, any resulting change in the cost shall constitute a corresponding increase or decrease in the Contract Price.
- e) The Contractor shall cooperate fully with the Town and proper authorities in seeking to obtain refunds of all fees, charges, penalties, or duties to which the Town may be entitled.

#### 10.6 Credits or Grants Applicable to the Work

- a) All credits, grants, or incentives of any nature provided by any municipal, provincial, federal, or international authority and attributable to the Work shall be the property of the Town.
- b) Without limiting the generality of Article 10.6a), if the Work results in the ability to demonstrate reductions in the generation of greenhouse gases, such reductions and any resulting greenhouse gas credits, offsets, or other instruments that may exist to measure and value such reductions shall be the property of the Town.
- c) If required and as may be requested by the Town, the Contractor shall provide the Town with all information, documents, and assistance as may be required to enable the Town to obtain all credits, grants, and incentives.

#### 10.7 Licensing

- a) It is a requirement of the Town that all successful Contractors and their sub contractors who are providing a service will have a valid Town of Peace River Business License prior to commencement of the work and maintain that license for the duration of the project.
- b) It may be a requirement of the Town that all successful Contractors who are providing a tangible product or good will have a valid Town of Peace River Business License prior to commencement of the work and maintain that license for the duration of the project if they operate within Town limits.
- c) Contractors' includes any business, occupation, activity, amusement, entertainment, trade employment, profession or calling and the provision of a

service of any kind that is conducted for the purpose of earning income, whether or not it is conducted for the purpose of earning a profit.

## **11.0 BONDS AND INSURANCE**

### **11.1 Performance Bond**

- a) The Contractor shall provide a Performance Bond to the Town. The Performance Bond shall guarantee the Contractor's faithful performance of the Work in conformance to the Contract, and detail thereof, shall protect the Town against any losses or damages arising by reason of failure of the Contractor to perform the Work as required by the Contract. The Performance Bond shall be in the form provided in Section 00 61 13.13 or CCDC 221, and issued by a Surety Company licensed in the Province of Alberta and satisfactory to the Town, and in the amount of 50% of the Contract Price.
- b) The Performance Bond provided shall remain in full force as a maintenance bond during the Warranty Period.
- c) The cost of the Performance Bond shall be borne by the Contractor.

### **11.2 Labour and Material Payment Bond**

- a) The Contractor shall provide a Labour and Material Payment Bond to the Town. The Labour and Material Payment Bond shall specify as eligible claimants those who have a direct contract with the Principal or with any Subcontractor of the Principal. The Labour and Material Payment Bond shall be in the form provided in Section 00 61 13.15 or CCDC 222, and issued by a Surety Company licensed in the Province of Alberta and satisfactory to the Town, and in the amount of 50% of the Contract Price.
- b) The costs of the Labour and Material Payment Bond shall be borne by the Contractor.

### **11.3 Contractor's Insurance**

- a) Without restricting the indemnification provisions of the Contract, the Contractor shall procure, maintain, pay for and keep in force for the duration of the Contract, coverage listed in the Conditions, unless otherwise stipulated herein, in a form acceptable to the Town and placed with Insurers licensed in Alberta a minimum of the following;
  - i) **General Liability Insurance:** The Limit shall not be less than Five Million Dollars (\$5,000,000.00) per occurrence and shall include coverage as respects liability arising out of activities performed by or on behalf of the Contractor, including Non-Owned Automobile, Broad Form Property Damage, Tenants Legal Liability, Products and Completed Operations, Employers Liability and Blanket Contractual Liability. The policy shall include cross liability and severability of interest.
  - ii) **Property Insurance:** On an All Risks basis covering loss or damage to the Contractor's tools and equipment to be used in the execution of the work specified in the Contract. Insurance on this property shall be on a replacement cost form.

- iii) Automobile Liability Insurance: The Limit shall not be less than Two Million Dollars (\$2,000,000.00) per accident for bodily injury and property damage. The policy shall cover all vehicles owned, leased or licensed in the name of the Contractor
- iv) Workers Compensation Insurance: Coverage to protect the Contractor from claims arising from injury to workers
- b) Other Insurance Provisions:
  - i) General Liability policy will be endorsed to add the Town as an Additional Insured with respect to liability arising out of the operations of the Named Insured.
  - ii) All policies will provide for Thirty (30) Days advance Notice of Cancellation to the Town.
  - iii) Contractor's property insurance policy shall provide a Waiver of Subrogation in favour of the Town.
  - iv) Evidence of required insurance in the form of a Certificate of Insurance, shall be submitted to the Town, prior the commencement of the Work. The Certificate of Insurance form provided in the Contract Documents shall be completed by the Contractor's broker and/or insurer. Replacement certificates showing evidence of renewed coverage shall be provided to the Town within 10 days of the stated policy expiry date. Certified copies of policies may be requested at the discretion of the Town.
  - v) Representation: The Town does not make any representation or warranty with respect to the extent or adequacy of the insurance protection as noted above.
  - vi) Obligations: The furnishing of this insurance shall not limit any of the obligations or liabilities expressed elsewhere in the Contract document.
  - vii) Contractor – Sub-Contractors: If there is no project insurance (Wrap-Up or Builders Risk) the Contractor will pass on all insurance requirements to Sub-Contractors and will secure the same Certificates as the Contractor is required to provide to the Owner.

## 12.0 DAMAGES AND INDEMNITY

### 12.1 Damages and Mutual Responsibility

- a) If either party to the Contract should suffer damage in any manner because of the wrongful act or neglect of the other party, or anyone for whom the other party is responsible in law, then that party shall be reimbursed by the other party for such damage. The reimbursing party shall be subrogated to the rights of the other party in respect of such wrongful act or neglect if it be that of a third party.
- b) If the Contractor has caused damage to the work of any Other Contractor, the Contractor shall, upon due notice in writing, settle with the Other Contractor by negotiation or arbitration. If the Other Contractor makes a claim against the Town on account of damage alleged to have been so sustained, the Town shall notify the Contractor in writing and may require the Contractor to defend the action at

the Contractor's expense. The Contractor shall satisfy a final order or judgment against the Town and pay the costs incurred by the Town arising from such action.

- c) If the Contractor becomes liable to pay or satisfy a final order, judgment, or award against the Town, then the Contractor, upon undertaking to indemnify the Town against any and all liability for costs, shall have the right to appeal in the name of the Town such final order or judgment to any and all courts of competent jurisdiction.

## 12.2 Indemnification

- a) The Contractor shall indemnify and hold harmless the Town and its representatives, agents, and employees from and against losses, claims, demands, payments, suits, judgments, costs, or expenses of every nature and description arising out of or in consequence of the Work or the performance of the Work. This shall include, but not be limited to, claims attributable to bodily injury, sickness, disease, or death, at anytime resulting there from, sustained by any person or persons, or on account of damage to property, including loss of use thereof arising out of or in consequence of the performance of the Work.
- b) In the event that any action, suit, claim, or demand be brought or made against the Town or its representatives, agents, or employees as set out herein, the Town will give notice in writing thereof to the Contractor, and the Contractor shall thereupon have the option of contesting the same or the validity thereof by appropriate legal proceedings. If the Contractor shall so elect, the Contractor shall give notice in writing to the Town within five (5) days of the aforementioned notice from the Town. On final determination of such action, suit, claim, or demand, the Contractor shall immediately pay any judgment rendered against the Town or its representatives, agents, or employees together with all proper costs and charges.
- c) In the event that the Contractor shall not elect, within the aforementioned period of five (5) days, to contest any such action, suit, claim, or demand, the Town may compromise any such action, suit, claim, or demand at the sole discretion of the Town and on such terms as the Town shall deem reasonable, and the Contractor shall thereupon forthwith pay to the Town to sum or sums so paid herein, together with such sums as shall represent the reasonable costs of the Town in defending or settling any such action, suit, claim, or demand.
- d) Without restricting the generality of the foregoing for the purposes of Section 12.2 – Indemnification, costs shall mean solicitor and client costs, whether the Town retains in-house or external Counsel.
- e) The obligations of the Contractor under Article 12.2 – Indemnification shall not extend to the liability of the Town or its representatives, agents, or employees where such liability arises from the act or omission of the Town and where the Contractor, by the exercise of reasonable diligence, could not have prevented such a course of action from arising.

## 12.3 Waiver of Claims

- a) Waiver of Claims by Town



As of the date of the Release of Holdback Certificate, the Town expressly waives and releases the Contractor from all claims against the Contractor including without limitation those that might arise from the negligence or breach of contract by the Contractor except one or more of the following:

- i) Those made in writing prior to the date of the Release of Holdback Certificate and still unsettled;
- ii) Those arising from the provisions of Article 5.7 – Warranty or Article 12.2 – Indemnification;
- iii) Those arising from the provisions of Article 9.4 – Hazardous Products and Chemicals, and arising from the Contractor bringing or introducing any toxic or hazardous substances and materials to the Site after the Contractor commence the Work.

b) Waiver of Claims by Contractor

As of the date of the Release of Holdback Certificate or acceptance of Final Payment, the Contractor expressly waives and releases the Town from all claims against the Town including without limitation those that might arise from the negligence or breach of contract by the Town except:

- i) Those made in writing prior to the Contractor's application for the Release of Holdback Certificate and still unsettled; and
- ii) Those arising from the provisions of Article 9.4 – Hazardous Products and Chemicals or Article 10.4 – Patent Fees.

---

---

**SCHEDULE A – RULES OF ARBITRAL PROCEDURE**

**1.0 GENERAL**

**1.1 Interpretation**

- a) In these rules:
  - i) The terms and phrases have the same meanings as may be attributed to them under the Arbitration Act – Alberta;
  - ii) The “Contract” means a contract containing an agreement to refer disputes to arbitration and appending these Rules, or incorporating them by reference; and
  - iii) The “parties” means the parties to the Contract.
- b) In these Rules, time shall be calculated in the same manner as time is calculated in the Contract.
- c) In these Rules, words in the masculine gender include the feminine and vice versa.

**1.2 Application**

- a) These Rules apply to an arbitration conducted under the Contract.
- b) The parties to arbitration may, by agreement, change or make additions to these Rules.

**1.3 Communications**

- a) All communications under these Rules shall be given in the same manner as communications may be given under the Contract.
- b) There shall not be any oral communication with respect to the issues in dispute between a party and the arbitrator unless it is made in the oral presence of both parties or their legal representatives
- c) A copy of all written communications between the arbitrator and a party shall be delivered to the other party at the same time.

**1.4 Objections**

- a) A party shall state any objections to any aspect of the arbitral proceedings or to the conduct of the other party or the arbitrator at the earliest possible time.
- b) The arbitrator may refuse to consider an objection if a party fails to comply with Article 1.4a).

**2.0 PRE-ARBITRATION CONSIDERATIONS**

**2.1 Commencement**

- a) Either party, henceforth referred to as the Claimant, may submit a dispute to arbitration as permitted under the Contract by giving the other party, henceforth referred to as the Respondent, a written notice containing the following:
  - i) A description of the Contract;

- ii) A statement of the issue in dispute;
  - iii) A request that the dispute be referred to arbitration;
  - iv) A description of the claim being made; and
  - v) The name or names of proposed arbitrators including the resume of the proposed arbitrator or arbitrators as specified in Article 2.2b).
- b) For the purposes of the calculation of time under these Rules, the arbitration shall be deemed to have commenced on the date the Respondent receives the notice under Article 2.1a).

## **2.2 Arbitrator**

- a) The arbitration shall be conducted before a single arbitrator appointed under these Rules who possesses the qualifications, in any, agreed to by the parties.
- b) If a party nominates an individual as an arbitrator, that party shall also provide a written resume of the individual's work background, qualifications, and arbitration experience.
- c) The parties shall make every reasonable effort to reach agreement on an arbitrator within twenty (20) days after the arbitration commences.
- d) If an agreement is not reached under Article 2.2c), either party may make an application to the court for the appointment of an arbitrator.
- e) Before an arbitrator accepts an appointment, the arbitrator shall provide both parties with a written statement declaring that there are no circumstances likely to give rise to justifiable doubts as to the arbitrator's independence or impartiality, and that the arbitrator will disclose any such circumstances to both parties if they should arise before the arbitration is concluded.
- f) If, for any reason, the arbitrator resigns, is unable or refuses to act, or is removed from office, the arbitrator shall be replaced by another arbitrator under these Rules, and any oral hearings previously held shall be rescheduled.
- g) If the parties do not agree that the circumstances specified in Article 2.2e) exist, either party may apply to the Court for an order that the arbitrator be replaced.

## **2.3 Scheduling a Meeting**

Within five (5) days after the arbitrator is appointed, the arbitrator shall convene a meeting of the parties to reach a consensus, if possible, and to issue orders, if necessary, regarding:

- a) The procedures to be followed during the arbitration;
- b) The time periods for taking steps in the proceedings;
- c) The scheduling of any oral hearing or meetings;
- d) Any preliminary applications or objections a party may have; and
- e) Any other matter which will assist the arbitration to proceed in an efficient and expeditious manner.

## **2.4 Powers of the Arbitrator**

- a) Subject to any limitations in these Rules or any agreement reached by the parties, the arbitrator may conduct the arbitration in any manner the arbitrator considers appropriate, but each party shall be treated fairly and shall be given full opportunity to present its case.
- b) The arbitrator may:
  - i) Make an interim order on any matter with respect to which the arbitrator may make a final award, including an interim order for preservation of property which is subject matter of the dispute;
  - ii) Order inspection of documents, exhibits, or other property at any location;
  - iii) Order the recording of any oral hearing or meeting; and
  - iv) Extend or abridge a period of time required in these Rules or fixed or determined by the arbitrator where the arbitrator considers it just and appropriate in the circumstances.
- c) The arbitrator may adjourn the proceedings from time to time if the arbitrator considers that it would facilitate settlement discussions between the parties.

## **3.0 PROCEEDINGS**

### **3.1 Exchange of Statements**

- a) The parties shall exchange written statements of their respective positions in the dispute in the following manner:
  - i) The Claimant shall give a statement outlining the facts, the matters in issue, and the relief or remedy requested no later than twenty (20) days after the meeting provided for in Article 2.3a);
  - ii) The Respondent shall give a statement outlining its response to the Claimant's statement and its counterclaim, if any, no later than fifteen (15) days following receipt of the Claimant's statement; and
  - iii) The Respondent, by counterclaim, shall give a statement outlining its defense to the counterclaim no later than ten (10) days following receipt of the counterclaim.
- b) The parties shall provide the arbitrator with copies of the statements exchanged in Article 3.1a).
- c) Each party shall attach to its statement in Article 3.1a) a list of documents upon which it tends to rely and which describes each document by kind, date, author, addressee, and subject matter.
- d) During the arbitration proceedings, the arbitrator may allow a party to amend or add to any statement made under Article 3.1a), unless:
  - i) The amendment or addition goes beyond the terms of the arbitration agreement in the Contract; or
  - ii) The other party would be prejudiced by the delay in making the amendment or addition.

### **3.2 Disclosure**

- a) The arbitrator may order a party to produce any documents not disclosed under Article 3.1c) that such party has under its care, custody, or control and that the arbitrator considers being relevant, within the time specified by the arbitrator.
- b) Each party shall allow the other party the necessary access at reasonable times to inspect and take copies of all documents that the former party has listed in Article 3.1c) or that the arbitrator has ordered to be produced under Article 3.2a).
- c) The parties shall prepare and send to the arbitrator an agreed statement of facts within the time specified by the arbitrator.
- d) Each party shall, not later than fifteen (15) days before the oral hearing commences, provide the other party with:
  - i) The name and address of any witnesses to be called and a written summary of their evidence; and
  - ii) In the case of an expert witness, a written statement or report prepared by the expert witness.
- e) Each party shall, not later than ten (10) working days before the oral hearing commences, give to the other party and the arbitrator an assembly of all documents to be introduced at the hearing.

### **3.3 Hearings and Meetings**

- a) The arbitrator shall give the parties written notice of not less than:
  - i) Ten (10) days of any oral hearings; or
  - ii) Five (5) days of any meetingswhich have not been previously scheduled under Article 2.3a).
- b) All oral hearings and meetings in the arbitration proceedings shall be conducted in private and the arbitrator and the parties shall keep all written communications and documents in respect of these proceedings strictly confidential.
- c) All oral hearings and meetings shall be conducted in the Town of Peace River, Alberta, Canada.

### **3.4 Evidence**

- a) The arbitrator shall not be required to apply the legal rules of evidence and shall determine the relevance and materiality of the evidence presented.
- b) All oral evidence shall be taken in the presence of the arbitrator and all the parties unless a party is absent by default or has waived the right to be present.
- c) The arbitrator may order any individual to be examined under oath or on affirmation in relation to the issues in dispute and to produce before arbitrator all relevant documents within the individual's care, custody, or control.
- d) The document assemblies delivered under Article 3.2a) shall be deemed to have been entered into evidence at the oral hearing without further proof and without being read out at the hearing, but a party may challenge the admissibility of any document so introduced.

- e) The arbitrator may permit a document to be introduced at the oral hearing which was not previously disclosed under Article 3.1a) or provided under Articles 3.2d)ii) or 3.2e). However, the arbitrator may take that default into account when determining the costs to be awarded in the arbitration.
- f) If the arbitrator permits the evidence of a witness to be presented as a written statement, the other party may require that witness to be made available for cross-examination at the oral hearing.
- g) The arbitrator may order a witness to appear and give evidence, and in that event, the parties may cross-examine that witness and call evidence in rebuttal.

### **3.5 Arbitrator Retained Experts**

- a) The arbitrator may:
  - i) Retain one or more experts to give a written report on specific issues; and
  - ii) For that purpose, require a party to make available relevant documents, goods, or other property for the expert's inspection.
- b) The arbitrator shall give a copy of the expert's report to the parties, who shall have the opportunity to reply to it.
- c) On a request of a party, an expert retained under Article 3.5a) shall:
  - i) Make available to the party for examination all documents, goods, or other property in the expert's possession with which the expert was provided in order to prepare a report; and
  - ii) Provide the party with a list of all documents, goods, or other property not in the expert's possession, but with which was provided in order to prepare a report, and a description of the location of those documents, goods, or other property.
- d) The parties may cross-examine an expert on the report and may call evidence in rebuttal.

### **3.6 Default**

- a) Where a Claimant, without sufficient cause and after five (5) days notice from the arbitrator, fails to provide the statement required under Article 3.1a)i) within the required time, the arbitrator may terminate the arbitration with respect to that claim.
- b) Where a Respondent, without sufficient cause and after five (5) days notice from the arbitrator, fails to provide the statement required under Article 3.1a)ii) within the required time, the arbitrator shall:
  - i) Continue the arbitration; and
  - ii) Require the Claimant to submit such evidence to support the claim as the arbitrator may require before making an award.
- c) Where a party, without sufficient cause, fails to appear at a scheduled oral hearing or fails to produce any evidence, the arbitrator may:
  - i) Continue the arbitration; and
  - ii) Make an award based upon the evidence before the arbitrator.

### **3.7 Close of Hearings**

- a) The arbitrator shall close the oral hearings when:
  - i) The parties advise that they have no further evidence to give or submissions to make; or
  - ii) The arbitrator considers further hearings to be unnecessary or inappropriate.
- b) Where the arbitrator considers it to be just and appropriate to do so, the arbitrator may reopen the oral hearings at any time before making the final award.

## **4.0 THE AWARD**

### **4.1 Award**

- a) An arbitrator shall decide the dispute in accordance with Applicable Laws.
- b) The arbitrator shall:
  - i) Make a final award not later than twenty (20) days after the oral hearings have been closed; and
  - ii) Deliver a signed copy of the award to each party.
- c) The final award of the arbitrator shall be dated, be in writing, and state the reasons upon which it is based.
- d) The arbitrator may order interest to be paid in the final award.
- e) The final award is final and binding on the parties and the parties agree to comply with it as soon as possible.

### **4.2 Costs**

- a) The arbitrator shall fix the costs of arbitration in the final award, which costs may include, but are not limited to, the following:
  - i) The fees of the arbitrator;
  - ii) Any necessary expenses incurred by the arbitrator;
  - iii) The fees, travel costs, and any other expenses of witnesses approved by the arbitrator; and
  - iv) Any fees, charges, or expenses for providing services to the arbitrator or the parties in connection with the arbitration.
- b) Except for the costs of legal fees and legal expenses of the successful party, the costs of the arbitration shall be borne solely by the unsuccessful party unless the arbitrator considers it appropriate under the circumstances to apportion them between the parties.
- c) With respect to the costs of legal fees and legal expenses of the successful party, the arbitrator:
  - i) May decide which party shall bear such costs if they were claimed during the arbitration;
  - ii) May apportion such costs if the arbitrator considers it just and reasonable to do so; and

- iii) In either event, shall specify the amounts of such costs and the manner of determining such costs.
- d) In making a decision under Article 4.2c), the arbitrator is not limited to awarding the legal fees and expenses that the Court of Queen's Bench may award to a successful party in a civil action.
- e) The fees of the arbitrator shall be reasonable in amount, taking into account the amount in the dispute, the complexity of the subject matter, the time spent by the arbitrator in the arbitration proceedings, and any other relevant circumstances.

#### **4.3 Amendments and Corrections to the Award**

- a) Upon application of a party, an arbitrator may amend or vary a final award to correct:
  - i) A clerical or typographical error; or
  - ii) An arithmetical error made in computation.
- b) An application by a party to the arbitrator pursuant to Article 4.3a) shall be made within ten (10) days after such party receives the final award.
- c) Either party may apply to the arbitrator, within ten (10) days after receiving the final award, for clarification of the award. The arbitrator may amend the award where the arbitrator considers that such amendment will clarify it.
- d) Either party may apply to the arbitrator, within twenty (20) days after receiving the final award, to make an additional award with respect to claims presented in the proceedings but inadvertently omitted from the award. The arbitrator may amend the award to include an additional award or where the arbitrator considers that such amendment will clarify it.
- e) The arbitrator may not amend or vary the final award without the consent of both parties and not more than twenty (20) days after all parties have received the final award.

- END OF SECTION 00 72 00 -



### **1.0 Contractor Safety Agreement**

- .1 The successful bidder will be required to enter into the Town of Peace River Contractor Safety Agreement and is accepting the responsibility of Prime Contractor with respect to OH&S.

### **2.0 All bidders acknowledge the Town of Peace River Contracts have changed**

- .1 Contractors must fully read and understand the responsibilities outlined in this document before submitting a bid. Any questions or concerns must be directed to the Town contact prior to the closing of the question period.
- .2 It is understood by all Contractors and their associated Sub-contractors that the Town will not enter into a contract agreement with a firm that is in litigation with the Town either directly or indirectly. Once the litigation has been finalized and provided that the Contractor is not on a no bid list, said Contractor or Sub-contractor are free to continue to submit bids for Town work.

### **3.0 Work Schedules**

- .1 The Contractor should be aware of the following work schedule
- .2 Project Start Date: mobilization in May 2023.
- .3 Construction Completion:
  - a) Construction must be completed no later than **August 31, 2023**.
- .4 The Contractor shall commence the Work and proceed with diligence to carry out the Work in accordance with the agreed upon schedule in sufficient time to complete the Work on or before the completion date specified in the Contract.
- .5 Should the Work fail to progress according to the approved Construction Schedule, the Contractor shall work such additional time (including weekends and holidays) in accordance with Applicable Laws, employ additional workers, or both, as may be required to bring the Work back on schedule, at no additional cost to the Town.

### **4.0 Traffic Accommodation & Detouring**

- .1 The contractor shall fully provide suitable maintenance of traffic for other vehicular and pedestrian traffic within and adjacent to the Contract Limits and provide a suitable Traffic Accommodation Strategy (TAS) for Town approval.
- .2 TAS plan shall be completed before any work or interruption to traffic patterns. TAS plan shall be completed in accordance with AT specifications. Refer to latest edition of AT, Traffic Accommodation in Work Zones Manual. TAS plan shall be reviewed by town and consultant.
- .3 The TAS shall include, but no be limited to the following:
  - a) Construction Zone
  - b) Location of Flagperson(s)

- c) Temporary Signage
  - d) Barriers and/or Delineators
  - e) Closures, as approved by the Town
  - f) Traffic Flow and Lane Direction
  - g) Pedestrian / Cyclist Accommodations
- .4 All traffic control measures must allow for (to the satisfaction of the Consultant)
- a) Appropriate temporary advanced warning signs
  - b) Appropriate protection of vehicles to the delineated work zone; and
  - c) Accessibility to all side streets where possible.
- .5 Roadway surfaces outside the work zone will be kept clean of debris. Debris spilled, tracked or otherwise deposited onto the roadway surface as a result of the Contractor's operation will be removed immediately. Travel lanes, shoulders and adjacent areas are to be kept clear of windrowed, piled or loose materials so that the roadway surfaces are clean and drainage from the roadway can be maintained. Areas of ponding water on or adjacent to the roadway due to construction operations shall be corrected immediately.
- .6 The Town and Consultant retain the right during the duration of construction activities to suggest and enforce modifications to the plan based on observed performance once implemented. The Contractor shall then adjust traffic accommodation measures as directed by the Consultant.
- .7 40 Avenue must remain open to vehicular traffic for the duration of construction. A minimum of one eastbound and one westbound lane available must be maintained. Access to adjacent businesses and roadways must be maintained.
- .8 Signage shall be provided a minimum of 72 hours in advance of closing the pathway to provide pedestrians notice of the upcoming construction. The pathway will be closed off during construction to ensure pedestrian safety.
- .9 TAS plan shall be in accordance with section 4.17, 00 72 00 General Requirements.

## **5.0 Utilities and Other Operators**

- .1 In addition to Section 00 72 00 General Conditions, Article 4.5 – Utilities and Section 01 52 00 Construction Facilities, Article 4.0 – Existing Utilities and Structures, the Contractor is advised that the known utility companies, owners and operators and their representatives are as follows:
- a) Town of Peace River – Public Works  
Phone: 780-624-3085

**6.0** The Contractor warrants that the inlaid thermoplastic pavement markings shall be free from any and all defects and deficiencies in workmanship performed, and materials and equipment supplied, by the Contractor, its Subcontractors, or suppliers for a period of 5 years.

**7.0** The successful bidder and the Town will mark the extents of construction following tender award.

**8.0** Water can be obtained at the truck fill station located at the Operations Building  
Cost per m<sup>3</sup> of water is \$2.75.

**9.0** As per section 01 45 00 the contractor is responsible for quality and coordination of geotechnical testing. However, the Town of Peace River will pay for all geotechnical testing services required. The contractor must use one of the Town Pre-qualified geotechnical testing agencies.

**10.0** Frame and covers are to be disposed of by Contractor.

**11.0** Asphalt millings are to be removed and disposed by contractor at own cost.

**12.0** The Contractor shall be responsible for any necessary landscaping restoration with topsoil and sod. The Contractor must water and maintain the restored landscaping for the warranty period of 2 years.

**13.0** Clean concrete and asphalt can be disposed at the Town Waste Centre.

**14.0** All material removed shall become the property of the Contractor, unless otherwise indicated by the Town. Removal, equipment rental, haul, disposal and disposal fees of the excavated materials shall be considered incidental to the work and no separate payment will be made.

**15.0 Rip Rap Removal & Reinstallation**

- .1 Riprap is a protective covering consisting of hand-laid or randomly deposited rock, sacked concrete or sacked cement stabilized material which is placed around culvert inlets and outlets and along slopes, embankments and ditches.
- .2 Contractor shall avoid contamination of stockpiled riprap.
- .3 Reinstallation of riprap shall be as per directed by the consultant.

**16.0 Signage Installation**

- .1 Refer to Alberta Transportation – Standard Specifications for Highway Construction: Edition 16, 2019

a) 5.18 Supply of Permanent Highway Signs, Posts, and Bases

<https://open.alberta.ca/dataset/9b29fb0b-e413-4ef6-a856-f33bc961177c/resource/7cbaea1c-6291-4543-a37f-bc3c405d27e7/download/trans-standard-specifications-for-highway-construction-edition-16.pdf>

**17.0 Regulatory Rapid Flashing Beacon (RRFB)**

- .1 Shall be supplied and installed per the manufacturing specifications.
- .2 Product:
  - a) Carmanah – Single, Black, Standard Push Button-Yellow, Solar, Integrated Solar Engine-Black, Overhead LED Light OR approved equivalent by the consultant shall be installed. Contractor shall provide product submittal to include product info and manufacturing installation requirements to be approved.

- END OF SECTION 00 73 00 -

**1.0 Work Under this Contract**

- .1 The Work, unless specifically stated otherwise, shall include the furnishing of all material, product, labour, and transportation necessary to complete the Work. The intent is that the Contractor provides a complete job.
- .2 The Work shall not be deemed complete until all components are placed in operation by the Contractor, and are operating satisfactorily.
- .3 Any minor item of the Work not called for in the specifications or shown on the Drawings but clearly required to meet the intent of design and normally provided for the proper operation of the Work shall be provided as if specifically called for in the Contract Documents. No additional payment will be made for this incidental work.
- .4 The use of the word "provide" or "provision" in the Contract Documents with respect to the Contractor's performance of the Work means "supply and install"; or "supply labour, materials, and equipment for the installation of". It does not mean supply only.
- .5 The Contractor shall supply all material for the Work unless expressly stipulated otherwise in the Contract Documents.

- END OF SECTION 01 11 00 -

## 1.0 General

- .1 Payments will be made on the basis of the unit prices and lump sum prices bid in the Tender, and in accordance with Section 5.0 – Payments and Certificates of the General Conditions.
- .2 The prices bid for various items of work, unless specifically noted otherwise, shall include the supply of all labour, plant, products, material, and equipment necessary to construct the Work in accordance with the Contract Documents.
- .3 The prices bid for supply and installation shall be full compensation for supplying, hauling, handling, storing, installing, cleaning, testing, and placing in service together with all other work subsidiary and incidental thereto for which separate payment is not provided elsewhere.
- .4 The method of measurement of the quantities for payment and the basis for payment will be in accordance with the following items of this section. All measurement will be done by the Town using generally accepted field survey methods.
- .5 Where the Tender shows separate items for supply and installation, the unit prices or lump sum prices bid for supply shall include supplying, delivering, loading, unloading and all allowances for handling, storage, breakage and waste. Payment will be made only for material actually installed in the Work. Progress Payment for supply-only items shall be made only for material and product on the worksite and in the Contractor's care, and shall then become the property of the Town.
- .6 Other materials on site, whether existing structures, vegetation, topsoil, gravel, sand or other excavated or piled materials, are the property of the Town or of the owner of the land on which the Work is located. Only those materials specifically noted in the Contract Documents as belonging to the Contractor shall become the Contractor's property.
- .7 Where there are excess excavated materials, unsuitable materials excavated or materials of any kind that are excavated but not used in the Work, such materials are not the property of the Contractor unless authorized in writing by the Town or specified to be disposed of by the Contractor.
- .8 With each progress payment claim, the Contractor and any pre-selected Supplier shall jointly certify a claim for payment for preordered material used or incorporated into the Work or delivered to the site of the Work during that claim period.
- .9 Upon complete performance of the Work, the Contractor shall credit the Town for material paid for as supplied on the worksite, but not incorporated in the Work, and remove the surplus material from the worksite.

## **2.0 Payment Clauses – For Schedule of Quantities and Prices**

### **1.1 Schedule 1.0 – Site Works**

#### **.1 Existing Rip Rap Removal & Reinstallation**

- .1 Reference: SC 00 73 00
- .2 Payment for Common Excavation shall be made at the unit price bid per square metre as specified in the Schedule of Quantities and Prices. Such payment will be full compensation for all labour, equipment, loading, hauling, transporting, placement of rip rap material obtained from within the limits of contract for its satisfactory incorporation into embankment construction and all work required to complete the restoration of the area.
- .3 Hauling or overhauling of excavated material for any length within the project limits, by any suitable method, will be considered as incidental to the work and no additional or separate payment will be made. Geotextile membrane shall be placed under rip rap area and be considered incidental to the work and no additional or separate payment will be made.

#### **.2 Topsoil Stripping**

- .1 Reference: 31 23 00
- .2 Measurement of this item will be conducted by topographical survey conducted by the Contractor and will be the volume difference measured between original and completed surface of this activity. Payment shall be made based on cu.m. The Contractor shall provide survey files to the Engineer for verification of quantities. Payment shall include grubbing and stripping of topsoil, loading, hauling, stockpiling, dust control, and any labour, materials, tools and incidentals required to complete the work to the satisfaction of the Engineer.
- .3 Once material is stripped, it becomes property of the contractor. Payment shall include removal of material to offsite disposal site.

#### **.3 Mobilization & Demobilization**

- .1 Reference: SC 00 73 00
- .2 Mobilization and demobilization shall include the Contractor's costs of mobilization at the beginning of the project; and the costs of demobilization at the end of the project.
- .3 Included in mobilization are such items as bonding, insurance, permits, moving personnel, materials and equipment to the site, setting up temporary facilities, project signage and all preparation for performing the Work.
- .4 Included in demobilization are preparation and submission of operation and maintenance manuals, removal of all personnel, materials and equipment, and cleanup of the site and the Work.

- 
- .5 The lump sum price bid for this work shall be relative to the costs involved but shall not exceed ten percent of the Tender Price.
  - .6 Payment will be made as follows, or as approved by the Town:
    - i. 60% of the lump sum bid will be included in the first progress payment certificate; and
    - ii. 40% of the lump sum bid will be included in the final progress payment certificate.
  - .7 The Town may, at the Town's own discretion, provide only partial payment if mobilization or demobilization is deemed not complete or insufficient to meet the demands of the Work.
- .4 Traffic Accommodation
- .1 Reference: SC 00 73 00
  - .2 Traffic Accommodation shall include the Contractor's cost for the implementation of temporary traffic control for the duration of the project, as well as the supply, installation, maintenance, and disposal of temporary project specific signage as required and the erection of initial project signs including Variable Message Signs (VMS), project signs and information signs. Install and maintain temporary fencing surrounding work area for duration of the project.
  - .3 Payment will be made as follows, or as approved by the Town:
    - i. 60% of the lump sum bid will be included in the first progress payment certificate;
    - ii. 40% of the lump sum bid will be included in the final progress payment certificate; and
    - iii. The lump sum bid price for this work shall be relative to the costs involved but shall not exceed ten percent of the tender price.
  - .4 The Town may, at the Town's own discretion, provide only partial payment if mobilization or demobilization is deemed not complete or insufficient to meet the demands of the Work.
- .5 Locate & Safeguarding Existing Utilities (incl. line locators & hydrovac)
- .1 Reference: SC 00 73 00
  - .2 Safeguarding Utilities shall include the Contractor's cost for the implementation of safeguarding and confirming utilities within the project limits, as well as the supply of hydrovac services, private locates (if required), and coordination with third party utility representatives.
- .6 Rough & Fine Grading
- .1 Reference: 32 91 19
  - .2 Measurement & Payment will be made on the basis of the Lump Sum Price. The Lump Sum Price shall be full compensation for supplying materials as specified, including hauling, placing, installing with all work



subsidiary and incidental for which separate payment is not provided elsewhere.

