



**TENDER NO.: 2022-06-21D**

**FOR**

**TOWN OF DRUMHELLER  
WILLOW ESTATES**

**JUNE 21, 2022**

**wood.**

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## **1 INSTRUCTIONS TO BIDDERS**

### **1.1 PREPARATION OF TENDERS**

The Tender must be submitted on the forms provided. Each Bidder shall specify on the Tender Form the unit price for each of the separate items called for.

The Bidder shall sign their Tender correctly in ink and their post office address must be shown.

### **1.2 DELIVERY OF TENDERS**

Bidders must submit the section entitled "**Tender Forms,**" in addition to **all Addenda** as issued by Issuing Office.

Bidders must submit the section entitled, in addition to all addenda as issued by the Consultant by email to: **purchasing@drumheller.ca**

Bidders are advised that owner accepts no responsibility for submission delays for any reason whatsoever and submissions received after the closing time will be rejected.

Submissions shall include the Subject:

WILLOW ESTATES, TENDER NO. 2022-06-21D

Submission will be received until: **2:00 pm, Local Time, Tuesday, July 12, 2022**

Tenders will be opened after the stated closing time and all bidders are invited to view the opening virtually. Details on the process to connect to the opening will be provided to bidders when they receive the tender documents from the Consultants or as an Addendum. The legal name of each bidder and the total tender as stated in the unit price schedule will be read aloud. This reading will not be considered as representation or warranty that the price is correct or that the tender document is valid.

Bidders shall retain the original copy of all tender documents submitted electronically. The successful bidder will be required to provide their original tender documents, including applicable authentication and original bonds, to the Owner prior to contract execution.

**LEFT BLANK INTENTIONALLY FOR LABEL**

## **1.3 TENDER SUBMISSION**

### **1.3.1 General**

This Tender Document states the instructions for submitting Tenders and the procedures and criteria by which Proponents will be selected. Please acknowledge receipt of this tender document by emailing the Receipt Confirmation form only to the Issuing Office. A copy of the Vendor Participation – Receipt Confirmation Form is included in Section 2 Tender Forms.

Town of Drumheller reserves the right to reject any or all Tenders, in the event that the Tenders do not meet the requirements. All costs incurred by Proponents in responding to this tender document are solely to the Proponent's account. Under no circumstances, including the cancellation of this tender and/or the decision not to proceed with the tendering process, will Town of Drumheller be liable for any costs incurred by the interested Proponents. Furthermore, in no way will this document suggest or constitute a contractual arrangement between the Proponents and Town of Drumheller.

The Proponent's Tender and all supporting information become the property of Town of Drumheller. All such documentation may be reproduced by Town of Drumheller, provided that such reproduction is made solely for internal use or for any purpose required by law.

### **1.3.2 Conditions of Tender**

All communications regarding this Tender shall be sent to the Consultant. Town of Drumheller will assume no responsibility for oral instructions or suggestions. Should the Proponent find discrepancies in, or omissions from the specifications, or should the Proponent be in doubt as to their meaning, the Proponent shall notify the Issuing Office, who may, if necessary, send written addenda to all Proponents.

Proponents are advised that all the instructions to Proponents and General Conditions of Tender as may be supplemented herewith, must be strictly complied with. Failure to do so either in whole or in part may invalidate the Tender submitted.

Tenders shall be properly executed in full compliance with the following:

- Tenders must be signed by the representative for the Proponent;
- if the Tender is made by a corporation, the full name of the corporation shall be accurately printed immediately above the signatures of its duly authorized officers and the corporate seal shall be affixed;
- if the Tender is made by a partnership, the firm name or business name shall be accurately printed above the signature of the firm and the Tender shall be signed by a partner or partners who have authority to sign for the partnership;
- if the Tender is made by an individual carrying on business under a name other than their own, their business name together with the individual's name shall be printed immediately above their signature; and
- if the Tender is made by a sole proprietor who carries on business in their own name, the proprietor shall print their name immediately below their signature.

In accordance with approved policy of Town of Drumheller, each Proponent shall, as a condition of supplying goods and services to Town of Drumheller, make full disclosure of any of the following existing business relationships with any member of Council, Directors, or Town of Drumheller, Chief Administrative Officer:

- If a private company Details of ownership of shares by any of the above.
- If a public company Details of any ownership of shares, in excess of 1% of total shares issued by any of the above.
- If a partnership Details of any partnership arrangement of any of the above.
- Details of any directorship of any of the above, unless the directorship is only by reason of the individual being a member of Council, and who has Council's authorization to vote.
- Details of any direct or indirect pecuniary interest of any of the above in the supply of such goods and services.

Disclosure, if any, of an existing business relationship shall be made in writing at time Tender submission or at the time the Proponent become, or ought to have become, aware of any such relationship.

Each Proponent shall make full disclosure of any relationship of any employee of Town of Drumheller who makes recommendations concerning the award of the Tender or any employee who may allot work to or order supplies from the awarded Tender. In addition, Proponents are to reveal details of ownership or partnership arrangements of any immediate relative employed by Town of Drumheller who alone or with other relatives hold more than a 25% interest. Failure to disclose this information may result in the rejection of the Tender and/or cancellation of the award. Town of Drumheller will not be liable for any costs incurred by the Proponent due to cancellation of the award.

The law applicable to this Tender shall be the law in effect in the Province of Alberta. Except for an appeal from an Alberta Court to the Supreme Court of Canada, no action in respect to this Tender shall be brought or maintained in any Court other than in a court of the appropriate jurisdiction of the Province of Alberta.

### **1.3.3 Other Applicable General Conditions**

#### **1.3.3.1 Appendices and Addenda**

Any appendices to this tender document and any subsequent addenda are incorporated into and form part of this tender. The information and data contained in any appendices and any subsequent addenda may form the basis upon which the Contract will be entered into with the Town.

#### **1.3.3.2 Disclaimer of Liability Indemnity**

By submitting a Tender, a Proponent agrees:

- to be responsible for conducting its own due diligence on data and information upon which its Tender is based;
- that it has fully satisfied itself as to its rights and the nature extended to the risks it will be assuming;
- that it has gathered all information necessary to perform all of its obligations under its Tender;
- that it is solely responsible for ensuring that it has all information necessary to prepare its Tender and for independently verifying and informing itself with respect to any terms or conditions that may affect its Tender;
- to hold harmless the Town, its elected officials, officers, employees, agents or advisors and all of their respective successors and assigns, from all claims, liability and costs related to all aspects of the tender process;
- that it shall not be entitled to claim against the Town, its elected officials, officers, employees, insurers, agents or advisors on grounds that any information, whether obtained from the Town or otherwise (including information made available by its elected officials, officers, employees, agents or advisors), regardless of the manner or form in which the information is provided is incorrect or insufficient;

- that the Town will not be responsible for any costs, expenses, losses, damages or liability incurred by the Proponent as a result of, or arising out of, preparing, submitting, or disseminating a Tender, or for any presentations or interviews related to the Tender, or due to the Town's acceptance or non-acceptance of a Tender; and
- to waive any right to contest in any proceeding, case, action or application, the right of the Town to negotiate with any Proponent for the Contract whom the Town deems, in its sole and unfettered discretion, to have submitted the Tender most beneficial to the Town and acknowledges that the Town may negotiate and contract with any Proponent it desires.

#### **1.3.4 Representations and Waivers**

The Town makes no representations or warranties other than those expressly contained herein as to the accuracy and/or completeness of the information provided in this tender document.

Proponents are hereby required to satisfy themselves as to the accuracy and/or completeness of the information provided in this tender.

No implied obligation of any kind by, or on behalf of, the Town shall arise from anything contained in this tender, and the express representations and warranties contained in this tender, and made by the Town, are and shall be the only representations and warranties that apply.

Information referenced in this tender, or otherwise made available by the town or any of its elected officials, officers, employees, agents or advisors as part of the procurement process, is provided for the convenience of the Proponent only and none of the Town, its elected officials, officers, employees, agents and advisors warrant the accuracy or completeness of this information. The Proponent is required to immediately bring forth to the Town any conflict or error that it may find in the tender document. All other data is provided for informational purposes only.

#### **1.4 ACCEPTABILITY OF TENDERS**

The Bidder will be allowed to withdraw and modify their Tender up to **thirty (30) minutes** before the tender closing time. The modified Tender must be resubmitted in accordance with the instructions contained in **Section 1.2 Delivery of Tenders**, even if the amendment is of unit prices only.

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

The Bidder shall fill in every item on the Tender Form. Where quantities are not given, unit prices shall only be entered. If there is a discrepancy found between the unit prices and the total amount, the unit price will be considered as representing the intention of the Bidder. The lowest or any Tender will not necessarily be accepted.

#### **1.5 TOWN OF DRUMHELLER AUTHORIZED REPRESENTATIVES – PROJECT INQUIRIES**

The only persons who are or shall be authorized to speak or act for Town of Drumheller with respect to this Tender, are those whose positions or names have been specifically designated in the Issuing Office. Questions or concerns regarding this tender must be received by the contact below via email before the question period deadline.

For information regarding this project, you may contact:

Wood Environment & Infrastructure Solutions,  
a Division of Wood Canada Limited  
#401, 1925 – 18th Avenue NE  
Calgary, AB T2E 7T8  
**Contact: Mr. Josh Strukoff, Project Coordinator**  
**Email: [joshua.strukoff@woodplc.com](mailto:joshua.strukoff@woodplc.com)**

Deadline for written questions and inquires is end of business (4:30 pm local time) on Tuesday, 5 July 2022. The Issuing Office will formally respond to all inquiries by no later than Thursday, 7 July 2022.

### **1.6 OMISSIONS OR DISCREPANCIES**

All communications regarding this tender shall be sent to the Issuing Office, Town of Drumheller will assume no responsibility for oral instructions or suggestions. Should the Proponent find discrepancies in, or omissions from the specifications, or should the Proponent be in doubt as to their meaning, the Proponent shall notify the Issuing Office, who may, if necessary, send written addenda to all Proponents.

Should a Bidder find discrepancies in, or omissions from, the Drawings or other Tender Documents, or should they be in doubt as to their meaning, they should at once notify the Issuing Office who may send direction to all Bidders. No oral interpretations shall be made to any Bidder as to the meaning of any part of the Tender Documents. Every request for an interpretation shall be made in writing and addressed to the Issuing Office:

Wood Environment & Infrastructure Solutions,  
a Division of Wood Canada Limited  
#401, 1925 – 18th Avenue NE  
Calgary, AB T2E 7T8  
**Contact: Mr. Josh Strukoff, Project Coordinator**  
**Email: [joshua.strukoff@woodplc.com](mailto:joshua.strukoff@woodplc.com)**

### **1.7 AVAILABILITY OF TENDER DOCUMENTS**

Tender Documents are available in electronic format from the Consultant's office by emailing [joshua.strukoff@woodplc.com](mailto:joshua.strukoff@woodplc.com). The Owner assumes no responsibility or liability for completeness of Tender Documents obtained from any other source. In the event of a discrepancy with Tender Documents obtained from any other source the Tender Documents issued above will govern.

Bidders shall promptly notify the Town of Drumheller representative, as identified in Instructions to Bidder **Clause 1.6 Omissions and Discrepancies**, upon discovery of any such omissions or discrepancies.

### **1.8 CONTRACT INFORMATION DOCUMENTS**

The Contract Information Documents listed herein are available for this project as noted in **Section 1.7 Availability of Tender Documents**.

The following engineering, environmental and geotechnical information, reports and other information are available for this tender:

- Geotechnical Report (to be provided as an Addendum);

- Terrestrial Vegetation and Wildlife Assessment:  
<https://floodreadiness.drumheller.ca/public/download/files/194260>
- Historical Resources Impact Assessment Summary;
- Berm Material Borrow Source Memo; and
- Fish and Fish Habitat Assessment:  
<https://floodreadiness.drumheller.ca/public/download/files/194257>

## **1.9 PLANS AND DRAWINGS**

All separate plans and drawings listed in the tender document will be available to each of the Bidders and are available in electronic format from the Town of Drumheller website and APC.

Hard copies of these documents are not available for the tender but will be provided to the successful bidder.

## **1.10 COMPLETING TENDER FORMS**

The Unit Price Schedules must be completed by:

- showing the Unit Price (where applicable), and the total for each item in the "Total Bid" column (in case of discrepancy the unit price figure will take precedence);
- showing the tendered lump sum (where applicable) in the "Total Bid" column; and
- showing the sum of all tender item totals in the space marked "Total Tender."

The Tender must be signed by an authorized representative of the Bidder, and

- the official title of the Bidder must be shown; and
- the official seal of the Bidder must be affixed, or the signature must be witnessed.

## **1.11 TENDER DEPOSIT**

The Tender must be accompanied by a certified cheque or bid bond made payable to the Owner in the amount of **ten percent (10%)** of the total sum tendered for the work.

The unsuccessful Bidders' certified cheques or bid bonds 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 Owner. The successful Bidder's certified cheque or bid bond will be returned upon receipt by the Owner of the necessary guarantee bonds.

## **1.12 GUARANTEE BONDS**

Pursuant to Section 1.2.9, Security, of the General Specifications (see **Special Provision 4.1.4, Standard Specifications for Highway Construction and Bridge Construction Work**), the successful Bidder shall deposit with the Town of Drumheller, at the time of signing the Contract, the following bonds:

- a) a Performance Bond in the amount of **fifty percent (50%)** of the agreed Tender price, covering the faithful performance of the Contract.
- b) a Labour and Materials Payment Bond in the amount of **fifty percent (50%)** of the agreed Tender price.

Both bonds shall be issued by the same Surety Company licensed to do business in the Province wherein the work is located.

The cost of the bonds shall be borne by the Contractor.

The Bidder, with their Tender, shall enclose a "Consent of Surety" from the Surety Company stating that it is willing to supply the bonds referred to previously. The Consent of Surety will be required whether the Bidder uses a certified cheque or bid bond under the provisions of **Clause 1.11, Tender Deposit**.

### **1.13 SITE CONDITIONS**

The Bidder must examine the site of the work before submitting a bid, either personally or through a representative, and satisfy himself as to the nature and location of the work, local conditions, soil structure and topography at the site of the work, the nature and quality of materials to be used, the equipment and facilities needed prior to and during the prosecution of the work, and all other matters which can in any way affect the work under this Contract. Submission of a Tender by the Bidder acknowledges awareness of all matters that such a site inspection would reveal to the reasonable Bidder.