**.7 Common Excavation**

- .1 Reference: 31 23 00
- .2 Measurement for common excavation shall be measured in cubic metres on the actual number of cubic metres excavated and compacted, as measured in its original position.
- .3 Payment for Common Excavation shall be made at the unit price bid per cubic metre as specified in the Schedule of Quantities and Prices. Such payment will be full compensation for all labour, equipment, common excavation, windrowing, loading, hauling, transporting, placement of suitable fill material obtained from within the limits of contract for its satisfactory incorporation into embankment construction and all work required to complete the restoration of the area.
- .4 Hauling or overhauling of excavated material for any length within the project limits, by any suitable method, will be considered as incidental to the work and no additional or separate payment will be made.

**.8 Borrow Excavation**

- .1 Reference: 31 23 33, 32 91 19
- .2 Measurement for Borrow Excavation shall be measured in cubic metres, as measured at the borrow source.
- .3 Payment for Borrow Excavation shall be made at the unit price bid per cubic metre as specified in the Schedule of Quantities and Prices. Such payment will be full compensation for supply, development and reclamation of the borrow source, as well as for scarifying and trimming of borrow surface and removal of rocks larger than 70mm maximum dimension and for excavation and placement of material imported from the borrow sources for its satisfactory incorporation into embankment construction including loading, hauling and transporting to the project site and all work required to complete the restoration of the area.
- .4 Topsoil stripping, topsoil placement and general cleanup at the borrow source location will be considered as incidental to the work and no additional or separate payment will be made.

**1.2 Schedule 2.0 – Hard Surface – Supply & Install**

**.1 Concrete Curb Ramp**

- .1 Prepared Subgrade (150mm)
  - .1 Reference: 34 01 00.
  - .2 Measurement & Payment for Prepared Subgrade will be made at the unit price bid per square metre as specified in the Tender Form to the depth as specified.
  - .3 All materials, tools and incidentals necessary to meet the compaction or “proof-rolling” requirements to the necessary

- specifications shall be considered incidental to the work and no separate payment will be made.
- .4 Subgrade preparation for all concrete surface works, not including curb & gutter, shall be compacted only to a 150mm depth with no cement stabilization.
- .2 Granular Base Course (Des 2, Class 20) (150mm depth)
    - .1 Reference: 34 02 01
    - .2 Measurement for Granular Base Course (Des 3, Class 20) shall be made on a horizontal square metre basis from the top of the final lift and for the depth as specified on the Engineering Drawings or as directed in the field by the Geotechnical Engineer. All applicable measurements shall be verified with itemized truck weight receipts upon application.
    - .3 Payment for Granular Base Course (Des 3, Class 20) shall be made at the unit price bid per tonne of specified Designation and Class of materials in the Tender Form. Such payment will be full compensation for supplying, processing, hauling, placing and compaction of the material on the roadways, supplying of water, adjusting moisture content and preparing the surface.
    - .4 The Contractor shall supply the itemized truck weight receipts upon application and Engineer verification of all quantities.
  - .3 Supply of Portland Cement
    - .1 Reference: 34 16 00, 34 16 01, 34 16 02, 34 16 03
    - .2 Measurement & Payment for Supply of Portland Cement will be made at the unit price bid per square metre as specified in the Tender Form as specified.
    - .3 Such payment will be full compensation for supply of Portland cement from plant, haul, and delivery.
    - .4 All materials, tools and incidentals necessary to provide supply of Portland cement shall be considered incidental to the work and no separate payment will be made.
    - .5 Contractor shall provide haul cards/delivery slips of cement supply to Engineer for quantity verification.
  - .2 Asphalt Trail (75mm depth)
    - .1 Reference: 34 12 16
    - .2 Measurement for Asphalt Concrete Pavement (ACO) shall be made on a horizontal square metre basis of specified Designation and Class of materials supplied and placed for the depth as specified on the Engineering Drawings or as directed in the field by the Geotechnical Engineer.
    - .3 Payment for Asphalt Concrete Pavement (ACO) shall be made at the unit price bid per square metre basis of specified Designation and Class of materials as specified in the Schedule of Quantities and Payments. Such payment will be full compensation for preparation of mix design and job mix formula, for supply, crushing and hauling aggregates, for blending of aggregates, for supplying and mixing asphalt

binder with the aggregates in amounts called for in the mix design, for transporting to the site, for laying and compacting the asphaltic mixture and for applying tack and prime coat.

- .4 The Contractor shall supply the itemized truck weight receipts upon application and Engineer verification of all quantities. If a discrepancy between cubic metre measurement multiplied by the specific gravity provided by the Geotechnical Engineer, the verified field measurement per the neat lines of the Engineering Drawings shall take precedent.
- .5 Prepared Subgrade (150mm)
  - .1 Reference: 34 01 00.
  - .2 Measurement & Payment for Prepared Subgrade will be made at the unit price bid per square metre as specified in the Tender Form to the depth as specified.
  - .3 All materials, tools and incidentals necessary to meet the compaction or “proof-rolling” requirements to the necessary specifications shall be considered incidental to the work and no separate payment will be made.
  - .4 Subgrade preparation for all concrete surface works, not including curb & gutter, shall be compacted only to a 150mm depth with no cement stabilization.
- .6 Granular Base Course (300mm depth)
  - .1 Reference: 34 02 01
  - .2 Measurement for Granular Base Course shall be made on a horizontal square metre basis from the top of the final lift and for the depth as specified on the Engineering Drawings or as directed in the field by the Geotechnical Engineer. All applicable measurements shall be verified with itemized truck weight receipts upon application.
  - .3 Payment for Granular Base Course shall be made at the unit price bid per tonne of specified Designation and Class of materials in the Tender Form. Such payment will be full compensation for supplying, processing, hauling, placing and compaction of the material on the roadways, supplying of water, adjusting moisture content and preparing the surface.
  - .4 The Contractor shall supply the itemized truck weight receipts upon application and Engineer verification of all quantities.

**1.3 Schedule 3.0: Sod and Seed c/w Imported Topsoil – Supply and Install**

- .1 150mm depth topsoil in sod and seed areas
  - .1 Reference: 32 91 19
  - .2 Payment will be full compensation for all labour, equipment and tools for the purposes of supplying, cleaning, screening, tilling and placing previously stockpiled topsoil and excavation, loading to trucks and hauling from the temporary windrowed or stockpiled supply site.

.3 Such payment will be full compensation for: all labour and tools; site preparation and clean-up; excavation and disposal; supply and installation of topsoil and shredded wood mulch; and clean bed edging.

.2 Sod

.1 Reference: 32 92 23

.2 Measurement & Payment for Sod shall be made at the unit price bid per square metre (as per the specified depth, if applicable) as specified in the Tender Form.

.3 Such payment will be full compensation for: all required labour, equipment, materials and tools; supply, preparation and clean-up of the surface; loading, hauling, spreading, placement, watering of all sod materials to be supplied by the Contractor.

.3 Seed

.1 Reference: 32 92 19

.2 Measurement & Payment for Seed shall be made at the unit price bid per square metre (as per the specified depth, if applicable) as specified in the Tender Form.

.3 Such payment will be full compensation for: all required labour, equipment, materials and tools; supply, preparation and clean-up of the surface; loading, hauling, spreading, placement, watering of all seed materials to be supplied by the Contractor.

**1.4 Schedule 4.0: Site Features– Supply and Install**

.1 Culverts (900mm dia. CSP & 150mm dia. CSP)

.1 Reference: 33 43 00

.2 Measurement for the supply and installation of culverts, and downdrains will be made in metres based on the total invert length of pipe installed, including elbows and sloped end sections.

.3 All compacted backfill bedding materials and/or granulars, sloped end treatments, connection/fastening materials and hand-laid rip rap requirements are considered incidental to the Work and no separate or additional payment will be considered.

.4 Payment will be made at the unit price bid per linear metre as specified in the tender form for the various types and sizes of culvert specified. This payment will be full compensation for supplying all culvert pipe materials including couplers and appurtenances, excavation, preparing the culvert bed, installing the pipe, backfilling, the supply and placement of hand-laid riprap, and all labour, equipment, tools and incidentals necessary to complete the Work to the satisfaction of the Town.

.5 No separate payment will be made for the installation of oakum in joints. Payment for this work will be included in the unit price bid for supplying and installing the culverts.

.6 Supply, placement, and compaction of granular base and granular backfill shall not be paid for specifically but included in the unit price bid for the culvert size and type being installed. No separate payment will be made

for the supply and installation of rock riprap but included in the unit price bid for supplying and installing the culverts

.2 Adjust Existing Manhole

- .1 Reference: 33 05 13
- .2 Measurement for Adjust Existing manholes, valves, and catch basins shall be per each frame, cover/grate, and valve adjusted where the existing frame, cover/grate, valve is re-used and the existing structure remains in place.
- .3 Payment will be made at the unit price bid in the Schedule of Quantities and Prices and shall be full compensation for excavating to expose the existing frame, cover/grate, or valve, removing, hauling and repositioning of all the frame, cover/grates and valves, additional grade rings, backfilling and restoring roadway structure condition.

.3 Pavement Marking – Crosswalk

- .1 Reference: 34 17 23.13
- .2 Measurement for Pavement Markings and payment shall be at the unit price bid per crosswalk as specified in the Tender Form.
- .3 Payment will be full compensation for preparation, protection, clean-up of road surface, supply and installation of glass beads, supply and installation of alkyd paint lines, hauling, spreading, placement; and all labour, materials, equipment, tools, and incidentals necessary to complete the Work.
- .4 Payment shall include 60 day warranty and maintenance period of all paint lines after installation.

.4 New Signs

- .1 Reference: SC 00 73 00
- .2 All new signs to be supplied and installed for the Work shall conform to Alberta Transportation Specifications 5.18 and 7.7
- .3 Payment will be made at the unit price bid for “Signage (less than 1m2) – Supply & Install” as shown will include full compensation for all materials, equipment, labour, tools and incidentals necessary to complete the Work to the satisfaction of the Consultant.

.5 Regulatory Rapid Flashing Beacon (RRFB)

- .1 Reference: SC 00 73 00
- .2 Payment for Regulatory Rapid Flashing Beacon (RRFB) shall be at the unit price lump sum and shall include supply and installation on both sides of affected roadway.
- .3 Product:
  - .1 Carmanah – Single, Black, Standard Push Button-Yellow, Solar, Integrated Solar Engine-Black, Overhead LED Light OR approved equivalent by the consultant shall be installed. Contractor shall provide product submittal to include product info and manufacturing installation requirements to be approved.

- .4 Payment will be full compensation for supply, install, site preparation, labour, materials, equipment, tools, new regulatory signage, and incidentals necessary to complete the work. Installation shall be per manufacturing specifications.
- .5 Additional new regulatory signage included in unit price are detailed in Construction Package: L301 Landscape Details.

**1.5 Schedule 5.0: Provisional Items – Supply & Install.**

**.1 Geotextile Roadway Membrane**

- .1 Reference: 34 01 03
- .2 Measurement of this item will be the completed square metre of ground area covered and approved. This item shall include full compensation for supply and placement of geotextile, and all labour, equipment, tools and incidentals necessary to complete the Work to the satisfaction of the Engineer.
- .3 This item will be used based on site conditions and directions provided by the Consultant.
- .4 Product:
  - .1 Nilex 2006 OR approved equivalent. Contractor shall provide product submittal to include product info and manufacturing installation requirements to be approved.
- .5 Use of geotextiles does not indemnify the Contractor of the required material performance specified within the specifications.
- .6 Installation of geotextile shall be in accordance with the manufacturer installation guide or manual.

- END OF SECTION 01 22 00 -

### **1.0 General**

- .1 The Contract is based on the products, materials, equipment, and methods described by the Contract Documents.
- .2 The Town will consider proposals for substitution of products, materials, equipment, and methods only when such proposals are accompanied by full and complete technical documentation and all other information required by the Town to evaluate the proposed substitution.

### **2.0 Equals**

- .1 Wherever the terms “or equivalent”, “or equal”, and “or approved equal” appear in the Contract Documents, the terms shall be understood to mean as being equal, in the opinion of the Town, in material content, workmanship, and quality to that designated as being the minimum acceptable standard.

### **3.0 Approval**

- .1 No alternate product, material, equipment, or method shall be accepted unless the Town has issued written approval of the proposed alternate.
- .2 Nothing contained within the Contract shall create any contractual relationship between any Subcontractor, Supplier, or manufacturer and the Town.
- .3 A claim for an addition to the Contract Price because of changes in the Work necessitated by the use of alternates or equals will not be considered.
- .4 Approval of alternates shall be considered based on:
  - a) Impact to Contract Price
  - b) Improvements to quality
  - c) Compatibility with other components
  - d) Aesthetics
  - e) Impact to construction schedule

### **4.0 Use of Alternates**

- .1 If the Contractor elects to provide an alternate product, material, equipment, or method than that specified in the Contract Documents, the Contractor shall be responsible for making all consequent adjustments, at the Contractors own expense, to make the alternate fit into the Work as specified.
- .2 The Contractor shall be responsible to pay any additional costs incurred by the Town for changes to the Contract Documents as a result of the use of any alternate.

## **1.0 Pre-Construction Meeting**

- .1 The Town will schedule a pre-construction meeting of parties in contract to discuss and resolve administrative procedure and responsibilities. Representatives of the Town, Contractor, major Subcontractors, field inspectors, and supervisors must be in attendance.
- .2 After time and location of this meeting has been established, the Contractor shall notify all parties concerned a minimum of four (4) days before the meeting.
- .3 The Town will chair and record discussions and decisions, and circulate the minutes to all parties concerned.
- .4 The agenda for the pre-construction meeting shall include, but is not limited to, the following:
  - a) Introductions.
  - b) Confirmation of the Superintendent, project managers, and resident inspection personnel.
  - c) Lines of communication including contact list.
  - d) Establish protocols for communication, reporting, inspection, etc.
  - e) Occupational Health and Safety relationships and responsibilities.
  - f) Eco plan and Environmental Responsibilities
  - g) Review of Contractor's site safety plan and procedures.
  - h) General review of General Conditions and Supplementary Conditions.
  - i) Review permitting requirements and applicable local regulations.
  - j) Contractor submittals schedule and protocol.
  - k) Review of the Contractor's Completion Schedule.
  - l) Requirements for temporary facilities.
  - m) Clear up any ambiguities or questions of interpretation known at that time.
  - n) Other business.
  - o) Distribution list.

## **2.0 Progress Meetings**

- .1 Progress meetings through the progress of the Work will be held monthly or more frequently if required by the Town.
- .2 The agenda for progress meetings shall include, but is not limited to, the following:
  - a) Review and approval of minutes of previous meeting.
  - b) Occupational Health and Safety.
  - c) Eco plan / environmental issues.
  - d) Review of progress since previous meeting.
  - e) Field observations, problems, and conflicts.



- f) Progress, schedule, during succeeding work period.
  - g) Review submittal schedules: expedite as required.
  - h) Maintenance of quality standards.
  - i) Pending changes and substitutions.
  - j) Outstanding action items.
  - k) Date and location of next meeting.
  - l) Other business.
  - m) Distribution list.
- .3 The Town will provide meeting facilities for all participants.
- .4 The Town will preside at project meetings.
- .5 The Town will record the minutes of progress meetings. These will include significant proceedings and decisions. These will identify "action by" parties and date for completion of duty.
- .6 The Town will reproduce and distribute copies of minutes within three (3) days after each meeting and transmit to meeting participants and affected parties not in attendance.
- .7 Representatives of the Contractor, Subcontractor and Suppliers attending meetings must be qualified and authorized to act on behalf of the party each represents.

- END OF SECTION 01 31 19 -

## **1.0 General**

- .1 Submittals shall conform to the provisions of this section to demonstrate that the specified products, materials, and equipment are furnished and installed in accordance with design intent as expressed in the Contract Documents.
- .2 Individual submittals are required as detailed in other sections of the specifications.
- .3 Until submissions are reviewed, work involving relevant products, materials, and equipment may not proceed.
- .4 At the time of submission, the Contractor shall notify the Town in writing of any deviations in the shop drawings, product data, or samples from the requirements of the Contract Documents.
- .5 The Town will review and return submittals in accordance with a schedule agreed upon or otherwise with reasonable promptness.
- .6 The Town's review shall be for conformity to the design concept and for general arrangement only and such review shall not relieve the Contractor of responsibility for errors or omissions in the shop drawings or of responsibility for meeting all requirements of the Contract Documents. A specific deviation on the shop drawings from the design concept requested by the Contractor may be approved or rejected in writing by the Town.

## **2.0 Identification of Submittals**

- .1 Identify each submittal and resubmittal by showing at least the following information:
  - a) Name, address and telephone number of the submitter, and a name of an individual for contact.
  - b) Drawing number and specification number to which the submittal applies.
  - c) Whether an original submittal or resubmittal.
  - d) Confirmation of prior review by the Contractor.
  - e) Date of submittal or resubmittal.
  - f) Authorized signature of the Submitter.

## **3.0 Coordination of Submittals**

- .1 Prior to submittal for the Town's review, coordinate all material:
  - a) Determine and verify field dimensions and conditions and conformance with specifications, including Material, catalogue numbers, type numbers and similar data.
  - b) Coordinate requirements between trades.
  - c) Coordinate with requirements under laws, regulations, etc.
  - d) Secure required approvals of public agencies, inspection agencies and standards agencies and show proof of approvals acquisition.

- e) Indicate any deviations from the intent of design as expressed in the Contract Documents and request specific review of these deviations.

**4.0 Timing of Submittals**

- .1 Make submittals far enough in advance to allow adequate time for coordination, Town's review, revisions and resubmittals, and for supply and delivery in time for the scheduled installation in the Work.
- .2 Allow at least ten (10) calendar days for the Town's review after receipt of submittals.
- .3 If either the Contractor or the Town so requests they shall jointly prepare a schedule fixing the dates for submission and return of submittals.
- .4 The Town will review and return shop drawings in accordance with a schedule agreed upon, or otherwise with reasonable promptness.
- .5 Costs due to delays in making submittals shall be borne solely by the Contractor.

**5.0 Review of Submittals**

- .1 The Town's review shall be for conformity to the design concept and for general arrangement only and such review shall not relieve the Contractor of responsibility for errors or omissions in the shop drawings or of responsibility for meeting all requirements of the Contract Documents. A specific deviation on the shop drawings from the design concept requested by the Contractor may be approved or rejected in writing by the Town.
- .2 Each reviewed shop drawing will be stamped by the Town with the following form of stamp, or similar:

REVIEWED	( )
REVIEWED AS MODIFIED	( )
REVISE AND RESUBMIT	( )
NOT REVIEWED	( )

This review by the Town is for the sole purpose of ascertaining conformance with the general design concept. This review shall not constitute approval of the detail design inherent in the submittal, responsibility for which shall remain with the Contractor submitting same. Review by the Town shall not relieve the Contractor of responsibility for errors or omissions in the submittal or of responsibility for meeting all requirements of the Contract Documents. The Contractor is responsible for dimensions to be confirmed and correlated at the job site, for information that pertains solely to fabrication processes or to techniques of construction, for installation, and for co-ordination of the work of all sub-trades.

- .3 The Contractor shall make any changes in shop drawings which the Town may require, consistent with the Contract Documents, and resubmit unless otherwise directed by the Town. When resubmitting, the Contractor shall notify the Town in writing of any revisions made by the Contractor other than those requested by the Town, in the Town's previous review.

### **1.0 Shop Drawings**

- .1 The Contractor shall arrange for the preparation of clearly identified shop drawings and submit two (2) prints to be retained by the Town plus the number of copies required by the Contractor.
- .2 Shop drawings shall be accurately drawn to a scale sufficiently large to show all pertinent features of the item, and its method of connection to the Work and shall have sufficient space for the Contractor's stamp and the Town's stamp.
- .3 Shop drawings shall be in accordance with the International System of Units (S.I.) metric units.

### **2.0 Product Data**

- .1 The Contractor shall provide clearly identified product data and submit two (2) prints to be retained by the Town plus the number of copies required by the Contractor.
- .2 Product data shall include but not be limited to:
  - a) Product assembly drawings
  - b) Materials list
  - c) Principal dimensions
  - d) Parts and components details
  - e) Letters of compliance with recognized standards where required
  - f) Operation data
  - g) Operation curves
  - h) Operation manuals where specified
  - i) Product Name and Model Number

### **3.0 Samples**

- .1 Where the Contractor is required to provide a product sample to the Town in these specifications, the Contractor shall submit one (1) sample of each product, unless otherwise indicated in the particular specification.
- .2 A cover sheet shall accompany each sample and shall detail all information required under Article 2.1 of Section 01 33 00 – Submittal Procedures.
- .3 Upon the Town's review of the sample, a copy of the cover sheet shall be returned to the Contractor indicating the reviewed status as per Article 5.2 of Section 01 33 00 – Submittal Procedures.

### **4.0 Designs by the Contractor**

- .1 Where the Contractor is responsible for engineering design of portions of the Work, this shall be clearly and specifically indicated on the Drawings or in the specifications of the Contract Documents.
- .2 Where the Contractor is required, either by law, regulation, or by the Contract, to provide engineering design, the Contractor shall employ the services of a

Professional Engineer registered in the area in which the Work is to be performed, and all submitted designs shall bear the Seal and Signature of that Registered Professional Engineer.

- END OF SECTION 01 33 23 -

## **1.0 Construction Safety Procedures**

- .1 Observe and enforce construction safety procedures required by the National Building Code 2006 Part 8 (if applicable), provincial government, Alberta Occupational Health and Safety Act and Regulations, Workers' Compensation Board, municipal statutes and authorities, and all other Applicable Laws.
- .2 The Contractor shall immediately notify the Town of any conflict between any provision of applicable safety requirements or authorities. The Town shall direct the Contractor on which provision shall apply to the Work.
- .3 Refer to Article 10.3 of Section 00 72 00 – General Conditions for further information on Occupational Health and Safety Requirements.
- .4 Work on roads shall be in accordance with Article 4.17 of Section 00 72 00 – General Conditions and Article 5.6 of Section 01 52 00 – Construction Facilities.
- .5 The Contractor shall develop safety procedures for all safety hazards, including hazard assessments and control measures. The Contractor shall ensure that all workers on the Site that are exposed or potentially exposed to such hazards are familiar with and follow the safety procedures.
- .6 Wherever hazardous products or chemicals are required for the performance of the Work or present on the Site, comply with the requirements of Article 9.4 of Section 00 72 00 – General Conditions.

## **2.0 Submissions**

- .1 The Contractor shall submit the following material to the Town at least five (5) days in advance on work commencing on the Site:
  - a) Codes of Practice required by the Occupational Health and Safety Act for work to be performed.
  - b) Name and contact information for the Contractor's designated representative for compliance with applicable health and safety regulations related to the work.
  - c) Names and contact information for the Contractor's site representatives during the performance of the Work.
  - d) Names and contact information for emergencies. Refer to Article 9.5 of Section 00 72 00 – General Conditions for additional information.
- .2 One copy of all pertinent hazard assessments, safety procedures, emergency information, and all other applicable health and safety documentation shall be forwarded to the Town for its records; one copy of all such documentation must also be maintained by the Contractor on the Site at all times.

## **3.0 Inspection and Reporting**

- .1 The Contractor shall conduct frequent inspections to ensure compliance with health and safety requirements.
- .2 Any observed unsafe conditions or work procedures shall be corrected in a timely manner.

- .3 In the event of a situation of imminent danger, the Contractor shall observe the requirements of Section 35 of the Occupational Health and Safety Act.
- .4 Any report provided by external inspection agencies to the Contractor shall be copied to the Town within 24 hours following receipt of the report.
- .5 All serious or potentially serious accidents or incidents shall be reported as required by the Occupational Health and Safety Act.

**4.0 Alberta Environmental Protection and Enhancement Act (AEPEA)**

- .1 The Contractor shall be responsible for conformance to the requirements of the AEPEA.
- .2 The Contractor shall report any release or spill that is caused during the performance of the Work, in accordance with the Act.
- .3 Reporting shall be to the Director of Pollution Control, Alberta Environment and Parks.
- .4 All reports under the Act shall be copied to the Town.

- END OF SECTION 01 35 26 -

## **1.0 General**

- .1 The Laws and Regulations of the province of Alberta shall govern.
- .2 Codes, Standards and Regulations are specified in other sections of the specifications and the Work shall be done in accordance with those Codes, Standards and Regulations where applicable.
- .3 Wherever standards (e.g., CSA, ASTM and others) are referred to in these Contract Documents, the current edition at the Tender submission date shall apply.
- .4 Where there is a clear conflict between the referenced Standard and the Contract Documents, the Contract Documents shall apply.
- .5 Where there is an ambiguity between a Standard and any term of these Contract Documents, the Town shall, in the first instance, give an interpretation of the intent of the Contract.
- .6 If the National Building Code of Canada applies to the Work, the standards of the Work shall conform to or exceed the minimum standards of the National Building Code of Canada.
- .7 Should any portion of the Work fall under the purview of the Alberta Public Works Act, the Alberta Public Works Act shall apply to the Work.
- .8 All other Alberta Laws and Regulations shall apply as appropriate and the Contractor shall comply with the requirements thereof as though they had been specifically named in these specifications.

## **2.0 Burning**

- .1 No burning shall be allowed.

## **3.0 Archaeology, Antiques, and Relics**

- .1 With respect to requirements for preserving historic resources, the Alberta Historical Resources Act and Regulations thereunder shall be complied with. Any item of suspected paleontological, historical or archaeological significance shall remain the property of the Town, shall be preserved and recovered within the requirements of the Alberta Historical Resources Act.
- .2 Notify the Town whenever any item of paleontological, archaeological or historical value is discovered and suspend operations on the Work immediately until the Town issues instructions and authorizes that the Work may proceed. The Town may issue a Change Order if, in the opinion of the Town, the Contractor is unduly delayed or is required to perform extra work by reason of the discovery and preservation of any paleontological, archaeological or historical resource.
- .3 The Town will, in the first instance, make a determination of the validity of a claim for delay and an estimate of the time of delay, and of the validity of the Contractor's claim for additional payment and an estimate of the amount of the additional payment.



## 1.0 Abbreviations and Acronyms - Specifications, Methods, Standards

### .1 General

AASHTO	American Association of State Highway & Transportation Officials
ACI	American Concrete Institute
AISC	American Institute of Steel Construction
AISI	American Iron and Steel Institute
ANSI	American National Standards Institute
ARCA	Alberta Roofing Contractors Association
ASCE	American Society of Civil Engineers
ASTM	American Society for Testing and Materials
AWPA	American Wood Preservers Associations
AWS	American Welding Society
BCLMA	B.C. Lumber Manufacturer's Association
CAN	National Standard of Canada
CCA	Canadian Construction Association
CISC	Canadian Institute of Steel Construction
CITC	Canadian Institute of Timber Construction
CPCI	Canadian Prestressed Concrete Institute
CRCA	Canadian Roofing Contractors Association
CSA	Canadian Standards Association
CWB	Canadian Welding Bureau
ISO	International Organization for Standardization
NBC	National Building Code
OH&S	Occupational Health & Safety
PCI	Prestressed Concrete Institute
PMBC	Plywood Manufacturer's Association
SJI	Steel Joist Institute
SSPC	Steel Structures Painting Council
WCB	Worker's Compensation Board

### .2 Utilities

API	American Petroleum Institute
AWWA	American Water Works Association
CGA	Canadian Gas Association
CGSB	Canadian General Standards Board
CSPI	Corrugated Steel Pipe Institute
IAO	Insurer's Advisory Organization
RTAC	Roads and Transportation Association of Canada
ULC	Underwriters Laboratories of Canada
USA	United States of America Standards (ASA)

### .3 Use of Abbreviations

These abbreviations and acronyms refer to Specifications, Methods and Standards issued by the respective Association, and the abbreviations are used in the specifications.

Alphanumeric designations following the abbreviations denote the specification, method, or standard.

## 2.0 Abbreviations and Acronyms – Metric

### .1 General

The specifications are metric and metric usage is based upon SI units in accordance with CSA Standard CAN/CSA-Z234.1 Canadian Metric Practice Guide. In this specification SI units are abbreviated in accordance with the Metric Units and Abbreviations below.

### .2 Linear Measure

Metre	m or lin.m.
Millimetre	mm
Kilometre	km
Micrometre	micro-m

### .3 Area

Square metre	m <sup>2</sup>
Square millimetre	mm <sup>2</sup>
Hectare	ha

### .4 Volume

Cubic metre	m <sup>3</sup>
Litre	L

### .5 Mass and Density

Kilogram	kg
Gram	g
Tonne	t
Kilogram per metre	kg/m
Gram per metre	g/m
Kilogram per cubic metre	kg/m <sup>3</sup>
Kilogram per hectare	kg/ha

### .6 Temperature

Degree Celcius	°C
----------------	----

### .7 Force, Pressure, Stress

Newton	N
Kilonewton	kN
Pascal	Pa
Kilopascal	kPa
Megapascal	MPa

### .8 Velocity, Rate of Flow

Metre per second	m/s
Metre per hour	m/h
Kilometre per hour	km/h
Litre per second	L/s

Cubic metre per second      m<sup>3</sup>/s

.9      Power, Energy, Heat, Work

Watt	W
Kilowatt	kW
Kilowatt hour	kWh
Joule	J

.10      Electricity

Ampere	A
Volt	V

- END OF SECTION 01 42 13 -

## **1.0 General**

- .1 The Contractor is solely responsible for the quality of material, product, equipment, and workmanship which the Contractor provides and for the Work.
- .2 The Contractor is responsible for quality control and shall perform such inspections and tests at their sole expense as are necessary to ensure that the Work conforms to the requirements of the Contract Documents. The completion of these tests does not relieve the Contractor of sole responsibility to supply material, product, and equipment, and to perform the Work in accordance with the requirements of the Contract Documents
- .3 During the progress of the Work, a sufficient number of tests shall be performed by the Contractor to determine that material, product, equipment, and installation meet the specified requirements.
- .4 Minimum requirements regarding quality control are specified in various sections of the specifications, however, the Contractor shall perform as many inspections and tests as are necessary to ensure that the Work conforms to the requirements of the Contract Documents.
- .5 Testing shall be in accordance with pertinent codes and regulations.
- .6 Product testing, mill tests, and laboratory reports to demonstrate that product, material, and equipment supplied by the Contractor meet the specifications are specified under various sections of the Contract Documents.

## **2.0 Quality Control Testing by the Contractor**

- .1 Quality control is the responsibility of the bidder; the Town will only complete QA testing if uncertainty arises as to quality.
- .2 The Contractor shall retain the services of an independent testing agency under supervision of a registered professional engineer, and pay for the cost of testing services for quality control including, but not limited to, the following:
  - a) Aggregates and mix designs for soil cement base course.
  - b) Aggregates and mix designs for asphaltic concrete.
  - c) Aggregates and mix design for Portland Cement concrete.
  - d) Applicable quality control testing for precast concrete.
  - e) Any product testing that is required and is specified under various sections of the specifications.
- .3 The Town will be responsible for the cost of testing services for field quality control. The Contractor shall retain the services of one of the Town's Pre-qualified geotechnical testing agencies, and coordinate the testing services for field quality control including, but not limited to, the following:
  - a) Sieve analysis of sands and aggregates to be incorporated into the Work.
  - b) Standard Proctor Density curves for backfill and borrow materials.
  - c) Compaction control tests for backfill and embankment material.
  - d) Mill tests and certificates of compliance.
  - e) Asphalt core testing.
  - f) Any material testing that is required and is specified under various sections of the specifications.

- .4 The Contractor shall provide all labour, materials, and equipment, and shall perform all tests, for linings, coatings, pressure tests, leakage tests, infiltration tests, and all other tests specified under the various sections of the specifications.
- .5 The Contractor shall promptly process and distribute all required copies of test reports and test information and related instructions to all Subcontractors and Suppliers to ensure that all necessary retesting and replacement of construction can proceed without delay.
- .6 The Contractor shall promptly provide the Town with copies of all test results.

### **3.0 Quality Assurance Testing by the Town**

- .1 The Town may retain and pay for the services of an independent testing agency for testing for quality assurance, for the Town's purposes.
- .2 The Town's testing agency and the Town may inspect and test material, product, equipment, and the Work for conformance with the requirements of the Contract Documents; however, they do not undertake to check the quality of the Work on behalf of the Contractor or to provide quality control.
- .3 Inspections and tests by the Town's testing agency and by the Town do not relieve the Contractor of sole responsibility to supply material, product, and equipment and to perform the Work in accordance with the requirements of the Contract Documents.
- .4 The Town may, at its discretion, order or perform any additional inspections and tests.
- .5 The Contractor shall coordinate with the Town the scheduling of testing and inspection by the Town's testing agencies or by the Town, to enable testing to be done as necessary, without delay, and the Contractor shall notify the Town sufficiently in advance of operations to allow for such inspection and tests by the Town or the Town's testing agency.

### **4.0 Code Compliance Testing**

- .1 Inspections and tests required by codes or ordinances, or by a plan approval authority, shall be the responsibility of and shall be paid for by the Contractor.
- .2 Copies of reports resulting from such inspections shall be submitted in a timely manner by the Contractor to the Town.

### **5.0 Retesting**

- .1 When tests on product, material, equipment, or completed portions of the Work carried out by the Contractor, the Contractor's testing agency, or by the Town's testing agency yield results not meeting the requirements of the Contract Documents, the Contractor, in addition to carrying out remedial work or replacement of the product, material, equipment or completed portions of the Work, shall provide for retesting of the remedied work.
- .2 Retesting, including retesting by the Town's testing agency, shall be at the Contractor's expense.
- .3 In every case where the Contractor has submitted test results which fail to meet the requirements of the Contract Documents, the Contractor shall submit, within

a practical and reasonable time, results of a retest showing that the results are in accordance with the requirements of the Contract Documents.

- .4 If the Contractor fails or refuses to do remedial work or replace unacceptable material, product, equipment, or portions of the Work, the Town may refuse to certify payment, in addition to any other remedies the Town may have.

- END OF SECTION 01 45 00 -

## **1.0 TEMPORARY UTILITIES**

### **1.1 Natural Gas, Gasoline and Other Fuels**

- .1 Provide natural gas, gasoline, and other fuels required for the performance of the Work, in accordance with governing regulations and ordinances, and the Contract Documents.
- .2 Provide all necessary temporary piping and, upon completion of the Work, remove all such temporary piping.

### **1.2 Water**

- .1 Where performance of the Work requires water supply, the Contractor may obtain water from the Town's truck filling station.
- .2 Provide all necessary temporary piping and, upon completion of the Work, remove all such temporary piping.
- .3 Failure to meet the preceding conditions may result in penalties and related costs, incurred by the Town, to be charged to the Contractor.
- .4 The Contractor is not authorized to operate any existing main valve or hydrant in the Town's water distribution system. The Utilities Department must be contacted to operate any existing main valve or hydrant.