### **1.14 PRE-TENDER MEETING**

A Pre-Tender Meeting will be held on 28, June 2022 between the hours of 2:00 pm and 4:00 pm at the DRFM office at the following location:

Town of Drumheller  
Resiliency and Flood Mitigation Office  
702 Premier Way  
Drumheller, Alberta  
T0J 0Y0.

Attendance at the time and place specified for the Pre-Tender Meeting is not mandatory for all Bidders. Major subcontractors are strongly advised to attend. Others are invited to attend.

Pre-tender meeting will comprise of 2 parts, the first in the DRFM Office and the second on site.

No information provided by Town of Drumheller or any of its representatives at the pre-tender meeting shall be binding, unless such information is included in an addendum.

### **1.15 PROJECT SCHEDULING AND COMPLETION OF THE WORK**

The Contractor shall schedule their operations to complete all of the Work under this Contract by **30 June 2023**.

### **1.16 SUBCONTRACTORS**

The Contractor named in the Agreement is solely responsible for all work under the Contract and for the allocation of work to Subcontractors.

The Contractor is responsible for the administration of all Subcontractors. All disputes as to the scope of work to be carried out by the various Subcontractors shall be the responsibility of the Contractor, so that all work is carried out to the satisfaction of the Consultant. No claims for Extras will be allowed on the basis

that a Subcontractor did not include same in their scope of work due to any subdivision of the work expressed or implied in the Plans or Specifications.

### **1.17 HIRING OF APPRENTICES**

The Government of Alberta encourages all bidders to consider employing apprentices on public sector construction projects. To find out more about hiring an apprentice and the supports available for their training, please visit <http://tradesecrets.alberta.ca/>.

### **1.18 TIME FOR EXECUTING CONTRACT AND DAMAGES FOR FAILURE TO EXECUTE**

Tenders shall be open for acceptance by Town of Drumheller for **thirty-five (35) days** after the tender closing date.

Any Bidder whose Tender is accepted within the time set out above, will be required to execute the Contract in accordance with **Section 1.2.7.2, Forfeiture**, of the General Specifications (see **Special Provision 4.1.4, Standard Specifications for Highway Construction**).

### **1.19 ACCEPTANCE OF TENDER AND ITS EFFECT**

The acceptance of the Tender shall bind the successful Bidder to execute the Contract in accordance with **Section 1.2.7.2, Forfeiture**, of the General Specifications (see **Special Provision 4.1.4, Standard Specifications for Highway Construction**).

Notwithstanding the provisions of **Clause 1.20, Acceptance of Tender and its Effect** hereinafter, or any other provisions in the Tender, if the Consultant, after acceptance of the Tender but before execution of the Contract, objects to any Subcontractor proposed to be employed by the successful Bidder in the performance of the Contract, and the Contractor refuses or neglects to nominate another Subcontractor, acceptable to the Consultant, the Tender may be rejected.

### **1.20 SAFETY PREQUALIFICATION**

Contracts will only be awarded to Bidders who, prior to the time fixed for receiving tenders, possess a valid Certificate of Recognition (COR) or a valid Temporary Letter of Certification (TLC) for a standard COR or COR Equivalency Letter (COREL) for out of province Bidders, as issued by the Alberta Construction Safety Association (ACSA) or another certifying partner authorized by the Alberta Ministry of Labour to issue CORs, TLCs, or CORELs. The COR, TLC, or COREL must be relevant to the work. Possession of a Certificate of Recognition other than a standard COR, TCL, or COREL, such as a Small Employer Certificate of Recognition (SECOR) is not acceptable.

Prospective Bidders who do not possess a COR, a TLC for standard COR, or a COREL and wish to obtain information about obtaining one, are advised to contact:

The Alberta Construction Safety Association  
225 Parsons Rd. SW  
Edmonton, AB T6X 0W6  
Telephone: (780) 453-3311 or (Toll Free) 1-800-661-2272  
Fax: (780) 455-1120 or 1-877-441-0440  
Web Site: [www.acsa-safety.org](http://www.acsa-safety.org)  
E-mail: [edmonton@acsa-safety.org](mailto:edmonton@acsa-safety.org)

or another certifying partner authorized by the Alberta Ministry of Labour.

It is the Bidder's responsibility to ensure their registration in the program is properly documented with the issuing certifying partner and the Owner will assume no liability for errors or omission in the regard.

### **1.21 FREEDOM OF INFORMATION AND PRIVACY ACT (FOIP)**

Town of Drumheller acknowledges that each Tender may contain information in the nature of a Proponent's trade secrets or commercial, financial, labour relations, scientific or technical information of or about a Proponent. Town of Drumheller acknowledges and agrees that Tenders in response to this Request for Tender are provided in confidence and protected from disclosure to the extent permitted under law. Town of Drumheller is bound by the Freedom of Information and Privacy Act (Alberta) and all documents submitted to Town of Drumheller will be subject to this protection and all disclosure provisions of this legislation.

### **1.22 GIFTS AND DONATIONS**

The successful Proponent shall ensure that no representative of the successful Proponent shall extend entertainment, gifts, gratuities, discounts, or special services, regardless of value, to any employee of Town of Drumheller. The successful Proponent shall report to the Issuing Office, any attempt by Town of Drumheller employees to obtain such favors.

### **1.23 AGREEMENT OF INTERNAL TRADE AND NEW WEST PARTNERSHIP TRADE AGREEMENT**

The provisions of the Agreement on Internal Trade, Part IV, Chapter Five – Procurement and Annex 502.4, ("AIT") and the New West Partnership Trade Agreement ("NWPTA") apply to this Tender.

### **1.24 SPECIFICATIONS AND STANDARD DRAWINGS**

Alberta Transportation's Specification, Specification Amendment, and select Drawing manuals referenced herein can be purchased separately from:

Alberta Transportation  
Strategic Procurement Branch  
Suite 100, 1<sup>st</sup> Floor, Twin Atria Building  
4999 - 98 Avenue  
Edmonton, AB T6B 2X3  
Telephone: (780) 415-1068

Alternatively, the documents may be viewed on-line on Alberta Transportation's web site at:

<https://www.alberta.ca/construction-contract-templates.aspx>.

City of Calgary Specification and select Drawing Manuals referenced herein can be viewed and / or purchased separately on-line on the City of Calgary's web site at:

<https://www.calgary.ca/PDA/pd/Pages/Planning-and-development-resource-library/Publications.aspx>.

### **1.25 TENDERS TO BE UNDER SEAL**

All Tenders shall be signed and sealed in the case of a Body Corporate. In the case of an individual, partnership, or non-incorporated organization, Tenders shall be signed and witnessed.

### **1.26 LIQUIDATED DAMAGES**

See General Specifications **1.2.20, "Failure to Complete on Time" and Special Provisions.**

**1.27 ADDENDA**

Addenda, when issued, form part of the Tender Documents. The Bidder shall acknowledge receipt of each addendum in the space provided on the Tender forms. The individual items included in the addendum shall be added, deleted, or changed in accordance with the instructions contained in the addendum letter. A copy of each addendum will be inserted into the Contract document.

During the tendering period all Addenda issued by the Issuing Office will be posted on APC and Town website.

Notwithstanding any other provision of this Tender, each Bidder must ascertain, prior to the time fixed for receiving tenders, that it has received all Addenda issued by the Issuing Office.

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## 2 TENDER FORMS

### 2.1 **CONDITIONS**

The Undersigned (also referred to as the "Bidder" and the "Contractor"), having carefully read the Contract Documents listed in Article A-2 of the Agreement and inspected the site, hereby agrees to execute and complete the Work contemplated in strict accordance with the said Contract Documents at the prices stipulated in the Unit Price Schedule.

It is understood that:

1. The estimated quantities shown in this Tender are approximate only and are used for the purpose of comparing bids.
2. No claim shall be made by the Bidder on account of any loss of anticipated profits resulting from any excess or deficiency in the estimated quantities.
3. Payment for work under this Contract will be made on the basis of quantities measured on the site and at the unit prices submitted, which shall be compensation in full for all the work done under the terms of the Contract.
4. The prices quoted shall bear a proper relationship to the value of work done or materials supplied.
5. The Owner reserves the right to terminate or to cancel any or all portions of the work and no claim shall be made on account of any loss of anticipated profits resulting from any cancellations or terminations in this Contract.
6. The Contractor is to complete the Unit Price for all items on the Unit Price Schedule.
7. The Owner reserves the right to accept or reject any or all tenders and to waive irregularities and informalities at its discretion. The Owner reserves the right to accept a tender other than the lowest tender without stating reasons. By the act of submitting its bid, the Bidder waives any right to contest in any legal proceeding or action the right of the Owner to award the work to whomever it chooses, in its sole and unfettered discretion, and for whatever reasons the Owner deems appropriate. Without limiting the generality of the foregoing, the Owner may consider any other factor besides price and capability to perform the work that it deems in its sole discretion to be relevant to its decision including but not limited to the following:
  - a) any past experience with the Bidder, or lack thereof;
  - b) the results of any reference check done by the Owner;
  - c) information relating to the financial state of the Bidder, however obtained;
  - d) length of construction period;
  - e) specific time for construction;
  - f) preference to a local Contractor.

The \_\_\_\_\_, Sureties are willing to provide a Performance Bond and a Labour and Materials Bond each in the amount of **50 percent (50%)** of the total amount tendered. The "Consent of Surety" form to this effect is complete.

Accompanying this Tender is the completed "Consent of Surety" along with a certified cheque or bid bond in the amount of **10 percent (10%)** of the total amount tendered for the Work.

If our Tender is accepted, we agree to commence the Work by the \_\_\_\_ day of \_\_\_\_\_, and to complete the Work on or before the \_\_\_\_ day of \_\_\_\_\_, or such later date as the Owner may for any reason determine.

It is understood that if this Tender is accepted within **thirty-five (35) days** of the time stated for Tender closing date, and if the Bidder fails or declines to enter into a Contract in accordance with the terms of the Tender, the Bidder's certified cheque or bid bond shall be forfeited to the Owner as an accepted and agreed determination of the damages to which the Owner may be entitled by reason of the Bidder's failure or refusal to enter into such Contract.

\_\_\_\_\_  
Contractor's Signature

\_\_\_\_\_  
Contractor's Name (Bidder)

\_\_\_\_\_  
Print Name

\_\_\_\_\_  
Witness or Seal

\_\_\_\_\_  
Position in Company

\_\_\_\_\_  
Date

\_\_\_\_\_  
Address

**2.2 VENDOR PARTICIPATION – RECEIPT CONFIRMATION FORM**

Please complete this form and email IMMEDIATELY to:

Wood Environment & Infrastructure Solutions,  
a Division of Wood Canada Limited  
Attention: Josh Strukoff, Project Coordinator  
#401, 1925 – 18th Avenue NE  
Calgary, AB T2E 7T8

joshua.strukoff@woodplc.com

**Failure to return these forms MAY result in a termination of communication regarding this Tender.**

COMPANY NAME: \_\_\_\_\_

ADDRESS: \_\_\_\_\_

CITY: \_\_\_\_\_ PROVINCE: \_\_\_\_\_ POSTAL CODE: \_\_\_\_\_

CONTACT PERSON: \_\_\_\_\_

PHONE NO: \_\_\_\_\_ FAX NO: \_\_\_\_\_

EMAIL ADDRESS: \_\_\_\_\_

I have received a copy of the above noted Tender.

**Yes**, I will be responding to this Tender. I understand any further correspondence will be made via email correspondence.

I agree to have Wood send further correspondence that it deems to be of an urgent nature by the following method:

Email

**No**, I will not be responding to this Tender. I understand that if I do not submit a Tender, this will not affect our company's status as a potential Proponent to Town of Drumheller in the future. I also understand that if I do not return this form, our company will not receive any further notices with regard to this Tender.

SIGNATURE: \_\_\_\_\_

TITLE: \_\_\_\_\_ DATE: \_\_\_\_\_

**2.3 COMPLIANCE WITH THE SPECIFICATIONS**

**This form must be completed and signed to constitute a formal Tender.**

We have examined these Specifications thoroughly and fully understand all conditions that do or can affect the Work to be done under these Specifications. We hereby certify that the Work offered in our Tender complies in every respect to the Owner's Specifications.

\_\_\_\_\_  
Contractor's Name (Print)

\_\_\_\_\_  
Witness

\_\_\_\_\_  
Signature or Seal of Contractor  
(Bidder)

\_\_\_\_\_  
Print Name

\_\_\_\_\_  
Position in Company

\_\_\_\_\_  
Alberta Construction Safety Association  
Number or Equivalent Safety  
Certification Number **mandatory**

\_\_\_\_\_  
Date

**2.4 ADDENDA RECEIVED**

**(All Addenda Must be returned with tender submission)**

**Addendum:**

#1 \_\_\_\_\_  
Date Received

#2 \_\_\_\_\_  
Date Received

#3 \_\_\_\_\_  
Date Received

#4 \_\_\_\_\_  
Date Received

#5 \_\_\_\_\_  
Date Received

\_\_\_\_\_  
Contractor's Representative Signature

\_\_\_\_\_  
Print Name

\_\_\_\_\_  
Position in Company

\_\_\_\_\_  
Contractor's Name (Bidder)

\_\_\_\_\_  
Date

2.5 UNIT PRICE SCHEDULE

**TOWN OF DRUMHELLER  
DRUMHELLER RESILIENCY AND FLOOD MITIGATION  
TOWN OF DRUMHELLER TENDER NO.: 2022-06-21D**

ITEM NO.	ITEM DESCRIPTION	ESTIMATED QUANTITY		UNIT PRICE		TOTAL BID
1	Mobilization (1.2.13)	1		Lump Sum		\$
2	Construction Advisory Signs (Special Provision)	3	signs	\$	/sign	\$
3	Clearing and Mulching (including tree clearing) (H.C.S. 2.1.4)	1.45	ha	\$	/ha	\$
4	Demolition and Removal (Special Provision)	1		Lump Sum		\$
5	Temporary Construction Fence (Special Provision)	1200	m	\$	/m	\$
6	Common Excavation (H.C.S. 2.3.6)	4,590	m <sup>3</sup>	\$	/m <sup>3</sup>	\$
7	Borrow Excavation – Contractor’s Supply (H.C.S. 2.3.6) (Special Provisions)	10,145	m <sup>3</sup>	\$	/m <sup>3</sup>	\$
8	Impervious Fill – Contractor Supply (Special Provision)	57	m <sup>3</sup>	\$	/m <sup>3</sup>	\$
9	Common Excavation – Waste (H.C.S. 2.3.6)	32	m <sup>3</sup>	\$	/m <sup>3</sup>	\$
10	Prepare Subgrade Surface – 1 <sup>st</sup> Layer (H.C.S. 3.1.3)	9,600	m <sup>2</sup>	\$	/m <sup>2</sup>	\$
11	Gravel Surfacing (H.C.S. 3.3) (Special Provisions)	390	m <sup>3</sup>	\$	/m <sup>3</sup>	\$
12	Riprap Bedding Gravel (Special Provision)	290	m <sup>3</sup>	\$	/m <sup>3</sup>	\$