### **1.3 Sanitation Facilities**

- .1 If required, provide and maintain temporary toilet facilities at the Site.
- .2 Upon completion of the Work, remove all such temporary toilet facilities.
- .3 Prohibit and prevent the committing of nuisances by workers on the Site or adjoining property.
- .4 Remove any worker who commits a nuisance.

### **1.4 Electricity And Lighting**

- .1 Provide electricity and artificial lighting required for the performance of the Work, in accordance with governing regulations, ordinances, and the Contract Documents.
- .2 Provide all necessary temporary wiring, distribution boxes, panels, etc., and, upon completion of the Work, remove all such temporary installations.

### **1.5 Telephone**

- .1 Arrange and pay for telephone service on the Site.

### **1.6 Heating And Ventilating**

- .1 Provide heating and ventilating, coverings, and enclosures as necessary to protect and perform the Work.
- .2 Provide all necessary temporary equipment, piping, wiring, ducting, and other materials necessary to perform the Work and, upon completion of the Work, remove all such temporary equipment.

- .3 Temporary heating and ventilating shall be in accordance with all governing regulations, ordinances, and the Contract Documents.
- .4 Temporary heating and ventilating shall be provided to:
  - a) Facilitate progress of the Work;
  - b) Protect the Work, products, material, and equipment against dampness and cold;
  - c) Prevent moisture condensation on surfaces;
  - d) Provide an atmosphere for curing material as required;
  - e) Provide adequate ventilation to meet safety regulations;
  - f) Prevent hazardous accumulation of dust, fumes, mists, vapours, or gases in areas occupied during construction; and
  - g) Ventilate storage spaces containing hazardous or volatile materials.

## **1.7 Fire Protection**

- .1 Provide for adequate fire protection of the Work and adjacent property.
- .2 Provide temporary extinguishers, hydrants, and other equipment as required and, upon completion of the Work, remove all such temporary equipment.
- .3 Refer to Article 9.0 – Protection of Work, Property, and Life of the General Conditions 00 72 00 for further requirements.

## **2.0 CONSTRUCTION AIDS**

### **2.1 Temporary Plant**

- .1 Provide all temporary items such as, but not limited to, stairs, ladders, scaffolding, ramps, transportation of labour and material, runways, chutes, hoists, elevators, tools, templates, and other temporary plant as required in the performance of the Work.
- .2 The location of such items shall be such as to prevent interference with, marking of, or damage to any portion of the Work.
- .3 All such items shall conform to all applicable national and local ordinances regulating safety, and to the National Building Code of Canada, and to the requirements of the Contract Documents.

### **2.2 Temporary Enclosures**

- .1 Provide, for the duration of construction, all required scaffolds, tarpaulins, barricades, canopies, warning signs, steps, bridges, platforms, and other temporary enclosures necessary for proper completion of the Work in compliance with all pertinent safety and other regulations.

### **2.3 Falsework And Temporary Construction Supports**

- .1 The Contractor shall be responsible for means and methods used for the falsework and temporary construction supports.



- .2 If required by the Contract, employ a qualified Registered Professional Engineer for the design of temporary works, and design in accordance with CSA S269.1.
- .3 Record design calculations and drawings to show that temporary works are adequate. Provide design loads, material details, and dimensions. Sign and seal design calculations and drawings, and revisions thereto.
- .4 The Town's approval to proceed with falsework and temporary construction supports shall not relieve the Contractor of its responsibility under the Contract. The Town's review shall be for general conformance to the intent of design and for permanent effects on the Site, or areas adjacent to the Site.

#### **2.4 Temporary Excavation**

- .1 The Contractor is responsible for the means and methods of making temporary excavations in order to install components of the Work.

### **3.0 PROTECTION**

- .1 Remove trees, fences, and other structures from the site of the Work as necessary to perform the Work only as approved by the Town.
- .2 Remove only those items that must be removed, or are clearly shown on the Drawings to be removed. Where an item must be removed that is not shown on the Drawings, obtain the Town's approval prior to commencing with the removal.
- .3 Protect all remaining trees, plants, fences, and other items from damage during construction.
- .4 To avoid tree damage during construction, the Contractor shall follow the Alberta ISA best practice guidelines for tree protection during construction and when required have professional arborist on site.
- .5 Where the bark of tree trunks is damaged or removed in the Contractor's performance of the Work, the Contractor will be assessed a maintenance charge according to the following table:

<b>Area of Bark Removed</b>	<b>Maintenance Assessment</b>
Less than 0.006 m <sup>2</sup>	\$100.00
From 0.007 to 0.010 m <sup>2</sup>	\$200.00
From 0.010 to 0.023 m <sup>2</sup>	\$500.00
Greater than 0.024 m <sup>2</sup>	\$1,000.00

Maintenance assessments shall be deducted from any remaining payment due to the Contractor.

### **4.0 EXISTING UTILITIES AND STRUCTURES**

- .1 Existing utilities and structures include pipes, culverts, ditches, or other items which are a part of an existing sewerage, drainage, or water system; or which are a part of a gas, electrical, telephone, television, telecommunications, or other utility system. Also included are sidewalks, curbs, gutters, swales, poles, fences, or any other structures encountered during construction.

- .2 The Contractor shall be responsible for location, protection, removal, or replacement of existing utilities and structures, or for repair of any damage which may occur during construction.
- .3 Existing utilities and structures may be shown on the Drawings, or described in the specifications. Such information is shown for design purposes and the existence, location and detail given is information that is obtained during the design period and is not necessarily complete, correct or current.
- .4 The Contractor shall pay all costs and be responsible for establishing locations and state of use of all existing utilities that may affect the Work. The Contractor shall make satisfactory arrangements with the utility companies involved for the location, protection, and inspection of existing utilities.
- .5 Notice in writing shall be given by the Contractor to the utility companies at least 48 hours before work commences in the vicinity of existing utilities.
- .6 The Contractor shall pay all the costs involved in protection of utilities, inspection of utilities, and all costs due to delays because of existing utilities and structures.
- .7 The Contractor shall provide for the uninterrupted flow of all watercourses, sewers, and drains encountered during the Work.
- .8 Access shall be maintained to all existing structures such as valves, hydrants, meter chambers, and control structures at all times during construction.
- .9 If interruption of service provided by an existing utility is necessary, the planned shut-down shall be approved by the owner of the utility. Requests for shut-down shall be made by the Contractor in writing at least 48 hours in advance.
- .10 The Contractor shall notify all customers or make arrangements with the utility company to notify all customers at least 48 hours in advance of a planned shut-down.
- .11 Unless otherwise specified, the Contractor shall make arrangements for relocation of existing utilities that the Town requests to be relocated; and the actual relocation shall be constructed by the owner of the utility unless other arrangements are approved by the Town in writing. The Contractor will be reimbursed the invoiced cost of the relocation. No extra payment is permitted for delays, or standby time.

## **5.0 TEMPORARY CONTROLS**

### **5.1 Noise Controls**

- .1 Noise levels to conform to the Workers' Compensation Board's Occupation Health and Safety Regulations.
- .2 Refer to Article 4.19 – Allowable Working Hours on the Site of the General Conditions 00 72 00 for further information regarding allowable working hours.
- .3 Take special precautions and apply noise abatement measures to reduce public exposure to noise to a minimum. Such measures include, but are not limited to:
  - a) Shields or other physical barriers to restrict the transmission of noise;

- b) Soundproof housings or enclosures for noise producing machinery such as compressors, pumps, motors, generators, etc.;
  - c) Efficient intake and exhaust silencers on air equipment;
  - d) Efficient intake and exhaust mufflers on internal combustion engines;
  - e) Sound deadening lining material on hoppers and storage bins;
  - f) Conducting truck loading, unloading, and hauling operations in a manner that keeps noise to a minimum;
  - g) The use of electric rather than internal combustion engine power on equipment such as chain saws, hoisting equipment in fixed locations, or other equipment where electric power is available; and
  - h) Placement of stationary noise producing equipment at maximum distance from public areas.
- .4 The Town may require specific noise controls be instituted in the event of overnight work approved under Article 4.19 of the General Conditions 00 72 00.

## **5.2 Dust Control**

- .1 Perform the Work in a manner that will not produce an objectionable amount of dust. Should the Town determine that dust control measures are required due to the performance of the Work; the Town may direct the Contractor to provide dust control at the Contractor's expense.

## **5.3 Pollution Control**

- .1 Abide by the requirements of Applicable Laws with respect to air and water pollution control requirements.

## **5.4 Sediment Control**

- .1 The Contractor shall maintain sediment control for surface drainage at the site, acceptable to the Town.
- .2 Additional sediment controls may be ordered in the event, or risk, of accidental spill or release to the environment.
- .3 The Contractor shall comply and cooperate with Town with respect to any reporting requirements for environmental agencies in the event of a spill or release.

## **5.5 Disposal of Wastes**

- .1 Burying of trash and waste on site is not permitted.
- .2 Disposal of waste or volatile materials into waterways, storm, or sanitary sewers is not permitted.
- .3 Pumping or draining water containing silt in suspension into waterways, sewers, or drainage systems is prohibited.
- .4 Abide by requirements of Applicable Laws respecting disposal of wastes.
- .5 Obtain required permits for waste disposal.

- .6 Burning of waste is not permitted.

## **5.6 Traffic Control**

- .1 The Contractor shall be responsible for all advanced-warning signage for notifying the public of pending traffic detours, if required, and appropriate detour signage during construction.
- .2 The Contractor shall be responsible for the regulation of traffic during construction, and shall perform the Work in a manner that will cause the least disruption of traffic.
- .3 The Contractor shall coordinate the Work with the Town to reduce traffic problems.
- .4 Unless otherwise provided elsewhere in these Contract Documents, no roads may be completely closed during performance of the Work. The Contractor must ensure that vehicular and pedestrian traffic is not subject to unreasonable or unnecessary restrictions.
- .5 The Contractor must comply with the provisions of Article 4.18 – Notifying Affected Parties of the General Conditions 00 72 00 in the event that performance of the Work requires disruption to regular traffic patterns or property access.
- .6 If at any time the Town determines that unnecessary restrictions are being placed on vehicular or pedestrian traffic, or that the Contractor has insufficient traffic control measures in place, the Contractor shall take whatever reasonable steps the Town deems necessary to alleviate such restrictions or insufficiencies.
- .7 Provision of flagmen, traffic signs, and other traffic controls shall be the Contractor's responsibility and shall be in accordance with the TAC Manual of Uniform Traffic Control Devices.
- .8 The Contractor shall supply all barriers, barricades, warning signs, detours, fences, flagmen and all other devices to protect the public. All applicable safety standards shall be followed.
- .9 The Contractor shall obtain written approval from the Town to block traffic temporarily if it is necessary to do so to perform the Work. At least one (1) week prior to blocking traffic, unless in the event of an emergency, notify the following:
  - a) Town Office (ph: 780-624-2574)
  - b) Public Works department (ph: 780-624-3085)
  - c) Fire Services Department (non-emergency) (ph. 780-624-2993)
  - d) RCMP Department (non-emergency) (ph. 780-624-6677)
- .10 Adequate construction parking, meeting local regulations, shall be provided by the Contractor.
- .11 Haul routes shall be maintained by the Contractor. They shall be kept open to traffic and shall be clean at all times.
- .12 Obtain permits as required to use public roads or streets for haul routes.

- .13 Refer to Article 4.17 – Work on Roads of the General Conditions 00 72 00 for additional requirements for traffic control and working on roads.

**5.7 Security**

- .1 Provide all necessary lighting, fencing, hoarding, security services, and personnel necessary to adequately protect the Work and the public.
- .2 Refer to Article 9.0 – Protection of Work, Property, and Life of the General Conditions 00 72 00 for additional requirements related to safety and security.

- END OF SECTION 01 52 00 -

## **1.0 General**

- .1 All products, material, and equipment supplied and installed shall be new.
- .2 All products, material, and equipment supplied shall conform to these specifications and to all applicable standards.
- .3 Workmanship shall be the best quality, executed by workmen experienced and skilled in their respective trades.
- .4 Ensure full cooperation among all trades and coordination of the Work with continuous supervision.
- .5 Use products for which replacement parts and service are readily available.
- .6 Use products of one manufacturer for products of the same type or classification. Do not mix different manufacturer's products in the Work or in parts of the Work.
- .7 Refer to Section 3.0 – Products of the General Conditions 00 72 00 for additional general requirements related to products, material, and equipment.

## **2.0 Manufacturer's Instructions**

- .1 Unless otherwise specified, comply with the manufacturer's or Supplier's instructions for products, material, and equipment, and comply with instructed installation methods.
- .2 Notify the Town in writing of any conflict between these specifications and the instructions of the manufacturer or Supplier.

## **3.0 Delivery and Storage**

- .1 Deliver, store, and maintain packaged products, material, and equipment with manufacturer's seals and labels intact.
- .2 Prevent damage and soiling of products, material, and equipment.
- .3 Store products, material, and equipment in accordance with instructions of the manufacturer or Supplier.
- .4 Comply with Workplace Hazardous Materials Information Systems (WHMIS) requirements.
- .5 Refer to Section 3.2 – Delivery and Storage of Products of the General Conditions 00 72 00 for additional requirements related to delivery and storage of products, material, and equipment.

- END OF SECTION 01 61 00 -

**1.0 General**

- .1 Maintain the working area in a clean and orderly manner as the Work progresses, and upon completion of construction, remove all waste materials, and all temporary facilities from the site.
- .2 Haul surplus or salvage materials that are the property of the Town to the Town's storage site.
- .3 Remove surplus or salvaged materials belonging to the Contractor from the site.
- .4 Clean haul routes.
- .5 Broom clean paved surfaces; rake clean other surfaces of ground.
- .6 Street Sweep roadways.
- .7 Clean all catch basins, manholes, storm, and sanitary sewers of any foreign material that may have entered the system during construction. Ensure all accesses function smoothly.
- .8 Clean all tar, oil, or asphalt from manhole, catch basin, and valve hardware, and from all finished concrete surfaces.
- .9 Where the Contractor fails to complete cleanup to the satisfaction of the Town, the Town may elect to complete the required cleanup and deduct the cost of such from any payment due to the Contractor in accordance with Section 7.1 – Town's Right to do Work of the General Conditions 00 72 00.

- END OF SECTION 01 74 23 -

## **1.0 General**

- .1 As specified in other sections of the specifications, the Contractor may be required to prepare and record drawings, to provide survey notes, to supply test results or other documents. Such information shall be turned over to the Town as soon as start-up is complete, and before the Construction Completion Certificate is issued.
- .2 Record documents shall be neat, legible and accurate.

## **2.0 Drawings of Record**

- .1 The Contractor shall keep one complete set of all construction drawings on the Site.
- .2 On the Site set of Contract Drawings, the Contractor shall record any changes that are made during the actual construction of the Work. The purpose of recording these changes is to provide drawings of record at the end of the Work. The Contractor shall be responsible for the adequacy and the reliability of the information recorded on the drawings of record.
- .3 At the completion of the construction period, the Contractor shall turn over the set of construction drawings, which have been marked up with changes during the course of the Work to the Town, to permit the Town to prepare Drawings of Record for the Work.

## **3.0 Confirmation from Approving Authorities**

- .1 Provide written confirmation from any and all authorities having jurisdiction that the Work conforms to their requirements (i.e. Alberta Labour, Electrical Protection Branch, etc.).

- END OF SECTION 01 78 39 -



**Division 31 – Earthwork**

## **1.0 GENERAL**

- .1 This item consists of preparatory work and operations including but not limited to those necessary for the movement of personnel, equipment, supplies and incidentals to and from the project site.
  - a) Included in mobilization are such items as bonding, insurance, permits, moving personnel, materials and equipment to the site, setting up temporary facilities, project signage and all preparation for performing the Work.
  - b) Included in demobilization are preparation and submission of operation and maintenance manuals, removal of all personnel, materials and equipment; and cleanup of the site and the Work.
- .2 Related Sections
  - a) 00 73 00 – Supplementary Conditions
  - b) 01 11 00 – Summary of Work
  - c) 01 22 00 – Measurement and Payment
- .3 References
  - a) Contract Drawings

## **2.0 PRODUCTS**

- .4 None

## **3.0 EXECUTION**

- .5 Execution not specifically mentioned herein shall conform to requirements as set out in the References as attached within this Section.

- END OF SECTION 31 01 00 -

## **1.0 GENERAL**

### **1.1 Description**

- .1 This section specifies requirements for excavation, fill, grading, and compacting for construction of subgrade and base course for pavement structures.

### **1.2 Definitions**

- .1 Common Excavation: Includes topsoil, clay, silt, sand, gravel, and peat within the area of the Work.
- .2 Borrow Material: Includes select topsoil, clay, sand, gravel, or other material imported from outside the Site for use as fill in the Work.
- .3 Unsuitable Material: Includes peat, roots, stumps, topsoil, frozen soil, garbage, or other material deemed unsuitable for fill by the Town.
- .4 Fill: An earth structure built up by successive lifts of a specified material at specified densities.
- .5 Prepared Subgrade: The soil immediately beneath a pavement structure that has been prepared as specified for the construction of a pavement structure.

### **1.3 Quality Control**

- .1 Refer to Section 01 45 00 – Quality Control.
- .2 Submit a copy of scale certificates prior to use.
- .3 ENC Testing Inc. shall perform all testing.

### **1.4 Quality Assurance**

- .1 The Town shall be advised of all borrow material sources a minimum of 5 days prior to delivery to allow scheduling of inspection by the Town.
- .2 For granular material, provide sieve analyses, to ASTM-C136, and other test results as necessary to clearly demonstrate that the aggregate being supplied for the Work meets the specified requirements. Conduct a minimum of one sieve analysis for each 1,000 tonnes of aggregate supplied.
- .3 Provide moisture/density curves for each type of material from each source of material to be compacted to a specified density. Moisture/density curves to ASTM-D698. The maximum density shall be the dry unit mass of a soil sample at optimum moisture content as determined in accordance with ASTM-D698 Method A.
- .4 For fill, conduct a minimum of one field density test for each 2,000 m<sup>2</sup> of compacted lift, unless otherwise specified or directed by the Town. Field densities to ASTM-D2167 or to ASTM-D2922 for comparison with the corresponding maximum density as specified in Article 1.4.2.
- .5 For subgrade, conduct a minimum of one field density test for each 1,000 m<sup>2</sup> of compacted lift, unless otherwise specified or directed by the Town. Field densities to ASTM-D1556, ASTM-D2167, or ASTM-D2922 for comparison with the corresponding maximum density as specified in Article 1.4.2.

- .6 For base course, conduct a minimum of one field density test for each 500 m<sup>2</sup> of compacted lift, unless otherwise specified or directed by the Town. Field densities to ASTM-D1556, ASTM-D2167, or ASTM-D2922 for comparison with the corresponding maximum density as specified in Article 1.4.2.
- .7 If a required field density test result is less than that required, three additional tests shall be carried out for the area represented by the failed test. The average of the three additional tests shall be taken to represent the density of that area. If this average is still less than required, the area shall be re-worked to the full depth of the lift, the soil moisture altered as necessary, re-compacted, and re-tested until the specified density is achieved. Alternatively, if the area represented by a failed field density test is immediately reworked and recompacted, the area shall be tested at normal frequencies.
- .8 The Contractor shall perform as many tests as are necessary to ensure that the work conforms to the requirements of the Contract regardless of the minimum number specified.

### **1.5 Disposal**

- .1 All materials on site whether stockpiled, stored, or excavated are the property of the Town, and the Town reserves the right to keep any part or all of the material.
- .2 Remove and dispose of surplus materials as directed by the Town.
- .3 The Contractor shall dispose of all waste materials at sites to be located by the Contractor and approved by the Town.
- .4 Refer to Section 01 52 00 – Construction Facilities for further requirements.

### **1.6 Related Work**

- .1 none

## **2.0 PRODUCTS**

### **2.1 Fill**

- .1 The Town shall determine the suitability of materials at the site for use as fill material.
- .2 Suitable borrow material may be required for use as fill material where sufficient material is unavailable at the site or where material at the site is unsuitable for use as fill material, as determined by the Town.

### **2.2 Subgrade**

- .1 Material for subgrade shall be compacted clay soil, free of deleterious material, and subject to the approval of the Town.

**2.3 Granular Materials**

- .1 Granular materials for base courses shall conform to the following gradation (CAN/CGSB-8.2-M):

Sieve Size	Percent Passing
20.0 mm	100
12.5 mm	60 – 92
5.0 mm	37 – 62
2.0 mm	26 – 44
400 µm	12 – 27
160 µm	7 – 18
80 µm	2 – 10

- .2 Granular materials for base courses shall comply with the following:

Aggregate Property	Tolerance
Coarse aggregate (> 5,000 µm) with ≥ 2 fractured faces (by mass)	60% minimum
Plasticity index (< 400 µm)	6 maximum
Liquid Limit	25 maximum
Lightweight pieces (by mass)	2% maximum

- .3 Crushed aggregate shall consist of sound, hard, and durable particles of sand, gravel, and rock. Crushed aggregate shall be free of flaky particles, soft shale, coal, ironstone, clay lumps, organic material, and other deleterious material.

**2.4 Equipment**

- .1 Grading equipment capable of spreading and trimming soil to the specified depth.
- .2 Compacting equipment capable of compacting soil as specified.
- .3 Any other equipment necessary to complete excavation, fill, grading, and compacting as specified.

**3.0 EXECUTION**

**3.1 Preparation of the Site**

- .1 Maintain slopes and adequate drainage during grading.
- .2 Do not allow mixing of different fill materials.
- .3 Locate, mark, and protect all utilities and appurtenances (i.e. manholes, catch basins, valves, and hydrants).
- .4 Locate and protect all existing trees and shrubs.
- .5 Protect completed portions of the work from damage. Repair damaged areas as required.

### **3.2 Excavation**

- .1 Excavate the area to the required cross-section to the required subgrade elevation.
- .2 Where excavation exposes unsuitable materials below the subgrade and the Town directs removal, excavate such materials using transition slopes no steeper than 10% along the alignment profile. Make the bottom of the cut level, with no loose material.
- .3 Where over-excavation occurs, reinstate grades by backfilling, compacting, and re-grading as directed by the Town. Where over-excavation is not directed or authorized by the Town, the Contractor shall restore grades at its sole expense.
- .4 Excavate rock and haul to disposal areas.
- .5 Excavate unsuitable material and haul to disposal areas.

### **3.3 Fill and Grade**

- .1 Place and spread fill material in successive horizontal lifts.
- .2 Compact each lift to a minimum 98% Standard Proctor Density, unless otherwise specified or directed by the Town.
- .3 Each lift shall not exceed 150 mm in compacted thickness.
- .4 Trim sideslopes from top down, and finish true to the required alignment, grade, and shape.
- .5 Grades shall be within 30 mm of design grades.
- .6 Trim high areas, scarify low areas, compact, and re-grade as required to achieve specified grades and compaction.
- .7 Ensure crossfalls and ditch bottoms are graded to promote positive drainage flow.

### **3.4 Subgrade Preparation**

- .1 Scarify and loosen subgrade to a depth of 150 mm, or as otherwise specified or directed by the Town.
- .2 Work the subgrade until the soil is pulverized into pieces no larger than 25 mm across, exclusive of stones.
- .3 Scarify, shape, and compact the subgrade as follows:
  - a) Compact the subgrade to a minimum of 100% of the maximum density for each 150 mm lift of subgrade under road, curb, gutter, curb ramps, alley crossings, and access crossings.
  - b) Compact the subgrade to a minimum of 98% of the maximum density for each 150 mm lift of subgrade under walks.
- .4 The required compaction can generally best be achieved when the soil is within 3% of the optimum moisture content just prior to compacting. The Contractor may dry or moisten the granular material as necessary to achieve the optimum moisture content.
- .5 Leave the surface of the compacted subgrade slightly higher than the required elevation; then trim to the required elevation.

- .6 Total compacted thickness shall be 150 mm.
- .7 Leave the finished surface even and free of depressions, humps, loose debris, and foreign material.
- .8 Finished subgrade surface shall be within 6 mm above the specified elevation or within 25 mm below the specified elevation. Trim any high spots and refinish to meet tolerance. Add approved material to low spots, scarify, and blend to the full subgrade depth, recompact to the required density, and refinish.
- .9 Proof roll the finished subgrade to confirm adequate bearing capacity of the subgrade soils. The proof roll shall be supervised by the Town and conducted in accordance with the Town's recommended procedures, as applicable.

### **3.5 Base Course**

- .1 20mm crush shall be used for all base course application (Des 3, Class 20).
- .2 If an existing subgrade is deemed acceptable by the Town, is on the designated grade, and contains sufficient depth of granular material, remove rocks larger than 75 mm, scarify the base to 75 mm depth, and pulverize the material into pieces no larger than 50 mm. If insufficient depth is observed, add imported granular material to meet the designated grade, and thoroughly mix.
- .3 If an existing subgrade is deemed unsuitable by the Town or not on the designated grade, windrow any suitable granular material to one side of the working area and rework the subgrade as specified in Article 3.4.
- .4 Store granular material in suitable stockpiles at the site. When stockpiling, avoid segregation of particle sizes. Provide weather protection on stockpiles where directed by the Town.
- .5 Provide the Town with a scale tickets for each aggregate load delivered to the site. Scale ticket forms shall be subject to the approval of the Town.
- .6 The Town shall inspect subgrade prior to placement of the base course.
- .7 Place granular material and spread uniformly in lifts not exceeding 150 mm in thickness when compacted.
- .8 Scarify, shape, and compact the base course as follows:
  - a) Compact the base course to a minimum of 100% of the maximum density for each 150 mm lift of base course under road, curb, gutter, curb ramps, alley crossings, and access crossings.
  - b) Compact the base course to a minimum of 98% of the maximum density for each 150 mm lift of base course under walks.
- .9 The required compaction can generally best be achieved when the granular material is within 3% of the optimum moisture content just prior to compacting. The Contractor may dry or moisten the granular material as necessary to achieve the optimum moisture content.
- .10 Leave the surface of the compacted base slightly higher than the required elevation; then trim to the required elevation.
- .11 Total compacted thickness shall be in accordance with the Drawings.

- .12 Leave the finished surface even and free of depressions, humps, loose debris, and foreign material.
- .13 Finished granular base surface shall have maximum 15 mm variation under a 3 m straightedge, and shall be within 6 mm above the specified elevation or within 15 mm below the specified elevation. Trim any high spots and refinish to meet tolerance. Add approved material to low spots, scarify, blend to the full subgrade depth, respread, recompact to the required density, and refinish.
- .14 If segregation occurs, blade the lift and mix thoroughly before spreading and shaping to grade.

### **3.6 Protection**

- .1 Do not permit traffic over prepared surfaces.
- .2 If the site floods, immediately drain the surface by natural flow or by pumping to catch basins, manholes, or ditches, as directed and authorized by the Town.
- .3 The Contractor shall repair any damaged areas to the satisfaction of the Town, at the Contractor's sole expense.

### **3.7 Cleanup**

- .1 Remove and dispose of all debris and excess material at a site, and in a manner, acceptable to the Town.
- .2 Maintain the site and areas adjacent to the site in a condition acceptable to the Town, and in accordance with other applicable requirements of the Contract Documents.

- END OF SECTION 31 23 00 -



## **1.0 GENERAL**

### **1.1 Description**

- .1 This section specifies requirements for trenching for underground utilities.
- .2 This section specifies requirements for trenching and backfilling, including:
  - a) Site preparation;
  - b) Excavation;
  - c) Support of the adjoining ground or structures;
  - d) Stockpiling and disposal of excess excavated material;
  - e) Control of surface and subsurface water in trenches;
  - f) Temporary railings, coverings, and enclosures to excavations;
  - g) Removal and replacement of unsuitable material;
  - h) Backfilling; and
  - i) Surface restoration.

### **1.2 Quality Assurance**

- .1 Refer to Section 01 45 00 – Quality Control.
- .2 Submit to the Town a list of sources of materials including sand, gravel, borrow materials, and concrete aggregates.
- .3 Provide samples, test results, sieve analyses, and reports for preliminary approval of materials.
- .4 Where fillcrete is used, submit mix design to the Town for approval at least ten (10) days prior to production.
- .5 Preliminary approval of materials does not constitute general acceptance. Acceptance depends upon satisfactory field test results and performance in place.

### **1.3 Quality Control**

- .1 Moisture density curves to ASTM-D698.
- .2 Sieve analyses to ASTM-C136.
- .3 Field densities to ASTM-D2167 or to ASTM-D2922.
- .4 Provide moisture/density curves for each type of material from each source of material to be compacted to a specified density.
- .5 For granular trench backfill, conduct a minimum of one of each test for every 100 m of trench of 1.0 m fill depth.
- .6 For fillcrete:
  - a) Slump tests, to CSA-A23.2-1C and CSA-A23.2-5C, to be taken between the 10% and 90% points of discharge of a fillcrete load, with every strength test, and as required by the Town.

- b) Air content tests, to CSA-A23.2-1C and CSA-A23.2-4C, to be taken between the 10% and 90% points of discharge of a fillcrete load, with every strength test, and as required by the Town.
  - c) Strength tests, to CSA-A23.2-3C and CSA-A23.2-9C, to be conducted once per day per supplier, or as required by the Town.
- .7 The Contractor shall perform as many tests as are necessary to ensure that the work conforms to the requirements of the Contract regardless of the minimum number specified.

**1.4 Disposal**

- .1 All materials on site whether stockpiled, stored, or excavated are the property of the Town, and the Town reserves the right to keep any part or all of the material.
- .2 The Contractor shall dispose of all waste materials at sites to be located by the Contractor and approved by the Town.
- .3 Refer to Section 01 52 00 – Construction Facilities for further requirements.

**1.5 Related Sections**

- .1 None

**2.0 PRODUCTS**

**2.1 Gravel**

- .1 Pit-run gravel shall be maximum size 75 mm complying with the following gradation:

Sieve Size	Percent Passing
75 mm	100
4.75 mm	80 maximum
0.5 mm	60 maximum
75 micro-m	10 maximum

- .2 Gravel for stabilization of trench bottoms

- a) Well graded sandy gravel - 75 mm maximum size complying with the following gradation:

Sieve Size	Percent Passing
75 mm	90 - 100
4.75 mm	20 - 50
0.5 mm	5 - 25
75 micro-m	0 - 5

- b) Washed rock - 75 mm maximum size with maximum 5% passing the 4.75 mm sieve.

## 2.2 Native Fill

- .1 Material excavated from trench excavation and approved by the Town. Fill material shall be free of stones larger than 200 mm, organic material, and other deleterious material.

## 2.3 Imported Fill

- .1 Imported backfill material for trenches shall be free from organic material or any perishable or objectionable material that would prevent proper consolidation.

## 2.4 Sand

- .1 Sand for backfill of trenches shall comply with the following gradation.

Sieve Size	Percent Passing
9.5 mm	100
4.75 mm	90 - 100
150 micro-m	20 maximum

## 2.5 Filter Cloth

- .1 Non-woven polyester in accordance with CGSB-148.1, 175 g/m<sup>2</sup>, 1.7 mm thickness. Submit product data to Town for approval.

## 3.0 EXECUTION

### 3.1 Site Preparation

- .1 Inspect and record condition of existing buildings and surface features which may be impacted by construction. Submit to Town prior to construction.
- .2 Protect all existing features within and along the trench alignment from damage due to construction activities. Excavations shall not encroach on normal 45° bearing support under any foundation without suitably designed and installed temporary support measures.
- .3 Clear the surface of the ground or road within the working area.
- .4 Dispose of refuse in a manner satisfactory to the Town.
- .5 Clearing, grubbing, and topsoil stripping and stockpiling shall be in accordance with Section 31 10 00 – Site Clearing.
- .6 Precutting Paved Surfaces
  - a) Refer to Section 34 01 26.81 – Concrete Paving Removal.
  - b) Cut pavement in straight lines parallel to the trench centreline.
  - c) Cut width shall not exceed the specified maximum trench width at ground surface.
  - d) Prevent the destruction of pavement in excess of the allowable width, by supporting the trench, by sheeting or other means.
  - e) Cutting pavement in excess of the allowable width is allowed if the nature of the soil is such that sheeting of the trench wall is impractical.

- f) Dispose of cut pavement.
- g) Where, in the opinion of the Town, the existing pavement is of such condition that precutting of pavement is not necessary, the pavement may be cut by trenching equipment upon receipt of written permission from the Town.

### 3.2 Excavation

#### .1 Depth

- a) Excavate the trench to a depth sufficient to lay the pipe as shown on the Drawings.
- b) If any part of the trench bottom is excavated in error below the specified grade, correct with approved materials compacted as specified under Article 3.4 - Pipe Bedding, at the Contractor's expense.

#### .2 Width

- a) Excavate trench width at the bottom such that the pipe can be laid and jointed as specified and backfill placed and compacted as specified.
- b) Trench width dimensions are described in the specifications for installation of the pipe and on the Drawings.
- c) Increase trench widths to allow placing of timber supports, sheeting and bracing, but do not exceed the maximum trench width shown on Drawings.
- d) Make trench walls vertical to 300 mm above the top of the pipe and maintain widths above this level within limits shown on the Drawings or in accordance with safety regulations.
- e) Pipe design is dependent upon the type of bedding specified and the class of backfilling in the pipe zone, as well as the width of the trench. If the Contractor uses trenching equipment or trenching methods that result in a wider trench than specified under the installation of pipe, then corrective work shall be performed as required by the Town, at the Contractor's expense. The corrective work may take the form of either or both of the following:
  - i) Supply and installation of a higher class of bedding and backfilling in the pipe zone.
  - ii) Supply and installation of a stronger class pipe.

#### .3 Length

- a) Excavate trenches only as far in advance of pipe laying as safety and traffic conditions permit and as far as the Town shall allow.
- b) For arterials and collector roads the maximum length of open trench excavation ahead of pipe laying is 15 m.
- c) For residential roads, lanes, boulevards, and non-paved areas the maximum length of open trench excavation ahead of pipe laying is 30 m.