ITEM NO.	ITEM DESCRIPTION	ESTIMATED QUANTITY		UNIT PRICE		TOTAL BID
13	Heavy Rock Riprap (Class 1M) (B.C.S. 10.7)	20	m <sup>3</sup>	\$	/m <sup>3</sup>	\$
14	Heavy Rock Riprap (Class 2) (B.C.S. 10.7)	1,000	m <sup>3</sup>	\$	/m <sup>3</sup>	\$
15	Topsoil Placement (H.C.S. 2.6.4)	14,525	m <sup>2</sup>	\$	/m <sup>2</sup>	\$
16	Surface Drainage Structure – Station 1+080 (Special Provision)	1			Lump Sum	\$
17	Surface Drainage Structure – Station 1+246 (Special Provision)	1			Lump Sum	\$
18	Surface Drainage Structure – Station 1+390 (Special Provision)	1			Lump Sum	\$
19	Concrete Pipe – Salvage and Re-install (375 mm) (H.C.S. 2.4) (H.C.S. 5.16) (Special Provisions)	1	m	\$	/m	\$
20	Concrete Pipe – Supply and Install (450 mm) (H.C.S. 2.4) (H.C.S. 5.16) (Special Provisions)	33	m	\$	/m	\$
21	Concrete Pipe – Supply and Install (600 mm) (H.C.S. 2.4) (H.C.S. 5.16) (Special Provisions)	40	m	\$	/m	\$
22	Concrete Pipe – Supply and Install (900 mm) (H.C.S. 2.4) (H.C.S. 5.16) (Special Provisions)	9	m	\$	/m	\$
23	Concrete Pipe – Supply and Install (1500 mm) (H.C.S. 2.4) (H.C.S. 5.16) (Special Provisions)	53	m	\$	/m	\$
24	Concrete Flared End – Supply and Install (450 mm) (Special Provisions)	5	unit	\$	/unit	\$
25	Concrete Flared End – Supply and Install (600 mm) (Special Provisions)	1	unit	\$	/unit	\$
26	Concrete Flared End – Supply and Install (900 mm) (Special Provisions)	2	unit	\$	/unit	\$

ITEM NO.	ITEM DESCRIPTION	ESTIMATED QUANTITY		UNIT PRICE		TOTAL BID
27	Concrete Flared End – Supply and Install (1500 mm) (Special Provisions)	2	unit	\$	/unit	\$
28	Concrete Headwall – Salvage and Install (375 mm) (Special Provisions)	1	unit	\$	/unit	\$
29	Concrete Headwall – Supply and Install (450 mm) (Special Provisions)	1	unit	\$	/unit	\$
30	Concrete Headwall – Supply and Install (600 mm) (Special Provisions)	2	unit	\$	/unit	\$
31	Concrete Headwall – Supply and Install (1500 mm) (Special Provisions)	2	unit	\$	/unit	\$
32	Tideflex Valve – Supply and Install (450 mm) (Special Provisions)	1	unit	\$	/unit	\$
33	Remove & Dispose Culverts Up to 1200 mm Dia (H.C.S. 2.4.4)	58	m	\$	/m	\$
34	Seeding – Hydro-Seed (Seed Mix 1) (H.C.S. 2.20.4) (Special Provisions)	1,050	m <sup>2</sup>	\$	/m <sup>2</sup>	\$
35	Seeding – Hydro-Seed (Seed Mix 2A) (H.C.S. 2.20.4) (Special Provisions)	7,590	m <sup>2</sup>	\$	/m <sup>2</sup>	\$
36	Seeding – Hydro-Seed (Seed Mix 3) (H.C.S. 2.20.4) (Special Provisions)	860	m <sup>2</sup>	\$	/m <sup>2</sup>	\$
37	Supply and Placement of Sod (Special Provision)	4,050	m <sup>2</sup>	\$	/m <sup>2</sup>	\$
38	Supply and Placement of Wood Mulch (Special Provision)	370	m <sup>2</sup>	\$	/m <sup>2</sup>	\$
39	Standard Access Gate – Salvage and Re-install (Special Provision)	1	gates	\$	/gate	\$
40	Standard Access Gate – Supply and Install (Special Provision)	1	gates	\$	/gate	\$

ITEM NO.	ITEM DESCRIPTION	ESTIMATED QUANTITY		UNIT PRICE		TOTAL BID
41	Supply and Placement of Landscape Steps (Special Provision)	4	staircase	\$	/step	\$
42	Maintenance – Warranty Period (Grass and Sod Only) (Special Provision)	12	months	\$	/month	\$
<b>TOTAL TENDER AMOUNT:</b>						
<b>PROVISIONAL ITEMS</b>						
43	Non-Woven Geotextile for Heavy Rock Rip Rap – Supply and Install (Special Provision)	930	m <sup>2</sup>	\$	/m <sup>2</sup>	\$
44	Prepare Subgrade Surface – 2 <sup>nd</sup> Layer (H.C.S. 3.1.3)	7,260	m <sup>2</sup>	\$	/m <sup>2</sup>	\$
45	Topsoil Contractor Supply (Special Provision)	50	m <sup>3</sup>	\$	/m <sup>3</sup>	\$
46	Concrete Pipe – Supply and Install (900 mm) (H.C.S. 2.4) (H.C.S. 5.16) (Special Provisions)	12	m	\$	/m	\$
47	Concrete Flared End – Supply and Install (900 mm) (Special Provisions)	4	unit	\$	/unit	\$
<b>TOTAL PROVISIONAL ITEM AMOUNT:</b>						
<b>CASH ALLOWANCE</b>						
48	Care of Water (Special Provision)					\$60,000
49	Turbidity Monitoring and Reporting (Special Provision)					\$60,000
50	Fish Capture and Release (Special Provision)					\$35,000

ITEM NO.	ITEM DESCRIPTION	ESTIMATED QUANTITY	UNIT PRICE	TOTAL BID
51	Erosion and Sediment Control Measures Implementation (Special Provision) (H.C.S. 6.5.6)			\$50,000
52	Traffic Accommodation (H.C.S. 7.1)			\$30,000
53	Existing and Temporary Access Roads Preparation (Special Provisions)			\$20,000
54	Staging Area Preparation and Restoration (H.C.S. 2.3.6) (H.C.S. 2.20.4) (H.C.S. 3.1.3) (Special Provision)			\$50,000
55	ECO Plan Preparation (Special Provision)			\$10,000
<b>TOTAL CASH ALLOWANCE AMOUNT:</b>				\$315,000

\_\_\_\_\_  
Contractor's Representative Signature

\_\_\_\_\_  
Contractor's Name (Print)

\_\_\_\_\_  
Print Name

\_\_\_\_\_  
Position in Company

\_\_\_\_\_  
Witness or Seal

\_\_\_\_\_  
Contractor's G.S.T. No.

\_\_\_\_\_  
Date

**3 TENDER AMENDMENT FORM**

**TENDER AMENDMENT**

**Town of Drumheller – Drumheller Resiliency and Flood Mitigation**

**TOWN OF DRUMHELLER TENDER NO.: 2022-06-21D**



We, \_\_\_\_\_  
(Name of Contractor)

the undersigned, modify the Tender Unit Price Schedule for our Tender as shown in the following table.

<b>CONTRACT UNIT PRICE SCHEDULE CHANGES</b> <b>Replacing ALL Previous Unit Price Changes</b>				
BID ITEM NO.	DESCRIPTION	ESTIMATED QUANTITY	UNIT PRICE CHANGE + OR -	TOTAL CHANGE FOR THIS ITEM + OR -
<b>+ or – Change in Total Tender</b>				

We also acknowledge and agree that:

1. This change supersedes all previous changes including those to other bid items. Previously submitted changes are all null and void.
2. We accept full responsibility for any lack of confidentiality arising from the use of this process.
3. We accept full responsibility, for failure of any reason whatsoever, of these revisions to arrive on time, for their accuracy, and for their completeness.

\_\_\_\_\_ Being \_\_\_\_\_  
 Signature Position in Company

Of \_\_\_\_\_ dated \_\_\_\_\_  
 Company Name Date

Email To: Drumheller Purchasing

Subject: DRFMO – Willow Estates Email: purchasing@drumheller.ca

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## 4 SPECIAL PROVISIONS

### 4.1 **STANDARD SPECIFICATIONS, SPECIFICATION AMENDMENTS, AND TYPICAL DRAWINGS**

#### 4.1.1 **Alberta Transportation Name Change**

Due to government reorganization, Alberta Transportation's name has changed. As a result, some specifications, drawings, plans, and other documents in this Contract may continue to reference Alberta Infrastructure, Alberta Infrastructure and Transportation, or Alberta Transportation and Utilities. Please be advised that any references to Alberta Infrastructure, Alberta Infrastructure and Transportation, or Alberta Transportation and Utilities shall mean Alberta Transportation.

#### 4.1.2 **Standard Specifications for Highway Construction and Bridge Construction Work**

The specifications for the construction work, which shall form part of the Contract Agreement, are published in the following manuals:

- Alberta Transportation, General Specifications, Specification Amendments and Supplemental Specifications for Highway and Bridge Construction – Edition 15, 2013;
- Alberta Transportation, Standard Specifications for Highway Construction – Edition 15, 2013;
- Alberta Transportation, Standard Specifications for Bridge Construction – Edition 16, 2017;
- City of Calgary, Roads Construction 2015 Standard Specifications;
- City of Calgary, Standard Specifications Waterworks Construction 2018;
- Alberta Transportation, Civil Works Master Specifications for Construction of Provincial Water Management Projects.

Generally, and unless otherwise noted or context dictates otherwise, the following changes are to be made to the above-mentioned manuals:

- the words "Department," "Minister" or "City" shall be replaced by the word "Owner."

#### 4.1.3 **Specification Amendments and Supplemental Specifications**

The Specification Amendments listed in the following Table are contained in the manual entitled "General Specifications, Specifications Amendments and Supplemental Specifications for Highway and Bridge Construction – Edition 15, 2013". Items that are marked with an "X" are applicable to this Contract; items that are not so marked do not apply. The Contractor is advised that the applicable Specification Amendments may contain modifications to the payment clauses for the Specifications amended.

<b>AMENDMENTS TO SPECIFICATIONS</b>		
<b>SECTION 1 – GENERAL SPECIFICATIONS</b>		
	AMC_C125.2	Priority Line Painting for Site Occupancy
	AMC_C125.3	Non-Priority Line Painting for Site Occupancy
	AMC_S53.1	Construction Staking and Survey Majority by Contractor
	AMC_S53.2	Amendment to Specifications 1.2 General, Re: Construction Staking and Survey Majority by Consultant
	AMC_S53.3	Amendment to Specifications 1.2 General, Re: Construction Staking and Survey for Bridge Structures
<b>X</b>	AMC_C230	Amendment to Specifications 1.2 General, Re: Diesel Fuel Cost Adjustment
<b>SECTION 3 – SURFACING</b>		
<b>X</b>	AMC_S116	Amendments to Specification 2.3, Grading, 3.1 Subgrade Preparation, and all Base Course Specifications, Re: Tolerances for Surface Finish
	AMC_S155	Amendments to Specification 3.50 Asphalt Pavement, (EPS), Re: Hot In-Place Recycled Asphalt Pavement
	AMC_S201	Amendments to Specification 3.50, Asphalt Concrete Pavement (EPS), Re: Acceptance Testing for Contracts with Small Quantities (less than 1,000 tonnes) of Asphalt Concrete Pavement
<b>SECTION 5 – MATERIALS</b>		
	AMC_S9.4	Supply of Aggregate – Contractor’s Supply with Option
	AMC_S9.5	Supply of Aggregate – Contractor’s Supply with No Option
	AMC_S9.6	Supply of Aggregate – Designated Source
	AMC_C218	Interim Payment for Supply of Materials
<b>SUPPLEMENTAL SPECIFICATIONS</b>		
	6.15	Fish Capture and Release

#### 4.1.4 Typical Plans and Drawings

The following additional specifications, typical plans, and drawings, which shall form part of the Contract Agreement, are for viewing and/or download from Alberta Transportation’s website at the following address: [www.transportation.alberta.ca](http://www.transportation.alberta.ca):

- Typical minimum requirements for traffic accommodation and construction zone temporary signing are included in the manual entitled "Traffic Accommodation in Work Zones 2018," 2<sup>nd</sup> Edition, Date of Issue December 2018.

It may be necessary for the Contractor to modify these drawings and/or develop new drawings to address non-typical situations when developing the Traffic Accommodation Strategy in accordance with Specification 7.1, Traffic Accommodation and Temporary Signing.

- Typical minimum requirements for pavement markings are included in the manual entitled "Highway Pavement Marking Guide," 2<sup>nd</sup> Edition, issued March, 2003.
- Drawings showing the typical minimum requirements for permanent highway signage are available through the "Typical Signage Drawings".
- Drawings showing the typical minimum requirements for barriers are available through, "Typical Barrier Drawings" and "Roadside Design Guide".
- Typical minimum requirements for erosion and sediment control devices are included in the following manuals:
  - Erosion and Sediment Control – June 2011
  - Field Guide for. Erosion and Sediment Control – June 2011
- Typical minimum requirements for highway street lighting devices are included in the "Highway Lighting Guide," issued in August, 2003.
- All other typical plans and drawings are included in the manual entitled "CB6 Highway Standard Plates," revised July 2015.

Hardcopy versions of select manuals are available for purchase from Alberta Transportation, Strategic Procurement Branch, Suite 310, 3<sup>rd</sup> Floor, Twin Atria Building, 4999 – 98 Ave., Edmonton, AB, Telephone: (780) 415-1068.

Bidders are advised that, from time to time, Alberta Transportation may issue revisions to existing drawings, and/or may insert drawings into the above-mentioned manuals without re-printing hardcopy editions of the manuals. These new and/or revised drawings will be available on Alberta Transportation's website.

Bidders are further advised that any drawing revisions and/or new drawings posted on Alberta Transportation's website, as of five (5) calendar days prior to the date set for the opening of Tenders, will apply to this Contract.

Any standard drawings that are not available on Alberta Transportation's website will be included in the Contract Documents.

## **4.2 CONTRACT INFORMATION DOCUMENTS**

Contract Information Documents including, but not limited to, geotechnical reports, miscellaneous documents, and reference drawings that may have been provided to the Contractor or made available to the Contractor for viewing during the tender period, shall not be considered part of the Contract Documents.

The Contractor is not entitled to rely upon the factual information or factual data in any Contract Information Document, nor any opinions or interpretations contained therein. Contract Information

Documents shall not be considered accurate, complete or appropriate, and are made available solely for the purpose of providing the Bidder with access to the information available to the Owner.

#### **4.3 STANDARD DRAWINGS**

In addition to the standard drawings referenced in the specifications, the following standard drawings shall apply:

<b>SOURCE</b>	<b>DRAWING NO.</b>	<b>DESCRIPTION</b>
City of Calgary	60	Chain Link Fence Pedestrian Gate, File Number 454.1001.024
City of Calgary	63	Standard Gate Closure, File Number 454.1001.027

#### **4.4 CONSULTANT**

The Consultant for this project is:

Wood Environment & Infrastructure Solutions,  
a division of Wood Canada Limited  
#401, 1925 – 18th Avenue NE  
Calgary, AB T2E 7T8

#### **4.5 MODIFICATIONS TO SCOPE OF WORK**

The Owner shall be entitled to increase or reduce the Scope of Work due to budgetary constraints or for any reason whatsoever upon the Owner providing written notice to the successful Contractor. If this is necessary, the actual type of work acceptably completed will be paid at the applicable prices bid shown in the Unit Price Schedule.

#### **4.6 PRODUCT OPTIONS AND SUBSTITUTIONS**

Where products are identified within the Specifications and include the words "or approved equivalent," the Contractor may propose alternate products for the Consultant and Owner's review and approval subject to the following conditions:

- Proposed alternate products may be permitted and shall require written authorization by the Consultant. Proposed alternate products shall be the same type as, be capable of performing the same function as, and meet or exceed the standards of quality and performance of the named product(s). Proposed alternate products shall not require revisions to the Contract Documents nor to work of Other Contractors but do require review and written authorization from the Consultant.
- Proposed alternate manufacturers may be permitted and shall require written authorization by the Consultant. Proposed alternate manufacturers shall have capabilities comparable to those of the named manufacturer(s). Proposed alternate manufacturers shall not require revisions to the Contract Documents nor to work of Other Contractors but do require review and written authorization from the Consultant.
- Do not order or install proposed alternate products without the Consultant's written authorization.

- If, in the Consultant's opinion, the proposed alternate product or manufacturer does not meet the requirements of the Contract Documents, provide a product that, in the Consultant's opinion, does meet the requirements of the Contract Documents.

Do not change products or manufacturers, authorized by the Consultant for use in performance of the Work, without the Consultant's written authorization. Submit requests to change authorized products and / or manufacturers to the Consultant in writing, including complete data substantiating compliance of a product with the requirements of the Contract Documents. Including the following:

- Product identification, including the manufacturer's name and address.
- Manufacturer's literature providing product description, applicable reference standards, and performance and test data.
- Samples, as applicable.
- Name and address of projects where the product has been used and the date of each installation.
- For proposed alternate products and requests for changes to authorized products, include, in addition to the above, the following:
  - Itemized comparison of the substitution with the named product(s). List significant variations.
  - Availability of maintenance services and sources of replacement products and parts.

#### **4.7 SCOPE OF WORK**

The Scope of Work for this project shall include, but is not limited to, the following:

- Clearing
- Common Excavation
- Borrow Excavation – Contractor's Supply
- Culverts – Supply and Install – Various Diameter
- Seeding / Sodding
- Heavy Rock Riprap Class 1M and 2 – Supply and Placement
- Stormwater Infrastructure – Retrofit and Installation
- Permanent Erosion Protection
- Care of Water, including but not limited to, river and creek flows, surface water run-off, groundwater, and River Diversion
- Fish Capture and Release
- Other Work

Unless otherwise specified, the Contractor shall supply all materials necessary to complete the Work. A complete job is called for, therefore any labour, material, equipment, tool or incidental item not specifically mentioned but necessary for completeness will be considered incidental to the Work and no separate or additional payment will be made.

#### **4.8 RIGHT OF WAY RESTRICTIONS**

Prior to the commencement of their operations, the Contractor shall consult with the Consultant to determine the location of properties with construction restrictions and conduct their operations accordingly. The following properties currently have construction restrictions:

- No access to adjacent residential properties.

If the restricted properties are still not available by the time the contractor has completed all other work, Town of Drumheller reserves the right to either:

- Modify the design and construction as required;
- Delete the affected portion of the work from the Contract.

All work items actually completed will be paid for at the applicable contract unit prices. No separate or additional payment will be made as a result of any alteration or elimination of original contract quantities.

#### **4.9 PROJECT SCHEDULING AND COMPLETION**

The Contractor shall schedule their operations to complete all work under this Contract by **30 June 2023**.

#### **4.10 WORKING HOURS**

Contractor shall adhere to Town of Drumheller Bylaw No. 16-10 for working hours.

The Contractor shall abide by all Federal, Provincial, and Town of Drumheller regulations regarding the noise level generated by the Contractor's operations or equipment.

#### **4.11 PROJECT INTERIM COMPLETION DATES**

The Contractor will be subject to the following interim completion dates:

<b>PROJECT COMPONENT</b>	<b>INTERIM COMPLETION DATE</b>
In-Stream Works and Dike Fill Substantial Completion	15 Dec 2022
Completion of 7 Ave portion of Dike and All Culvert/Cross Drains	15 May 2023
Construction Completion Certificate	30 June 2023

Where the interim completion date shown above is stated as the number of calendar days rather than a specified date, the Contractor shall schedule their activities to ensure work within the specified project component is completed within the specified number of calendar days.

General Specification 1.2.19, "Adjustment of Completion Dates" and General Specification 1.2.20, "Failure to Complete on Time" will apply to all interim completion dates.

#### **4.12 CONTRACT RECORD DOCUMENTS**

##### **4.12.1 Designation of Contract Record Documents**

At the commencement of the Work, the Owner will provide the following documents to the Contractor to be designated and retained as Contract Record Documents:

- Two Complete Sets of the Contract Drawings – Issued for Construction.
- Two Complete Sets of Contract Documents.

The Contractor shall maintain one record copy of each of the following documents:

- Change Orders and other modifications to the Contract.
- Reviewed Shop Drawings, Product Data, and Samples.
- Field test records.
- Inspection certificates.
- Manufactures' certificates.
- Field Survey Data.
- ECO Plan, including Sediment Erosion Control Plan.
- Other Plans that have been submitted.

#### **4.12.2 Maintenance of Contract Record Documents**

The Contractor shall maintain the Contract Record Documents in accordance with the following:

- Store Contract Record Documents in the Contractor's Site office apart from documents used for construction. Provide files, racks, and secure storage.
- Label each document "CONTRACT RECORD" in large, neatly printed letters.
- Maintain Contract Record Documents in a clean, dry, and legible condition. Do not use these documents for construction purposes.
- Keep Contract Record Documents available for inspection by the Owner. Revised the content of the documents as required prior to final submittal.
- Maintain Contract Record Documents as work progresses. Record information for each area of work within 14 days after completion.

#### **4.12.3 Recording Information on Contract Record Documents**

The Contractor shall record information on the Contract Record Documents in accordance with the following:

- Record information on the Contract Record Documents provided by the Owner.
- Use coloured erasable pencils to record information.
- Use a different colour to record information pertaining to each major system.
- Record changes and variations from the Drawings concurrently with construction progress. Do not cover any work until the required information is recorded.
- Legibly mark Contract Record Drawings to record actual construction, including the following:
  - Measured dimensions depths, elevations, and horizontal co-ordinates of foundation excavation and fill surfaces, including the interfaces of fill zones.
  - Measured dimensions, elevations, and horizontal co-ordinates of structure components and foundations.
  - Measured depths, elevations, and horizontal co-ordinates of underground utilities and appurtenances. Reference locations to permanent surfaces improvements.
  - Measured depths, elevations, and horizontal co-ordinates of underground utilities and appurtenances covered in construction. Reference to visible and accessible features of construction.
  - Measured depths, elevations, and horizontal co-ordinates of instrumentation installed in foundations and structures.
  - Field changes of dimensions and details.
  - Changes to equipment layout and services.
  - Details not on the original Drawings.
  - Reference to related Shop Drawings and modifications.
- Legibly mark the Specifications to record actual construction including the following:

- Manufacturer trade name and catalogue number of each product actually installed particularly optional and substitute items.
- Changes made by addenda and Change Orders.
- Maintain other documents, including manufacture's certificates, inspection certifications, and field test records required by individual Specifications sections.

#### **4.12.4 Submittals**

The Contractor shall provide the following submittals:

- Contract Record Drawings at least monthly throughout the course of the Work as the information becomes available or the information is received. The Owner's representative will review the adequacy and accuracy of the information on the Contract Record Drawings referencing field notes, surveys, photographs, or other field observation methods and return the Contract Record Drawings to the Contractor after review for ongoing revisions.
- Complete Contract Record Documents before or with the request for inspection for Construction Completion.

#### **4.13 CONTRACTOR'S WARRANTY AND FINAL ACCEPTANCE:**

The following Special Provision replaces General Specification 1.2.53 Contractor's Warranty and Final Acceptance in its entirety:

During the warranty period, the Contractor shall warrant the Work to be free from any defect or failure and to withstand climatic, maintenance and normal operational conditions. The Warranty period shall be **two (2) years** and shall commence on the date of the Construction Completion as determined by the Owner.

Work requiring warranty periods different from above will be identified in the Special Provisions.

The Contractor shall repair, at their own expense, any such defect or failure which occurs in the Work prior to the expiry of the warranty period. The Owner will notify the contractor, in writing, of repairs required during the warranty period; and the Contractor shall promptly make the necessary repairs.

If the Contractor fails to carry out repairs promptly or to the satisfaction of the Owner, the Owner may then make other arrangements to have the repairs done, the cost of which shall be debt due and owing by the Contractor and the Surety to the Owner.

Contrary to Specification 2.20, Seeding, the warranty period shall be two (2) years and shall commence on the date of the Construction completion, as determined by the Owner.

Upon completion of all above requirements, a Final Acceptance Certificate will be issued by the Consultant on behalf of the Owner.

#### **4.14 RESTRICTED ACTIVITY PERIOD**

The Contractor shall be aware of the following Restricted Activity Period (RAP) for the Red Deer River as it is classified as a Class C Water Body:

- Red Deer River:  
April 16 to June 30, annually

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The information above is based on Alberta Environment and Parks' *Code of Practice for Watercourse Crossings* Calgary Management Area Map – Dated November 2012.

The installation of isolations is not permitted during the Restricted Activity Periods on the Elbow River. Additionally, all isolations must comply with the *Water Act* approval.

#### **4.15 BIDDER'S INVESTIGATION**

The Bidder is responsible for examining the Plans, Specifications, Tender and Contract forms and to carefully investigate and satisfy itself of every condition affecting the Projects and Site including, but not limited to, the site conditions, and the Work to be provided. The contractor acknowledges and agrees that its submission of a tender is conclusive evidence that the Contractor made such investigation and that whether or not it has so investigated, it is willing to assume and does assume all risk regarding conditions affecting the Project and the Site.

The Contractor acknowledges and agrees that any information pertaining to subsurface soil, rock and groundwater conditions on the borehole/testpit logs or report shown on the drawings has been obtained for design purposes and is valid only at the specific locations of the boreholes/testpit logs or report and on the date that the subsurface investigations took place. Bidders may wish to supplement this information, for their purposes, by performing additional investigations.

#### **4.16 DIFFERING CONDITIONS**

If, during the execution of the Work, the Contractor encounters surface or subsurface conditions, not resulting from inclement weather or seasonal river elevation differentiation or flow volume or groundwater conditions, which meet all of the following requirements:

- differ substantially from those indicated in the Contract documents;
- differ materially from those ordinarily found and generally recognized as inherent in construction activities of the character provided in the contract documents;
- could not have been reasonably discovered during the Bidder's investigation of the Site in accordance with Special Provision, Bidder's Investigation;
- were not foreseeable by a reasonably experienced contractor; and
- are not expressly dealt with elsewhere in the Contract.

then the Contractor must notify the Consultant and Owner promptly, before such conditions are disturbed, if possible. In any event the Contractor must give written notice to the Consultant and Owner within 7 calendar days after first observance of the conditions. On receipt of such notice from the Contractor, the Consultant will promptly investigate such conditions. Failure to provide written notice within the prescribed time period will preclude the Contractor from proceeding under this section.

If the Consultant or Owner notice potential differing conditions, the Consultant will give notice to the Contractor that Consultant will investigate such conditions.

If as a result of the Consultant's investigation, the Consultant determines that a differing condition exists, which would cause or result in an increase of decrease to the scope of the Work, the cost to be incurred by the Contractor, or in the time required to perform the Work, then the Consultant may recommend to the Owner for the Owner's consideration, one or more of the following:

- provide instruction to the Contractor on how to proceed including, but not limited to, removing all or a portion of the Work, revisiting all or a portion of the Work, or continuing the Work as set out in the Contract.
- adjust one or more of the following:
  - Construction Completion Dates
  - Site Occupancy Days; or
- Adjust the amount of payment for the Work in accordance with Contract including, if applicable Section 1.2.25, Extra Work, or reduce the amount to be paid under the Contract. Additional costs will be based on unit rates as set out in the Contract, or as negotiated as appropriate.

The Contractor may pursue the matter further through the process detailed in Section 1.2.54, Claims and Dispute Resolution if:

- The Consultant determines that a differing condition does not exist, or
- The Consultant determines that a differing condition exists, but the Contractor believes the Consultant's instructions or adjustments are inconsistent with the intent or scope of the Contract, or are given in error. Then the Contractor must give notice to the Consultant and proceed to carry out the instructions.

Upon encountering differing surface or sub-surface conditions, the Contractor is responsible for implementing measures to reduce impacts related to these conditions. The Contractor is not entitled to payment for that portion of costs incurred which could have been reasonably avoided by the Contractor.