- .4 Excavate so that the pipe can be laid to the line and grade as shown on Drawings, or as established by the Town.
- .5 Stockpile material excavated alongside the trench in authorized working areas in a manner that will not endanger the work, hinder pedestrian or vehicle traffic, block surface drainage or obstruct access to other utilities. Where excavated material cannot be piled along the trench in compliance with the above restrictions, remove it from the site and stockpile at an acceptable location for return to the trench for backfilling. Do not stockpile excavated material over existing pipelines.
- .6 Windrow reusable gravel and keep it separate from the remainder of the excavated material so that it can be replaced when the backfilling operation has been completed.
- .7 Dispose of waste or surplus material as per Article 1.4 - Disposal.
- .8 Keep excavations dry while work is in progress. Protect excavations against flooding and damage from surface runoff and/or groundwater.
- .9 The expense of removing water from trenches, regardless of origin, is the responsibility of the Contractor.
- .10 Obtain all necessary approvals prior to discharging water to surface drains, watercourses, or drainage areas.
- .11 Common Excavation
  - a) Excavation of materials, with the exception of surface gravel, pavement, or rock, is classified as common excavation.
  - b) In ledge rock, boulders, or large stones, over-excavate 150 mm below the pipe level.
- .12 Unsuitable Material
  - a) Unsuitable material is material in the trench at subgrade that is unstable or which contains ashes, cinders, organic material, or large pieces of inorganic material, or is otherwise unsuitable, and which, in the judgment of the Town, should be removed.
  - b) Excavate and remove unsuitable material to a width and depth ordered by the Town. Backfill the subgrade with an approved material compacted in 150 mm lifts to provide a continuous bearing for pipes. Replacement material shall be washed rock, pit-run gravel, or well-graded sandy gravel.
  - c) Disposal of unsuitable material shall be in accordance with Article 1.4 - Disposal.
  - d) Payment will be made for removal and replacement of unsuitable material if the Town orders the work.
  - e) Material that becomes unstable or unsuitable through the Contractor's failure to divert surface water or control ground water in the trench shall be excavated and removed as waste material and replaced with approved material at the expense of the Contractor.
- .13 Hand Trenching, Tunneling, Boring, and Augering

- a) Employ hand trenching, tunneling, boring, or augering methods where specified on the Drawings or ordered by the Town.
- b) Submit complete details regarding tunneling, boring or augering methods proposed in writing to the Town, and do not commence work until after the Town has advised in writing that the work may proceed.

.14 Temporary Protective Structures

- a) Temporary protective structures, bracing, shoring and sheeting are the responsibility of the Contractor and shall be designed by a Professional Engineer registered in Alberta.
- b) Observe safety regulations of the Occupational Health and Safety Act with regard to protection of the work, property, and structures adjacent to the Work and maintenance of the trench widths.
- c) Where closed sheeting is required it shall be installed such that adjacent soil cannot enter the trench either below or through sheeting.
- d) Moveable trench cages may be used in lieu of conventional shoring, provided they comply with all applicable safety regulations and permit installation of the pipe, bedding, and pipe zone material as specified.
- e) Increase trench widths as necessary to allow placing of supports, sheeting, and bracing, but do not exceed the maximum trench widths shown on the Drawings, or provide for corrective measures.
- f) Where damage to adjacent structures will not result, remove temporary protective structures and backfill as specified for the pipe zone and the trench.
- g) Leave temporary structures in place where damage to adjacent structures may result, or if directed by the Town.

.15 Special Supports

- a) Construct special supports of timber, concrete or other material, as ordered by the Town, where the bottom of the trench is unstable and over-excavation is judged by the Town to be uneconomical.

.16 Interfering Services

- a) Provide for the uninterrupted flow of all watercourses, sewers, and drains encountered during the work.
- b) Support existing water mains, sewer pipes, gas lines, and other pipes to protect them from damage.
- c) Repair and make good at the Contractor's expense any damage which may occur to any water main, sewer pipe, gas line, or other pipe and to any electrical conductor, cable, sidewalk, curb, or structure.
- d) Determine the locations of all structures, pipes, manholes, and valves by contact with the Town and the examination of Drawings. If necessary, explore and excavate for such purposes.

- e) Remove abandoned utility service lines encountered in areas of construction. Cap, plug or seal abandoned lines and record locations on Drawings of Record.

### **3.3 Trench Crossings**

- .1 Existing pipelines shall be exposed by hand digging or hydro-vacuuming. No mechanical excavation shall be undertaken within 1.0 m of the anticipated location of an existing pipeline. Hydro-vacuuming is the preferred method of confirming the location of existing utilities near the surface.
- .2 Give notice to the Town of pipeline crossings at least 48 hours prior to commencement of work on pipeline crossings. Excavation cannot commence until a representative of the pipeline to be crossed has properly located the pipeline.
- .3 Refer to Article 4.0 of Section 01 52 00 – Construction Facilities for additional requirements.

### **3.4 Pipe Bedding**

- .1 Pipe bedding shall be in accordance with the Drawings and with the specifications for installation of the pipe.
- .2 Do not proceed with placing pipe bedding until the Town has inspected the trench.

### **3.5 Backfilling in the Pipe Zone**

- .1 The pipe zone is defined as that part of the trench from the bottom of the pipe bedding to 300 mm above the top of the pipe or above the top of the highest pipe in a combined trench.
- .2 Backfilling in the pipe zone shall be in accordance with the Drawings and with the specifications for installation of the pipe.

### **3.6 Trench Backfill**

- .1 Trench backfill is defined as backfill above the pipe zone.
- .2 Do not proceed with trench backfill until the Town has inspected and approved the bedding and backfill in the pipe zone.
- .3 Place backfill in a dry trench.
- .4 Place backfill by rolling down a slope in the trench or lower by machine. Prevent backfill from dropping vertically.
- .5 Backfill as close as possible to pipe laying operations so that trenches are left open no longer than absolutely necessary.
- .6 Protect all open excavations when construction is not ongoing with fencing, barricades, flashing lights, etc. and provide watchmen for site security and public safety if required by the Town.
- .7 There shall be no open trench permitted at the end of the last working day prior to weekends or holidays.

- .8 Plan the backfilling operation so that exposure of the backfill material to frost is kept to a minimum. Use no large frozen chunks of soil as backfill.

### 3.7 Classes of Backfill

- .1 Class I (Arterials and Collector Roads)
  - a) Place pit-run gravel or sand in uniform 150 mm lifts over the whole width of the trench, each lift compacted to 98% of the maximum density as determined by the Standard Proctor Compaction Test.
  - b) Remove all surplus excavated material and stockpile on site as directed, or dispose of it as directed by the Town.
  - c) Bring the compacted granular material up to the original grade and restore the surface to original or better condition.
  - d) Remove excess granular material to allow surface restoration.
- .2 Class II (Residential Roads, Lanes and Non-Paved Areas)
  - a) Place native backfill material in uniform lifts not exceeding 150 mm over the width of the trench, each lift compacted using mechanical compaction equipment. Compact to 98% of the maximum density as determined by the Standard Proctor Compaction Test.
  - b) Backfill material shall be free of wood, brush, or other perishable, objectionable material. No rocks larger than 200 mm shall be present in the backfill material.
  - c) The moisture content of the backfill material shall be controlled by the Contractor as necessary to achieve compaction as specified, and at the Contractor's expense. Supply and add water if it is necessary to increase moisture content. Spread and dry backfill material if moisture content is above optimum.
  - d) Supply and place imported material at the Contractor's expense if moisture content cannot be adjusted.
  - e) Where, in the opinion of the Town, the excavated material is unsuitable for backfilling purposes, the Contractor shall, upon written order from the Town, use imported material.
  - f) Where the excavation is carried out on a gravel road, bring the compacted excavated material up to the base of the surface gravel and place surfacing gravel to match the existing surface.
- .3 Fillcrete
  - a) Uniformly place fillcrete from the top of bedding to the designated or pre-existing subgrade elevation.
  - b) Protect fillcrete from freezing or other adverse weather conditions for a minimum of 24 hours following placement.
  - c) Fillcrete that is exposed to significant infiltration of water within 24 hours of placement must be removed and replaced.



- d) A minimum of 150 mm of granular base course must be placed on the fillcrete surface before allowing any vehicular traffic over the fillcrete. Granular base course may be placed 24 hours following the placement of the fillcrete.

.4 Backfilling Tunnels and Boreholes:

- a) Backfill all voids around carrier pipe or, if there is a casing, backfill all voids around the casing with sand placed manually, mechanically, or pneumatically.
- b) Alternatively, the Contractor may pressure grout voids or fill them with urethane foam.
- c) Seal both ends of casings.

**3.8 Cleanup**

- .1 Clean up and dispose of all excess material, trash, rocks, boulders, and debris as work progresses and in accordance with Article 1.4 - Disposal.
- .2 Refer to Section 01 74 23 – Final Cleaning for additional requirements.

**3.9 Restoration**

- .1 Restore or replace all sidewalks, curb, gutter, shrubs, fences, poles, roads, or other property and surface structures damaged or removed during the course of the work to a condition equal to that before the work began, furnishing all labour and materials at the Contractor's expense.
- .2 Restore trench surfaces to their original level and conditions after backfilling or as detailed on the Drawings.
- .3 Restore all public roads, temporary access roads, and stockpile and storage sites to a condition at least equal to that in which they were found.
- .4 Restore other working areas that were affected by the construction operation by re-grading, re-gravelling, and/or pavement repair as necessary to restore these surfaces to their original level and condition.

**3.10 Trench Settlement During Warranty Period**

- .1 During the Warranty Period, the Contractor shall replace materials and rectify all failures that occur as a result of settlement of trench backfill or collapse of trench walls.
- .2 Trenches in which backfill settles shall be refilled with the specified backfill material. Paved surfaces that are adjacent to trenches or on trench backfill, which fail during this period, shall be replaced or repaired in an approved manner.
- .3 Replacement of materials and rectification of failures that occur as a result of settlement of trench backfill or collapse of trench walls, are entirely the responsibility of the Contractor and such repair work shall be done at the Contractor's expense.

**3.11 Maintenance During Warranty Period**

- .1 During the Warranty Period, the Contractor is responsible for extra road maintenance required as a result of trench settlement or disruption of surface drainage.
- .2 The Contractor shall coordinate this extra maintenance with the normal maintenance provided by the Town and make whatever arrangements that may be required with the Town.

- END OF SECTION 31 23 33 -

**Division 32 – Exterior Improvements**

## **1.0 GENERAL**

### **1.1 RELATED SECTIONS**

- .1 32 92 19 – Seeding
- .2 32 92 23 - Sodding
- .3 32 91 19.13 – Landscape Grading

### **1.2 METHOD OF PAYMENT AND REVIEW**

- .1 Maintenance will be paid in monthly progress payments during the performance of the landscape maintenance and warranty work in contract. All maintenance invoices to be accompanied with maintenance log and material receipts.
- .2 Payment shall be subject to Consultant's review of Contractor's workmanship and performance during the maintenance and warranty period. Maintenance and warranty work that is deemed improper, inadequate, incomplete and not in accordance with contract specifications shall be deemed unacceptable by the Consultant.
- .3 Any additional maintenance beyond the specified maintenance and warranty period that is required for Contractor to achieve final acceptance shall be provided at Contractor's own expense.
- .4 The Consultant reserves the right to reduce monthly payments for maintenance services and/or extend maintenance period when:
  - .1 The Contractor submits false or inaccurate maintenance log data.
  - .2 Improper, inadequate or incomplete maintenance is provided.
  - .3 The Contractor fails to perform required maintenance services on schedule.
- .5 Payment of Landscape Maintenance shall be twelve payments (May through October, for a minimum of two years) totalling 80% of the total budgeted allowance for Exterior Warranty and Maintenance with the remaining 20% Warranty and Maintenance Holdback to be released after the issuance of Final Acceptance and/or the release of landscape securities by the municipality.
- .6 If the Contractor fails to provide the specified level of administration and maintenance, additional holdbacks and penalties may be applied, as per the General Conditions of the Contract.

### **1.3 MAINTENANCE PERIOD**

- .1 The Contractor shall provide maintenance for all plants and other related work for a minimum of two years that shall include two full and complete growing seasons (May 1st to October 31st) commencing from the Date of Substantial Completion of the Work. All maintenance requirements will be extended to October 31st of the second year of the warranty period, which may extend beyond the Final Acceptance date of the warranty period and work. Note: The Town has the option to waive the Contractors warranty and maintenance period and turn this

work over to a Landscape Maintenance Contractor. If this option is applied, a formal Construction Completion Review of all work will be completed by all parties prior to and acceptance agreement by the Town, Contractor and Landscape Maintenance Contractor. Once accepted, all further Contractor warranty is waived by the Town.

#### **1.4 QUALITY ASSURANCE**

- .1 Site Supervisor: perform all landscape maintenance services at all times under the on-site direction and supervision of a competent, knowledgeable and certified Landscape Journeyman Gardener with a minimum of five years of progressive supervisory experience.
- .2 Staffing: provide experienced, competent and trained grounds maintenance personnel to perform all tasks and services in a knowledgeable and professional manner. Workers shall act appropriately and professionally at all times while working on site. Contractor shall not assign any worker that the Consultant deems incompetent, careless, insubordinate, or otherwise objectionable to work on site grounds.
- .3 Site Security: Contractor's personnel shall carry personal identification at all times while working on site. Identification shall be presented when requested by the Consultant or other site security staff. All employees must check in with site security upon entering and leaving the premises.
- .4 Employee Attire/Safety Vests: Contractor's employees shall be properly attired at all times. Each employee working on site shall wear a reflective coloured safety vest at all times for safety and visibility.
- .5 Submit the following for Consultant's review and approval:
  - .1 Pesticide Applicator's certificate of qualification, Landscape Class: submit at commencement or maintenance each season.
  - .2 Landscape Journeyman Gardener's certificate of qualification and credentials regarding site supervisor's maintenance experience and horticulture knowledge.
  - .3 Pruning credentials of each Certified Arborist and other landscape personnel who may perform pruning services.
  - .4 Grounds maintenance log: submit to the Consultant each week.
  - .5 Other required submittals as noted and specified in contract.
- .6 During the Warranty and Maintenance Period it is the responsibility of the Contractor to monitor plant health and replace (without Consultant notice) immediately if dead or in poor condition.

#### **1.5 MAINTENANCE COORDINATION:**

- .1 The Contractor is responsible for reviewing all snow clearing and storage considerations with the Town and Snow Removal Maintenance Company to mitigate plant damage during the two (2) year warranty and maintenance period. Considerations should include: snow removal (equipment use), snow storage (assigned locations, drainage and erosion/sediment mitigation), and snow/ice control material use (sand, salt, gravel). Any plant material damaged by snow

removal, storage, or material uses shall be considered Third Party damage and replaced or rehabilitated at the Town's cost.

- .2 All seasonal (spring, summer and fall) landscape maintenance is to be provided by the Contractor. Any plant material damage caused by the maintenance (spraying, fertilizing, pruning, watering/irrigating, etc) of the Property Management company (or their Maintenance company) will be considered Third Party damage and replaced or rehabilitated at the Town's cost.
- .3 Pedestrian Desire Lines: The Contractor is responsible for coordinating the installation of Temporary Controls to prevent shrub bed damage caused by pedestrian desire line traffic during the two (2) year warranty and maintenance period. Any identified desire lines shall be reviewed and assessed by the Consultant and Town for potential hard surface restoration. Note: Desire line development will typically occur during the first winter of the maintenance and warranty and maintenance period. The Contractor should visit the site during the winter months to assess and contact the Consultant to discuss Temporary Control requirements.

## **1.6 SITE REVIEWS / MEETINGS**

- .1 During initial maintenance establishment period, site meetings and inspections may be conducted minimum every two weeks between Contractor and the Consultant. Contractor's workmanship and performance will be reviewed and other landscape concerns or issues will be addressed and evaluated.
- .2 Subsequent site meetings and inspections may be held minimum once a month after landscape has adequately established as determined by the Consultant.
- .3 The Consultant shall, at his direction, conduct random site inspections throughout the maintenance period to evaluate the quality and completion of work performed. Deficient work, noted by the Consultant, shall be promptly corrected by Contractor.

## **1.7 MAINTENANCE LOG & PAYMENT**

- .1 Complete a daily maintenance log during each day of maintenance activity throughout contract.
- .2 Submit log to the Consultant at end of each week.
- .3 Contractor's site supervisor shall complete and sign maintenance log at completion of work each day. Contractor shall ensure all maintenance log data is true and accurate.
- .4 Record and update all maintenance activities including date/time of activities, materials and quantity used on site, location where activities were carried out, number of employees and name of supervisor on site.
- .5 Detail applications of all chemical pesticides including target weed, insect or other pest, mode, type, and rates of application and results. Include date, time, weather conditions and name of licensed applicator. Keep and maintain pesticide applicator's log.
- .6 Maintenance Invoice: approval of Contractor's invoice requires submittal of verifiable and accurate maintenance log data that supports all maintenance

services being invoiced. Contractor shall ensure all work and tasks being invoiced have been performed and completed in accordance with contract specifications to ensure payment. Maintenance services and tasks being invoiced shall be subject to the Consultant's review and approval.

### **1.8 SOIL TESTING**

- .1 Provide minimum five soil tests each spring from locations randomly selected by the Consultant on site. Contractor shall arrange and pay for services of accredited testing laboratory, approved by the Consultant.
- .2 Test soil for: existing soil nutrients; soil pH value; total soluble salts (electrical conductivity); percentage of organic matter; soil texture and percentage of sand, silt and clay; fertilizer recommendations; and recommendations for soil amendments.
- .3 Submit original copy of each soil test to the Consultant. Review results with the Consultant.
- .4 Correct and amend soil as recommended. Perform additional tests to verify results of work completed to amend and correct soil deficiencies.
- .5 Regularly use a moisture sensor device to test and measure availability of moisture in native turf and plant soil areas. Record data in maintenance log.

### **1.9 DELIVERY, STORAGE AND HANDLING**

- .1 No equipment or materials shall be stored on-site. Remove all equipment and materials off site each day to Contractor's own storage space.
- .2 Leave tools, equipment and materials in a secure storage area when not in use during period of operation and at completion of each scheduled task.
- .3 Contractor shall be present to accept delivery of all equipment and/ or material shipments.

### **1.10 MAINTENANCE SCHEDULE**

- .1 Schedule: submit a neat, legible and detailed maintenance schedule at commencement of maintenance each spring. List all daily, weekly and monthly maintenance services and tasks with approximate dates for completion. Review schedule with Consultant for approval.

### **1.11 TRAINING**

- .1 Contractor shall thoroughly train and instruct the Town's ground maintenance personnel regarding plant care for each plant installed on site, care of all native grassed areas and maintenance for other site features. Training shall be provided prior to termination of maintenance period in contract.
- .2 Provide adequate training sessions both on site and in an office setting to review required landscape maintenance services and discuss all maintenance issues and concerns regarding the installed landscape.

**1.12 GENERAL**

- .1 Landscape maintenance services and tasks in contract include for all equipment, labour, materials and incidentals necessary to complete all maintenance requirements in contract.

**2.0 PRODUCTS**

**1.13 WATER**

- .1 Record quantity of water supplied and applied on site in maintenance log.
- .2 The Town will supply Contractor with a limited supply and access to water on site using building source but only if available.
- .3 Irrigation system control (if applicable) is to be supervised by the Contractor during the two (2) year warranty and maintenance period. Refer to Section 1.4.6 for coordination requirements.

**1.14 FERTILIZER**

- .1 Plant Fertilizer: as directed by the Consultant or in accordance with soil tests. Use only controlled or slow release plant fertilizers.
- .2 Do not use “weed and feed” type fertilizer.

**1.15 TOPSOIL AND PEATMOSS**

- .1 Imported Topsoil: natural, fertile, friable, shredded, screened agricultural soil containing no less than 6% organic matter, pH value ranging from 5.9 to 7.0, E.C. – salinity reading not exceeding 1.5, loam soil texture, and reasonably free from subsoil, slag, clay, stone, lumps, live plants, roots, sticks, quack grass, noxious weeds and foreign matter.
- .2 Peatmoss: decomposed plant material, fairly elastic and homogeneous, free of decomposed colloidal residue, wood, sulphur and iron. Minimum 80% organic matter by mass, pH value between 4.0 and 5.0.

**1.16 PEST CONTROLS**

- .1 Chemical pest control: supply and install all required chemical pesticides including herbicide, insecticides and fungicides, when Integrated Pest Management Principles (IPM) are considered ineffective in controlling or suppressing pest populations on-site.
- .2 Pesticide Application Records: pesticide application records shall be kept by licensed applicator. Submit written records at completion of each pesticide application on-site. Provide information regarding target weed, insect or other pest, mode, type and rates of application and results. Include date, time, weather conditions and name of licensed applicator.

**1.17 PROTECTIVE MATERIALS**

- .1 Rodent Protection: chemical repellent, liquid soap, and galvanized woven wire mesh (or equivalent product) complete with fasteners. Any plant material damaged by animals or rodents shall be replaced at the Contractors cost.



- .2 Burlap Wrap: natural untreated products.
- .3 Perforated plastic spiraled strip for horticultural use.
- .4 Winter snow traction and de-icing products protection: 1.2m snow fence lined with 6mm clear poly liner where heavily sanded and/or salted roads and walks interface with planted beds.

**1.18 SNOW FENCING**

- .1 Snow fencing (Temporary Controls): Standard type, 1.2m height and posts supplied by Contractor.

**3.0 EXECUTION**

**1.19 GENERAL WORKMANSHIP**

- .1 The Consultant will be the "Sole Judge" for assessing Contractor's maintenance performance and workmanship.
- .2 Schedule timing of operations to growth, weather conditions and use of site. Do each operation continuously and complete within reasonable time period.
- .3 Do not perform work in any location or manner that may endanger the health and safety of the public.
- .4 Coordinate maintenance practices with the Consultant. Alter maintenance schedules, when necessary, to accommodate site activities.
- .5 Collect and dispose of excess material and debris to municipal disposal site weekly. Separate and recycle materials suitable for composting.
- .6 Contractor shall promptly correct all maintenance deficiencies noted by Consultant during site meetings or following notification of site inspection results completed by the Consultant.

**1.20 SPRING CLEAN-UP**

- .1 Complete spring clean-up by May 15th or as soon as working conditions are favourable.
- .2 Remove and dispose of protective coverings and mulch used in winter protection.
- .3 Thoroughly, clean, collect and remove all sand, rock chips, salt and other debris accumulated during winter months from all maintained turf and hard surface areas. (Refer to Section 1.4.6) Dispose in approved municipal disposal site.
- .4 Remove and store on site: snow fence and stakes, burlap and other protective materials. Reinstall all loose edging material or replace if necessary
- .5 Completely clean planting beds, tree wells, and planters of all debris, leaves, litter, unsuitable plant growth and other foreign matter. Loosen and lightly cultivate soil without disturbing roots of permanent plantings.
- .6 Place specified soil in all plant beds where settlement has occurred.
- .7 Sweep and clean all hard surfaces to maintain a clean and tidy appearance.

## 1.21 TREE AND SHRUB MAINTENANCE

- .1 Monitoring:
  - .1 Contractor shall regularly monitor and visually inspect the health and care of all plants on site to ensure adequate plant care is provided in accordance with specifications that will enable plants to grow in a vigorous, healthy and non-stressed condition.
  - .2 Contractor shall indicate results of each plant monitoring inspection in maintenance log.
- .2 Trees and Plant Beds:
  - .1 Maintain all plants during the maintenance period as necessary each week to maintain healthy and vigorous growing conditions. As native plants become established the need for regular maintenance measures will gradually decrease. Consult with the Consultant of the need to reduce various maintenance activities.
  - .2 Cultivate tree pits, planting beds and planters as necessary to maintain a loose friable soil free from perennial weeds and grass including their roots. If necessary, pull weeds and their roots by hands or spot spray with approved herbicide without damaging other plants.
  - .3 Remove and dispose of all debris, rubbish, and animal waste each week. Provide a clean and well-maintained appearance within all planting beds and tree wells.
  - .4 Edge all plant beds evenly to depth of 100 mm as necessary to maintain original line and shape. Remove all cut edges from site.
  - .5 Edge and maintain neat, clean and circular tree wells. Do not damage roots of plants when re-edging. Keep well area free of weeds and litter.
  - .6 Record and remove dead and unhealthy plants including roots from site and install replacement plants when necessary.
  - .7 Straighten all plants that lean or sag. Replant any plant that settles or which is planted too low as necessary.
  - .8 Rake, level and re-spread mulch within plant beds and tree wells to achieve a fresh appearance and to correct any disturbances as necessary.
  - .9 Keep mulched areas clean and free of all debris, litter and weed growth. Place additional mulch to match existing, when necessary, to maintain original depth.
  - .10 Place planting soil in plant beds to correct any low and-uneven areas.
  - .11 Maintain correct soil conditions in plant beds to promote optimum growth and health for each plant. Add soil amendments and organic matter according to soil analysis
- .3 Staking and Tree Protection:
  - .1 Keep required stakes and guy wires taut and plants plumb during maintenance period. Repair guy wires as required. (if applicable).
  - .2 Remove support stakes and staking accessories on self-supporting trees as required. At completion of maintenance all stakes and guying materials shall be removed from site. (if applicable).

- .3 Install and keep plant protection materials in proper repair and adjustment when required or when directed by the Consultant. (if applicable)

## 1.22 FERTILIZATION

- .1 Organic Fertilizer: Contractor shall submit a proposal to use organic fertilizers instead of synthetic fertilizers in maintenance of all plant material prior to commencement of work in spring. The Consultants will review proposal for acceptance.
- .2 Synthetic Fertilizer:
  - .1 Apply plant fertilizer as directed by the Consultant or in accordance with soil test analysis. Use only controlled or slow release plant fertilizers. Record all plant fertilizations in maintenance log.
  - .2 Plant fertilizer shall generally be applied during second year and subsequent years of maintenance unless directed otherwise based on soil analysis.
  - .3 Apply 30-10-7 or 10-6-4 plant fertilizer or similar to all trees by June 1st at rate of 18 g/25mm of caliper per tree from trunk to drip line. Apply fertilizer using a pressurized injection method of injecting fertilizer into the soil.
  - .4 Plant Beds/Specimen Plants: apply liquid 20-20-20 fertilizer at 1 kg to 250 litres of water. Alternatively, apply Ozmocote 14-14-14 slow release granular fertilizer in accordance with manufacturer's specifications by June 1st each spring.
  - .5 Apply water after applying granular fertilizer to ensure penetration of fertilizer into soil and roots

## 1.23 WATERING

- .1 Monitor: regularly test and monitor soil moisture conditions and a plant's need for water to ensure adequate health and survival. Natural rainfall shall be considered in determining the amount and frequency of watering.
- .2 All plants shall generally be watered on a regular basis to ensure healthy and vigorous growing conditions and to ensure survival. During periods of dry soil conditions and warm weather provide additional deep root watering to maintain health.
- .3 Gradually, as native plants become established the need for water shall be reduced. Consult with the Consultant regarding the need to reduce watering.
- .4 Apply sufficient water per application to obtain moisture saturation of the plant root ball.
- .5 Any additional plant watering that may be required during the early spring or late fall due to dry weather conditions shall be the Contractor's responsibility to ensure plant warranty is maintained. Contractor shall monitor weather conditions and apply water as necessary to protect and provide healthy growing conditions.

**1.24 PRUNING**

- .1 Prune all plants in accordance with proper practices and standards of the International Society of Arboriculture (ANSI A-300 Pruning Standards).
- .2 Use only qualified and experienced Certified Arborists and other personnel in performance of all tree pruning services. Shrubs and perennial plants may be pruned by contractor's trained and experienced landscape journeymen gardeners if approved by the Consultant.
- .3 Do not shear or top any plant, strip lower branches or raise crown.
- .4 Use sharp pruning tools at all times to prune plants without tearing and ripping plant tissue.
- .5 Limit pruning to removal of dead, diseased or injured branches, stray branches, double leaders, water sprouts, suckers and to compensate for loss of roots as a result of transplanting. Remove undesirable, rubbing and crowded limbs and maintain an adequate clearance where necessary.
- .6 Prune to take advantage of the plant's growth habit, accentuating its natural tendencies, seldom modifying them.
- .7 Prune to ensure that there is a central leader on coniferous trees.
- .8 Improperly pruned plants shall be replaced by Contractor.

**1.25 PLANT REMOVAL AND REPLACEMENT**

- .1 Contractor shall immediately remove from site all dead, unhealthy and unappealing plants during the maintenance/warranty period or when directed by the Consultant. Healthy new replacement plants shall be promptly supplied and installed by Contractor subject to availability to ensure site landscaping is maintained as originally designed. Replacement plants shall meet specifications and be approved by the Consultant.
- .2 Trees flagged for replacement shall be marked with orange florescent paint sprayed directly on tree trunk.
- .3 Replacement plantings shall be performed in a timely manner and as soon as conditions permit. Contractor shall advise Minister when availability of any replacement plant will be delayed.
- .4 All replacement plants must be fully established by termination of maintenance period. Contractor shall continue to provide specified maintenance for replacement plants not fully established until deemed acceptable by the Consultant.
- .5 The Consultant reserves the right to extend warranty on all plants not fully established or where replacement plantings have been delayed by Contractor.
- .6 Required replacement plantings during the maintenance period resulting from theft and vandalism shall be the Town's responsibility. All reported theft or vandalism will be reviewed and confirmed by the Consultant.

**1.26 WEED, INSECT AND DISEASE CONTROL**

- .1 Contractor shall manage and control pests using Integrated Pest Management (IPM) principals that utilizes regular monitoring to identify pests, considers various control options (biological, physical, cultural, mechanical and chemical) before implementing an effective, economical and environmentally acceptable solution to prevent and suppress pests.
- .2 Contractor to advise the Consultant of all identified pests on-site, controls implemented to manage pests and the outcome of each treatment action. Record all information in maintenance log.
- .3 Submit a detailed Integrated Pest Management program that will be implemented on site prior to commencement of maintenance each spring.
- .4 Other general considerations include:
  - .1 Pest Monitoring: monitor and visually inspect all landscape areas each week to identify potential pest problems. Pest problems include insect, disease and weed infestations. Contractor shall ensure that all pest infestations are properly and positively identified by using the services of a specialist. Submit report to the Consultant.
  - .2 Determine susceptibility of plant species to pesticide damage before recommending or applying chemical pesticides. Submit specified pest control information and obtain the Consultant's approval prior to any pesticide application. Submit information on using IPM principles to control pests.
  - .3 Pesticide Applicator: when pesticides are deemed necessary to control pests, the application of each pesticide on site shall be performed by a licensed pesticide applicator. Submit a pesticide applicator's log to the Consultant at completion of each pesticide application
  - .4 Perform pest control applications in accordance with Provincial codes and regulations regarding use and application of pesticides. Provide the Consultant with three day advance notification of intent to apply chemical pesticides.
  - .5 Prepare and apply pesticide according to manufacturer's specifications. Minimize drift at all times. Erect signs to notify building occupants and the public regarding pesticide use on site.
  - .6 Timing: pesticides shall be applied at times, which limit any possibility of contamination from climatic and other factors. Monitor weather conditions to avoid making application prior to inclement weather to eliminate potential runoff from treated areas. Confine all applications to outside of regular site operation hours to avoid contamination from drift and its effect on surroundings, occupants of nearby buildings and site users.
  - .7 Ineffective and improper application of pesticide shall be immediately corrected by Contractor. Additional applications of pesticides shall be completed approximately two weeks after any initial application is noted as visibly inadequate or deemed deficient by the Consultant.
  - .8 Apply pre-emergent in spring or fall to control weeds in plant beds and tree wells.
  - .9 Shallow cultivate and weed plant pits and beds when required.

- .10 Weeds: apply pesticide to eradicate weeds and foreign perennial grass within turf areas on site only when necessary and approved by the Consultant.
- .11 Insects: apply pesticide based on development stage of insects' life cycles to prevent loss or damage to plant material. Turf areas shall be treated when necessary to control turf diseases and insects.
- .12 Repair and pay for damage caused by application of pesticides.
- .13 Do not use soil sterility products.

**1.27 AUTUMN PREPARATION**

- .1 Leaf Removal: rake and vacuum leaves as they shed each week and remove from site. Continue to perform this service until leaves cease to fall.
- .2 Remove all leaves and other foreign debris from all plant beds, walkways and other hard surface areas, catch basins and from along all service roads and parking curbs each week. Clean all road and parking curbs free of leaves and other debris. Remove all collected leaves and other debris from site to approved waste recycling depot.
- .3 Cut back damaged foliage of perennials within one week after killing frost. Stake location of perennials, if necessary, and thoroughly water. Apply organic mulch around plants as necessary for winter protection.
- .4 Deep root water all plant material between October 1st and 15th. Supply clean water, water tanker, equipment, hoses and labour necessary to apply water.
- .5 Protect plants from rodent, animal, sun and all other damage by supplying and installing appropriate plant protection materials.
- .6 Sweep and clean all hard surfaces. Remove all debris and litter from site.
- .7 Flag utility services for winter identification as necessary.
- .8 Erect stakes and snow fences as required or as directed by the Consultant and/or Town.

**1.28 CLEANLINESS OF GROUNDS**

- .1 Keep grounds in clean and tidy condition on a regular basis each week. Maintain clean site appearances free of all debris, litter and pests.
- .2 Provide prompt service (within two hours) when directed by the Consultant and/or Town to correct any inadequate or deficient clean up services.
- .3 Collect and dispose of excess material, litter and other debris to municipal disposal site following each clean-up. Contractor to pay all disposal costs.
- .4 Sweep and clean hard surfaces including curbs adjacent to areas of native turf and plant maintenance. Keep catch basins clean and clear of all debris resulting from site maintenance.
- .5 Keep all rocks, boulders and gravel surfaces clean and free of weeds and other pests. Ensure all other site features are kept clean and pressure washed when necessary to remove foreign matter.

## **1.0 GENERAL**

### **1.1 Description**

- .1 This section specifies requirements for landscape grading including subgrade preparation and topsoil placement.

### **1.2 Applicability to Landscape Contractors and Developers**

- .1 Landscape contractors working on projects for the Town shall have current membership of the Landscape Alberta Nursery Trades Association and are required to comply with these standards.
- .2 Developers are responsible for ensuring the employment of a reputable landscape company with current membership of the Landscape Alberta Nursery Trades Association for the fulfillment of all requirements of this specification in terms of the execution of the work and during the maintenance period.

### **1.3 Definitions**

- .1 "Weeds" includes, but is not limited to, dandelions, jimsonweed, quack grass, horsetail, morning glory, rush grass, mustard, lambsquarter, chickweed, crabgrass, Canadian thistle, tansy, ragwort, Bermuda grass, bindweed, bent grass, perennial sorrel, brome grass, red root, pigweed, buckweed, scentless chamomile, toadflax, foxtail, and perennial sow thistle.

### **1.4 Quality Assurance**

- .1 All soils testing and reports shall be by a recognized soils testing laboratory.
- .2 The Town shall be advised of the topsoil source a minimum of 5 days prior to delivery to allow scheduling of inspection by the Town.
- .3 The Contractor shall provide a soils report to the Developer's Landscape Architect and the Town prior to installation. The soils report shall detail the following:
  - a) Soil texture in accordance with the Canadian System of Texture Classification;
  - b) Soil pH;
  - c) Organic matter content by dry weight;
  - d) Macronutrients status; and
  - e) Conductivity.
- .4 The units in which each characteristic is reported shall correspond to the units specified in the applicable articles of this section. The soils report shall indicate whether the proposed topsoil sample meets the requirements specified. If the sample does not meet the specified requirements, the soils report shall prescribe the amendments, if any, that are necessary to bring the proposed topsoil into compliance with these specifications.

**1.5 Disposal**

- .1 All materials on site whether stockpiled, stored, or excavated are the property of the Town, and the Town reserves the right to keep any part or all of the material.
- .2 The Contractor shall dispose of all waste materials at sites to be located by the Contractor and approved by the Town.
- .3 Refer to Section 01 52 00 – Construction Facilities for further requirements.