#### **4.17 HAUL ROUTE INFORMATION**

Hauling of all materials shall be in accordance with Specifications 4.5, Hauling of the Standard Specifications for Highway Construction and the Provisions contained herein. In addition to Specification 4.5, the Contractor shall provide a haul route submittal 7 days prior to the start of hauling.

For information and requirements of local haul routes the Contractor shall contact the following:

Information on local Town of Drumheller road bans can be obtained by calling Roadata Services at 1-888-830-7623.

#### **4.18 DUST ABATEMENT**

The Contractor shall be responsible for controlling all dust caused by their operations. Dust abatement shall be achieved by watering, application of dust abatement materials chosen from the Alberta Transportation Recognized Product List; or through the use of biodegradable soil stabilizers approved by the Consultant.

Dust suppressant materials shall be applied, as required, by method subject to the approval of the Consultant. The completed treatment shall provide a smooth and relatively dust free surface.

The Contractor shall perform the Work in accordance with the materials supplier's recommended application rates, and methods of roadway preparation and placing of material unless otherwise directed by the Consultant.

All costs associated with dust abatement, regardless of number of applications, or required maintenance will be considered incidental to the Work, and no separate or additional payment will be made.

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#### **4.19 ROAD RESTRICTIONS / ROAD BANS**

The Contractor is advised that all Alberta Transportation provincial road restrictions / road bans and Town of Drumheller local road restrictions / road bans on hauls roads to and from the project shall be enforced in accordance with Specification 4.5, Hauling of the Standard Specifications for Highway Construction and Provisions contained herein. No extra payment will be made for hauling of materials under road restrictions / road bans.

Information on provincial Alberta Transportation road bans can be obtained by call 1-855-762-3226 or by visiting Alberta Transportation's web site at [www.alberta.ca/road-restrictions-and-bans-overview.aspx](http://www.alberta.ca/road-restrictions-and-bans-overview.aspx)

Information on local Town of Drumheller road bans can be obtained by calling Roadata Services at 1-888-830-7623.

#### **4.20 SITE ACCESS PADS**

Site access pads shall be constructed at all entrances and exit points to the construction areas, or as designated by the Consultant, to prevent the tracking of mud and dirt onto existing roads.

The access pads shall be a minimum of 15 metres long and wide enough to remove the mud and dirt from the vehicle tires. The access pad shall be a minimum of 200 mm thick and be constructed of uniformly sized drain or crush rock.

The Contractor shall remove all sediment, dirt, dust and mud deposited on existing roads at the end of each workday, or as often as necessary to keep roadways clear. When muddy conditions exist, all vehicle tires shall be sprayed clean of all debris in a designated area to contain sediment prior to entering the public roadway.

Sediment that poses a hazard to vehicle or pedestrian traffic on the roadway, as determined by the Consultant, shall be removed immediately.

The construction, maintenance and removal of site access pads, washing of tires, and removal of sediment, dirt, and mud from roadway will be considered incidental to the Work and no separate or additional payment will be made.

#### **4.21 TEMPORARY CONSTRUCTION ACCESS ROAD**

Temporary construction access points have been designated for the sole use by the Contractor to gain access to and from the work site to Town of Drumheller's local road network.

The construction, maintenance and removal of site access pads, washing of tires, and removal of sediment, dirt, and mud from the roadway will be considered incidental to the Work and no separate or additional payment will be made.

At the completion of the project, or as deemed required by the Consultant, the Contractor shall complete a site restoration to return the disturbed areas to a condition equal to or better than prior to work starting. The Contractor will be paid under applicable bid items necessary to complete the work. The Consultant will have the final decision on what type of work is to be completed. The following bid items may be applicable: "Common Excavation – Waste", "Borrow Excavation – Contractor's Supply", "Seeding", and "Topsoil – Contractor Supply".

Temporary construction access roads may be terminated at any time by the Consultant if, in the opinion of the Consultant, the Contractor is mistreating the intent of the temporary access roads.

All costs associated with Permanent and Temporary Access Roads including but not limited to the preparation, installation, supply of materials, maintenance; and other temporary measures used on the project will be paid by the submittal of costs towards the Cash Allowance for "Existing and Temporary Access Roads Preparation". The Cash Allowance will be considered full compensation for all labour, materials, equipment, tools, and incidentals necessary to complete the Work to the satisfaction of the Consultant, and no separate or additional payment will be made.

#### **4.22 STAGING AREA PREPARATION AND RESTORATION**

All costs associated with Staging Area Preparation and Restoration including but not limited to the preparation, topsoil stripping and stockpiling, maintenance, reclamation, topsoil preparation and placement, seeding; and other temporary measures used on the project will be paid by the submittal of costs towards the Cash Allowance for "Staging Area Preparation and Restoration". The Cash Allowance will be considered full compensation for all labour, materials, equipment, tools, and incidentals necessary to complete the Work to the satisfaction of the Consultant, and no separate or additional payment will be made.

#### **4.23 PROJECT SITE OFFICE**

In addition to the requirements of General Specification 1.2.16, Site Offices for Construction, the Contractor shall provide a site office for the entire project duration. The Contractor shall be responsible for all utilities, upkeep, and maintenance of the project site office as well as providing all weather access and parking facilities.

The Contractor shall be required to supply one (1) site trailer for sole use of the Consultant for the entire duration of the project.

#### **4.24 PROGRESS AND MILESTONE CONSTRUCTION MEETINGS:**

The Contractor is responsible for hosting construction progress and milestone meetings at its site office or at a location determined by the Consultant. All attendees identified as necessary by the Consultant must be in attendance. The frequency, date and agendas for the meetings will be determined by the Consultant.

The following, but not limited to, shall be considered as Milestone Meetings:

- General Pre-Construction
- Substantial Completion

All meetings will be considered incidental to the Work and no separate or additional payment will be made.

#### **4.25 PROJECT IDENTIFICATION / GRANT SIGNS**

The Town has supplied and installed three (3) Project Identification / Grant Signs. These signs are located at key points within the Town of Drumheller for public awareness and information and shall remain in place for the duration of construction.

Sign maintenance is the responsibility of the Contractor and shall be in accordance with Standard Specification 7.1, Traffic Accommodation and Temporary Signing”.

Payment for the maintenance of project identification / grant signs will be included in the unit price bid per sign for “Construction Advisory Signs”, and will be full compensation for the maintenance of signposts; sign maintenance; removal and disposal of the signs and sign posts at construction completion; and all labour, materials, equipment, tools and incidentals necessary to complete the Work to the satisfaction of the Consultant.

#### **4.26 CONSTRUCTION ADVISORY SIGNS**

The Contractor shall be required to supply and install three (3) Construction Advisory Signs. These signs shall be located at key points within the Town of Drumheller for public awareness and information as directed by the Consultant. The Construction Advisory Signs shall include the name of the project and contact information for the Contractor and Town of Drumheller. Signs shall be installed three (3) weeks prior to Construction start-up at locations as directed by the Consultant and shall remain in place for the duration of construction.

Plywood edges must be sealed. All edges, front and back are to be primed using high quality exterior primer and one coat of green (Pantone 349c) exterior enamel paint. Reflective sheeting (ASTM D 4956-01 – Type 1) is to be added to the information panel area prior to adding textual information.

Signs shall be fabricated using aluminum or exterior 12 mm MDO plywood (crezan) and installed using 100 mm x 150 mm wooden posts. Sign shall be installed minimum 1.50 m above natural ground measured to the bottom of sign board.

The Contractor shall be responsible for the design and fabrications of the Construction Advisory Signs. All drawings shall be stamped and signed by a Professional Engineer registered in the Province of Alberta. One (1) copy of the general sign layout and associated shop drawings shall be submitted to the Consultant for review a minimum of two (2) weeks in advance of scheduled fabrication.

Sign Placement, installation and maintenance shall be in accordance with Standard Specification 7.1, Traffic Accommodation and Temporary Signing”.

Contractor shall be fully responsible for the posting of a 24-hour telephone contact number for public information. The telephone number and sign lettering shall be of sufficient size to permit reading while travelling at 50 km/hr (ie. For Construction Information Call xxx-xxx-xxxx).

There will be no separate or additional payment for all costs associated with the Public Information call number and shall be considered incidental to Work.

Payment for advisory signs will be made at the unit price bid per sign for “Construction Advisory Signs”, and will be full compensation for sign fabrication; the supply, installation and maintenance of signposts; sign installation and maintenance; removal and disposal of the signs and signposts at construction completion; and all labour, materials, equipment, tools and incidentals necessary to complete the Work to the satisfaction of the Consultant.

#### **4.27 PUBLIC NOTIFICATION – ELECTRONIC MESSAGE BOARDS**

Public Notification - Electronic Message Boards not required for this contract.

#### **4.28 PUBLIC NOTIFICATION – HOMEOWNER / RESIDENT**

The Contractor shall submit a detailed schedule (i.e., Gantt Chart) outlining the work and timeline to complete the work within the project limits. The following work areas shall be broken out and detailed within the detailed schedule, as directed by the Consultant:

- 7 Ave Section
- 1+520 to 1+550
- In-stream Riprap Placement

The Contractor shall maintain close contact with each affected homeowner / resident, via the Consultant, with respect to schedule and shall ensure the schedule is updated on weekly basis, or as directed by the Consultant.

#### **4.29 SURVEY BY OWNER'S REPRESENTATIVE**

In addition to Alberta Transportation's General Specifications for Highway and Bridge Construction, Specification 1.2.31 Stakes, Marks, and Engineering Test and AMC\_S53.2, the Owner's Representative will perform the following survey work:

- Verification of Measurement for Payment for earthwork quantities.

The Contractor shall have no claim against the Owner for any adjustment to their schedule due to the availability of the Owner's Representative survey work. No additional compensation will be paid by the Owner for any delay, inconvenience or damage sustained by the Contractor which is caused by the adjustment to the Contractor's schedule due to the availability of the Owner's Representative survey team.

#### **4.30 WORK IN THE VICINITY OF UTILITIES**

The Contractor shall be advised that there are utilities in the vicinity of the work. The Contractor shall arrange for locating utilities where required. The Contractor will be responsible for and will conduct their work in such a manner as to safeguard all communication / telephone lines, power lines, gas lines, water lines, sanitary lines, and oil pipelines within the limits of this project. It is also the Contractor's responsibility to maintain liaison with the utility owners and take all other precautions to maintain the utility services.

There will be no separate payment for locating and protection of utilities; all costs associated with this work shall be considered incidental to this Contract.

##### **ATCO ELECTRIC**

Mr. Greg Smith, Operation Supervisor  
610-12 Street S.W.  
Drumheller, AB T0J 0Y0  
Email: [greg.smith@atco.com](mailto:greg.smith@atco.com)  
Phone: 403 820-7503  
Cell: 403 820-3593

Phone No.: 1-800-668-5506

##### **TELUS**

Mr. Roger Medavarapu, Area Manager  
Drumheller, AB T0J 0Y0  
Email: [roger.medavarapu@telus.com](mailto:roger.medavarapu@telus.com)

Phone No.: 587-876-0715

**APEX UTILITIES**

Apex Utilities  
Email: [customercare@apexutilities.com](mailto:customercare@apexutilities.com)

Phone No.: 1-866-222-2067

**TOWN OF DRUMHELLER**

702 Premier Way  
Drumheller, AB T0J 0Y0  
Email: [kblanchett@drumheller.ca](mailto:kblanchett@drumheller.ca)

Phone No.: 403 823-1302

The Contractor shall not have any claim for compensation or damages against the Owner for any stoppage, delays, inconvenience or damages sustained by them due to any interference to the presence, adjustment, obtaining crossing agreements, or any coordination with any utility.

**4.31 ENVIRONMENTAL CONTROL**

**4.31.1 Control of Equipment**

The Contractor shall carefully control all equipment and work operations so that their operations do not extend beyond the designated working limits unless otherwise specifically authorized by the Consultant.

**4.31.2 Burning**

Under no circumstances will burning be permitting within the project limits.

**4.31.3 Historical Resources**

Pursuant to Section 31 of the *Historical Resources Act*, should any paleontological or historical resources be discovered during the conduct of construction activities, the Consultant is to be informed immediately. Pursuant to information from the appropriate governing body, it may be necessary for the Owner to issue further instructions regarding the documentation of these resources.

**4.32 ENVIRONMENTAL INFORMATION**

The following environmental information is available for this tender:

- Terrestrial Vegetation and Wildlife Assessment:  
<https://floodreadiness.drumheller.ca/public/download/files/194260>
- Fish and Fish Habitat Assessment:  
<https://floodreadiness.drumheller.ca/public/download/files/194257>

The Contractor shall contact Alberta Environment and Parks (AEP) and inform the Consultant should an animal denning site, raptor nest or injured wildlife be found at any time during construction. The Contractor is advised that if any sensitive species are located that, dependent on the species, the work in the vicinity of the nest will be restricted.

The Contractor shall stockpile all topsoil materials at least twenty (20) metres from the watercourse and provide suitable erosion and sedimentation control measures.

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## **4.33 ENVIRONMENTAL REQUIREMENTS – WEED CONTROL & CLUBROOT MANAGEMENT PLAN & WHIRLING DISEASE**

### **4.33.1 General**

Clubroot, caused by *Plasmodiophora brassicae*, is a serious disease of cruciferous crops (i.e., mustards, canola, etc.) which can result in reduced to severe yield losses. Clubroot was declared a pest under Alberta's Agricultural Pests Act in April 2007. Enforcement of the Act is the responsibility of the Agricultural Service Board located in each municipality.

The Contractor shall carry out their operations in accordance with the provisions in the attached Weed Control and Clubroot Management Plan and the Best Management Practices outlined in the Alberta Clubroot Management Plan which is available on-line at the following location:

[http://www1.agric.gov.ab.ca/\\$Department/deptdocs.nsf/all/agdex11519](http://www1.agric.gov.ab.ca/$Department/deptdocs.nsf/all/agdex11519)

### **4.33.2 Whirling Disease**

Whirling disease is caused by *Myxobolus cerebralis*, a microscopic parasite of salmonid fish, including trout and whitefish. This disease can cause high levels of mortality in some fish.

To prevent the spread of Whirling Disease in Alberta, all equipment that may come in contact with the stream environment (water, sediment, aquatic flora and fauna) must arrive and depart the worksite clean and dry. Care should be taken to ensure water from cleaning does not re-enter any nearby waterways through runoff, ditches, or storm drains. The contractor must comply with all decontamination conditions contained in regulatory approvals and as per the latest Alberta Government guidelines and the link below.

<https://www.alberta.ca/stop-whirling-disease.aspx>.

### **4.33.3 Clubroot Management Plan**

Clubroot, caused by *Plasmodiophora brassicae*, is a serious disease of cruciferous crops (i.e. mustards, canola, etc.) which can result in reduced to severe yield losses. Clubroot was declared a pest under Alberta's Agricultural Pests Act in April 2007. Enforcement of the Act is the responsibility of the Agricultural Service Board located in each municipality.

The Contractor shall carry out his or her operations in accordance with the provisions in the attached Weed Control and Clubroot Management Plan and the Best Management Practices outlined in the Alberta Clubroot Management Plan which is available on-line at the following location:

[http://www1.agric.gov.ab.ca/\\$Department/deptdocs.nsf/all/agdex11519](http://www1.agric.gov.ab.ca/$Department/deptdocs.nsf/all/agdex11519)

As part of the ECO Plan, the Contractor shall detail his or her proposed Clubroot control measures for soil disturbance work at locations involving Clubroot infected soils. Details shall include proposed equipment cleaning procedures as well as any control measures recommended by the Municipality's Agricultural Fieldman.

Soil disturbance work shall not commence until the Contractor's ECO Plan has been reviewed and accepted by the Consultant.

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All costs associated with the implementation of Clubroot control measures, including those required by the applicable Agricultural Service Board, will be considered incidental to the Work and no separate or additional payment will be made.

#### **4.33.4 Black Knot Fungus**

To control the spread of black knot fungus, caused by *Dibotryon morbosum* or *Apiosporina morbosa*, contractors must develop and implement a site-and species-specific weed management plan, as per Alberta Weed Control Act and Weed Control Regulations. A localized weed survey is to be conducted between June and August at construction sites and along equipment movement corridors to identify any weed species present. All equipment entering the project site must be cleaned before arrival to prevent the spread of weed species. Removing and destroying wood infected with black knot fungus is the only way to control the disease once it is present. If black knot fungus is identified, the diseased wood must be immediately removed and destroyed, by burning, to prevent the spread of spores. Black knot to be disposed of at the Drumheller landfill.

As part of the ECO Plan the Contractor shall detail their proposed Black Knot Fungus control measures for removal and hauling of any black knot found on Site.

All costs associated with the implementation of Black Knot Fungus control measures will be considered incidental to the Work and no separate or additional payment will be made.

#### **4.33.5 Dutch Elm Disease**

To control the spread of Dutch Elm Disease, caused by *Ophiostoma ulmi* or *Ophiostoma nova-ulmi*, European Elm Bark Beetle (*Scolytus multistriatus*) and Native Elm Bark Beetle (*Hylurgopinus rufipes*), contractors must develop and implement a site-and species-specific weed management plan, as per Alberta Weed Control Act and Weed Control Regulations.

The Contractor shall carry out his or her operations in accordance with the provisions in the attached Alberta Government Dutch Elm Disease Prevention and Control Plan and the Best Management Practices outlined in the Alberta Dutch Elm Disease Prevention and Control Plan Management Plan which is available on-line at the following location:

<http://www.alberta.ca/dutch-elm-disease.aspx>

<http://www.alberta.ca/dutch-elm-disease-prevention-what-you-can-do.aspx>

Removing and destroying wood infected with Dutch Elm Disease / European Elm Bark Beetle / Native Elm Bark Beetle is the only way to control the disease once it is present. If Dutch Elm Disease / European Elm Bark Beetle / Native Elm Bark Beetle is identified, the diseased wood must be immediately removed and destroyed, by burning, to prevent spread. Dutch Elm Disease / European Elm Bark Beetle / Native Elm Bark Beetle to be disposed of at the Drumheller landfill. The Contractor shall haul any Dutch Elm Disease / European Elm Bark Beetle / Native Elm Bark Beetle found on Site and removed to a designated burning site for disposal.

As part of the ECO Plan, the Contractor shall detail his or her proposed Dutch Elm Disease/ European Elm Bark Beetle / Native Elm Bark Beetle control and removal measures. Details shall include any control measures recommended by the Municipality's Agricultural Fieldman.

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All costs associated with the implementation of Dutch Elm Disease / European Elm Bark Beetle / Native Elm Bark Beetle control measures will be considered incidental to the Work and no separate or additional payment will be made.

#### **4.34 ECO PLAN**

The contractor shall prepare and implement a project and site-specific Environmental Construction Operations (ECO) Plan in accordance with the Environmental Construction Operations (ECO) Plan Framework Municipal Version 2020 edition (available at <https://www.calgary.ca/uep/esm/contractor-environmental-responsibilities/eco-plans.html>) except for Section 2.3 Erosion and Sediment Control and Section 2.4 Municipal Tree Protection. The contractor's ECO Plan shall incorporate a Siltation and Erosion Control Plan (SECP) that includes site specific details of implementation and maintenance of erosion control measures. The Contractor shall submit the ECO Plan for review to the Consultant seven (7) calendar days prior to the Pre-Construction Meeting for comments.

The ECO Plan shall incorporate a Siltation and Erosion Control Plan (SECP), which is a condition of the *Water Act* approval and Fisheries and Oceans Canada (DFO) authorization, a copy of both is included in Section 8 Environment Permits and Authorizations. The Contractor shall incorporate all conditions into the ECO Plan. The Contractor shall submit the ECO Plan to the Consultant for further review and comments prior to starting work. No work shall commence until the Consultant and Owner have reviewed and all comments have been addressed to the satisfaction of the Consultant and the Owner.

The Contractor shall have no claim against the Owner for any adjustment, delay, hindrances, inconvenience or damage sustained by the Contractor due to turn-around time for review and comments from either the Consultant or regulatory agencies.

The recommended environmental protection plan measures outlined below are intended to form part of the ECO Plan that will be designed and implemented to protect the aquatic environment during construction and throughout the post-construction period. These measures would be intended to ensure compliance with the Federal *Fisheries Act* and prevent the harmful, alteration, disruption and destruction of fish habitat. Nothing in this Special Provision shall waive the Contractor's responsibility for Environmental Management in accordance with General Specification 1.2.50. The Contractor shall minimize siltation of the water body resulting from the construction of the Works.

Construction area boundaries and areas of concern shall be marked with conspicuous flagging tape to ensure public awareness as well as to remind construction personnel that the site is a sensitive area which shall not be disturbed beyond necessity. All individuals on site shall be orientated with respect to environmental protection measures.

All costs associated with ECO Plan Preparation including but not limited to the creation, reporting, editing; and all other related work will be paid by the submittal of costs towards the Cash Allowance for "ECO Plan Preparation". The Cash Allowance will be considered full compensation for all labour, materials, equipment, tools, and incidentals necessary to complete the Work to the satisfaction of the Consultant, and no separate or additional payment will be made.

##### **4.34.1 Control of Surface Water Run-off**

All exposed areas resulting from construction activities will require erosion control devices. Extra erosion and sediment control materials shall be on site during the construction period should a precipitation or snowmelt event occur at a vulnerable time.

If runoff or sediment laden water from the area disturbed by the construction exists, it should be diverted to a settling pond, sediment trap, or through a vegetated area to minimize erosion and sedimentation of the waterbody and/or storm drain inlets. All flow diversion will be conducted such that it does not adversely affect the land and in a manner such that it will not disturb sediments in the waterbody.

Stabilize all disturbed areas, including exposed soils and slopes, by:

- Immediately installing temporary erosion control measures to remain in place until vegetation or other long-term erosion control methods are fully established and functioning.
- Installing and placing long-term erosion control measures including, but not limited to, slope stabilization and re-vegetation.

Accumulated sediment shall be removed from sediment control devices as required to ensure effective treatment of surface runoff. The Contractor shall remove sediment in such a manner that no sediment is released downstream of the structure and also to ensure the device is not damaged. All costs associated with this work will be considered incidental and shall be included in the Cash Allowance for Care of Water and no separate or additional payment will be made.

The Contractor shall take care and handle hazardous materials in accordance with current regulations and the following:

- Hazardous material(s) stored on the project site shall be labelled according to the WHMIS regulations and will be suitably contained.
- All equipment working in and around the river shall use bio-degradable hydraulic fluid.
- All equipment servicing activities with the potential for accidental spills (i.e., oil changes and hydraulic repair) shall be conducted in a designated area.
- Used oil, filter and grease cartridges, lubrication containers, and other products of equipment maintenance shall be contained and disposed of at the nearest industrial waste facility.
- The Contractor shall fuel, service, wash and stage equipment a minimum of 100 metres from any watercourse. The Contractor shall store fuel within a containment berm that is at least 100 metres from any waterbody and that has a minimum capacity of 110% of the volume of fuel being stored. The Contractor shall control all runoff from washing, servicing and containment areas such that it does not enter any waterbodies.
- Ensure waste storage areas do not block drainage ways or that the wastes are at risk of being introduced into a watercourse. The Contractor shall dispose of all waste generated during construction at local landfill sites in accordance with local guidelines. The Contractor shall provide weather-proof and wildlife-resistant garbage containers for waste disposal.
- Hydraulic, fuel and lubrication systems of equipment shall be inspected to ensure that systems are in good condition and free of leaks.
- To ensure adequate response capability in the event of a fuel spill, fuel and service vehicles shall carry an approved hydrocarbon spill kit for ground spills, in addition to floating sorbent pads and booms for spill cleanup on open water.
- All fuel nozzles shall be equipped with functional automatic shutoffs and a minimum 10 kg of commercial grade adsorbent. Shovels and an empty fuel barrel will be carried on all fuel and service vehicles.
- All spills shall be reported in accordance with all federal and provincial reporting procedures.

- Contaminated soil and vegetation and used sorbent material shall be collected and disposed of at an approved industrial waste disposal facility.

The development, implementation, supply and maintenance of the ECO Plan shall be considered incidental to the Work and no separate or additional payment will be made.

#### **4.35 ENVIRONMENTAL PROTECTION DEVICES OR PROCEDURES**

General Specification 1.2.50.3.3 Maintenance of Environmental Protection Devices, is revised as follows:

Delete the last paragraph and replace with the following:

Payment for maintaining temporary and permanent erosion control devices, including the removal and depositing of silt from containment ponds, sediment barriers or other temporary sediment erosion control products, until the Construction Completion is issued by the Consultant, will be considered incidental to the Work, and no separate or additional payment will be made.

#### **4.36 FISH CAPTURE AND RELEASE**

Payment shall be paid by the submittal of costs towards the Cash Allowance for "Fish Capture and Release", regardless of the number of times the Contractor requires to complete this task. The fish salvage permit shall be obtained by the Contractor.

The Lump Sum price bid will be considered full compensation for all labour, materials, equipment, tools, and incidentals necessary to complete the Work to the satisfaction of the Consultant, and no separate or additional payment will be made.

All costs associated with determining the presence of fish will be considered incidental to the Work, and no separate or additional payment will be made.

Payment for Fish Capture and Release will be via Cash Allowance and will be paid as the Contractor submits billing for work or materials covered under the Cash Allowance.

#### **4.37 CARE OF WATER**

##### **4.37.1 General**

Nothing in this Special Provision shall waive the Contractor's responsibility for Environmental Management in accordance with General Specification 1.2.50. All risk associated as a result of changing flow conditions will remain the Contractor's responsibility.

In addition to ECO Plan submission requirements, the Contractor shall also prepare and submit a separate care of water plan signed and sealed by a professional engineer registered in the Province of Alberta to the Consultant for review and acceptance a minimum of 14 days prior the pre-construction meeting. The care of water plan shall outline the means and methods that will be used to control and manage water, including groundwater, and or ice at all times during the Work in accordance with all applicable environmental regulations and the Contract Drawings. The care of water plan shall include the design, installation and removal of temporary river diversion works, including returning the temporary river diversion works to original elevations.

The care of water plan will be reviewed by the Consultant solely to ascertain general conformance with environmental regulations, specifications and any applicable Special Provisions, Authorizations or Permits of the Contract. The Consultant's review and acceptance shall not be considered as relieving the Contractor of their full responsibility for the design, construction, monitoring, performance, and maintenance of the care of water plan.

The Contractor should develop their scope of work for the Care of Water based on the QAES Report, located in Section 8 Environmental Permits and Authorizations of this document, and the previously noted requirements of the ECO Plan.

Accumulated sediment shall be removed from sediment control devices as required to ensure effective treatment of surface runoff. The Contractor shall remove sediment in such a manner that no sediment is released downstream of the structure and also to ensure the device is not damaged. All cost associated with this work will be considered incidental and shall be included in Cash Allowance for Care of Water and no separate or additional payment will be made.

#### **4.37.2 In-stream Work**

The Contractor shall conduct an inspection program to ensure that all regulatory requirements are fulfilled and maintained during construction, and that the preventive environmental measures are in place as part of their ECO and Care of Water Plans.

The Contractor shall be aware of the following Restricted Activity Period (RAP) for the Red Deer River as it is classified as a Class C Water Body:

- Red Deer River:  
April 16 to June 30, annually

The information above is based on Alberta Environment and Parks' *Code of Practice for Watercourse Crossings* Calgary Management Area Map – Dated November 2012.

The installation of isolations is not permitted during the Restricted Activity Periods on the Red Deer River. Additionally, all isolations must be removed per the *Water Act* approval.

No additional payment or separate payment will be granted for additional Site Isolations installation and/or removals, mobilizations and/or demobilizations resulting from construction delays where the instream works are not completed within the allowable in-stream work period.

Site Isolation techniques may not remain in-stream between April 16 to June 30 of any given year. Excavation of the streambed within the flowing water of the Red Deer River is not permitted.

Construction within the wetted perimeter is expected to occur outside of the RAP. No work within the wetted perimeter shall occur during the RAP unless authorization for construction within this time period is obtained from Alberta Environment and Parks (AEP). Isolated works are permitted within the RAP.