**1.6 Related Work**

- .1 Section 34 01 00 – Subgrade Preparation
- .2 Section 32 92 19 – Seeding
- .3 Section 32 92 23 - Sodding

**2.0 PRODUCTS**

**2.1 Peat Moss**

- .1 Peat moss shall be of good horticultural quality, homogeneous, and free of foreign material, lumps, clay, soil, stumps, rocks, quack grass, and noxious weeds. Peat moss shall be pulverized and shall pass through a 37 mm screen. The peat moss shall have a pH between 4.5 and 6.0, conductivity not exceeding 1.5 mS/cm, maximum sulphate of 200 ppm, and no lime present.

**2.2 Sand**

- .1 Sand for horticultural use shall be free of vegetation, clay balls, or other foreign material and shall comply with the following gradation.

Sieve Size	Percent Passing
2.50 mm	100
1.25 mm	90-100
800 micro-m	80-90
315 micro-m	30-60
160 micro-m	2-10
63 micro-m	< 1

**2.3 Crushed Gravel**

- .1 Crushed gravel shall be maximum size 25 mm complying with the following gradation.

Sieve Size	Percent Passing
25 mm	100
19 mm	95-100
9.50 mm	60-80
4.75 mm	40-60
2.00 mm	25-45
425 micro-m	10-25
75 micro-m	2-10



## **2.4 Topsoil**

- .1 Topsoil shall be loose, friable soil, free from subsoil, slag, clay, stones, lumps, live plant roots, or other foreign materials. Organic matter to be between 4 and 15% by dry weight.
- .2 Topsoil pH to be between 6.0 and 8.0. Use lime or sulphur, as indicated by analysis of topsoil, to bring pH to the required range.
- .3 Topsoil shall be free from weeds and weed seeds, and shall be in a reasonably moist condition.
- .4 Topsoil shall be capable of sustaining vigorous plant growth.
- .5 Where topsoil must be imported, use loam or sandy loam as defined by particle size analysis using the hydrometer method and the mechanical analysis triangle of the Canadian System or Texture Classification. Submit details of imported topsoil to the Town for approval at least 5 days prior to delivery.

## **2.5 Equipment**

- .1 Grading equipment capable of spreading and trimming soil to the specified depth.
- .2 Compacting equipment capable of compacting soil as specified.
- .3 Cultivators capable of scarifying, discing, or harrowing.
- .4 Rollers of suitable size and mass to complete topsoil placement.
- .5 Other equipment as necessary to complete landscape grading as specified.

## **3.0 EXECUTION**

### **3.1 Preparation of the Site**

- .1 Complete backfilling before beginning grading.
- .2 Maintain slopes and adequate drainage during grading.
- .3 Do not allow mixing of topsoil and subsoil material.
- .4 Locate, mark, and protect all utilities and appurtenances (i.e. manholes, catch basins, valves, and hydrants).
- .5 Locate and protect all existing trees and shrubs.

### **3.2 Inspection of Materials on Site**

- .1 Obtain the Town's approval prior to using materials on the Site.

### **3.3 Grading Procedures**

- .1 Excavate to the required subgrade elevation.
- .2 Excavate rock and haul to disposal areas.
- .3 Excavate unsuitable material and haul to disposal areas.
- .4 Grades shall be within 30 mm of design grades.

### **3.4 Subgrade Preparation**

- .1 Scarify soil to a depth of 200 mm, or as otherwise specified or directed by the Town.
- .2 Work the soil with cultivating and mixing equipment until the soil is pulverized into pieces no larger than 25 mm across, inclusive of stones.
- .3 Scarify, shape, and compact the subgrade to a minimum of 95% of the maximum density as determined by the Standard Proctor Compaction Test.
- .4 Leave the surface of the compacted subgrade slightly higher than the required elevation; then trim to the required elevation.
- .5 Total compacted thickness shall be 200 mm.
- .6 Leave the finished surface even and free of depressions, humps, loose debris, and foreign material.
- .7 Do not permit vehicular traffic over the prepared subgrade.

### **3.5 Topsoil Placement**

- .1 The Town shall inspect the subgrade prior to the Contractor proceeding with topsoil replacement.
- .2 Do not place topsoil when subgrade or topsoil is frozen, excessively wet or dry, or in a condition that inhibits proper grading, cultivation, or compaction.
- .3 Spread topsoil uniformly over prepared subgrade to achieve a minimum compacted depth of 200 mm for sodded and seeded areas, unless otherwise specified or directed by the Town.
- .4 Cultivate topsoil to a depth of 200 mm, breaking down lumps. Remove stones larger than 25 mm, weeds, roots, and other foreign material from the Site.
- .5 Manually spread topsoil around trees and plants to prevent damage by grading and leveling equipment.
- .6 Float the area until the surface is smooth. Cut smooth and flush all areas adjacent to catch basins.
- .7 Fine grade to eliminate rough or low areas and to ensure positive drainage.
- .8 Boulevards – The finished topsoil level shall conform to the adjacent curb and sidewalk elevations and must provide for adequate drainage of sidewalk areas after turf establishment.
- .9 Buffer Strips – The finished topsoil level shall slope uniformly from the property line towards the back of the sidewalk at not less than 2%.
- .10 Utility Lots and Walkway – Where sidewalks are present, a swale shall be provided at a distance of at least one meter from either side of the sidewalk. The grade must be sloped away from the sidewalk at a minimum grade of 2%.
- .11 Median Strips and Traffic Islands – The finished topsoil level shall be even from curb to curb with crowning to accommodate drainage.
- .12 Compact topsoil with rollers to the satisfaction of the Town.

- .13 Final topsoil grades for seeded areas shall be flush to finished grades at surface structures (i.e. manholes, sidewalks, driveways, and curbs).
- .14 Final topsoil grades for sodding shall be 25 mm below finished grades at surface structures and 25 mm below the crown of adjacent turfed areas.
- .15 When abutting an existing turfed area, cut the existing turf to form a straight, non-jagged joint with the new seeded or sodded area.
- .16 The Town shall inspect the topsoil preparation prior to the Contractor proceeding with seeding or sodding.

- END OF SECTION 32 91 19-

**Part 1 GENERAL**

**1.1 RELATED SECTIONS**

- .1 32 01 90 – Maintenance of Planting
- .2 32 91 19 – Landscape Grading
- .3 32 92 23 – Sodding

**1.2 SUBMITTALS**

- .1 Submit the following samples and items though not limited to:
- .2 Submit to Consultant 500 g sample of each seed mixture intended to be used. Label sample to include Name, Project and date. Confirm that seed mix represents tested seed lots.
- .3 Submit certificate(s) of analysis with each seed sample. Seed analysis report to be current and show specie and variety of seed, date and results of all tests.
- .4 Submit written documentation from suppliers of seed and fertilizer showing all information as outlined in items 2.1.2 and 2.2.2 following
- .5 Submit all original seed labels and bags at completion of seeding to confirm amount of seed used on site.

**1.3 EXAMINATION**

- .1 Report to the Consultant in writing, any conditions or defects encountered on the site during or before construction on which work of this section depends and which may adversely affect its performance.
- .2 Do not commence work until such conditions or defects have been investigated and corrected.

**1.4 QUALITY ASSURANCE**

- .1 Contractor: should be a member in good standing of LANTA (Landscape Alberta Nursery Trades Association). Submit credentials or past related work experience prior to commencement of work.
- .2 Site Supervisor: provide a competent, experienced and knowledgeable site supervisor to direct and supervise all staff and work of contract. Supervisor should possess a Landscape Journeyman Gardner certification and have a minimum of five years of progressive supervisory experience. Submit name and credentials (or past related work experience) of the site supervisor to the Consultant for approval prior to commencement of work.
- .3 Staffing: provide experienced, competent and trained landscape personnel to perform all tasks and services in a knowledgeable and professional manner. Workers shall act appropriately and professionally at all times while working on site. Contractor shall not assign any worker that the Consultant deems incompetent, careless, insubordinate, or otherwise objectionable to work on site.

- .4 Contractor shall be responsible for ensuring that contract specifications are being adhered to. Failure of the Consultant to immediately reject unsatisfactory workmanship or to notify the Contractor of their deviation from the specification shall not relieve the Contractor of their responsibility to repair and/or replace unsatisfactory work.
- .5 Contractor shall obtain approvals for suppliers, sub-contractors, and all materials used in this section of work as specified and as directed by the Consultant.

## **1.5 PRODUCT HANDLING**

- .1 Deliver and store seed in dry, weatherproof place, protected from damage by heat, moisture, rodents, or other causes until time of seeding.
- .2 All manufactured materials such as fertilizers shall be delivered and stored on site in standard containers clearly indicating contents, weight, analysis and the name of manufacturer.

## **1.6 WARRANTY**

- .1 Contractor shall provide warranty for all seeded areas and materials and other related work for a minimum of two years that shall include two full and complete growing seasons (May 1st to October 31st) commencing from the Date of Substantial Completion of the Work. All seed maintenance requirements will be extended to October 31st of the second year of the warranty period, which may extend beyond the Final Acceptance date of the warranty period and work. Note: The Owner has the option to waive the Contractors warranty and maintenance period and turn this work over to a Landscape Maintenance Contractor. If this option is applied, a formal Construction Completion Review of all work will be completed by all parties prior to and acceptance agreement by the Owner, Contractor and Landscape Maintenance Contractor. Once accepted, all further Contractor warranty is waived by the Owner.
- .2 During the warranty period, monitor seeded areas and reseed (replant) all areas which have failed to develop into a healthy, vigorous growing stand of grass/forbs. Grass densities must average higher than 20 plants per square metre(2/sq. ft.) and forbs average higher than 5/sm (1/sq. ft.) in the first season of growth. Densities should approach 60 - 90 grass seedlings per square metre (6 - 10/sq. ft.) by the end of the second growing season. Areas showing deterioration resulting from workmanship, washout, overuse or vandalism shall be repaired at all times time during the warranty period at Contractor's expense.
- .3 Contractor shall notify the Consultant as to any foreseen problems including work by others and site conditions which may potentially affect the healthy growth of seed/plant material.
- .4 The Consultant reserves the right to extend warranty on all seeded areas not fully established or where replacement seeding has been delayed by Contractor.

## **1.7 MAINTENANCE PERIOD**

- .1 Maintain all seeded areas and other work for a minimum of two years that shall include two full and complete growing seasons (May 1st to October 31st) commencing from Date of Substantial Completion of the Work. See Section 32 01 90 –Landscape Maintenance for maintenance details. All seed maintenance

requirements will be extended to October 31st of the second year of the warranty period, which may extend beyond the Final Acceptance date of the warranty period and work.

**Part 2 PRODUCTS**

**2.1 MATERIALS**

**.1 SEED**

.1 Seed shall meet the requirements of the Provincial Seed Regulations and the Seeds Act for Canada, having minimum germination of seventy-five (75%) percent and minimum purity of Ninety-seven (97%) percent. Note: Wild harvest seed (grass/forbs) cannot be guaranteed for germination rates or dormancy.

.2 Deliver in original containers showing analysis of seed mixture, percentage of pure seed, year of production, net weight, date when bagged and location. Treated with appropriate fungicide at time of mixing. A weed certificate is required for all native grass/forb seeds. Native grass and forb seeds to be individually packaged and mixed on-site by the Contractor. (Note: do not use fungicide on Native Grass and Forb mixtures).

.3 Seed mixtures and rates of seeding:

.1 AT Zone 2 Seed Mix – Dry Mixedwood

35% Slender Wheat Grass

20% Fringed Brome

15% Northern Wheat Grass

10% Tufted Hairgrass

10% Rocky Mountain Fescue

10% Fowl Bluegrass

Rate of Application: 20kg/ha.

**.2 SOIL AND ACCESSORIES**

.1 Refer to Section 32 91 19 – Landscape Grading

.2 Inorganic Fertilizers: complete commercial fertilizer containing (60%) or more urea formaldehyde by weight. All fertilizers will be in bags, clearly marked with the name of the manufacturer, contents, weight and analysis. Supply and apply fertilizer according to soils report prior to seeding.

.3 Fibre mulch: wood fibre mulch; free of growth or germination inhibiting ingredients and specially manufactured for hydromulching equipment.

**.3 WATER**

.1 Contractor shall supply clean fresh water, water tanker, equipment, sprinklers, and labour necessary for use in seeding operations and to

adequately and efficiently apply water to all seeded areas during maintenance period.

- .2 Water shall be clean fresh and free of substances or matter that would inhibit vigorous and healthy seed growth.
- .3 Record quantity of water supplied and applied on site in maintenance log.
- .4 The Owner will supply Contractor with a limited supply and access to water on site using building source but only if available.

#### **.4 WEED CONTROL**

- .1 Perform weed control and other maintenance requirements as indicated in Section 32 01 90 – Landscape Maintenance.
- .2 Prior to seeding Contractor shall review the need for additional soil tests or chemical treatment of seedbed soil due to existing weeds with Consultant.

### **Part 3 EXECUTION**

#### **3.1 NATIVE GRASS AND FORB SEEDING**

- .1 Obtain the Consultant's approval of seedbed finish grades, final till, surface flatness and fertilizer application before seeding.
- .2 Do all seeding when soil temperatures and moisture conditions are most suitable.
- .3 Use Brillion native seed drill (or approved equivalent) into rolled and compacted soil, or broadcast into loose soil and then compact.
- .4 Refer to application seeding rates for seed drill or broadcast methods.
- .5 Roll seeded area with rollers not exceeding 50kg.
- .6 Water entire area with fine spray immediately after each area has been sown or as directed by Consultant. Apply enough water to ensure penetration of at least 50mm, avoid washing out of seeds.
- .7 Seed half the amount of prescribed seed mixture in one direction, seeding other half of seed mixture in perpendicular direction.
- .8 In small areas where use of mechanical seeder is impractical seed using Cyclone type manual seeder.
- .9 Lightly rake or harrow seeded areas.
- .10 Planting Season:
  - .1 Grass Seeding: Recommended Season: May 1 to September 15.

#### **3.2 HYDROMULCHING**

- .1 Mix fibre mulch and clean water in a clean tank according to manufacturer's recommendations to achieve an application rate of 200 kg/ha. Agitate to create uniform slurry.
- .2 Use hydromulching equipment and apply slurry within twenty-four (24) hours of dry seeding. Apply during calm weather.

- .3 Apply slurry to produce uniform coverage at specified rate of application.
- .4 Apply hydromulch to all area's of seed or as indicated on drawings.

### **3.3 PROTECTION**

- .1 Protect all seeded areas from all damage, disturbance or other construction activity until to final acceptance. Remove protection after seeded areas are properly established or when directed by the Consultant.
- .2 Damaged seed beds and other work resulting from inadequate protection including inadequate or improper watering shall be repaired or replaced as directed by the Consultant at Contractor's expense. All damages shall be corrected prior to final acceptance.

### **3.4 MAINTENANCE**

- .1 See Section 32 01 90 for all maintenance requirements in contract.

### **3.5 ACCEPTANCE**

- .1 Seeded areas will be accepted by the Consultant at end of maintenance period provided:
  - .1 Seeding work meets requirements of the specifications.
  - .2 Seeded grass areas are properly, uniformly and well established in accordance with establishment criteria.
  - .3 Seeded grass areas are free of dead, unhealthy or deteriorated areas; bare, burnt or thin spots; and rutted and eroded areas.
  - .4 Seeded areas are free of weed growth.
  - .5 Seeded grass areas have been fertilized as required.
  - .6 Seeded grass areas are clean and free of all debris, litter and other foreign matter.
- .2 Establishment criteria for native seeded areas (grass/forbs):
  - .1 First growing season: grass plant densities must average higher than 20 plants per square metre (2/sq. ft.) and forbs average higher than 5 per square metre (1/sq. ft.).
  - .2 Second growing season: grass densities must approach 60 - 90 grass seedlings per square metre (6 - 10/sq. ft.).
  - .3 Contractor shall use specified materials to correct seed installations that do not comply with requirements for acceptance and continue with specified maintenance/ establishment until deemed acceptable by the Consultant.
- .3 Areas seeded in fall will be reviewed for substantial completion the following spring, one month after start of the growing season.

### **3.6 RESTORATION**

- .1 Restore pavement, concrete, grassed areas, planted areas, structures, substructures, damaged or disturbed in any way during execution of the project and during establishment period in manner satisfactory to the Consultant.



**3.7**

**CLEAN UP**

- .1 Broom clean pavement and sidewalks. Clear soil and rubble from sewer lids and catch basins.
- .2 Clean all site features of all hydromulching debris.
- .3 Leave site in neat and tidy condition. Remove excess materials from site.

- END OF SECTION 32 92 19 -

**Part 1 GENERAL**

**1.1 RELATED SECTIONS**

- .1 32 01 90 –Maintenance of Planting
- .2 32 91 19 – Landscape Grading
- .3 32 92 19 - Seeding

**1.2 EXAMINATION**

- .1 Report to the Consultant, in writing, of any conditions or defects encountered on the site during or before construction on which work of this section depends and which may adversely affect its performance.
- .2 Do not commence work until such conditions or defects have been investigated and corrected.

**1.3 QUALIFICATIONS**

- .1 All sod work described in this section should be executed by personnel under the constant direction and control of a "Landscape Journeyman Gardener" as defined by Alberta Manpower, and in strict accordance with specifications and best horticultural practice.

**1.4 QUALITY ASSURANCE**

- .1 Supply sod, healthy, vigorous and certified No.1 cultivated turf grass sod, as specified hereinafter.
- .2 Supply sod with a strong fibrous root system, free from stones, burned or bare spots, disease, insect infestation and containing not more than one (1%) percent weeds.

**1.5 PRODUCT HANDLING**

- .1 Sod shall be protected during transportation and shall be delivered to the site in a fresh and healthy condition.
- .2 Sod shall be stored on site for a maximum twenty-four (24) hours before installation.
- .3 Protect sod from drying out or heating up if it cannot be laid immediately upon arrival on the site.
- .4 All manufactured materials, such as fertilizers, shall be delivered and stored on site in standard containers clearly indicating contents, weight, analysis and the name of the manufacturer.
- .5 Store all materials, which are subject to deterioration, in a dry, weatherproof place on the site.

**1.6 SAMPLES & TESTING**

- .1 The Contractor will supply to the Consultant written documentation from suppliers of fertilizer.

**1.7 GUARANTEE**

- .1 Guarantee all sod areas for a period of two (2) years from date of issue of Certificate of Substantial Performance. All sod maintenance requirements will be extended to October 31st of the second year of the warranty period, which may extend beyond the Final Acceptance date of the warranty period and work. Note: The Owner has the option to waive the Contractors warranty and maintenance period and turn this work over to a Landscape Maintenance Contractor. If this option is applied, a formal Construction Completion Review of all work will be completed by all parties prior to and acceptance agreement by the Owner, Contractor and Landscape Maintenance Contractor. Once accepted, all further Contractor warranty is waived by the Owner.
- .2 During the guarantee period make periodic inspection of sod areas and notify Owner and Consultant, in writing, of any corrective or preventive measures necessary to maintain grass areas healthy and vigorous.

**Part 2 PRODUCTS**

**2.1 MATERIALS**

**.1 SOD**

- .1 Sod Type - Manderley - Less Water Sod is Canada's first qualified drought-tolerant sod. It is grown from professional grade grass seed that meets the stringent drought-tolerant standards of the Turfgrass Water Conservation Alliance (TWCA), and uses an approved TWCA 100% seed blend. Manderley Less Water Sod can be used in a variety of residential and commercial settings where drought tolerance, less water consumption, reduced maintenance, cost savings and a lush green lawn are valued. It is perfectly complementary to commercial and residential green building projects where drought tolerant sod is required to reduce irrigation needs and to provide a sustainable turf area. Manderley Less Water Sod can contribute to obtaining valuable LEED credits.

Manderley Less Water Sod provides architects, designers and building professionals with an important solution for a water reduction strategy that can contribute to valuable LEED (Leadership in Energy and Environmental Design) credits. In particular, it can contribute to LEED Water Use Reduction (WEc3) and Water Efficient Landscaping (WEc1) specifications.

Manderley Less Water Sod Benefits:

- .1 Grown from a 100% blend of TWCA approved, drought tolerant, Water Star qualified grass seed.
- .2 Drought defiant.
- .3 Reduces water consumption by up to 50%.
- .4 Can substantially reduce maintenance time. Stays green longer in periods of drought.
- .5 Rapid spring 'green-up'. High quality and drought tolerant properties protects home investment and increases curb appeal.

- .6 Reduces negative environmental footprint.
- .7 Designed for harsh Canadian climates.
- .8 Disease and pest resistant.
- .9 Performs in high traffic areas, and
- .10 Can be used in both sun and shade.
- .2 Sod shall be cut by approved methods in accordance with recommendations of the Nursery Sod Growers Association of Alberta. It shall be cut in pieces, approximately 500mm<sup>2</sup> in area. Thickness of the sod soil portion shall be a minimum 25mm and maximum 40mm.
- .3 Sod shall be rolled or folded prior to lifting in such a manner as to prevent tearing or breaking.

## **2.2 SOIL & ACCESSORIES**

- .1 Topsoil: See Section 32 91 19.
- .2 All inorganic fertilizers will be complete commercial fertilizers containing sixty (60%) percent or more urea formaldehyde by weight. All fertilizers will be in bags, clearly marked with the name of the manufacturer, contents, weight, and analysis.

## **2.3 WATER**

- .1 Contractor shall supply clean fresh water, water tanker, equipment, sprinklers, and labour necessary for use in seeding operations and to adequately and efficiently apply water to all seeded areas during maintenance period.
- .2 Water shall be clean fresh and free of substances or matter that would inhibit vigorous and healthy seed growth
- .3 Record quantity of water supplied and applied on site in maintenance log.
- .4 The Owner will supply Contractor with a limited supply and access to water on site using building source but only if available.

## **Part 3 EXECUTION**

### **3.1 FERTILIZING**

- .1 Obtain approval of finished grade prior to fertilizing.
- .2 Apply 11-51-0 fertilizer at 2.5kg 100m<sup>2</sup> or as indicated in soil fertility report.
- .3 Spread evenly with mechanically calibrated distributor. Mix thoroughly into upper 50mm of topsoil.

### **3.2 SOD APPLICATION**

- .1 Apply sod during normal growing season. Sod installation at freezing temperatures or over frozen soil is not acceptable.
- .2 Lay sod in rows, smooth, even and flush with adjoining areas and with joints staggered. Butt sections closely without overlapping or leaving gaps between sections.

- .3 Lay sod flush with adjoining grass areas, paving and top of curbs.
- .4 Water immediately in sufficient quantities to obtain moisture penetration through sod into upper 100mm of topsoil.
- .5 Roll sod to ensure sod contact with topsoil and to remove minor depressions and irregularities.
- .6 All sod areas which show open joints, cuts or are not butted flush with adjoining grass areas, paving, curbs and walks shall be top dressed. Topsoil shall be spread and raked to fill in open joints, gaps and spaces between sod pieces and adjoining grass and paving materials. Top dressing shall be at the Contractor's expense.

### **3.3 CLEAN UP**

- .1 Broom clean pavement and sidewalks. Clear soil and rubble from sewer lids and culvert pipes.
- .2 Leave site in neat and tidy condition. Remove excess materials from site.

### **3.4 RESTORATION**

- .1 Restore pavement, concrete, grassed areas, planted areas, structures, substructures, damaged or disturbed in any way during execution of the project and during maintenance period in manner satisfactory to the Consultant.

### **3.5 ESTABLISHMENT**

- .1 All sod areas shall be maintained by the Contractor immediately after sod has been installed and shall continue for a period of two (2) years following acceptance of landscape installation or a Certificate of Substantial Performance, whichever is the later.
- .2 Establishment shall include all measures necessary to establish and maintain all sod areas in a healthy, vigorous growing condition, included but not limited to:
  - .1 Mowing grass regularly to maintain height between 50 and 70mm.
  - .2 Trim edges of sod areas neatly, by hand clipping if necessary, and remove all clippings from planting beds, tree saucers and pavement.
  - .3 Roll sod to remove depressions and irregularities.
  - .4 Water, when necessary, with sufficient amount to saturate sod and upper 100mm of topsoil.
  - .5 Weed, insect and fungus control shall be carried out when required following manufacturer's recommendations and provincial laws.
  - .6 Re-sod areas which show deterioration, or which are thin, bare or burned out. Repair all damages resulting from erosion and washouts or any other cause.

### **3.6 ACCEPTANCE**

- .1 Sod will be accepted at the end of the establishment period provided that:
  - .1 Sod is properly established.
  - .2 Sod is free of dead or bare spots.

- .3 No surface soil is visible when grass has been cut to a height of 50mm.
- .2 All sod areas shall be freshly mowed with clippings removed at the end of the establishment period to facilitate inspection.

- END OF SECTION 32 92 23 -

**Division 33 – Utilities**

## **1.0 GENERAL**

### **1.1 Description**

- .1 This section specifies requirements for manholes and other structures for sewers.

### **1.2 Standards**

- .1 Materials supplied in this section shall be in accordance with ASTM, CSA, and CGSB Standards.
- .2 Precast manhole sections, catch basins, adjusting neck rings, and manhole steps shall conform to CAN/CSA-A257.4.
- .3 Manhole joints shall meet the requirements of CAN/CSA-257.3.
- .4 All precast concrete items shall be marked with manufacturer's identification, date of casting, type of cement, and CSA standard.

### **1.3 Shop Drawings**

- .1 Submit shop drawings for all manholes and other structures for sewers.
- .2 Submit shop drawings for all precast manhole components. Include certification by an independent testing laboratory that cement and aggregate conform to the specified standards.

### **1.4 Quality Assurance**

- .1 Refer to Section 01 45 00 - Quality Control.
- .2 Submit to the Town a list of sources of materials including gravel, borrow materials, and concrete aggregates.
- .3 Provide samples, test results, sieve analyses and reports for preliminary approval of materials.
- .4 Preliminary approval of materials does not constitute general acceptance. Acceptance depends on satisfactory field test results and performance in place.

### **1.5 Quality Control Testing**

- .1 Manhole Backfill
  - a) Moisture density curves to ASTM-D698.
  - b) Sieve analyses to ASTM-C136.
  - c) Field densities to ASTM-D2167 or to ASTM-D2922.
  - d) Provide moisture/density curves for each type of material from each source of material to be compacted to a specified density.
  - e) Conduct a minimum of one of each test for each manhole.
- .2 The manufacturer of the precast concrete items shall perform quality testing and control in accordance with CAN/CSA-A257.0.



- .3 The Contractor shall perform as many tests as are necessary to ensure that the Work conforms to the requirements of the Contract regardless of the minimum number required.

## 1.6 Disposal

- .1 All materials on site whether stockpiled, stored, or excavated are the property of the Town, and the Town reserves the right to keep any part or all of the material.
- .2 The Contractor shall dispose of all waste materials at sites to be located by the Contractor and approved by the Town.
- .3 Refer to Section 01 52 00 – Construction Facilities for further requirements.

## 2.0 PRODUCTS

### 2.1 Concrete

- .1 Concrete shall be made with Type 50 sulphate resistant Portland cement to CAN/CSA-A3000.
- .2 Maximum slump 75 mm, Class 25 MPa.
- .3 In freezing weather, provide concrete with a temperature of not less than 10°C, and maintain this temperature for 72 hours.

### 2.2 Mortar

- .1 Mortar shall conform to the following mix:
  - a) 1 part Type 50 sulphate resistant cement;
  - b) 1 part clean, sharp sand; and
  - c) Water to provide workability
- .2 In freezing weather, heat sand and cement and apply mortar warm. Protect joints from freezing until mortar has set.

### 2.3 Crushed Gravel

- .1 Crushed gravel shall be maximum size 25 mm, clean crushed material conforming to the following gradation.

Sieve Size	Percent Passing
25 mm	100
19 mm	95 - 100
9.5 mm	60 - 80
4.75 mm	40-60
2.00 mm	25 - 45
425 micro-m	10 - 25
75 micro-m	2 - 10

### 2.4 Safety Steps

- .1 Fabricate from 20 mm diameter Type 304 L stainless steel with minimum load resistance of 300 kg.

- .2 Steps shall be cast into precast sections with a maximum spacing of 400 mm.
- .3 The distance from the top of the manhole cover to the top rung shall be a maximum of 450 mm.
- .4 Bottom step shall be spaced to more than 300 mm above the benching.
- .5 For manholes exceeding 7 m in depth, a safety platform shall be installed as required by Occupational Health and Safety regulations.

## **2.5 Waterproofing/Damp-Proofing**

- .1 Exterior damp-proofing - cement mortar coating - 15 mm thickness.

## **2.6 Manhole Bases - Tee Riser Type**

- .1 Precast tee riser sections may be used for manholes where pipes pass straight through manholes. Refer to the Drawings for tee riser manholes locations and dimensions.
- .2 Tee risers to ASTM-C478M, equivalent in strength to the highest class or highest D-load pipe to which it is connected.
- .3 Use Type 50 sulphate resistant cement.
- .4 Concentric reinforcing.
- .5 Rubber gasket joints to ASTM-C443.
- .6 Submit shop drawings.

## **2.7 Manhole Bases - Standard Type**

- .1 Standard 1,200 mm diameter precast manhole to ASTM C478 and shall be used where indicated on the Drawings.
- .2 Manholes to ASTM-C478M, equivalent in strength to the highest class or highest D-load pipe to which it is connected.
- .3 Use Type 50 sulphate resistant cement.
- .4 Concentric reinforcing.
- .5 Rubber gasket joints to ASTM-C443.
- .6 Submit shop drawings.

## **2.8 Manhole Barrels and Tops**

- .1 Circular precast barrel sections to ASTM-C478M with rubber gasket joints to ASTM-C443.
- .2 Precast conical top sections to withstand AASHTO - H20 loading, as detailed on the Drawings. Top sections shall be eccentric or concentric as indicated on the Drawings.
- .3 Frames and Covers
  - a) Manhole frames and covers shall be made of iron and shall conform to ASTM-A48.

- b) Frames and covers for manholes on roads shall be Norwood NF-80 floating type, as manufactured by Norwood Foundry Ltd., or approved equal.
- c) Frames and covers for manholes not on roads shall be Norwood NF-39, as manufactured by Norwood Foundry Ltd., or approved equal.
- d) Submit shop drawings.
- e) Use sealing compound between precast concrete and cast-in-place concrete and between grade rings. Bitumous joint sealing compound to conform to CGSB 56-GP-4A, or approved equal.
- f) Frames and covers shall be hot dipped galvanized according to CSA G164-M.

## **2.9 Drop Structures**

- .1 For pipes and fittings in drop structures, use materials in accordance with pipe size and type entering the drop structure.
- .2 Use all other materials as detailed on the Drawings.
- .3 All pipe entrances through the manhole wall shall utilize a waterstop conforming to ASTM C-923.
- .4 Interior Drop Structures
  - a) Use 25 mm wide x 2 mm thick Type 304 L stainless steel straps.
  - b) Provide polyvinyl chloride (PVC) tee fitting and vent pipe attached to the top end of the pipe as shown on the Drawings.

## **2.10 Non-Shrink Grout**

- .1 Pre-mixed compound consisting of non-ferrous aggregate, cement, water reducing and plasticizing agents, capable of developing a minimum compressive strength of 16.5 MPa at 2 days and 48 MPa at 28 days.
- .2 Master Builders Embeco, or approved equal.

## **2.11 Miscellaneous Metals**

- .1 All miscellaneous metal used inside sewer manholes, or buried as part of sewer manholes shall be Type 304 L stainless steel.
- .2 All inserts and insert bolts shall be stainless steel.

## **3.0 EXECUTION**

### **3.1 General**

- .1 Excavation for manholes shall be in accordance with Section 31 23 33 – Trenching and Backfilling.
- .2 Keep excavations dry while work is in progress. Protect excavations against flooding and damage from surface runoff and/or groundwater.

- .3 The expense of removing water from trenches, regardless of origin, is the responsibility of the Contractor.
- .4 Over-excavate the base if the material at the bottom of the trench is unsuitable for support, and replace with crushed gravel compacted in 150 mm lifts to 97% Standard Proctor Density.
- .5 Where a granular base is specified or directed, provide minimum 150 mm of crushed gravel compacted to 97% Standard Proctor Density.

### **3.2 Manhole Construction**

- .1 Manholes shall be constructed in accordance with details on the Drawings.
- .2 Bases shall be placed on solid, unfrozen ground.
- .3 Construct manhole unit plumb and true to alignment and grade.
- .4 Complete manhole construction as pipelaying progresses.
- .5 Install rubber gasket or flexible sealing compound and set manhole sections in place in accordance with the directions of the manufacturer.
- .6 Cover all interior and exterior joints with mortar.
- .7 Waterproof or damp-proof the exterior if ordered by the Town.
- .8 Build pipes and stubs into manholes and form smooth flow channels, or use pre-benched manhole base sections.
- .9 Where drop structures are required, assemble drop structures according to details on the Drawings.
- .10 Plug all lifting holes with non-shrink grout.

### **3.3 Manhole Benching**

- .1 Benching of flow channels shall be in accordance with details on the Drawings.
- .2 Use formwork to install channels and benching, and finish the flow channel using a steel trowel.
- .3 Benching shall provide smooth inverts on regular curves through the manhole.
- .4 Factory finished pre-benched manhole base sections may be used for manhole construction.

### **3.4 Manhole Completion**

- .1 Compact backfill around manholes using mechanical tampers, the full depth of the manhole. Compaction shall be to 98% of the maximum density as determined by the Standard Proctor Compaction Test. Class I backfill or fillcrete, as specified in Section 31 23 33 – Trenching and Backfilling, is required around manholes regardless of the class of backfill for the pipe.
- .2 Unless otherwise specified, set the conical tops such that the vertical side is on the right hand side of the manhole, when looking upstream. Ensure manhole rungs are aligned.

- .3 Place frame and cover on top section to elevation indicated, and adjust tops flush finished grades. If adjustment is required, use concrete grade rings, placed with non-shrink cement mortar. Parge, make smooth and watertight, inside and out.

### **3.5 Catch Basins**

- .1 Catch basins shall be constructed in accordance with details on the Drawings.
- .2 Bases shall be placed on solid, unfrozen ground.
- .3 Construct catch basin unit plumb and true to alignment and grade.
- .4 Install rubber gasket or flexible sealing compound and set catch basin sections in place in accordance with the directions of the manufacturer.
- .5 Plug all lifting holes with non-shrink grout.
- .6 Catch basin frame and cover shall be as specified on the Drawings.
- .7 Frames and covers shall be hot dipped galvanized according to CSA G164-M.

### **3.6 Connecting Pipe to Manholes and Catch Basins**

- .1 Smooth-walled pipes shall be connected to the precast, pre-benched manhole or catch basin with an integral gasket for each connection.
- .2 Non-shrink grout shall be applied around the circumference of the pipe on each side of the manhole or catch basin wall.

### **3.7 Installing Manholes in Existing Systems**

- .1 Where a new manhole is to be installed in an existing run of sewer pipeline, ensure full support of existing pipe during manhole installation.
- .2 Carefully break out the portion of the existing pipe within area of the location of the new manhole and remove all waste debris.
- .3 Make joints watertight between the new manhole and the existing pipe.
- .4 Provide temporary flow control as necessary, and in conformance with Section 33 01 30.53 – Temporary Flow Control.

### **3.8 Cleanup**

- .1 Remove dirt, mortar, debris and other material from manholes.
- .2 Clean manhole rungs.
- .3 Place covers after cleaning.
- .4 Dispose of all waste material in accordance with Article 1.6 – Disposal.

## 1 GENERAL

- .1 This specification covers the installation and removal of pipe culverts less than 1500 mm equivalent diameter.

Abbreviations for the various types of culverts when indicated on the Drawings or used in the Specifications are as follows:

C.S.P.	Corrugated Steel Pipe
R.C.P.	Reinforced Concrete Pipe
P.V.C.	Polyvinyl Chloride (Polyethylene Pipe)

- .2 Related Sections

- .1 01 11 00 – Summary of Work
- .2 01 22 00 – Measurement and Payment
- .3 31 23 00 – Excavation and Fill
- .4 31 23 33 – Trenching and Backfilling

- .3 References

- .1 Contract Drawings

## 2 PRODUCTS

- .1 All culvert materials shall be supplied by the Contractor.

- a) Corrugated Steel Pipe: to CSA-G401, plain galvanized; with helical lock seam corrugations having a profile of 68mm by 13mm; round, 1.6mm thick or as shown on the drawings with ends cuts square or beveled as indicated. All necessary couplers and fasteners are to be included. The Contractor will submit the manufacturer's product data to the Engineer seven (7) days prior to use.
- b) Reinforced Concrete Pipe: shall conform to the material and fabrication requirements of the A.S.T.M. Specification C 76M.

The following information shall be clearly marked on each section of pipe:

- (1) The pipe class
- (2) The date of manufacture, and
- (3) The name or trade-mark of the Manufacturer.

This information shall be marked on the outside for pipe sizes up to and including 900 mm diameter and on the inside for pipe sizes over 900 mm diameter.

End sections shall be supplied with either square or sloped ends as required by the order. The dimensions of the sloped ends shall conform to details shown on the Drawings.

- c) Granular Bedding: Class B as per Standard Drawings 5.5 and 5.6.
  - d) Granular Backfill: Class B as per Standard Drawings 5.5 and 5.6.
  - e) Riprap: to be rock that comprises hard, durable stones that will not deteriorate with water or freeze and thaw cycles with a minimum nominal size of 150mm and a maximum nominal size of 400mm.
  - f) Filcrete Material (or engineered equivalent): a permanent cementitious fill material with a minimum compressive strength of 0.5 MPa,
- .2 When the Contract stipulates, the Contractor shall supply all gravel materials required for the backfilling of culverts in accordance with Section 33 06 00.
- .3 Tolerances:
- a) Alignment: Centreline of culvert shall not vary from the designated alignment by more than 75mm.
  - b) Invert Grade:  $\pm 12$ mm maximum variation from designated invert grade elevations, provided positive flow is maintained.

### 3 EXECUTION

#### .1 Excavation and Preparation of Base

Excavation for the culvert base shall be to a depth of not less than 0.3 m below the invert grade, and shall be of sufficient width to permit assembly of the pipe and the operation of compaction equipment on either side of the pipe. All soft, yielding or unsuitable material at this level shall be removed to a depth satisfactory to the Engineer. Excavated material shall be replaced with gravel or other acceptable material to provide a firm foundation of uniform density throughout the entire length of the pipe.

On completion of excavation for the culvert base and the removal and replacement of any soft, yielding or unsuitable material the Contractor shall compact the exposed surface to uniform density. The Contractor shall then construct the culvert bed to the established elevation using gravel material or other material acceptable to the Engineer. The culvert bed shall be compacted in accordance with Section 31 23 33. The width of the culvert bed shall be 3 times the culvert diameter or span.

When the culvert installation is in rock, excavation for the culvert base shall be carried out to a depth of not less than 0.2 m below the invert grade. The width of the culvert bed shall be a minimum of 1.5 times the diameter or span of the culvert.

.2 Installation

.1 General

The culvert shall be installed on the prepared base, true to the designed lines and grades unless otherwise established by the Engineer. Separate sections shall be securely joined together in accordance with the Manufacturer's instructions. Coupler bands shall be used for metal and polyethylene pipe and unless otherwise specified, rubber gasket type joints shall be prepared and made between sections of reinforced concrete culvert. At all coupling and joint areas and at areas of concrete pipe that have external bells, depressions shall be constructed in the culvert bed so that the pipe is uniformly supported along its entire length.

The Contractor shall use due care when installing the culvert to avoid damaging the material. Damaged culvert materials shall be removed and replaced by the Contractor at his own expense.

- a) The Contractor will excavate down to 300mm below the intended pipe invert in accordance with Section 37 10. The Contractor will excavate to a minimum width of three (3) times the pipe diameter to permit the pipe assembly and accommodate bedding placement and compaction equipment on both sides of the pipe. The Contractor will carefully trim the bottom of the excavation to provide a uniform support along the profile and throughout the length of pipe. The base will be compacted to a minimum 95% Standard Proctor Density. If the base is too soft to compact, the Contractor will continue excavation to firm base and backfill with granular or other material approved by the Engineer compacted in 150mm lifts to a minimum 95% of Standard
- b) Proctor Density. The granular bedding will be placed to a width at least three (3) times the diameter of the pipe in lifts of 150mm upon compaction. Each lift will be compacted to a minimum 95% of maximum density according to ASTM D698 Method A. The top 50mm of bedding in contact with the pipe will be loosened to permit the corrugations to seat snugly.
- c) Roll or lift and lower pipe into position on prepared bedding. Do not drop or drag pipe. Join pipe sections with appropriate couplers and fasteners according to manufacturer's instruction. Repair damage to protective coating with two coats of galvacon, zinc oxide or bituminous paint. Ensure that pipe is laid true to line and grade with the proper camber. If necessary, shore pipe to required position. Remove shoring when backfill has progressed to adequately support the pipe without displacement.

.2 Installation of Corrugated Steel Pipe and Pipe Arches

When required, elbows shall be installed to accommodate sharp changes in gradient or direction of the pipe.



Pipe shall be carefully handled to prevent damage to the protective coating. Any damage to coatings shall be repaired by the Contractor at his own expense in accordance with CAN3- G401.

### .3 Installation of Reinforced Concrete Culvert

Reinforced concrete culvert shall be placed beginning at the downstream or lower end of the culvert. The pipes shall be placed with the bell or grooved ends facing upstream. The interior sections of the culverts shall conform to the grade and alignment as shown on the Drawings, or as established by the Engineer.

Culvert sections shall be joined using either a wedge and block, or mechanical pipe pullers to bring the pipe to the homed position. Joints shall not be deflected beyond the Manufacturer's recommended maximum. Culvert sections shall be anchored to adjacent sections by tie bars, where provided. Lifting holes and holes for engaging bars shall be filled with mortar, and finished flush with the pipe surface.

### .4 Extension of Existing Culverts

Extensions to existing culverts will be considered as new installations. Where an existing culvert is to be extended, the removal, salvage and reinstallation of the existing sloped end sections may be required as shown on the Drawings or as directed by the Engineer.

Where the existing pipe was manufactured to imperial dimensions and the new pipe is manufactured to metric dimensions and a mismatch occurs at the joint, the Contractor shall caulk the joint with oakum to obtain a water resistant joint.

## .3 Backfilling

### .1 General

Backfill under the haunches and immediately adjacent to the culvert extending from the culvert base up to an elevation of 30 percent of the vertical height of the culvert shall be comprised of select gravel or soil material, as directed by the Engineer. Backfill immediately adjacent to the culvert above this level shall be comprised of select soil material. All backfill material shall be free from frozen lumps and organic material. Backfill within 300 mm of the culvert wall shall be free from stones of diameter larger than 80 mm.

All backfill material shall be placed in layers not exceeding 0.15 m in depth. Each layer shall be thoroughly compacted at optimum moisture content by means of pneumatic or other mechanical tamping equipment. Backfill and compaction layers shall be brought up simultaneously and evenly on both sides of the culvert filling all corrugations and ensuring firm contact with the entire bottom surface of the pipe. This compaction procedure shall be continued until the backfill reaches a minimum elevation of 0.3 m above the top

of the pipe, or greater, as determined by the Engineer if necessary to carry the weight of construction equipment without damage to the culvert.

Backfilling of the remainder of the culvert excavation, beyond the immediate region of the culvert, shall be carried out in accordance with Section 31 23 33. Compacting equipment shall be operated parallel to the longitudinal axis of the culvert, until sufficient fill has been placed to proceed with construction of the embankment in the normal manner.

The remaining construction of the grade embankment over the installation may then proceed in accordance with Section 31 23 33.

.2 Pipe Zone Backfilling

Do not cover work until it passed inspection by the Engineer. Correct deficiencies as directed. Backfill according to section 37 10 00. Place granular backfill under pipe haunches on both sides of pipe in 150mm lifts. Compact each lift thoroughly with hand tampers. Continue placing backfill simultaneously on both sides of pipe in 150mm lifts. Compact each lift to a minimum 95% of maximum density according to ASTM D698 Method A. Do not allow the levels of fill on the two sides to differ by more than one lift at any time. Build up backfill until reaching a minimum cover of 300mm over pipe. After compaction, the remainder of the embankment or roadwork may proceed. Do not allow construction and other traffic over the pipe unless adequate protective fill is placed in addition to the minimum cover. Remove such protective cover before proceeding with the rest of embankment fill.

.4 Riprap

Immediately following completion of culvert installation, hand-laid riprap shall be placed in accordance with Section 45 02 00.

.5 Removal

.1 Removal, Salvage and Reinstallation of Existing Culverts

Where removal and salvage of existing culverts or drainage structures from the roadbed, ditches, or other waterways is specified, the Contractor shall carefully excavate, remove and store the material at locations suitable to the Engineer. Salvaged materials shall be reinstalled in accordance with these specifications.

.2 Removal and Disposal of Existing Culverts

Where removal and disposal of existing culverts or drainage structures from the roadbed, ditches, or other waterways is specified, the Contractor shall remove and dispose of the material at locations acceptable to the Engineer.

.3 Culvert Installation and Removal on Roadways in Service

Where culvert installation or removal must take place on roadways that must remain in service during construction, the Contractor shall carry out his installation or removal by either building and maintaining a detour or by working on one half of the roadway while maintaining flagperson controlled and adequately signed traffic flow on the other half. Details of all proposed traffic accommodation methodologies shall be provided in the Contractor's Traffic Accommodation Strategy.

.4 Grouting Abandoned Culverts

When directed by the Engineer or at the locations shown on the Drawings, the Contractor shall completely fill existing culverts, starting at the upstream end, with a permanent cementitious fill material with a minimum compressive strength of 0.5 MPa to prevent future collapse of the culverts.

The filling of the culverts shall be carried out using methods and materials acceptable to the Engineer. The Contractor shall take precautions during filling operations to ensure that no blow outs or disruptions of the existing roadway occur.

When a replacement culvert is being installed, the replacement culvert shall be in operation before grouting of the abandoned culvert begins.

- END OF SECTION 33 43 00 -

**Division 34 – Transportation**

## **1.0 GENERAL**

### **1.1 Description**

- .1 This section specifies requirements for working and compacting subgrade soil.

### **1.2 Definition**

Prepared subgrade: soil immediately below the granular sub-base, base course, pavement structure or concrete slab, pad or curb & gutter, and boulevards, compacted to a depth of 150 mm or 300 mm or as specified.

### **1.3 Quality Assurance**

- .1 Refer to Section 01 45 00 – Quality Control.

### **1.4 Quality Control**

- .1 Maximum Density: the dry unit mass of a sample of soil at a optimum moisture content as determined according to ASTM-D698 method A.
- .2 Required Densities:
  - a) Minimum of 100% of the maximum density for each 150 mm lift of subgrade under pavement structures, concrete; curb & gutter, curb ramps, alley and access crossings
  - b) Minimum of 98% of the maximum density for each 150 mm lift of subgrade under concrete sidewalks, asphalt trails.
  - c) Minimum of 95% of the maximum density for each 150 mm lift of subgrade under turf areas, planting beds and disturbed areas.
- .3 Testing Frequency to ASTM-D2169 or to ASTM-D2922:
  - a) Subgrade – one for each 1,000 m<sup>2</sup> of compacted lift.
  - b) Fill – one for each 2,000 m<sup>2</sup> of compacted lift.
- .4 Proof Rolling: a proof roll of the finished subgrade will be required to confirm adequate bearing capacity of the subgrade soil. Proof rolling will be supervised by the Town according to the Town's recommendations. Proof rolling will be done using a single axle dual wheel truck loaded to a minimum 9100 kg on the rear axle. Tires to be inflated to a minimum 275 KPa.
- .5 The Contractor shall perform as many tests as are necessary to ensure that the work conforms to the requirements of the Contract regardless of the minimum number specified.

### **1.5 Related Sections**

- .1 Section 34 02 00 - Aggregate
- .2 Section 34 02 01 – Granular Base
- .3 Section 34 12 16 – Asphalt Paving

## **2.0 PRODUCTS**

### **2.1 Materials**

- .1 Use only compacted clay subgrade soil with no deleterious material approved by the Town.

### **2.2 Equipment**

- .1 Use various pieces of equipment designed for disking, scarifying, spreading, spraying water, compacting and trimming material to specified depth and cross section and proof rolling.

## **3.0 EXECUTION**

### **3.1 Subgrade Preparation**

1. Loosen clay to required depth. Work clay with cultivating and mixing equipment until clay is pulverized into pieces no larger than 25 mm maximum, exclusive of all rock.
2. The required compaction can generally best be achieved if the clay is dried or moistened to within  $\pm 3\%$  of the optimum moisture content prior to compacting.
3. If the Town determines that it is not practical to dry the clay, the Town may order cement stabilized soil. Spread clay in lifts not to exceed 150 mm compacted. Compact each lift to the required density in 1.4.2.
4. Leave the surface of the compacted subgrade slightly higher than required elevation; then trim to the required elevation.
5. Leave the finished surface even and free of depressions, humps, loose debris and foreign material.
6. Finished subgrade shall be within 6 mm above the specified elevation or within 25 mm below the specified elevation.

### **3.2 Tolerances**

- .1 Trim high spots and refinish surface to within tolerance.
- .2 Add approved material to low areas, scarify and blend to full subgrade depth recompact to required density and refinish surface at the contractor's expense. Fill low areas with extra thickness of subsequent granular sub-base or base course at the contractor's expense
- .3 If a density test result is less than the required density, the test result is discarded and 3 retests shall be performed on the area represented by the failed test. The average of the 3 tests shall represent the density of that area. If this average is less than the required density, the area shall be reworked to the full depth of the lift, the soil moisture altered as necessary and recompact to the required density. If the area is not retested but is reworked and recompact the area shall be tested at the normal testing frequencies.
- .4 The Contractor shall assume the risk of uncovering and reworking the subgrade if it is covered before the Town has accepted the test result.

### **3.3 Protection of finished Work**

- .1 Do not permit vehicle traffic over prepared subgrade.
- .2 If the subgrade floods, drain immediately by natural flow or by pumping into catch basins, manholes or ditches. This work shall be done at the contractor's expense.
- .3 Maintain protection of the prepared subgrade until subsequent granular sub-base or base course is placed. Repair and retest as required by the Town if damaged.

- END OF SECTION 34 01 00 -

**1.0 GENERAL**

**1.1 Description**

- .1 This section specifies the supply and installation of woven Geotextile Roadway Membrane (Geotextile) and Glasgrid Pavement Reinforcement Membrane (Glasgrid).

**1.2 Related Section**

- .1 Section 01 11 00 – Summary of Work
- .2 Section 01 22 00 – Measurement and Payment
- .3 Section 31 23 00 – Excavation & Fill
- .4 Section 34 12 16 – Asphalt Paving

**2.0 PRODUCTS**

**2.1 Geotextile**

- .1 Material
  - a) Woven geotextile consists of continuous monofilaments, staple fibres, multi-filament yarns, or slit films that are woven into a fabric.
  - b) The geotextile shall meet the following requirements:

Property	ASTM Test	Material Specification <sup>1</sup> Average Roll Value		
		Class 1	Class 2	Class 3
Elongation (%)	D 4632	<50 min	<50 min	<50 min
Grab Strength (N)	D 4632	1 400 min.	1 100 min.	800 min.
Sewn seam strength (N)	D 4632	1 260 min.	990 min.	720 min.
Tear Strength (N)	D 4533	500 min. <sup>2</sup>	400 min. <sup>2</sup>	250 min.
Puncture Strength (N)	D 4833	500 min.	400 min.	300 min.
Permittivity (per sec)	D 4491	0.05 min. <sup>3</sup>	0.02 min. <sup>3</sup>	0.02 min. <sup>3</sup>
Apparent Opening Size (mm)	D 4751	0.43 max.	0.60 max.	0.60 max.
Ultraviolet stability (% retained strength)	D 4355	50% after 500 hrs of exposure	50% after 500 hrs of exposure	50% after 500 hrs of exposure

Note 1: All numeric values except A.O.S. represent minimum average roll value as measured in the weaker principal direction.

Note 2: For woven monofilament geotextile, the required minimum average roll value for tear strength is 250 N.

Note 3: Default value. Permittivity, or resistance that is encountered, of the geotextile should be greater than that of the soil. The City may also require the permeability of the geotextile to be greater than that of the soil.



.2 Installation

Unless otherwise directed in the applicable specification, the placement of geotextile shall be in accordance with the following:

- a) The surface to receive the geotextile shall be prepared to a relatively smooth condition free of obstructions, depressions, debris, and soft or low density pockets of material.
- b) The geotextile shall be installed free from tensile stresses, folds, wrinkles, or creases.
- c) If more than one width of geotextile is used, the Contractor shall either overlap the joints by a minimum of 400 mm with no stitching, or overlap the joint by 200 mm and provide two rows of stitching at each joint.
- d) The geotextile shall be protected all times during construction. Wheeled or tracked vehicles shall not be allowed to travel directly on the geotextile fabric. Any geotextile damaged during installation or during placement of granular material shall be replaced by the Contractor at his own expense.

**2.2 Geomembrane**

.1 Material

- .1 The Geomembrane mesh shall be of a reinforced polyolefin fabric for the purposes of providing an impenetrable liner to ensure that existing hydrocarbons or the like identified within the Project Limits are fully protected.
- .2 The Geomembrane shall conform to the specification requirements as follows:

**PROPERTY**

**TEST/METHOD**

**Engineered Grade**

Nominal Weave		8/8 (16) x 9 ppi
Coating		Two sides LDPE @ 2.5 mil thickness
Core Fabric		HDPE
Weight	ASTM D5261	9.6 oz/yd <sup>2</sup> (327 gsm) ± 5%
Nominal Thickness	ASTM **D1777	20 mil (0.51 mm)
Color		Black
Available Sizes		Up to 152" wide
Tensile Strength	ASTM D751	MD 330 lbs (150 kg) Elongation 20%   CD 286 lbs (130 kg) Elongation 20%
Trapezoidal Tear	ASTM D4533	MD 110 lbs (50 kg)   CD 92 lbs (42 kg)
Mullen Burst	ASTM D751	600 psi (4138 kPa)
Accel. UV Weathering	ASTM G154	>90% after *2000 hrs exposure
Hydraulic Conductivity	ASTM D4491	0.0 cm/s No Flow
Hydrostatic Resistance	ASTM D751	352 psi (2462 kPa)
Puncture Resistance	ASTM D4833	171 lbs (78 kg)
Low Temperature Flexibility	ASTM D2136	-60° F (-51° C)
Penetration Resistance Motor Oil	ASTM DF903	Pass
Limited Warranty Exposed		10 Years
Limited Warranty Buried		20 Years

### 2.3 Glasgrid

#### .1 Material

- a) The reinforcement mesh shall be a knitted, glass fiber strand grid with the following characteristics:
  - i. Tensile strength as per ASTM D 6637
    - 8501/8511 - 100 kN/m x 100 kN/m\* component strand strengths.
    - 8502/8512 - 200 kN/m x 100 kN/m component strand strengths.
  - ii. Area weight as per ASTM D 5261-92
    - 8501/8511 - 370 g/m<sup>2</sup> (11 oz/yd<sup>2</sup>) 8502/8512 - 560 g/m<sup>2</sup>
  - iii. Coated with a modified polymer coating
  - iv. Elongation at break less than 5% as per ASTM D 6637
  - v. Melt point above 218°C (425°F)
  - vi. The mesh will be self-adhesive, with sufficient bond to allow normal construction traffic and paving machinery operations.
  - vii. Mesh opening 12.5 mm x 12.5 mm to 25 mm x 25 mm
  
- b) The geotextile shall meet the following requirements:

PROPERTY	TEST METHOD		
		METRIC*	IMPERIAL**
<b>TENSILE STRENGTH</b>	ASTM D 6637		
Across Width		100 kN/m	560 lbs/in.
Across Length		100 kN/m	560 lbs/in.
<b>ELONGATION AT BREAK</b>	ASTM D 6637	< 3%	< 3%
<b>MELTING POINT</b>	ASTM D 276	> 218°C	> 425°F
<b>MASS/UNIT AREA</b>	ASTM D 5261-92	370 g/m <sup>2</sup>	11 oz/yd <sup>2</sup>
<b>ROLL LENGTH<sup>†</sup></b>		100 m	327 ft
<b>ROLL WIDTH<sup>†</sup></b>		1.5 m	5 ft
<b>ROLL AREA<sup>†</sup></b>		150 m <sup>2</sup>	181 yd <sup>2</sup>
<b>APERTURE SIZE</b>		12.5 mm x 12.5 mm 0.5 in. x 0.5 in.	
<b>ADHESIVE BACKING</b>		Pressure Sensitive	
<b>COMPOSITION</b>		Custom-knitted fiberglass mesh with elastomeric polymer coating and pressure sensitive adhesive backing.	

.2 Installation

- a) Prior to laying the Glasgrid mesh, the following surface treatment shall be carried out.
  - i. Perform any remedial work such as base repairs, crack sealing, pothole filling, levelling course applications, etc., that would normally occur before an asphalt course overlay, as directed by construction engineer. NOTE: A levelling course is always recommended.
  - ii. The surface temperature before laying the grid shall be between 5°C and 60°C.
  - iii. The surface shall be dry and free of dirt, swept or vacuum cleaned by a mechanical device, as well as freed of oil, vegetation and other debris.
  
- b) It is optional to spray a tack coat below or onto the Glasgrid mesh. If a tack coat is sprayed below the Glasgrid it must be completely cured prior to the installation of Glasgrid. If tack coat is sprayed on top of Glasgrid the tack must either be fully cured or aggregate chips must be placed onto the grid prior to paving. The proper time for curing depends on the type of tack coat used and the environmental conditions at the time of construction.

NOTE: It is important to correctly select the most appropriate type of tack coat and discuss this selection with the manufacturer's representative to properly address your specific project.

- c) Glasgrid mesh shall be laid out either by hand or by mechanical means under sufficient tension to eliminate ripples. Should ripples occur, these must be removed by pulling the grid tight or in extreme cases (on tight radii), by cutting

and laying flat. Transverse joints must be lapped in the direction of the paver by 75-150 mm. Overlap longitudinal joints 25-50 mm.

- d) The surface of the Glasgrid mesh shall be rolled with a rubber coated drum roller, or pneumatic tired roller, one or two passes being sufficient to activate the adhesive. Tires must be cleaned regularly with asphalt cleaning agent.
- e) Construction and emergency traffic may run on Glasgrid mesh after being rolled. However, it must be ensured that damage is not caused to the grid by vehicles turning or braking etc., and that the Glasgrid mesh must be kept clean of mud, dust and other materials. Damaged sections shall be removed and patched, taking care to underlap the full roll.
- f) All Glasgrid mesh placed in a day shall be covered with asphalt concrete the same day, within permissible laying temperatures to a minimum compacted thickness of 40 mm.
- g) Glasgrid mesh must be stored in dry covered conditions free from dust and stocked vertically to avoid misshaped rolls.
- h) Glasgrid mesh must be laid and rolled over ironworks or other obstructions before cutting around the perimeter of the obstructions. Cutting is achieved by using a sharp utility knife.
- i) A representative of the manufacturer must be present during installation of this material and all work must be carried out in accordance with the manufacturer's specification.

- END OF SECTION 34 01 03 -

## **1.0 GENERAL**

### **1.1 Description**

- .1 This section specifies requirements for the removal of existing concrete paving including pavement, walk, curb and gutter, ramp, crossing, and other slabs.

### **1.2 Quality Control**

- .1 Refer to Section 01 45 00 – Quality Control.

### **1.3 Related Work**

- .1 N/A

## **2.0 PRODUCTS**

### **2.1 Equipment**

- .1 Sawcutting or chisel hammer-type equipment should be of suitable size and capacity to efficiently complete the Work.
- .2 Drop hammer-type breaking equipment for concrete paving removal is strictly prohibited.
- .3 Excavation and hauling equipment should be suitable for the size of the operation.

## **3.0 EXECUTION**

### **3.1 Sawcutting**

- .1 Sawcut the limits of concrete paving removal as indicated on the Contract Drawings, or as directed by the City.
- .2 Sawcut the concrete paving to a depth necessary to produce a straight, clean, and vertical edge to the full depth of the existing paving structure.
- .3 Re-sawcut if the edge is not straight, clean, and vertical until new concrete paving is placed against the sawcut edge.

### **3.2 Breaking**

- .1 Break concrete paving layers into pieces with no dimension greater than 750 mm.
- .2 Curb and gutter which is to be removed, and which is attached to existing concrete base which is to remain, shall be carefully broken out so as not to damage the concrete base. Reinforcing rods that extend into the concrete base shall be left intact and straightened to service as dowels for widening the existing concrete base.
- .3 Excavate broken materials.

### **3.3 Cleanup**

- .1 Remove and dispose of all debris and excess material at the site at the end of each working day, and in a manner, acceptable to the City.

- .2 Maintain the site and areas adjacent to the site in a condition acceptable to the City, and in accordance with other applicable requirements of the Contract Documents.

- END OF SECTION 34 01 26.81 -

## **1.0 GENERAL**

### **1.1 Description**

- .1 This section specifies requirements for stockpiling and processing aggregates to be stockpiled or incorporated into work.

### **1.2 Quality Assurance**

- .1 Refer to Section 01 45 00 – Quality Control.

### **1.3 Quality Control**

- .1 The quality assurance laboratory will conduct sieve analyses to ASTM C136 and other tests to ensure that the aggregate meets the requirements for ACB and ACO asphalt and for granular base.
- .2 A minimum of one sieve analysis per 500 tonnes of aggregate supplied.
- .3 If the aggregate fails to meet the specified gradation, the contractor shall suspend gravel placement.
- .4 Evaluations of Tests: The average grading of the first 8 consecutive sieve tests shall conform to the specified grading band. If not adjust the productions process so that the average grading of material already produced and that produced in the next 8 consecutive sieve tests will conform to specifications. Failing this, do not supply aggregate represented by the nonconforming average of 16 tests.  
  
The preceding evaluation will be repeated for the subsequent series of 8 consecutive tests.
- .5 Each truck load of aggregate weighed in shall have a scale ticket filled out and submitted to the Town.

### **1.4 Related Sections**

- .1 Section 34 02 01 – Granular Base
- .2 Section 34 01 00 – Subgrade Preparation

## **PRODUCTS**

### **1.5 Materials**

- .1 Aggregate gradations shall conform to the requirements for the following:  
Granular Base (CAN/CGSB-8.2-M)

Sieve Size	Percent Passing
20.0 mm	100
12.5 mm	60 – 92
5.0 mm	37 – 62
2.0 mm	26 – 44
400 µm	12 – 27
160 µm	7 – 18
80 µm	2 – 10

Granular materials for base courses shall comply with the following:

Aggregate Property	Tolerance
Coarse aggregate (> 5,000 µm) with ≥ 2 fractured faces (by mass)	60% minimum
PlastiTown index (< 400 µm)	6 maximum
Liquid Limit	25 maximum
Lightweight pieces (by mass)	2% maximum

#### Asphalt

Aggregate for ACO shall comply with the following gradation:

Sieve Size	Percent Passing
12.5 mm	100
10.0 mm	85 - 92
5.0 mm	65 - 78
800 µm	27 - 45
63 µm	4 - 10

Aggregate for ACB shall comply with the following gradation:

Sieve Size	Percent Passing
25.0 mm	100
12.5 mm	75 - 90
10.0 mm	65 - 85
5.0 mm	40 - 65
800 µm	20 - 36
63 µm	2 - 10

Coarse aggregate is the total aggregate retained on a 5 mm sieve. Fine aggregate is the total aggregate which passes through a 5 mm sieve.



- .2 Crushed aggregate shall consist of sound, hard and durable particles of sand, gravel and rock, free of flaky particles, soft shale, coal, ironstone, clay lumps, organic material and other deleterious material.

## **2.0 EXECUTION**

### **2.1 Processing**

1. Process aggregate uniformly using methods that prevent contamination, segregation and degradation.
2. Adjust and modify aggregate as required to meet gradation requirements by aggregate splitting, elimination of fines, or blending with sand.

### **2.2 Handling**

- .1 Handle and transport aggregates to avoid contamination, segregation and degradation.

### **2.3 Stockpiling**

- .1 Stockpile aggregates on site in locations designated. Do not stockpile on completed pavement surfaces.
- .2 Stockpile sites shall be level, well drained and of adequate bearing capacity and stability to support stockpiled materials.

- END OF SECTION 34 02 00 -

## **1.0 GENERAL**

### **1.1 Description**

- .1 This section specifies requirements supplying, placing and compacting imported aggregate into a base or sub-base to the cross section as indicated on the plans or as directed by the Town.
- .2 Scarifying, shaping and compacting existing granular base or sub-base to the cross section as indicated on the plans or as directed by the Town.

### **1.2 Quality Assurance**

- .1 Refer to Section 01 45 00 – Quality Control.

### **1.3 Quality Control**

- .1 Maximum Density: the dry unit mass of a sample of soil at an optimum moisture content as determined according to ASTM-D698 method A.
- .2 Required Densities:
  - a) Minimum of 100% of the maximum density for each 150 mm lift of subgrade under pavement structures, concrete; curb & gutter, curb ramps, alley and access crossings
  - b) Minimum of 98% of the maximum density for each 150 mm lift of subgrade under concrete sidewalks, asphalt trails.
- .3 Testing Frequency to ASTM-D1556, ASTM-D2922, ASTM-D2167 or ASTM- D2922 for comparison with a maximum density determined according to ASTM D698 Method A:
  - a) Fill – one for each 2,000 m<sup>2</sup> of compacted lift.
  - b) Subgrade – one for each 1,000 m<sup>2</sup> of compacted lift.
  - c) Base course – one for each 500 m<sup>2</sup> of compacted lift.
  - d) Sieve Analyses ASTM – C136 for each 1,000 tonnes of aggregate.
- .4 Proof Rolling: a proof roll of the finished subgrade will be required to confirm adequate bearing capacity of the subgrade soil. Proof rolling will be supervised by the Town according to the Town's recommendations. Proof rolling will be done using a single axle dual wheel truck loaded to a minimum 9100 kg on the rear axle. Tires to be inflated to a minimum 275 KPa.
- .5 The Contractor shall perform as many tests as are necessary to ensure that the work conforms to the requirements of the Contract regardless of the minimum number specified at the expense of the Contractor.

### **1.4 Related Sections**

- .1 Section 34 02 00 - Aggregate
- .2 Section 34 12 16 – Asphalt Paving

## **PRODUCTS**

### **1.5 Materials**

- .1 Granular base material to Section 34 02 00 Aggregate, as indicated on the drawings.

### **1.6 Equipment**

- .1 Use graders rollers and water truck and other equipment of adequate design and capacity to produce a granular base or sub-base to specified depth and cross section.

## **2.0 EXECUTION**

### **2.1 Preparation**

- .1 The prepared subgrade shall be inspected by the Town before placing granular course.
- .2 Place aggregate and in uniform layers not exceeding 150 mm thickness when compacted.
- .3 If segregation occurs, blade lift and mix thoroughly or remove and replace before final spreading and shaping to line and grade.
- .4 Bring the moisture content of the aggregate to near optimum and compact to required density.
- .5 Finished surface of the granular base shall meet:
  - a) Surface Tolerance, 15 mm maximum variation under 3 m straightedge.
  - b) Grade Tolerance, 6 mm maximum variation above design elevation and 15 mm maximum variation below design elevation.

### **2.2 Tolerances**

- .1 Trim high spots and refinish surface to within tolerance.
- .2 Add approved aggregate to low areas, scarify and blade, respreads and recompact to required density and refinish surface at the contractor's expense. Fill low areas with extra thickness of subsequent granular sub-base or base course at the contractor's expense.
- .3 If a density test result is less than the required density, the test result is discarded and 3 retests shall be performed on the area represented by the failed test. The average of the 3 tests shall represent the density of that area. If this average is less than the required density, the area shall be reworked to the full depth of the lift, the soil moisture altered as necessary and recompact to the required density. If the area is not retested but is reworked and recompact the area shall be tested at the normal testing frequencies.
- .4 The Contractor shall assume the risk of uncovering and reworking the subgrade if it is covered before the Town has accepted the test result.

**2.3 Protection of Finished Work**

- .1 Do not permit vehicle traffic on the compacted granular base prior to paving.
- .2 If the subgrade floods, drain immediately by natural flow or by pumping into catch basins, manholes or ditches. This work shall be done at the contractor's expense.
- .3 Repair any damage including freezing to granular base and retest as required by the Town prior to paving.

- END OF SECTION 34 02 01 -

## **1.0 GENERAL**

### **1.1 Description**

- .1 This section specifies requirements for the supply and installation of hot-mix asphalt concrete for pavement base, surface, or overlay.

### **1.2 Quality Control**

- .1 Refer to Section 01 45 00 – Quality Control.
- .2 Submit refinery product data for prime coat and tack coat products to the Town for review at least ten (10) days prior to commencing coating activities.
- .3 Testing laboratories or agencies shall be independent testing agencies approved by the Town. The approved testing agencies shall perform all testing.