Where a waterbody is dry or frozen to the bottom at the time of construction, the requirement to isolate the site does not have to be met. The Contractor shall conduct isolation of instream work in accordance with the following:

- General - The Contractor is solely responsible to determine the means and methods to gain access into the subject watercourse(s) in order to complete all associated with the completion of the Work. The Contractor shall clearly outline their anticipated isolation plans in their Care of Water Plan.
- Temporary Instream Isolation - The Contractor shall be responsible for the design of any temporary instream isolation measures, channel access berms used, and for the design of scour protection on exposed berm faces, in addition to the requirements of Special Provision 4.38 "Turbidity Monitoring and Reporting".
- Berm Construction Materials - The Contractor shall supply all materials required for the temporary instream isolation features. Isolation features shall be constructed from materials that do not easily erode or disperse in the channel and that can provide the desired water-tightness to facilitate instream construction and isolation that may be required for headslope and riprap installation. The Contractor is advised that suitable berm material shall be clean, non-toxic to fish and free of silt. The Contractor shall be solely responsible for the determination of the suitability of the materials selected for berm construction. The above does not preclude that all work shall be conducted in accordance with Special Provision 4.38 "Turbidity Monitoring and Reporting".
- Contingency Planning - If isolation requires pumps (e.g., flows < 1 m<sup>3</sup>/s), spare pumps and generators shall be on hand. Pumps shall be tested in advance to ensure that they are in good working order. At least 200 to 300 percent of planned pumping capacity shall be available on site in case of equipment breakdown or increases in flows beyond magnitudes originally anticipated. All pumps used for bypass pumping shall have capacity that exceeds expected flows. The bypass pump intake shall be installed where it will not disturb sediments in the waterbody.
- Control of Water - Any water entering an intake of a bypass pumping system must pass through a screen with openings that are no larger than 2.54 mm (a tenth of an inch) and at a velocity that does not result in the entrainment and entrapment of fish or fish fry. Discharge water shall be directed to prevent erosion of the area at and surrounding the outlet of the bypass pump by dissipating the energy to the released water using devices that include, but are not limited to, tarps, flip buckets, or appropriately sized granular materials. Water shall be pumped from the isolated construction site to a sediment trap or through a vegetated area to minimize the addition of sediment to the waterbody. The water diverted around the isolated site shall be returned to the waterbody downstream of the isolated site. Where ice is present on the waterbody, the diverted water shall be returned to the waterbody downstream of the isolated site, under the ice.
- Accommodation of Fish - Following the placement of isolation measures, fish salvage operations shall be conducted in accordance with Special Provisions 4.36 and within the isolated area using standard salvage techniques (i.e., electro-fishing, minnow traps, seine net, etc.). This activity will be conducted in accordance with a fish salvage permit, where required, to be obtained by the Contractor from AEP. Any fish found within the isolated portion of the construction site will be removed and released alive, without harm or destruction, to an area of the waterbody outside of the isolated area. An isolation method must not be used for longer than fourteen consecutive days unless upstream and downstream fish migration is accommodated. Equipment will be available on-site to collect and move fish.
- Removal of Isolation Dams - The re-introduction of water into the construction area isolated by the dam(s) shall be carefully planned to minimize the introduction of sediment into the water body. Before removing the dam(s), the following shall be completed:
  - The isolated area shall be thoroughly cleaned of any construction materials, aggregate stockpiles, or loose vegetation.
  - The channel bed surfaces will be restored to natural contours with appropriately sized material.

- Surface Water Quality - Surface water quality monitoring for total suspended solids will be required in accordance with Special Provision 4.38 during construction and shall be the responsibility of the Contractor. This work will be considered incidental to the work and no separate payment will be made under this Contract.

All instream works must comply with the 'Canadian Navigable Waters Act' signage and marking requirements, including:

- Signs stating, "Construction Ahead", legible from a distance of 50m, placed upstream and downstream of the work area, and
- That the perimeter of the work site is visible from sunset to sunrise and during periods of restricted visibility by the placement of yellow flashing lights, cautionary buoys with retro-reflective material, or cautionary buoys with yellow flashing lights.

#### **4.37.3 Protection of Fish**

During the course of the Work, any fish that are found within the isolated area are to be removed, without harm, to an area of the river immediately outside the isolated area by the Contractor's designated Qualified Aquatic Environment Specialists (QAES). The Contractor shall notify the Consultant immediately upon discovery of the fish within the isolated area. The Contractor shall co-operate fully with the QAES during their fish protection duties and will stop work at the Owner, Consultant or QAES's direction. No claim will be allowed for delays in construction due to these stoppages.

#### **4.37.4 Construction Sequencing**

The Contractor shall be fully responsible for all work associated with the river diversion channel and isolation, and all river isolation works including the re-establishment of the river to original conditions and cross-section prior to construction. If the Contractor's construction sequencing is such that the river diversion channel and isolation and/or river isolation works requires removal in accordance with the Environmental Permitting requirements and then reinstallation to complete the work, the river shall be re-established to original cross section / conditions each time the river diversion channel and isolation/river isolation is required.

#### **4.37.5 Measurement and Payment**

All costs associated with Care of Water including but not limited to the design, installation, supply of materials, maintenance, reporting, and removal of river isolations and diversions, site isolations including cofferdams, dikes, berms, sumps, pumping systems, and other protective and dewatering works required to permit construction of the Work in the dry; signage; warning lights; provisions for handling groundwater, rainstorm runoff, snow, snowmelt, and ice; installation and removal turbidity blankets; maintenance, including removal of sediment or siltation; and other temporary measures used on the project will be paid by the submittal of costs towards the Cash Allowance for "Care of Water". The Cash Allowance will be considered full compensation for all labour, materials, equipment, tools, and incidentals necessary to complete the Work to the satisfaction of the Consultant, and no separate or additional payment will be made.

The Contractor is responsible for the Care of Water at all times during construction. No separate payment outside of the Cash Allowance amount will be made for hindrances, delays, or damage caused by changing flow conditions, including groundwater flow, surface runoff, spring snow melt or any factors which are a result of weather or any other means.

All costs associated with the removal and reinstallation of river diversion channel and isolation and all river isolation works and any means or measures required, and including the re-establishment of the river to original cross section/conditions prior to construction and construction of the river diversion channel and isolations and river isolation works, regardless of the number of times required, will be considered incidental to the Care of Water works and no separate or no additional payment outside of the Cash Allowance will be made.

Payment for Care of Water will be via Cash Allowance and will be paid as the Contractor submits billing for work or materials covered under the Cash Allowance.

#### **4.38 TURBIDITY MONITORING AND REPORTING**

##### **4.38.1 General**

In accordance with the Regulatory requirements and the Environmental Authorizations for the Project, located in Section 8 Environmental Permits and Authorizations, the Contractor's operations will be subject to the Maximum allowable increase in Total Suspended Solids (Max-TSS) within the watercourse.

##### **4.38.2 Definitions**

*Instream Construction Activity* Any planned instream construction activity below the high-water mark that has the potential to result in additional turbidity in the watercourse. This would include, but is not limited to, the installation and removal of isolation measures (i.e., coffer dams, berms, silt curtains, etc.) placing of riprap in the water, bank excavation, etc.

*Isolated Construction Activity* Any planned construction activity that occurs when working in-stream within a stable site isolation measure (i.e., coffer dams, berms, silt curtain, etc.).

*Site Isolation* The placement, erecting or installation of a system whose function is to assure sediment produced from construction activities is contained to the isolated work site.

*Visually Conspicuous Plume* A plume of suspended solids that can be visually observed in the watercourse;

*Accidental Occurrence* Any situation, beyond the Contractor's control, that results in elevated turbidity levels in excess of the specified compliance limits. This would include situations like the unexpected breaching of a cofferdam due to flood conditions exceeding the design levels.

##### **4.38.3 Sampling and Testing**

The Contractor is responsible for all sampling and testing of Total Suspended Solids (TSS) as specified herein.

Prior to the start of Construction, the Contractor shall determine the normally occurring linear relationship between Total Suspended Solids (TSS) and turbidity in the watercourse as per the Conversion Relationship between Nephelometric Turbidity Units (NTU) into mg/L for Alberta Transportations' Turbidity Specification.

<https://www.alberta.ca/transportation-and-water-project-environmental-requirements.aspx>

Laboratory results and the linear relationship will be sent to the Consultant for review prior to initiating the program. During construction, the contractor shall:

- Measure suspended solids in NTU accurate to within 2% of the calibration solution of the equipment
- Convert NTU into mg/L to establish the relationship specific to the site; and
- Measure upstream and downstream NTU levels within a maximum period of 30 minutes of each other, or as directed by the Consultant, unless there is a sediment release (see monitoring frequency below).

The Consultant shall be afforded full access to facilities for random quality assurance inspection. The results of the Consultants’ quality assurance testing will serve to monitor the Contractor’s quality control program.

**4.38.4 Sampling Frequency**

Sampling shall occur from 30 minutes prior to daily construction activities until 30 minutes after construction activities have been completed or as specified in the Water Act approval. All sampling information shall be compiled in a daily report. The frequency of total suspended solid sampling by the Contractor shall be in accordance with the following:

Table 1: Sampling Frequency (or as specified in the Water Act Approval)

<b>Site Condition</b>	<b>Monitoring Frequency</b>
Instream Construction Activities and Accidental Occurrences	<ul style="list-style-type: none"> <li>• During construction hours, sample at a minimum of once every hour at all compliance transects.</li> <li>• If an exceedance or plume is observed, sampling shall be done within the plume until TSS levels have returned to acceptable background levels for two consecutive sampling events.</li> <li>• No sampling events shall occur during Accidental Occurrences until it is safe to do so.</li> </ul>
Isolated Construction Activities	<ul style="list-style-type: none"> <li>• When the Contractor is working within site isolation samples will be taken at all transects at three-hour intervals, during construction hours.</li> <li>• If sample results have not exceeded 5 mg/L above background levels for two consecutive active construction days, monitoring is no longer required unless a visually conspicuous plume is observed, or the isolation works are altered or as directed by the Consultant.</li> </ul>

**4.38.5 Compliance Monitoring**

Three measurement transects will be established to capture the zone of influence. Transects will be positioned at 60 m, 120 m and 180 m downstream of the active construction area with a minimum of three sampling points distributed across the active channel. For watercourses water depth less than 1 m, one measurement will be taken at 50% of the depth for each sample point along the transect. For watercourses greater than 1 m deep, two (2) measurements will be taken at 20% and 80% of water depth at each sample point along the transect and the results averaged or as specified in the Water Act approval.

#### 4.38.6 Visual Plume Monitoring

In the event that a visually conspicuous plume is observed, the Contractor shall immediately cease all Work, undertake mitigation measures, contact the Consultant, and promptly initiate a plume TSS monitoring program in accordance with the following:

- All Work that may have a direct or indirect effect on water quality will cease during all plume occurrences.
- A sample must be taken from the middle of the plume and as close to the source of the plume as possible (within safety limits).
- Monitoring will be done at all transects, and the plume sampling point, as often as feasible (a minimum of an hourly basis) and will continue until two consecutive monitoring events show no compliance exceedances.

#### 4.38.7 Compliance Criteria

Criteria are set by the current versions of the Environmental Quality Guidelines for Alberta Surface Waters, which are based on the Canadian Council of Ministers of the Environment.

Following completion of each TSS monitoring event, the Contractor will know if the construction activities are within compliance limits. This will be accomplished as follows:

- The results for each of the upstream sample points will be averaged to determine a background TSS (mg/L) for each event.
- The average TSS concentration (mg/L) shall be calculated for each of the downstream transects (cross sections). The average value for each transect will be compared to the background TSS concentration (mg/L). If the result for any transect exceeds 25 mg/L above the average background concentrations the project is not in compliance. The average value for any transect is calculated as the arithmetic average of the sample points in that transect.
- Any differences will be compared with the TSS Compliance Criteria to determine if the construction works (i.e., isolated or instream construction activities) are within compliance.

The Contractor's operations shall utilize equipment, labour, and procedures that ensure that the levels of suspended solids are maintained below the following levels:

The Contractor shall notify the Consultant at least 72 hours (3 calendar days) prior to the start of any Instream Construction Activity.

In the event a measurement is over the Exceedance Levels, or an Accidental Occurrence that results in a visually conspicuous plume of sediment, the Contractor shall cease all Work that may have a direct or indirect impact on water quality and immediately initiate mitigation actions. The Contractor shall immediately notify the Consultant and call the Alberta Energy and Environment Response line at 1-800-222-6514.

If an exceedance occurs during Isolated Construction Activity and a reduced sampling program is in effect, the sampling frequency must be reset to the requirements, as listed in Table 1, where the sampling frequency is to return to three-hour intervals during construction hours.

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#### **4.38.8 Record Keeping**

A detailed record of the sampling completed for the TSS monitoring program during Instream Construction Activity and Isolated Construction Activity shall be kept by the Contractor and reported to the Consultant in a weekly summary format. The Contractor shall ensure that daily sampling records are up-to-date and kept onsite at all times during the period in which the monitoring program is in effect. Upon completion of the Construction Activities, the Contractor shall also forward a final report containing all sampling and testing data to the Consultant. The weekly summary report shall include at a minimum:

- Brief description of the works and types of construction activities completed during the sampling period.
- Date and time of each sample.
- Weather conditions at the time of each sample.
- Changes of depth of flow at the upstream transect.
- Documentation of daily NTU instrument calibrations.
- Both turbidity (NTU) and TSS (mg/L) for each sample taken.
- The daily average value (mg/L TSS) of the upstream background samples.
- The daily average value (mg/L TSS) for each downstream transect (all three sites per transect combined).
- Documentation of all non-compliance instances, including the level of exceedance, the duration of exceedance, the mitigation measures taken, verification of the reporting of the exceedance and any related communications with regulators regarding the exceedance event, and future measures to be taken to avoid or control further exceedances.
- Description of events or circumstances that may have prevented or hindered completion of the TSS monitoring program.

#### **4.38.9 Measurement and Payment**

Payment for sampling, testing and reporting of TSS for Instream Construction Activity and Isolated Construction Activity will be paid by the submittal of costs towards the Cash Allowance for "Turbidity Monitoring and Reporting." Payment will be full compensation for all required work which shall include but is not limited to coordinating, scheduling, sampling, testing and reporting as required to establish the linear relationship between TSS and NTU as well as for each 24-hr. period; including labour, equipment, tools and incidentals necessary to complete the work to the satisfaction of the Consultant, regardless of the number locations or occurrences that are required.

All costs associated with sampling, testing and reporting of TSS associated with Accidental Occurrences will be considered incidental to the Work, and no separate or additional payment will be made.

Payment for Turbidity Monitoring and Reporting will be via Cash Allowance and will be paid as the Contractor submits billing for work or materials covered under the Cash Allowance.

#### **4.39 TEMPORARY CONSTRUCTION FENCING**

To restrict Landowner and Public access to the work area, the Contractor shall supply, install, maintain, and remove temporary construction fence along the private-property side of the work area and as designated by the Consultant.