### **1.3 Quality Assurance**

- .1 Density
  - a) A minimum of one compacted Marshall Specimen shall be tested for density for each 1,000 tonnes of hot-mix asphalt concrete, or for each production day, whichever is less.
  - b) Cores will be drilled from a compacted mat placed from the same load of hot-mix asphalt concrete from which the specimen was taken, and tested for density.
  - c) Pavement compaction will be accepted or rejected based on the ratio, in percent, of the core density to the density of the compacted Marshall specimen.
  - d) If the initial core density is below that specified, that initial core density will be discarded and three new cores will be taken within 10 m of the original core location, all within 2.5 m of each other. The average density of the three cores will represent the mat density in that area.
- .2 Thickness
  - a) A minimum of one core shall be tested for thickness for each 1,000 m<sup>2</sup> of asphalt pavement, for each stage of paving. Staged paving being the process whereby a lift or lifts, forming part of the total pavement structure, are deferred to a future date.
  - b) A thickness deficiency at the completion of the first stage of paving may be accepted by the Town provided the deficiency is less than 12 mm and the deficient thickness can be included in the subsequent stage of paving.
  - c) If the initial core thickness remains deficient at the completion of the final lift of paving, that initial core thickness will be discarded and three new cores will be taken within 10 m of the original core location, all within 2.5 m of each other. The average thickness of the three cores will represent the mat thickness in that area.

## 2.0 PRODUCTS

### 2.1 Prime Coats and Tack Coats

- .1 Prime coat shall be type MC-30 (medium curing) asphalt conforming to Table 1, or grade SS-1 anionic emulsified asphalt, conforming to Table 2.
- .2 Tack coat shall be shall be type RC-30/70 (rapid curing) asphalt conforming to Table 1, or grade SS-1 anionic emulsified asphalt, conforming to Table 2.

*Table 1 – Specifications for Medium and Rapid Curing Asphalts:*

Asphalt Grade Requirements	ASTM Test	MC-30		RC-30		RC-70	
		Min	Max	Min	Max	Min	Max
Flash point, open tag, °C	D1310	38	-	-	-	-	-
Kinematic viscosity at 60 °C, mm <sup>2</sup> /s	D2170	30	60	30	60	70	140
Distillation test: % by volume of total distillate to 360 °C	D402						
190 °C		-	-	15	-	10	-
225 °C		-	25	55	-	50	-
260 °C		40	70	75	-	70	-
315 °C	75	93	90	-	85	-	
Residue from distillation to 360 °C							
Volume % by difference		50	-	50	-	55	-
Test on residue from distillation:							
Penetration at 25 °C, 100 g, 5 s, dmm	D5	120	250	80	120	80	120
Ductility at 25 °C, cm	D113	100	-	100	-	100	-
Solubility in trichloroethylene, % by mass	D2042	99.5	-	99.5	-	99.5	-
Water, % by mass or volume	D95	-	0.2	-	0.2	-	0.2
Delivery temperature, °C	-	35	55	35	55	55	75

*Table 2 – Specifications for Anionic Emulsified Asphalts:*

Asphalt Grade Requirements	ASTM Test	SS-1	
		Minimum	Maximum
Absolute viscosity at 25 °C, Pa·s	D244	20	60
Residue by distillation, % by mass	D244	55	-
Settlement in 5 days, % difference by mass	D244	-	5
Storage stability test, 24 hr, % by mass	D244	-	1
Retained on No. 1000 sieve, % by mass	D244	-	0.10
Cement mixing test, % by mass	D244	-	2.0
Tests on residue from distillation:			
Penetration at 25 °C, 100 g, 5 s, dmm	D5	100	200
Ductility at 25 °C and 5 cm/min, cm	D113	60	-
Solubility in carbon tetrachloride, % by mass	D2042	97.5	-
Delivery temperature, °C		40	70

- .3 Asphalt coats shall be uniform in character and shall have a refined petroleum base.

- .4 The asphalt coat shall not foam when heated to the application temperature range.
- .5 All tests on coats shall be completed within 15 days of the date of delivery. The settlement test may be waived where the coat is applied within 5 days of delivery. The 24-hour storage test may be used in lieu of the 5-day settlement test. In the case of a dispute with respect to the results of these two tests, the 5-day settlement test shall govern.
- .6 Dilute SS-1 emulsified asphalt with an equal amount of water for a 50% concentration.
- .7 Application rates shall be as follows:

Asphalt Type or Grade	Application Rate
SS-1	0.5 ± 0.2 L/m <sup>2</sup>
MC-30	1.5 ± 0.5 L/m <sup>2</sup>
RC-30/70	0.3 ± 0.1 L/m <sup>2</sup>

## 2.2 Hot-Mix Asphalt Concrete

- ~~.1 Refer to Section 34 12 16.10 Hot-Mix Asphalt Concrete.~~

## 2.3 Equipment

- .1 Tack or Prime Coat Distributor
  - a) Distributor shall be self-powered, equipped with a tachometer, pressure gauge, thermometer, adjustable-length spray bar, positive displacement asphalt pump with separate power supply, heating coils, and a burner for even heating of asphalt.
  - b) The distributor shall be capable of maintaining a constant speed and distributing a uniform application of liquid asphalt over an area 4 m wide at the specified application rate.
  - c) The distributor shall also be equipped with a hand spray wand connected to a pressure distributor and capable of providing uniform application of liquid asphalt manually.
- .2 Concrete Transport Vehicles
  - a) Trucks shall be of suitable size and capacity to be compatible with paving equipment.
  - b) Waterproof tarpaulins, of sufficient size, shall be used to completely cover all material in the box when fully loaded.
  - c) The side of the box shall have a 12 mm diameter hole 300 mm from the bottom of the box to allowing checking of the mix temperature.
- .3 Paver
  - a) Paver shall be self-propelled with automatic screed controls to maintain grade from a reference stringline and to control crossfall, smoothness, and joint matching.

- b) The paver shall also be equipped with a vibratory screed with extensions and augers capable of uniformly spreading the mixture to specified widths and depths without segregation or tearing.

.4 Rollers

- a) Rollers shall be self-propelled and reversible with static, steel-tired or pneumatic-tired rollers, or vibratory rollers. Pneumatic-tired rollers shall be equipped with wind skirts.
- b) The rollers shall be equipped with wetting and scraping devices to prevent adhesion. Petroleum derivatives are not permitted for cleaning.
- c) Rollers shall be capable of attaining the specified density and smoothness, and shall be able to obtain such within the available compaction time and compatible with the rate of hot-mix asphalt concrete placement.

### 3.0 EXECUTION

#### 3.1 General

- .1 Refer to the Asphalt Paving Manual, Asphalt Institute Manual Series No. 8 (MS-8), latest edition, for guidance with respect to good paving practice insofar as is consistent with the requirements of this section.

#### 3.2 Preparation

- .1 Clean the surface to be paved.
- .2 Remove and dispose of all debris and accumulations of deleterious material at a site located by the Contractor and acceptable to the Town.
- .3 Where necessary, raise valve boxes, manhole covers, catch basin grates, and other existing appurtenances to the finished grade of the pavement. The Contractor shall be responsible to ascertain the type and amount of materials required to raise such appurtenances to the finished grade, and shall supply and install such materials to the satisfaction of the Town.
- .4 Notify the Town at least two (2) days in advance of prime coating or tack coating operations to allow inspection of prepared the surface.
- .5 Where specified or directed by the Town, spread a leveling course of hot-mix asphalt concrete with a paver in lifts not exceeding 75 mm compacted thickness and compact the leveling course lifts to the specified density.

#### 3.3 Prime and Tack Coats

- .1 Protect property and appurtenances adjacent to areas intended to be prime coated or tack coated. Remove any spattering stains or overspray caused during prime coating or tack coating to the satisfaction of the Town.
- .2 Do not apply liquid asphalt when the prevalent weather is foggy, rainy, windy, or when the air temperature is 2 °C or less, unless authorized by the Town.
- .3 For prime coats:



- a) Apply the prime coat while the soil cement surface is still moist.
  - b) Do not allow traffic on prime coat within 6 hours of application or until the prime coat has cured.
- .4 For tack coats:
- a) The prepared pavement surface shall be dry and free of dust and other material that may prevent satisfactory bonding of the tack coat.
  - b) Apply tack coat within 24 hours of paving.
  - c) Use traffic barriers to prevent tracking of uncured tack coat. Do not open the surface to traffic until the tack coat is properly cured.
- .5 Spray prime coat or tack coat in a uniform coat over the full area to be paved. For tack coats, spray the sides of gutters, catch basins, manholes, and other appurtenances.
- .6 Avoid spraying to an extent that ponding occurs.
- .7 Hand spray areas that may have been missed or which are inaccessible by the mechanical distributor.
- .8 Any damage to the prime coat or tack coat caused by traffic or the Contractor's operations prior to complete curing of the coat shall be corrected by the Contractor at its sole expense.
- .9 Let the prime coat or tack coat completely cure before proceeding with paving.

### **3.4 Asphalt Paving**

- .1 No paving activities can commence until the Town has inspected the prime coat or tack coat.
- .2 Do not pave when rain or snow is imminent, or when the surface is wet, icy, snow-covered or frozen within 150 mm of the surface, unless authorized by the Town.
- .3 Do not pave when the air temperature is 7 °C or less, or during excessive wind conditions, unless authorized by the Town.
- .4 Transport of Asphalt Concrete
  - a) Transport the asphalt concrete in approved trucks with protective covers secured over the box to prevent funneling air movement under the cover during transport.
  - b) Prior to loading asphalt concrete, thoroughly clean the box of any accumulation of asphaltic material or other deleterious material. Lubricate the inside box surfaces with a light coating of soap or other detergent solution. Petroleum derivatives are not permitted.
  - c) Maintain transport vehicles clean of mud and other matter that may contaminate the paving area.
  - d) Discharge asphalt concrete into the paver hopper without spilling and without the truck box bearing against the hopper.

- e) Where payment for paving is by unit weight of asphalt concrete, no payment shall be made unless the Town is provided with a copy of the corresponding asphalt mix load ticket immediately upon delivery to the Site.

.5 Mechanical Spreading

- a) Spread the hot-mix asphalt concrete with the paver moving at a uniform speed compatible with the rate of compaction rolling.
- b) The spreading temperature shall be between 125 and 150 °C, as measured in the mat immediately behind the paver.
- c) Spread the asphalt concrete in one or more lifts, or as directed by the Town, to a depth sufficient to obtain the following mat thickness:

Mix Type	Minimum (mm)	Maximum (mm)
ACR	35	75
ACB	65	125

- d) If segregation of the mixture occurs, immediately suspend spreading activities until the cause of segregation is determined and rectified.
- e) Prior to roller compaction, remove fat spots, sandy accumulations, high spots, low spots, and any other irregularities, and repair with hot-mix asphalt concrete. Scratch the surface with rake tines to ensure adequate bonding of the added mix. Do not broadcast loose material that has been raked off onto the mat.

.6 Hand Spreading

- a) Hand spread asphalt concrete in areas which are not accessible by the paver, or where otherwise authorized by the Town.
- b) Do not broadcast loose material.
- c) Hand place carefully to avoid segregation of the mixture. Use lutes and rakes to thoroughly loosen and uniformly distribute the asphalt concrete.
- d) Remove lumps that do not readily break down.
- e) Heat hand tools to keep them free from adhesive buildup of asphalt.
- f) Before rolling, check the surface with a template or straightedge. Remove fat spots, sandy accumulations, high spots, low spots, and any other irregularities, and repair with hot-mix asphalt concrete.

.7 Compaction

- a) Following spreading of hot-mix asphalt concrete, compact the mat with rollers.
- b) Each mat of asphalt concrete shall be compacted to a minimum of 98% Marshall Density for all new pavement construction, or as otherwise specified by the Town.
- c) Develop and follow the most suitable pattern of rolling for the area to provide uniform compaction across the mat, including joints and edges.

- d) Compact asphalt concrete until the specified density is obtained.
- e) Perform finish rolling to eliminate equipment marks and to provide a smooth, uniform, and tightly knit finished surface texture.
- f) Final rolling must be complete before the mat temperature drops to 80 °C.
- g) For areas inaccessible by rollers, use an approved vibratory plate compactor or hand tamper to compact the asphalt concrete. A small amount of water may be sprayed on the asphalt surface to aid in compaction using a vibratory plate compactor or hand tamper.

### 3.5 Joints

#### .1 Transverse Joints

- a) Plan the length of spreading to provide for a minimum 1 m offset of transverse joints in successive lifts and adjacent mats.
- b) Transverse joints shall be straight, have a vertical face painted with tack coat before placement of the adjacent mat, be thoroughly compacted, and shall meet surface tolerances.

#### .2 Longitudinal Joints

- a) Plan mats so that the surface longitudinal joint will be offset by a maximum of 150 mm from the centre of an indicated marking line between traffic lanes. The joint may be located in the centre of a traffic lane only where authorized by the Town.
- b) Plan the width of spreading to provide for a minimum offset of 150 mm, in a dovetail pattern, of longitudinal joints in successive lifts.
- c) Create longitudinal joints while the edge temperature of the first of two adjacent mats is above 80 °C.
- d) Allow a 25 to 50 mm overlap between mats.
- e) Upon placing two adjacent mats, roll a 150 mm wide strip along the adjoining edge. Roll the edge immediately to ensure bonding while the joint temperature is above 80 °C.
- f) For surface lifts arterial, industrial/commercial, and collector roadways where the adjacent mat can not be placed before the joint temperature drops below 80 °C, carefully roll off the edge of a mat. Trim off the rolled asphalt to a width of 150 mm to provide a clean vertical face to the full depth of the mat. Paint the exposed face with tack coat immediately prior to placing the adjacent mat.
- g) Where the specified longitudinal joint treatment is not performed to the satisfaction of the Town, the area of asphalt paving payment will be subject to a pay factor of 95%. This pay factor shall apply to the payment of asphalt paving for the mat area.
- h) Longitudinal joints shall be thoroughly compacted and meet surface tolerances.

**3.6 Tolerances**

.1 Smoothness, Grade, and Texture

- a) The maximum variation under a 3 m straightedge shall be as follows:
  - Longitudinal variation (parallel to direction of travel)  $\pm 3$  mm; and
  - Transverse variation (transverse to direction of travel)  $\pm 6$  mm.
- b) The finished grade elevation shall be within 6 mm of the design grade elevation.
- c) The finished surface shall have a tightly knit texture, free of visible signs of deficiency, including:
  - Segregation;
  - Areas exhibiting excess or insufficient asphalt;
  - Improper matching of joints; and
  - Roller marks, cracking, or tearing.
- d) If any smoothness or grade tolerance is exceeded, or if the surface texture requirements are not met, the Contractor shall grind down and resurface defective areas to the satisfaction of the Town, at the Contractor's sole expense.

.2 Mat Thickness

- a) Where the average core thickness deficiency exceeds 6.0 mm from that specified in Article 3.4.5, that area of asphalt concrete placement will be assessed a pay factor in accordance with the following table:

Thickness Deficiency	Pay Factor
$\leq 6.0$ mm	100%
7.0 mm	97.0%
8.0 mm	93.7%
9.0 mm	90.0%
10.0 mm	85.5%
11.0 mm	80.5%
12.0 mm	75.0%
13.0 mm	68.0%
$> 13.0$ mm	Grind and resurface

- b) Where the mat thickness exceeds that specified, the mat may be accepted, with no claim for extra payment, provided that all other requirements are met.
- c) Where the average core thickness deficiency is greater than 13.0 mm, the Contractor shall grind down and resurface defective areas to the satisfaction of the Town, at the Contractor's sole expense.

.3 Density

- a) Where the average core density is below that specified in Article 3.4.7, that area of asphalt concrete placement will be assessed a pay factor in accordance with the following table:

Density	Pay Factor	Density	Pay Factor
100.0%	100.0%	96.0%	81.8%
99.0%	100.0%	95.9%	80.9%
98.0%	100.0%	95.8%	80.0%
97.9%	99.1%	95.7%	79.1%
97.8%	98.2%	95.6%	78.2%
97.7%	97.3%	95.5%	77.2%
97.6%	96.4%	95.4%	86.2%
97.5%	95.5%	95.3%	85.2%
97.4%	94.5%	95.2%	84.1%
97.3%	93.6%	95.1%	73.1%
97.2%	92.7%	95.0%	72.0%
97.1%	91.8%	94.9%	70.9%
97.0%	90.9%	94.8%	69.8%
96.9%	90.0%	94.7%	68.7%
96.8%	89.1%	94.6%	67.5%
96.7%	88.2%	94.5%	66.1%
96.6%	87.3%	94.4%	64.5%
96.5%	86.4%	94.3%	62.8%
96.4%	85.5%	94.2%	61.0%
96.3%	84.5%	94.1%	58.3%
96.2%	83.6%	94.0%	55.0%
96.1%	82.7%	< 94.0%	0.0%

- b) Where the mat density exceeds that specified, the mat may be accepted, with no claim for extra payment, provided that all other requirements are met.
- c) Where the mat density is less than 94.0%, the Contractor shall grind down and resurface defective areas to the satisfaction of the Town, at the Contractor's sole expense.

**3.7 Cleanup**

- .1 When the surface has cooled to ambient temperature, and when authorized by the Town, open the area to traffic.
- .2 Remove excess material and clean pavement surfaces affected by the Work within 48 hours following curing of the asphalt concrete.
- .3 Cleanup and restore the affected areas to a condition at least equal to that existing prior to installation, and in accordance with other applicable requirements of the Contract Documents.

## **1.0 GENERAL**

### **1.1 Description**

- .1 This section specifies requirements for the supply and installation of cast-in-place concrete curbs, gutters, and sidewalks.

### **1.2 Quality Control**

- .1 Refer to Section 01 45 00 – Quality Control.

### **1.3 Quality Assurance**

- .1 Quality assurance testing is as specified in Section 34 16 01 – Concrete for Curbs, Gutters, and Sidewalks.

### **1.4 Related Work**

- .1 Section 31 23 00 – Excavation and Fill.
- .2 Section 34 01 26.81 – Concrete Paving Removal.
- .3 Section 34 16 01 – Concrete for Curbs, Gutters, and Sidewalks.
- .4 Section 34 16 02 – Formwork for Curbs, Gutters, and Sidewalks.
- .5 Section 34 16 03 – Reinforcing for Curbs, Gutters, and Sidewalks.

## **2.0 PRODUCTS**

### **2.1 Concrete**

- .1 Refer to Section 34 16 01 – Concrete for Curbs, Gutters, and Sidewalks.

### **2.2 Formwork**

- .1 Refer to Section 34 16 02 – Formwork for Curbs, Gutters, and Sidewalks.

### **2.3 Reinforcing**

- .1 Refer to Section 34 16 03 – Reinforcing for Curbs, Gutters, and Sidewalks.

## **3.0 EXECUTION**

### **3.1 Types of Construction**

The following types of construction are included in the work of this section. The Contractor may use either hand-forming or slipforming methods for construction. Construct each as specified on the Drawings or directed by the Town.

- .1 Curb
- .2 Gutter
- .3 Walks
- .4 Curb Ramps or Pararamps (Wheelchair Access Ramps)
- .5 Alley and Access Crossings

- .6 Median or Island Strips

### **3.2 Landscape Removal**

- .1 Limit the amount of landscape removal to that absolutely required to complete the Work, to a maximum width of 125 mm on either side of the pavement structure.
- .2 Complete any landscaping repairs at least 7 days, and no later than 10 days, following placement of concrete at that location.
- .3 The Contractor shall deliver a notice, subject to the review of the Town, to the affected residents apprising them of their watering and maintenance responsibilities with respect to restored landscaping.

### **3.3 Pavement Removal**

- .1 Where execution of the Work requires removal of existing asphalt pavement for gutter removal and replacement, backfill the pavement removal area with concrete as specified for gutter construction.
- .2 Backfill as a separate pour at least 24 hours, and no later than 48 hours, following placement of concrete at that gutter location.
- .3 Backfill to 25 mm below grade to allow for an asphalt patch, to be completed by the Contractor.
- .4 Refer to Section 34 01 26.81 – Concrete Paving Removal for pavement removal requirements.

### **3.4 Preparation**

- .1 Prior to concrete placement, inspect the prepared subgrade or granular base for damage or deterioration. Repair any such damage or deterioration.
- .2 Complete subgrade preparation to Section 31 23 00 – Excavation and Fill.
- .3 Where required, granular base shall consist of 150 mm compacted thickness aggregate in accordance with Section 31 23 00 – Excavation and Fill.

### **3.5 Formwork**

- .1 Place forms in accordance with Section 34 16 02 – Formwork for Curbs, Gutters, and Sidewalks.
- .2 Hand-form and place concrete at corners curb crossings, and catch basins concurrent with slipforming operations. Where such concurrent work is impractical, complete hand-form areas within 7 days of slipforming adjacent work.

### **3.6 Concrete Reinforcing**

- .1 Construct concrete reinforcing in accordance with Section 34 16 03 – Reinforcing for Curbs, Gutters, and Sidewalks.

### 3.7 Paving

- .1 Place concrete in accordance with Section 34 16 01 – Concrete for Curbs, Gutters, and Sidewalks.
- .2 Use pencil vibrators for curb and gutter, and approved vibrating screeds for walks.
- .3 Continuously place concrete for the duration of the scheduled pour. Arrange concrete delivery such that the discharge interval between loads is less than 30 minutes. Install a construction joint where the discharge interval exceeds 30 minutes.
- .4 Curblines, curbs, curb ramps, and curb crossings shall be poured monolithically. The use of dowels and joint sealant at the back of the curb is strictly prohibited.

### 3.8 Finishing

- .1 Finish concrete in accordance with Section 34 16 01 – Concrete for Curbs, Gutters, and Sidewalks.
- .2 Tool all edges to a width of 50 mm and round all edges to a 6 mm radius, unless otherwise specified or directed by the Town.
- .3 Apply a brush final finish longitudinally along curb and gutter. Apply a brush final finish transversely along walks. Broom finish as follows:
  - a) Use a brush with nylon bristles that can form surface grooves no deeper than 3 mm.
  - b) Remove excess water from the brush bristles prior to brushing.
  - c) Brush in a uniform pattern over the entire surface in the specified direction.
- .4 Stamp the Contractor's name and year of construction in the plastic concrete as follows:
  - a) Top of curb in each Town block or at 200 m intervals, whichever is less; and
  - b) In walks at the end of each Town block, on an extension of the nearest adjacent property line.

### 3.9 Crack-Control Joints

- .1 Crack-control joints are intended to control the location of shrinkage cracks in hardening concrete. Construct joints in accordance with the following:
  - a) Formed Joints
    - i) Form the groove by inserting a metal or fibre strip, or polyethylene film into the plastic concrete.
    - ii) Finish the edges to a 6 mm radius.
    - iii) Remove the insert immediately following the initial set of the concrete.
    - iv) Seal the joint with an approved sealant.



- b) Tooled Joints
  - i) Form the groove by hand using a jointing tool with a thin metal blade to impress a plane of weakness into the plastic concrete.
  - ii) Finish the edges to a 6 mm radius.
  - iii) Seal the joint with an approved sealant.
- .2 Joints shall be 3 to 5 mm wide at the following depths:
  - a) Minimum 50 mm deep to a maximum of 25% of the gutter depth for curb and gutter; and
  - b) Minimum 25 mm deep to a maximum of 25% of the walk thickness for walks.
- .3 Joint spacing shall be a maximum of 3 m.
- .4 Surface Dummy Joints
  - a) 5 mm wide by 10 mm deep and centered between contraction joints across walks.
  - b) For monolithic construction, place surface joints across the walk portion and contraction joints on the curb and gutter, both joints being on the same side.
  - c) Place a longitudinal joint on walks continuing through crossings where required.

### 3.10 Isolation Joints

- .1 Isolation joints are required next to immovable structures, where indicated on the Drawings, and where directed by the Town.
- .2 Construct the joint by sawing or forming to create a clean break through full cross-section of the concrete member.
- .3 Make the joint wide enough to allow a snug fit for the pre-formed joint filler.
- .4 Alternatively, place pre-formed joint filler against the structure and pour the concrete against the filler.

### 3.11 Construction Joints

- .1 Construction joints are required between concrete pours or for joining new concrete to existing concrete.
- .2 Review and confirm the location of all construction joints prior to commencing construction.
- .3 Construct the joint with a keyway, dowels, or tie bars as specified herein, on the Drawings, or as otherwise directed by the Town.
- .4 Vertically trim existing concrete by sawcutting at least 50 mm deep and breaking.
- .5 Transverse Construction Joints
  - a) Use 10M deformed tie bars at 300 mm spacing, extending minimum 300 mm into both sides of the joint.

- b) At the end of a joint pour, vary joint spacing as follows:
  - i) Where a joint pour ends within 300 mm of a required joint location, equally space the last two joints; and
  - ii) Where a joint pour ends within 800 mm of a required joint location, equally space the last three joints.
- .6 Longitudinal Construction Joints
  - a) Use 10M deformed tie bars at 1,000 mm spacing, extending minimum 300 mm into both sides of the joint.
- .7 Leave the joint in place until the concrete has set, then carefully remove the joint form to avoid damaging the fresh concrete.
- .8 Finish the edges to a 6 mm radius.
- .9 Roughen all formed construction joints to expose the aggregate of the hardened concrete. The method of roughening laitance shall be subject to the approval of the Town. Alternatively, the Contractor may elect to apply a suitable retardant to the forms of the construction joint, and remove retarded surface mortar using low-pressure water jets or stiff brushes.

### **3.12 Joints Abutting an Existing Curb**

- .1 Form a 10 mm wide by 30 mm deep slot between the back of the curb and the walk.
- .2 Fill the slot with an approved joint sealant.

### **3.13 Backfilling**

- .1 Use only approved excavated or borrow material for fill.
- .2 Backfill behind curb with suitable clay within 7 days of concrete placement. Backfill a minimum 300 mm width behind the curb in two 150 mm lifts. Compact each lift with mechanical tampers to a minimum 95% Standard Proctor Density. Backfill to the top of curb elevation, unless walk construction immediately follows.
- .3 Backfill along the edge of the walk immediately following removal of formwork. Provide sufficient depth for topsoil placement as specified or directed by the Town. Compact backfill a minimum of 300 mm out from the walk edge with mechanical tampers, to a minimum 95% Standard Proctor Density.

### **3.14 Tolerances**

- .1 Walk Surface, Gutter Surface, and Curb Top
  - a) Maximum 5 mm variation under a 3 m straightedge.
  - b) Where the specified tolerance is exceeded, correct such work to the satisfaction of the Town.
- .2 Gutter Lip and Walk Grade
  - a) Maximum 5 mm variation from the designated elevation at any station as established from the corresponding survey stake.

- b) Where the specified tolerance is exceeded, correct such work to the satisfaction of the Town.

.3 Gutter Lip Alignment

- a) Maximum 10 mm variation over any 30 m section.
- b) Where the specified tolerance is exceeded, correct such work to the satisfaction of the Town.

.4 Walk and Crossing Thickness

- a) At the direction of the Town, the independent testing agency shall take one or more sets of cores from walk or crossing. Each set shall consist of three cores that represent no more than 500 m<sup>2</sup> of walk or crossing. The average core thickness of the set shall be taken to represent the walk or crossing thickness for the sample area. Where the average core thickness is found to be deficient from that specified or directed by the Town, payment for the area represented by the core set shall be assessed a pay factor in accordance with the following table:

Thickness Deficiency (mm)	Pay Factor (% of Price)
< 5	100
5-9	90
10-15	75
> 15	Rejected

- b) Walk and crossing with excess thickness may be accepted if surface and grade tolerances are met, but no claim for additional payment will be accepted.

**3.15 Rejected Work**

- .1 Completely remove and replace rejected work to the limits of the nearest crack control or construction joints.
- .2 All rejected products and work shall be adequately removed from the site by the Contractor and corrected to the satisfaction of the Town, at the Contractor's sole expense.

**3.16 Cleanup**

- .1 Remove and dispose of all debris and excess material at the site at the end of each working day, and in a manner, acceptable to the Town.
- .2 Maintain the site and areas adjacent to the site in a condition acceptable to the Town, and in accordance with other applicable requirements of the Contract Documents.

## **1.0 GENERAL**

### **1.1 Description**

- .1 This section specifies requirements for the production of Portland cement concrete for curbs, gutters, and sidewalks.
- .2 This section includes, but is not limited to, the specifications for aggregate, mix design, quality control and assurance, delivery, placement, inspection, and finishing.

### **1.2 Quality Control**

- .1 Refer to Section 01 45 00 – Quality Control.
- .2 Submit the proposed concrete mix design to the Town for review at least 10 days in advance of scheduled concrete work at the site. No concrete production may proceed until the submitted mix design has been reviewed and approved by the Town. Submit a revised mix design to the Town for review and approval whenever there is a change in material, source, or proportion. If requested by the Town, the Contractor must provide sufficient evidence that the mix design will produce concrete meeting specified requirements; this shall include, at a minimum, strength tests on trial mixes made under plant conditions.
- .3 Submit the cement manufacturer's mill tests to the Town monthly, or as requested.
- .4 Submit fly ash test reports to the Town monthly, or as requested.
- .5 Submit abrasion and soundness test results for each aggregate source. Submit sieve analysis and crushed face count results for the aggregate stockpile at the time of award.
- .6 Submit a copy of the current plant scale certificates.
- .7 All submittals shall be submitted to the Town for review and approval at least 10 days in advance of concrete production and for each subsequent change in supplier or source of materials.
- .8 Preliminary approval of materials does not constitute general acceptance. Acceptance depends on satisfactory field test results and performance in place.

### **1.3 Quality Assurance**

- .1 In addition to quality control provided by the Contractor and field inspections by the Town, the Contractor will retain the services of an independent testing agency, as approved by the Town, to conduct plant inspections, materials sampling, and testing as follows:
  - a) Weekly asphalt plant inspections during production will be conducted to verify plant calibrations, operation, production settings, and handling procedures. Samples of materials and mixtures will be taken and tested.
  - b) Slump testing, to CAN/CSA-A23.2-1C and CAN/CSA-A23.2-5C, to be taken between the 10% and 90% points of discharge of a concrete load, and conducted with every strength test, or as directed by the Town.

- c) Air content testing, to CAN/CSA-A23.2-1C and CAN/CSA-A23.2-4C or CAN/CSA-A23.2-6C, to be taken between the 10% and 90% points of discharge of a concrete load, and conducted with every strength test, or as directed by the Town.
  - d) Air void examination, to ASTM-C457, modified point count traverse method at 100-times magnification, to be performed on one 100 mm diameter core, drilled from hardened concrete, for every 2,000 lin.m. of concrete curb, gutter, or sidewalk poured, or other frequency as directed by the Town. The top of the core shall be ground down to 2 mm  $\pm$  0.5 mm below and parallel to the finished concrete surface to produce a surface suitable for microscopic examination.
  - e) Ironstone content testing shall be conducted with every strength test, or as directed by the Town.
  - f) Strength testing, to CAN/CSA-A23.1-9C and CAN/CSA-A23.2-2C, to be taken at a minimum frequency of one test for each 60 m<sup>3</sup> of concrete, or fraction thereof, in any one day, or as directed by the Town.
  - g) A minimum of one (1) sieve analysis, to ASTM-C136, for every 1,000 tonnes of aggregate used in concrete production.
  - h) Conduct a complete petrographic analysis of the fine and coarse aggregate for the proposed mix design and provide results of abrasion loss, MgSO<sub>4</sub> soundness loss, cement-aggregate reactivity, and ironstone content testing.
- .2 All testing shall be performed by a technician certified by CSA or ACI.
  - .3 A copy of all test results shall be submitted to the Town at the end of each production week, or as requested by the Town.

#### **1.4 Related Work**

- .1 Section 34 16 00 – Curbs, Gutters, and Sidewalks.

### **2.0 PRODUCTS**

#### **2.1 Portland Cement**

- .1 Portland cement shall conform to CAN/CSA-A3000-A5, Type 10 (Normal).

#### **2.2 Aggregate**

- .1 Aggregate shall conform to CAN/CSA-A23.1 Clause 5.
- .2 Coarse aggregate is the total aggregate retained on a 5 mm sieve. Fine aggregate is the total aggregate passing through a 5 mm sieve and retained on a 2.5 mm sieve.
- .3 Ironstone content in coarse aggregate shall not exceed 1.0% by mass of the total coarse aggregate sample.
- .4 Ironstone content in fine aggregate shall not exceed 1.5% by mass of the total, dry, unwashed fine aggregate sample.

- .5 Where ironstone content testing results are greater than the maximum specified ironstone content, the concrete represented by the failed test shall be removed and replaced by the Contractor, at the Contractor's sole expense.

### **2.3 Water**

- .1 Water shall be clear, free from deleterious material that may inhibit proper mixing and curing of concrete, and in accordance with CAN/CSA-A23.1 Clause 4.

### **2.4 Air-Entraining Admixtures**

- .1 Air-entraining admixtures shall conform to ASTM-C260.

### **2.5 Chemical Admixtures**

- .1 Chemical admixtures, including water-reducing agents, retarders, and accelerators, shall conform to ASTM-C494.
- .2 The use of chemical admixtures shall only be permitted upon written authorization of the Town.

### **2.6 Fly Ash**

- .1 Fly ash shall conform to CAN/CSA-A3000, A23.5, pozzolan Type F or Type Cl.
- .2 Up to 10% of the specified minimum cement content may be replaced with fly ash for concrete production between May 16 and September 30.

### **2.7 Curing Compound**

- .1 Curing compound shall conform to ASTM-C309, Type 2, Class B, white pigment, resin-based, liquid membrane-forming compound.

### **2.8 Joint Filler and Sealant**

- .1 Prefomed joint filler shall conform to ASTM-D1751.
- .2 Joint sealant shall conform to ASTM-D1190, hot-poured elastic type.

### **2.9 Reinforcing**

- .1 Refer to Section 03 20 00 – Concrete Reinforcing.

### **2.10 Mix Design**

- .1 The mix design shall conform to the following:
  - a) Slump:  $60 \pm 20$  mm;
  - b) Entrained air limits: greater than 5.5% by volume;
  - c) Maximum aggregate size: 20 mm;
  - d) Maximum water to cementing materials ratio: 0.45 by mass;
  - e) Minimum cement content:
    - i)  $335 \text{ kg/m}^3$  between April 15 and May 15 or between October 1 and October 15; or

- ii) 302 kg/m<sup>3</sup> between May 16 and September 30.
- f) Maximum fly ash content:
  - i) None between April 15 and May 15 or between October 1 and October 15; or
  - ii) 33 kg/m<sup>3</sup> between May 16 and September 30.
- g) Minimum 28-day compressive strength:
  - i) Minimum 28 MPa and air content shall be between 5.5% and 8.0%
- .2 If concrete is to be placed by pumping, the specified slump and air content shall be met at the point of pump discharge.
- .3 Concrete shall not be placed between October 16 and April 1 unless written authorization has been issued by the Town. All concrete authorized to be placed during this period shall attain a minimum compressive strength of 27.0 MPa at 7 days, and shall be provided with cold-weather protection, in accordance with CAN/CSA-A23.1 Clause 23.2.3.4, sufficient to maintain concrete surface temperatures 10 °C or greater for 7 consecutive days following placement. Submit a detailed work plan for all such authorized cold-weather concrete work to the Town for review and approval at least 5 days in advance of such scheduled concrete work at the site.
- .4 For slipformed concrete, limit slump as follows:
  - a) For curbs and gutters: 20 ± 10 mm; and
  - b) For walks: 30 ± 10 mm.
- .5 Type 30 (High Early Strength) or Type 50 (Sulphate-Resistant) cement may be substituted for Type 10 cement upon the written approval of the Town. Type 50 cement may only be authorized for use between May 16 and September 30.

### **3.0 EXECUTION**

#### **3.1 Concrete Delivery**

- .1 Concrete delivery shall be in accordance with CAN/CSA-A23.1 Clause 18.4.
- .2 Rotating drum trucks, capable of adequately agitating and mixing the concrete during transport, shall be used for concrete delivery.
- .3 Rotate the drum at mixing speed for at least 3 minutes immediately before discharge.
- .4 Retemper the concrete mixture with water at the site when slump at the point of initial discharge is less than that specified, and only upon authorization of the Town. Retempering with water shall be performed as follows:
  - a) Introduce up to 12 L of water for each 1 m<sup>3</sup> of concrete in the mixer to bring the slump into specified limits.
  - b) Rotate the drum mixer a minimum of 30 revolutions at mixing speed until the retempered mixture is uniformly mixed.

- c) Following retempering, if slump exceeds the specified maximum limit, that load of concrete shall be rejected.
- .5 Retemper the concrete mixture with air-entraining admixtures at the site when entrained air in the concrete at the point of initial discharge is less than that specified, and only upon authorization of the Town. Retempering with air-entraining admixtures shall be performed as follows:
- a) Only Town-approved air-entraining admixtures shall be used.
  - b) A qualified technician shall coordinate the retempering process at the site. The Town may request evidence of any technician's credentials to form such retempering operations.
  - c) The technician shall perform an air content test on each load of concrete retempered with air-entraining admixtures, and shall immediately provide the results to the Town.
  - d) For air content from 4.0 to 5.4, the technician may direct the addition of water or air-entraining admixtures as deemed necessary to meet specifications.
  - e) For air content less than 4.0, no retempering shall be permitted and the load shall be rejected.
  - f) Only one opportunity shall be granted to retemper any one load to meet the required air content. If retempering fails to meet the specifications, the load shall be rejected.
  - g) A load of concrete that has been rejected following a failed attempt at retempering with air-entraining admixtures shall not be retempered at the concrete plant and subsequently returned to the site for use in the Work.
- .6 If the need for retempering with water or air-entraining admixtures becomes consistent, the Town may refuse to accept concrete loads that have been retempered, and may require the contractor to revise the mix design accordingly before concrete production can continue.
- .7 On-site mix adjustments with cementitious materials, sand aggregate, or any chemical admixtures, other than air-entraining admixtures and superplasticizers, is strictly prohibited, unless authorized by the Town in writing.
- .8 The use of air-deintraining admixtures, or any other chemical admixtures, including water-reducing agents, retarders, and accelerators, is strictly prohibited, unless authorized by the Town in writing.
- .9 Where the ambient temperature is greater than 23 °C, the maximum concrete mix temperature shall not exceed 30 °C at the time of placement. If the concrete mix temperature exceeds 30 °C at the time of placement, all such concrete represented by that load shall be rejected.
- .10 Where the ambient temperature is less than 5 °C, the concrete mix temperature shall be between 15 °C and 30 °C at the time of placement. If the concrete mix temperature is outside of these specified limits at the time of placement, all such concrete represented by that load shall be rejected.
- .11 Completely discharge the concrete load within 90 minutes of initial mixing of water, cement, and aggregate at the plant. The discharge time may be extended



to up to 120 minutes with the use of hydration control admixtures, where approved by the Town. The supplier must submit sufficient evidence that the plastic concrete properties (slump, air content, and temperature) can be maintained through the extended discharge time period. Such evidence must be submitted for Town review and approval at least 10 days in advance of scheduled concrete work at the site.

- .12 Provide the Town with a delivery ticket for each concrete load, clearly indicating the following information:
- Concrete supplier
  - Concrete plant location
  - Ticket number
  - Truck number
  - Mechanical date and time stamp of initial plant mixing
  - Mix design identification
  - Cement type
  - Aggregate size
  - Type and amount of admixtures
  - Volume of water added
  - Volume of concrete
  - Site arrival time
  - Start and end of discharge times
  - Any other information that may reasonably be requested by the Town

### **3.2 Paving**

- .1 Place concrete in accordance with CAN/CSA-A23.1.
- .2 Thoroughly clean all reinforcement and formwork.
- .3 Moisten the subgrade or sub-base surface, reinforcement, and formwork with water prior to placing concrete to minimize absorption of water from the concrete following placement.
- .4 Do not place concrete during a rain event, when a rain event is imminent, nor when, in the opinion of the Town, the weather is unsuitable for concrete placement.
- .5 Pour concrete continuously and rapidly between predetermined construction joints.
- .6 Refer to Section 32 16 00 – Curbs, Gutters, and Sidewalks for additional requirements.

### **3.3 Finishing**

- .1 Perform initial and final concrete surface finishing in accordance with CAN/CSA-A23.1.
- .2 The use of water to facilitate finishing operations is strictly prohibited. To aid in concrete finishing, the surface may be fogged with an evaporation reducer acceptable to the Town.

- .3 Protect the work area from rain to avoid excessive moisture on the unfinished surface.
- .4 Finishing shall be performed by, or under the direction of, certified journeyman concrete finishers.
- .5 Refer to Section 32 16 00 – Curbs, Gutters, and Sidewalks for additional requirements.

### **3.4 Protection**

- .1 Protect freshly placed concrete from freezing, premature drying, adverse weather conditions, tampering, and physical disturbance in accordance with CAN/CSA-A23.1 Clause 21.
- .2 Concrete shall be protected from freezing for a minimum of 4 days following placement, or for the time necessary to achieve 75% of the specified 28-day compressive strength, whichever is greater.
- .3 The Contractor shall repair any such damaged areas to the satisfaction of the Town, at the Contractor's sole expense.

### **3.5 Curing**

- .1 Membrane Curing
  - a) Membrane curing is required when the maximum daily air temperature is not expected to exceed 5 °C for 72 hours following concrete placement.
  - b) Cure exposed concrete surfaces using an approved curing compound applied with a pressurized spray nozzle.
  - c) Apply a continuous and uniform coating of the compound over the surface. Follow compound manufacturer's instructions for the optimal application dose rate.
- .2 Moist Curing
  - a) Moist curing shall only be used where directed by the Town.
  - b) After the concrete has set, maintain a moist condition on the concrete surface by using wet burlap or polyethylene film over the surface for a minimum of 7 days.

### **3.6 Tolerances**

- .1 The Contractor shall assist the independent testing agency in obtaining field samples for quality assurance testing.
- .2 The Contractor shall suspend pouring operations after sampling until field quality testing results are known.

.3 Surface Temperature

- a) For concrete where the surface temperature is found to be less than 0 °C, the concrete may be accepted by the Town subject to a pay factor adjustment in accordance with the following table:

<b>Time Following Placement That Temperature Falls Below 0 °C</b>	<b>Pay Factor (% of Price)</b>
> 96 hours	100.0
72 to 96 hours	80.0
48 to 71 hours	70.0
< 48 hours	Work Rejected

- b) The application of a pay factor or rejection shall apply to the area or extents represented by, or measured by, field testing.

.4 Slump

- a) Where the measured slump from any load is determined to be deficient from that specified, a second test shall be performed on another portion of the same load. If the second test fails, the load will be rejected and the contractor shall remove any portion of that load that may already have been poured.

.5 Air Content

- a) For concrete where the air content is found to be less than specified, the Town may authorize retempering of the concrete as defined in Article 3.1.5.
- b) For air content less than 4.0, no retempering shall be permitted and the load will be rejected. The contractor shall remove any portion of that load that may already have been poured.

.6 Spacing Factor

- a) The maximum allowable spacing factor is 0.23 mm, as determined by Air Void Examination, specified in Article 1.3.1d).
- b) If the spacing factor of a core sample is greater than 0.23 mm, the concrete represented by that sample shall be rejected.
- c) Where concrete has been rejected and is to be removed for failing to meet the spacing factor requirements, the Contractor shall, at its sole expense, commission the independent testing agency to conduct an Air Void Examination of two additional core samples, one from each end of the removal area, to prove that the concrete left in place meets the spacing factor requirements. Should either additional sample fail to meet the specified spacing factor, the area represented by the failed sample shall duly be rejected.

.7 Strength

- a) If strength test results in a measured strength that is less than that specified, the area represented by the failed test may be accepted by the

Town subject to a pay factor adjustment in accordance with the following table:

<b>Cylinder Strength (% of Specified Strength)</b>	<b>Pay Factor (% of Price)</b>
95 – 100	100
90 – 94	90
85 – 89	85
< 85	Work Rejected

- b) The application of a pay factor or rejection shall apply to the area or extents represented by, or measured by, field testing.
- c) The Contractor may, at its sole expense, elect to provide evidence of strength by coring and testing to CAN/CSA-23.2-14C, by a qualified independent testing agency, within 7 days of a failed 28-day cylinder test or within 3 days of a failed 7-day cylinder test. Three cores shall be drilled from the concrete area represented by the failed test at locations approved by the Town. The average strength of the three cores will be used in the subsequent application of Article 3.6.7a).

**3.7 Rejected Work**

- .1 All rejected products and work shall be adequately removed from the site by the Contractor and corrected to the satisfaction of the Town, at the Contractor's sole expense.

**3.8 Cleanup**

- .1 Remove and dispose of all debris and excess material at the site at the end of each working day, and in a manner, acceptable to the Town.
- .2 Maintain the site and areas adjacent to the site in a condition acceptable to the Town, and in accordance with other applicable requirements of the Contract Documents.

## **1.0 GENERAL**

### **1.1 Description**

- .1 This section specifies requirements for providing all concrete formwork, falsework, and slipforming required for the installation of curbs, gutters, and sidewalks.

### **1.2 Quality Control**

- .1 Refer to Section 01 45 00 – Quality Control.
- .2 Supply, erect, and dismantle concrete formwork and falsework in accordance with CAN/CSA-23.1 and CAN/CSA-S269.1, as applicable, and as specified herein.
- .3 The Contractor shall be responsible for the design of all formwork, falsework, and other appurtenances required for forming.

### **1.3 Related Work**

- .1 Section 34 16 00 – Curbs, Gutters, and Sidewalks.

## **2.0 PRODUCTS**

### **2.1 Formwork Materials**

- .1 Formwork materials shall be in accordance with CAN/CSA-S269.3; plain, reusable, pre-coated plywood sheets or formed steel panels.
- .2 The use of forms that are dented, rough, out of shape, or otherwise unsuitable shall not be permitted.
- .3 The use of earth forms is prohibited, except where specifically authorized by the Town.

### **2.2 Falsework Materials**

- .1 Falsework materials shall be in accordance with CAN/CSA-S269.1.

### **2.3 Form Ties**

- .1 Form ties shall be removable or snap-off metal ties, fixed or adjustable length, and free of devices which may leave holes larger than 25 mm diameter in the concrete surface.

### **2.4 Form Release Agents**

- .1 Form release agents shall be chemically active agents containing compounds that react with free lime in concrete resulting in water-soluble soaps.

### **2.5 Void Forms**

- .1 Void forms, where required, shall be inert closed cell expanded polystyrene.
- .2 “Frost Cushion” by Beaver Plastics, or approved alternative.

## **2.6 Form Stripping Agent**

- .1 The form stripping agent shall be colourless mineral oil, free of kerosene, with viscosity between 15 and 24 mm<sup>2</sup>/s at 40 °C, flashpoint minimum 150 °C, open cup method.

## **2.7 Slipform Equipment**

- .1 Slipform equipment shall be of a design suitable to the Work, suitable for use with vibratory equipment, and capable of uniformly extruding, spreading, shaping, and consolidating freshly poured concrete into a dense, homogeneous formation.
- .2 The equipment should produce a concrete surface requiring minimal hand finishing.
- .3 The equipment shall be self-propelled and capable of automatically controlling alignment and grade.

## **3.0 EXECUTION**

### **3.1 Fabrication and Erection**

- .1 Verify lines, levels, centres, and dimensions against the Drawings prior to proceeding with fabrication and erection of formwork and falsework.
- .2 Where the Town authorizes the use of earth forms, hand trim the sides and bottom of the earth form, and remove excess material prior to placing concrete.
- .3 Fabricate and erect falsework in accordance with CAN/CSA-S269.1.
- .4 Fabricate and erect formwork in accordance with CAN/CSA-S269.3 in such a manner to produce finished concrete conforming to the shapes, dimensions, locations, levels, and tolerances specified herein and required by CAN/CSA-A23.1.
- .5 Align form joints and make watertight. Lay out forms in such a manner to minimize the number of form joints.
- .6 Do not place shores or mud sills on frozen ground. Provide suitable drainage through the site to prevent washout of soil supporting mud sills and shores.
- .7 Use 25 mm chamfer strips on exterior corners and 25 mm fillets on interior corners of concrete members, unless otherwise specified or directed by the Town.
- .8 Form chases, slots, openings, drips, recesses, and expansion and control joints where required.
- .9 Build in anchors, sleeves, and other inserts required to accommodate work specified in other sections and on the Drawings. Ensure that anchors and inserts are installed such that they will be flush with the finished concrete surface.

### **3.2 Slipforming**

- .1 Set and maintain a grade line by establishing a taut string or wire line, set against the Town's survey control datum.
- .2 Provide stable support for the traveling slipform machine.

- .3 Protect adjacent work and property from damage. Repair any damaged caused during the performance of the Work to the satisfaction of the Town.
- .4 Coordinate concrete delivery and placement to maintain uniform advancement of the slipforming operation without interruption. If progress is interrupted at any time, immediately suspend vibrating and tamping.
- .5 Maintain adequate slump to prevent slipformed concrete from sagging.
- .6 Slipformed surfaces shall be smooth, dense, and free of pockets and honeycombing.
- .7 Correct minor irregularities in the slipformed finish using hand finishing methods.

### **3.3 Form Removal**

- .1 Review and confirm the timing for removal of forms with the Town in all cases.
- .2 Strip forms within 48 hours of concrete placement to facilitate finishing operations.
- .3 Re-shoring to remove forms shall be done in accordance with CAN/CSA-S269.1.

### **3.4 Cleanup**

- .1 Remove and dispose of all debris and excess material at the site at the end of each working day, and in a manner, acceptable to the Town.
- .2 Maintain the site and areas adjacent to the site in a condition acceptable to the Town, and in accordance with other applicable requirements of the Contract Documents.

- END OF SECTION 34 16 02 -

## **1.0 GENERAL**

### **1.1 Description**

- .1 This section specifies requirements for providing all concrete reinforcement required for the installation of curbs, gutters, and sidewalks.

### **1.2 Quality Control**

- .1 Refer to Section 01 45 00 – Quality Control.
- .2 Install steel reinforcement in accordance with CAN/CSA-23.1 and CAN/CSA-W186, as applicable, and as specified herein.
- .3 Upon request by the Town, submit a certified copy of the mill test report for the proposed reinforcing steel, clearly indicating the results of physical and chemical analyses. Submit the report to the Town for review and approval at least 10 days in advance of ordering reinforcing steel.
- .4 Submit steel reinforcement shop drawings clearly indicating reinforcing placement, bar bending details, quantity of reinforcement, sizes, spacing, and lists. Detail lap lengths and bar development lengths in accordance with CAN/CSA-A23.2. Locate laps in coordination with the location of construction joints. Prepare reinforcement shop drawings in accordance with the Reinforcing Steel Manual of Practice by the Reinforcing Steel Institute of Canada, as applicable.

### **1.3 Related Work**

- .1 Section 34 16 00 – Curbs, Gutters, and Sidewalks.

## **2.0 PRODUCTS**

### **2.1 Reinforcing Steel**

- .1 Reinforcing steel shall be grade 400, billet steel, deformed bars in accordance with CAN/CSA-G30.18, unless otherwise specified or directed by the Town.
- .2 Weldable, low alloy steel deformed bars, where specified, shall duly conform to CAN/CSA-G30.18.

### **2.2 Tie Bars**

- .1 Tie bars shall be grade 300, billet steel, uncoated, deformed bars in accordance with CAN/CSA-G30.18, unless otherwise specified or directed by the Town.
- .2 Epoxy-coated tie bars, where specified, shall conform to ASTM-D3963.

### **2.3 Steel Dowels**

- .1 Steel dowels shall be clean, straight, free of flattened or burred ends, uncoated and in accordance with CAN/CSA-G30.18.
- .2 Epoxy-coated tie bars, where specified, shall conform to ASTM-D3963.
- .3 Steel dowels shall be placed in all separate walk that connects to existing Curb & Gutter at 750mm O.C. or otherwise approved by project manager.



## **2.4 Cold-Drawn Steel Wire**

- .1 Cold-drawn steel wire shall be uncoated and in accordance with CAN/CSA-G30.3M.
- .2 Epoxy-coated cold-drawn steel wire, where specified, shall conform to ASTM-D3963.

## **2.5 Welded Steel Wire Fabric**

- .1 Welded steel wire fabric shall uncoated and in accordance with CAN/CSA-G30.5M.
- .2 Epoxy-coated welded steel wire fabric, where specified, shall conform to ASTM-D3963.

## **2.6 Tie Wire**

- .1 Tie wire shall be cold-drawn, annealed steel in accordance with CAN/CSA-G30.3.

## **2.7 Epoxy Coatings**

- .1 Epoxy coatings shall be in accordance with ASTM-D3963.

## **2.8 Galvanizing**

- .1 Galvanizing shall be in accordance with CAN/CSA-G164.

## **2.9 Plain Round Bars**

- .1 Plain round bars shall be in accordance with CAN/CSA-G40.21.

## **2.10 Chairs, Bolsters, Bar Supports, and Spacers**

- .1 Chairs, bolsters, bar supports, and spacers shall be suitable for strength and support of reinforcing and live loads during construction.

## **3.0 EXECUTION**

### **3.1 Fabrication, Shipping, and Handling**

- .1 Fabricate reinforcing steel in accordance with CAN/CSA-A23.1 and ACI-315 – Details and Detailing of Concrete Reinforcement.
- .2 Where approved or directed by the Town, weld reinforcement in accordance with CAN/CSA-W186.
- .3 Ship bundles of bar reinforcement, clearly identified with bar bending details and lists.
- .4 Protect epoxy- and paint-coated portions of bars with adequate covering during shipping and handling.

### **3.2 Field Bending and Welding**

- .1 Field bending and welding shall only be permitted where specifically authorized by the Town.

- .2    Field bending shall be performed without the use of heat, by applying slow and steady pressure.
- .3    Remove and replace any bars that develop cracks or splits.

**3.3    Placing Reinforcement**

- .1    Place reinforcement as indicated on approved shop drawings and in accordance with CAN/CSA-A23.1.
- .2    Place sufficient chairs, tie wires, and supports to adequately maintain the position of the reinforcement during placement of the concrete, in accordance with the tolerances provided by the referenced CAN/CSA guidelines.
- .3    Use plain round bars as slip dowels in concrete where required. Apply asphalt paint to the end of the dowel intended to move with the hardened concrete. When the paint is dry, apply a coat of mineral lubricating grease.
- .4    The Town shall inspect reinforcement placement before concrete placement is permitted.
- .5    Ensure sufficient cover is achieved over reinforcement when placing concrete.
- .6    Reinforcing steel, anchor bolts, or other inserts shall not be inserted during concrete placement.

**3.4    Field Touch-Up**

- .1    Touch-up all damaged and cut ends of epoxy-coated, painted, or galvanized reinforcing with compatible finish to provide a continuous finish.

- END OF SECTION 34 16 03 -

## **1.0 GENERAL**

### **1.1 Description**

- .1 This section specifies requirements for the supply and installation of spray-applied epoxy pavement markings on asphalt concrete surfaces.

### **1.2 Quality Control**

- .1 The Contractor is solely responsible for the quality of material, product, equipment, and workmanship which the Contractor provides and for the Work.

## **2.0 PRODUCTS**

### **2.1 Equipment**

- .1 Where the Work is to be carried out on the Town's walking pathway system, equipment must be of an appropriate size to protect the pathway structure, surrounding surfaces, and adjacent appurtenances.
  - a) Only equipment mounted on a half-ton truck-type chassis, or smaller unit, will be accepted.
  - b) A garden tractor-type unit would be best suited to the 3 metre wide pathway system.
  - c) The applicator must be able to ride completely on the pathway and mark the centerline of the path.
  - d) The equipment must be self-propelled and be equipped to apply the marking material according to the manufacturer's recommendations.
- .2 Where the Work is to be carried out on the Town's road network, equipment proposed by the Contractor for use in carrying out the Work shall be subject to the approval of the Town.

### **2.2 Marking Materials**

- .1 Marking materials shall be suitable for asphalt concrete surfaces and shall be available in both white and yellow colours.
- .2 The material, while on the roadway surface and at any natural ambient temperature shall exist as a solid line with cold ductility that permits normal movement with the road surface without chipping or spalling. Propagation of a pavement crack through the lane marking material shall be excluded from this requirement.
- .3 Composition
  - a) The material shall be free from all skins, dirt and foreign objects.
  - b) The compound shall be resistant to the deleterious effects of ultra-violet light. This includes material degradation and discolouration.
  - c) Material shall be non-toxic and not harmful to persons or property.
- .4 Colour

- a) Yellow: Conforming to CGSB Colour #505-308 or U.S. Federal Standard 595a Colour chip 33538, 45% minimum when measured with the Gardner Multi-Purpose Reflectometer at 45° - 0° of luminous directional reflectance with a green filter. Colour tolerance shall fall within the limits of U.S. Department of Transport yellow tolerance chart, PR colour #1.
- b) White: Brilliant white, 70% minimum when measured with the Gardner Multi-Purpose Reflectometer at 45° - 0° daylight luminous directional reflectance with a green filter or match U.S. Federal Standard 595a Colour 17886. The white material shall not exceed a yellowness index of 0.15. (AASHTO T250)

.5 Retroreflectivity

- a) The initial reflectance for the in-place marking, measured 7 to 10 days after application, shall have the minimum reflectance values indicated below, as obtained with a MiroLux 30 Retroreflectometer:

Dry/Night:     White – 200 mcd/lux/m<sup>2</sup>  
                  Yellow – 175 mcd/lux/m<sup>2</sup>

.6 Retained Retroreflectivity

- a) The reflectance for longitudinal lines, for at least 36 months after placement, shall have the minimum reflectance values indicated below, as obtained with a MiroLux 30 Retroreflectometer.

Dry/Night:     White – 75 mcd/lux/m<sup>2</sup>  
                  Yellow – 60 mcd/lux/m<sup>2</sup>

- b) Failure to meet these requirements shall require the Contractor to replace the portion of the material shown to be below these minimum values.

.7 Chemical Resistance

- a) Test samples of 50 mm square should show no signs of degradation after exposure to:
  - i) 0.15% NaCl (24 hr. immersion)
  - ii) 5% CaCl (24 hr. immersion)
  - iii) 1 hour spot test with mineral oil.
  - iv) No deterioration when in direct contact with asphalt cement in asphaltic materials or with sodium chloride or calcium chloride or other de-icing materials.

.8 Bond Strength

- a) The material shall be suitable for application on old or new asphalt. Bond strength shall be sufficient for the material to remain in place for a minimum of three (3) years.

.9 Skid Resistance

- a) Minimum vehicle skid resistance of the in place markings shall not be less than 45 based on Portable Skid Resistance Tester, Road Research Laboratory Road Note Number 27, British Standards Institution.

### **2.3 Premarking Materials**

- .1 Premarking materials shall be subject to the approval of the Town.

### **3.0 EXECUTION**

#### **3.1 General**

- .1 The Contractor shall assume all costs resulting from the use of patented materials, equipment, devices, or processes used on or incorporated in the Work, agrees to indemnify and save harmless the purchaser and his duly authorized representatives from all suits at law, or action of every nature for or on account of the use of any patented materials, equipment, devices or processes.

#### **3.2 Premarking**

- .1 The Contractor is responsible for premarking all work.
- .2 Premarking must be done on a clean, dry pavement surface with premarking paint.
- .3 Unless authorized by the Town, premarking shall be within 100mm accuracy of plan dimensions; notwithstanding this, premarking shall indicate straight lines and smooth curves.
- .4 Premarking shall be reviewed by the Town prior to the installation of the markings.
- .5 Field adjustment of the alignment of the markings from the plans may be accepted, subject to the approval of the Town. Any changes made in the field must be recorded by the Contractor on plans issued by the Town and returned to the Town following completion of the Work.

#### **3.3 Traffic Control and Work Area**

- .1 The Contractor shall, at all times, provide warning and passage for all users of the pathway within the area of the Work. The Work shall be carried out as quickly as possible to prevent excessive delay and inconvenience.

#### **3.4 Workmanship**

- .1 Install painted pavement markings on a clean, dry pavement surface.
- .2 Spraying will not be permitted during high wind conditions, or other adverse weather conditions.
- .3 Faulty markings must be removed and replaced within 5 working days at the Contractor's sole expense.
- .4 The Contractor shall minimize overspray as much as possible.
- .5 Contractor shall remove any spillage or overspray.

#### **3.5 Types of Markings**

- .1 The pavement markings shown on the plans were designed, where applicable, in compliance with the Manual of Uniform Traffic Control Devices for Canada. If

conflict arises as to the interpretation between the plans and the Manual of Uniform Traffic Control Devices, precedence shall be given to the plans.

**3.6 Rejected Work**

- .1 Completely remove and replace rejected work to the limits specified by the Town.
- .2 All rejected products and work shall be adequately removed from the site by the Contractor and corrected to the satisfaction of the Town, at the Contractor's sole expense.

**3.7 Cleanup**

- .1 Cleanup and restore the affected areas to a condition at least equal to that existing prior to installation.
- .2 Remove and dispose of all debris and excess material at the site at the end of each working day and in a manner acceptable to the Town.
- .3 Maintain the site and areas adjacent to the site in a condition acceptable to the Town.

- END OF SECTION 34 16 00 -

**1.0 GENERAL**

**1.1 Description**

- .1 This section specifies the supply and installation of woven Geotextile Roadway Membrane (Geotextile) and Glasgrid Pavement Reinforcement Membrane (Glasgrid).

**1.2 Related Section**

- .1 Section 01 11 00 – Summary of Work
- .2 Section 01 22 00 – Measurement and Payment
- .3 Section 31 23 00 – Excavation & Fill
- .4 Section 34 12 16 – Asphalt Paving

**2.0 PRODUCTS**

**2.1 Geotextile**

- .1 Material
  - a) Woven geotextile consists of continuous monofilaments, staple fibres, multi-filament yarns, or slit films that are woven into a fabric.
  - b) The geotextile shall meet the following requirements:

Property	ASTM Test	Material Specification <sup>1</sup> Average Roll Value		
		Class 1	Class 2	Class 3
Elongation (%)	D 4632	<50 min	<50 min	<50 min
Grab Strength (N)	D 4632	1 400 min.	1 100 min.	800 min.
Sewn seam strength (N)	D 4632	1 260 min.	990 min.	720 min.
Tear Strength (N)	D 4533	500 min. <sup>2</sup>	400 min. <sup>2</sup>	250 min.
Puncture Strength (N)	D 4833	500 min.	400 min.	300 min.
Permittivity (per sec)	D 4491	0.05 min. <sup>3</sup>	0.02 min. <sup>3</sup>	0.02 min. <sup>3</sup>
Apparent Opening Size (mm)	D 4751	0.43 max.	0.60 max.	0.60 max.
Ultraviolet stability (% retained strength)	D 4355	50% after 500 hrs of exposure	50% after 500 hrs of exposure	50% after 500 hrs of exposure

Note 1: All numeric values except A.O.S. represent minimum average roll value as measured in the weaker principal direction.

Note 2: For woven monofilament geotextile, the required minimum average roll value for tear strength is 250 N.

Note 3: Default value. Permittivity, or resistance that is encountered, of the geotextile should be greater than that of the soil. The City may also require the permeability of the geotextile to be greater than that of the soil.

.2 Installation

Unless otherwise directed in the applicable specification, the placement of geotextile shall be in accordance with the following:

- a) The surface to receive the geotextile shall be prepared to a relatively smooth condition free of obstructions, depressions, debris, and soft or low density pockets of material.
- b) The geotextile shall be installed free from tensile stresses, folds, wrinkles, or creases.
- c) If more than one width of geotextile is used, the Contractor shall either overlap the joints by a minimum of 400 mm with no stitching, or overlap the joint by 200 mm and provide two rows of stitching at each joint.
- d) The geotextile shall be protected all times during construction. Wheeled or tracked vehicles shall not be allowed to travel directly on the geotextile fabric. Any geotextile damaged during installation or during placement of granular material shall be replaced by the Contractor at his own expense.

**2.2 Geomembrane**

.1 Material

- .1 The Geomembrane mesh shall be of a reinforced polyolefin fabric for the purposes of providing an impenetrable liner to ensure that existing hydrocarbons or the like identified within the Project Limits are fully protected.
- .2 The Geomembrane shall conform to the specification requirements as follows:

**PROPERTY**

**TEST/METHOD**

**Engineered Grade**



Nominal Weave		8/8 (16) x 9 ppi
Coating		Two sides LDPE @ 2.5 mil thickness
Core Fabric		HDPE
Weight	ASTM D5261	9.6 oz/yd <sup>2</sup> (327 gsm) ± 5%
Nominal Thickness	ASTM **D1777	20 mil (0.51 mm)
Color		Black
Available Sizes		Up to 152" wide
Tensile Strength	ASTM D751	MD 330 lbs (150 kg) Elongation 20%   CD 286 lbs (130 kg) Elongation 20%
Trapezoidal Tear	ASTM D4533	MD 110 lbs (50 kg)   CD 92 lbs (42 kg)
Mullen Burst	ASTM D751	600 psi (4138 kPa)
Accel. UV Weathering	ASTM G154	>90% after *2000 hrs exposure
Hydraulic Conductivity	ASTM D4491	0.0 cm/s No Flow
Hydrostatic Resistance	ASTM D751	352 psi (2462 kPa)
Puncture Resistance	ASTM D4833	171 lbs (78 kg)
Low Temperature Flexibility	ASTM D2136	-60° F (-51° C)
Penetration Resistance Motor Oil	ASTM DF903	Pass
Limited Warranty Exposed		10 Years
Limited Warranty Buried		20 Years

### 2.3 Glasgrid

#### .1 Material

- a) The reinforcement mesh shall be a knitted, glass fiber strand grid with the following characteristics:
  - i. Tensile strength as per ASTM D 6637
    - 8501/8511 - 100 kN/m x 100 kN/m\* component strand strengths.
    - 8502/8512 - 200 kN/m x 100 kN/m component strand strengths.
  - ii. Area weight as per ASTM D 5261-92
    - 8501/8511 - 370 g/m<sup>2</sup> (11 oz/yd<sup>2</sup>) 8502/8512 - 560 g/m<sup>2</sup>
  - iii. Coated with a modified polymer coating
  - iv. Elongation at break less than 5% as per ASTM D 6637
  - v. Melt point above 218°C (425°F)
  - vi. The mesh will be self-adhesive, with sufficient bond to allow normal construction traffic and paving machinery operations.
  - vii. Mesh opening 12.5 mm x 12.5 mm to 25 mm x 25 mm
  
- b) The geotextile shall meet the following requirements:

PROPERTY	TEST METHOD	METRIC*		IMPERIAL**	
<b>TENSILE STRENGTH</b>	ASTM D 6637				
Across Width		100 kN/m	560 lbs/in.		
Across Length		100 kN/m	560 lbs/in.		
<b>ELONGATION AT BREAK</b>	ASTM D 6637	< 3%		< 3%	
<b>MELTING POINT</b>	ASTM D 276	> 218°C		> 425°F	
<b>MASS/UNIT AREA</b>	ASTM D 5261-92	370 g/m <sup>2</sup>		11 oz/yd <sup>2</sup>	
<b>ROLL LENGTH<sup>†</sup></b>		100 m		327 ft	
<b>ROLL WIDTH<sup>†</sup></b>		1.5 m		5 ft	
<b>ROLL AREA<sup>†</sup></b>		150 m <sup>2</sup>		181 yd <sup>2</sup>	
<b>APERTURE SIZE</b>		12.5 mm x 12.5 mm 0.5 in. x 0.5 in.			
<b>ADHESIVE BACKING</b>		Pressure Sensitive			
<b>COMPOSITION</b>		Custom-knitted fiberglass mesh with elastomeric polymer coating and pressure sensitive adhesive backing.			

.2 Installation

- a) Prior to laying the Glasgrid mesh, the following surface treatment shall be carried out.
  - i. Perform any remedial work such as base repairs, crack sealing, pothole filling, levelling course applications, etc., that would normally occur before an asphalt course overlay, as directed by construction engineer. NOTE: A levelling course is always recommended.
  - ii. The surface temperature before laying the grid shall be between 5°C and 60°C.
  - iii. The surface shall be dry and free of dirt, swept or vacuum cleaned by a mechanical device, as well as freed of oil, vegetation and other debris.
  
- b) It is optional to spray a tack coat below or onto the Glasgrid mesh. If a tack coat is sprayed below the Glasgrid it must be completely cured prior to the installation of Glasgrid. If tack coat is sprayed on top of Glasgrid the tack must either be fully cured or aggregate chips must be placed onto the grid prior to paving. The proper time for curing depends on the type of tack coat used and the environmental conditions at the time of construction.

NOTE: It is important to correctly select the most appropriate type of tack coat and discuss this selection with the manufacturer's representative to properly address your specific project.

- c) Glasgrid mesh shall be laid out either by hand or by mechanical means under sufficient tension to eliminate ripples. Should ripples occur, these must be removed by pulling the grid tight or in extreme cases (on tight radii), by cutting

and laying flat. Transverse joints must be lapped in the direction of the paver by 75-150 mm. Overlap longitudinal joints 25-50 mm.

- d) The surface of the Glasgrid mesh shall be rolled with a rubber coated drum roller, or pneumatic tired roller, one or two passes being sufficient to activate the adhesive. Tires must be cleaned regularly with asphalt cleaning agent.
- e) Construction and emergency traffic may run on Glasgrid mesh after being rolled. However, it must be ensured that damage is not caused to the grid by vehicles turning or braking etc., and that the Glasgrid mesh must be kept clean of mud, dust and other materials. Damaged sections shall be removed and patched, taking care to underlap the full roll.
- f) All Glasgrid mesh placed in a day shall be covered with asphalt concrete the same day, within permissible laying temperatures to a minimum compacted thickness of 40 mm.
- g) Glasgrid mesh must be stored in dry covered conditions free from dust and stocked vertically to avoid misshaped rolls.
- h) Glasgrid mesh must be laid and rolled over ironworks or other obstructions before cutting around the perimeter of the obstructions. Cutting is achieved by using a sharp utility knife.
- i) A representative of the manufacturer must be present during installation of this material and all work must be carried out in accordance with the manufacturer's specification.

- END OF SECTION 34 01 03 -