Locations for the Temporary Construction Fence will be marked out prior to starting construction by the Consultant. The Contractor shall provide 48 hours advance notice to the Consultant to allow notification to property owners prior to installation of Temporary Construction Fencing.

The temporary construction fence shall be a minimum 1.83 m (6 ft) high construction grade fence. Each section of fence shall be interlocking to ensure the security fence is stable during normal weather conditions. The fence shall be installed straight and plumb. Temporary construction fence shall include warning signs for each property such as "Keep Out" and "Construction Area" or any additional signs which may be necessary to warn of conditions present. Gates shall be installed at dedicated locations determined by the Consultant to provide landowners access to the river.

Measurement and Payment for the supply, installation, maintenance, and removal of temporary construction fencing will be per meter, complete in place. Payment will be made at the unit price bid for per meter for "Temporary Construction Fence" and will be full compensation for the supply, installation, maintenance, and removal of the temporary construction fencing and warning signs, site clean-up of the fence, and all labour, equipment, tools and incidentals necessary to complete the Work to the satisfaction of the Consultant.

90% of the unit price bid will be paid once the temporary construction fence is acceptably installed as determined and inspected by the Consultant. The remaining 10% of the unit price bid will be paid once removal and clean-up has been completed to the satisfaction of the Consultant.

#### **4.40 ROADWAY SWEEPING WITHIN THE CONSTRUCTION LIMITS**

The Work consists of removing soil, gravel, and other debris from all road surfaces which the contractor utilizes in the performance of their work operations or as directed by the Consultant.

The Contractor shall supply a pickup broom and all debris shall be removed from road surfaces. Disposal of debris shall be the responsible of the Contractor at a disposal site subject to the approval of the Consultant.

Sweeping and cleaning / removal of debris, mud, gravel as a result of the Contractor's operations will be considered incidental to the Work and no separate or additional payment will be made.

#### **4.41 CLEARING**

The Consultant will provide drawings with the Clearing limits prior to starting Work. The Contractor shall be fully responsible for their operations within each property / work zone to ensure only trees identify by the Consultant are removed. Compensation to the Property Owner for any trees which are removed outside of these markings will be the responsibility of the Contractor.

Due to the timing of the Work, Clearing Operations may contradict with the *Migratory Birds Convention Act*. The Consultant will be responsible for completing all bird sweeps in advance of Clearing Operations in coordination with the detailed schedule, to be completed and provided by the Contractor. The Contractor shall notify the Consultant 7 days prior to starting Clearing operations to allow for bird and wildlife sweep(s) and any adjustments to the schedule due to findings of the bird and wildlife sweep(s). The Contractor shall have no claim against the Owner for any inconvenience, scheduling adjustment, delay or loss arising from compliance with the *Migratory Birds Convention Act* or resulting from a different exclusionary period imposed by Alberta Environment.

Under no circumstance will the Contractor be allowed to burn any trees, debris, or other woody debris resulting from their clearing operations within the project limits. The Town of Drumheller will not issue a burning permit for this project.

The Contactor, as directed by the Consultant, shall remove trees which are outside of the footprint of the project limits which need to be removed as part of the land acquisitions agreement. These trees shall be identified at the time of Clearing operations. The Contractor shall make provisions within their bid which are designated by the Consultant for removal for trees under the Clearing operations which may be leaning or in close proximity to buildings structure to be removed in safe and professional manner. Any damage done to private property and or buildings or any type shall be the sole responsible of the Contractor during the Tree Clearing operations. All tree stumps shall be removed and disposed of by the Contractor and will be considered incidental to the Clearing operations and no separate or additional payment will be made for this work. Depressions left by the removal of tree stumps shall be backfilled with approved backfill material.

Backfill material will be paid under Common Excavation or Borrow Excavation - Contractor's Supply as determined by the Consultant.

There will be no separate or additional compensation paid to the Contractor for method of removal of trees which are leaning or designated by the Consultant for removal as part of the Clearing operations.

As part of the 14-day advance notification to landowners, the Contactor shall coordinate the tree clearing operations within each individual lot, which shall include land under control by the Town of Drumheller, with the homeowner and Consultant for the potential stockpile site for stacking of cut trees and removal of all trees designated for removal. The homeowner has the option of accepting all or a percentage of trees which are to be removed, cut and stacked, or no trees to be stacked within the property. The Contractor shall have no claim against the Owner for percentage of trees which are to be cut up and stacked on individual properties, including land under control by the Town of Drumheller. All debris, including but not limited to branches and stumps resulting from the Clearing operations, shall be removed and disposed of by the Contractor as this work shall be considered incidental to the Clearing and no separate or additional payment will be made.

Payment shall be based on total area of tree removal measured in hectares based on actual horizontal measurement completed by the Consultant, including area outside of project limits as designated by the Consultant.

#### **4.42 REMOVAL AND DISPOSAL**

The Contractor shall take note of the locations and conditions of existing infrastructure located within the project limits identified for removal.

The Contractor shall remove and dispose of infrastructure as identified on the Contract Drawings, as noted in the Special Provisions and as directed by the Consultant, including all attached parts and connectors, and dispose of the debris thereof in accordance with Specification 2.17, "Removal of Miscellaneous Structures", or as otherwise directed by the Consultant.

During the demolition operations, all safety regulations shall be adhered to, and all necessary precautions shall be taken to protect the workers, the public, and both the public and private properties.

Payment for the work will be made on a lump sum basis, at the price bid for "Removal and Disposal". This payment shall be compensation in full for demolishing, breaking down, excavating, removing, hauling, disposing of material, including all landfill costs, backfilling, and all labour, equipment, tools and incidentals necessary to complete the work required for the demolition, removal and disposal of these structures, in accordance with the specifications or as directed by the Consultant.

#### **4.43 TEMPORARY ROADS**

Design and construct all temporary roads including access, haul and detour roads, temporary parking areas, and drainage structures required for construction operations.

Provide detours required for the execution of the Work.

Confine construction traffic to the limits of temporary roads and avoid disturbances to adjacent lands. Contain hauled material in vehicles, and keep routes clear of mud, fallen rock, and debris resulting from construction operations.

Control dust, remove snow, and maintain road surfaces daily or at frequent intervals depending upon weather or traffic and as required by The Owner.

Reclaim all temporary roads when they are no longer required. Scarify, grade to original contours, cultivate, replace topsoil, and seed to grass.

#### **4.44 NON-WOVEN GEOTEXTILE FILTER FABRIC**

Currently, as noted on the Contract Drawings, non-woven geotextile filter fabric is not specified under the riprap bedding gravel as part of the Heavy Rock Riprap installation. Depending upon site conditions, there may be situations due to soil and site conditions where the Consultant will direct the Contractor to supply and place non-woven geotextile filter fabric prior to the placement of riprap bedding gravel. The Contractor shall supply and install non-woven geotextile filter fabric in accordance with Alberta Transportation's Standard Specifications for Bridge Construction, Section 10, Heavy Rock Riprap.

The Contractor shall supply and install filter fabric which meets the requirements of Type C as outlined in Specification 5.31 Geotextile 5.31.2. Materials. Supplier shall be a product which is currently on Alberta Transportation Product List at the time of installation.

Measurement for payment for non-woven geotextile filter fabric will be the square meter (m<sup>2</sup>) of ground covered, excluding the area associated with laps or stitching, and acceptably placed, measured to the nearest 1 m<sup>2</sup>.

Payment will be made at the unit price bid for "Non-Woven Geotextile for Heavy Rock Riprap – Supply and Install" regardless of classification of riprap placed. The price will be considered full compensation for supply and installation of the geotextile filter fabric, and all labour, materials, equipment, tools, and incidentals necessary to complete the Work to the satisfaction of the Consultant.

#### **4.45 RIPRAP BEDDING GRAVEL**

The Contractor shall supply and place riprap bedding gravel in accordance with Alberta Transportation's Civil Works Master Specification for Construction of Provincial Water Management Projects, Section 002371, Bedding Gravel Placement, and Section 002330, Earthwork Materials, as included in Section 6 Supplemental Specifications and the following additional requirements.

References to "Gravel Armour 5C" within these Specifications shall be synonymous with riprap bedding gravel.

Riprap bedding gravel shall meet the following gradation:

Gravel Armour 5C Designation:

Effective Particle or Sieve Size (mm)	Percent Passing by Mass (%)
200	100
150	85 – 100
100	60 – 85
40	30 – 55
20	15 – 30
10	5 – 15
5	0 – 5

Less than 12% loss of weight after 5 cycles in accordance with the requirements of CAN/CSA-A23.2-9A.

Measurement for payment for Riprap Bedding Gravel will be the cubic metre (m<sup>3</sup>) acceptably placed, measured to the nearest 1 m<sup>3</sup>.

Payment will be made at the unit price bid for "Riprap Bedding Gravel" and will be full compensation for royalties; permits; sampling and testing; transportation; supply and placement; and all labour, equipment, tools, and incidentals necessary to complete the Work as shown on the Drawings and to the satisfaction of the Consultant.

#### **4.46 PIPE BEDDING GRAVEL**

The Contractor shall supply and place pipe bedding gravel in accordance with Alberta Transportation's Civil Works Master Specification for Construction of Provincial Water Management Projects, Section 002371, Bedding Gravel Placement, and Section 002330, Earthwork Materials, as included in Section 6 Supplemental Specifications and the following additional requirements.

References to "40 mm Drain Rock" within these Specifications shall be synonymous with pipe bedding gravel.

Pipe bedding gravel shall meet the following gradation:

40 mm Drain Rock Designation:

Effective Particle or Sieve Size (mm)	Percent Passing by Mass (%)
40	100
5	0 – 10
2.5	0 – 5
0.08	0 – 5

Payment will be made as part of the unit price bid for "Concrete Pipe – Supply and Install" or "Concrete Pipe – Salvage and Install" and will be full compensation for royalties; permits; sampling and testing; transportation; supply and placement; and all labour, equipment, tools, and incidentals necessary to complete the Work as shown on the Drawings and to the satisfaction of the Consultant.

#### **4.47 GRAVEL SURFACING**

The Contractor shall supply and complete gravel surfacing in accordance with Alberta Transportation's Standard Specifications for Highway Construction Section 3.3 and the following additional requirements.

References to "Road Gravel Zone 4B" within these Specifications shall be synonymous with Road Surface Gravel.

Road Surface Gravel shall meet the following gradation:

Road Gravel Zone 4B:

Effective Particle or Sieve Size (mm)	Percent Passing by Mass (%)
20	100
10	35 – 77
5	15 – 55
1.25	0 – 30
0.08	0 – 12

At least 40% by mass of the particles retained on the 5 mm and larger sieves to have 2 or more fractured faces.

#### **4.48 FILL PLACEMENT**

In addition to the requirements of Specification 2.3, Grading the following shall apply; if there is a discrepancy, the stricter requirements will apply:

##### **4.48.1 Preparation**

Remove debris, snow, ice, water, and loose material prior to starting fill placement. Do not place fill material when the material, the foundation, or the surface on which it would be placed is frozen. Moisten, if required, and scarify the foundation surface to a minimum depth of 200 mm to obtain a good bond prior to placing the first lift of fill. Scarification of bedrock foundation surfaces is not required. Grade and compact the scarified foundation surface to the same density specified for the overlying fill.

##### **4.48.2 Protection**

Suspend fill placement operations at any time when, in the opinion of the Consultant, work cannot be performed in accordance with the specifications on account of rain, flooding, cold weather, or other unsatisfactory conditions. Immediately prior to any suspension in fill operations, slope the fill surface as specified and roll with rubber tire equipment or smooth cylindrical roller so as to leave the surface area in a smooth, even condition for drainage.

Protect compacted fill and foundation surfaces that have been prepared for receiving fill from freezing by using a temporary layer of soil or insulating materials, or other means authorized by the Consultant. Remove protection only when ready to place fill, and authorization is provided by the Consultant. If deemed necessary by the Consultant, condition, rework, and re-compact or remove and replace any portion of the fill or foundation that has suffered a reduction in quality due to drying, frost, rain, or any other reason to the specified requirements before placing succeeding layers. Reroute construction traffic away from or stabilize areas to the satisfaction of the Consultant where the fill or ground surfaces begin to rut or exhibit instability. Do not allow construction traffic, including foot traffic, to cross unless adequate measures, acceptable to the Consultant, are in place to prevent contamination, degradation, and over compaction of these materials.

##### **4.48.3 Fill Placement**

Do not place fill material on any surface until the prepared surface has been inspected by the Consultant. Rectify any defects, including any identified by the Consultant.

Provide fill from material excavated from areas of Common Excavation and Borrow Excavation. Schedule, sequence, and conduct operations to make the best use of all excavated materials, protect and prevent suitable materials from becoming unsuitable, and minimize the volume of Borrow Area Excavation.

Construct fill zones at the locations, and to the lines, grades, slopes, and elevations specified in the Contract Documents, or as established by the Consultant, using fill materials that are placed, conditioned, and compacted to the specified requirements. Overbuild final fill slopes and then trim them to the lines, grades, slopes, and elevations specified in the Contract Documents.

Maintain the top surface of fill zones approximately horizontal. During spreading and compaction, provide the surface of the fill zone with a gentle transverse gradient of 3% to 5% so that water from precipitation will drain freely toward the extremities of the fill zone but away from any filter materials.

Place and spread fill materials in continuous and approximately horizontal layers of uniform thickness in such a manner as to prevent segregation and stratification and to obtain a homogeneous mass. Place, spread and compact fill materials in a continuous operation to avoid freezing of the materials before the specified compaction can be achieved.

Place and spread fill for the barrier system in a direction parallel to the barrier centreline to minimize the potential for formation of preferential seepage paths.

Prior to or during fill placement operations, Contractor to mix or blend material as required to obtain a consistent fill material, and to scarify, blend, condition and break up fill materials to the full depth of the uncompacted lift.

Commence placement of fill materials at the lowest elevation of the foundation, and progress in an upslope direction

Moisten each previously placed lift, if necessary, and work with discs to a minimum depth of 50 mm to provide a bonding surface prior to placing the overlying lift of fill material except when, in the opinion of the Consultant, such work cannot be performed because of cold weather.

Place fill materials in layers not exceeding the loose thickness specified in Special Provision 4.48.6.

Join new fill onto all natural, excavated, or fill slopes by terracing or stepping into the slopes. Stagger fill joints to minimize the potential for preferred seepage paths in any direction

Do not place fill material adjacent to cast-in-place concrete structures until at least 14 days after concrete placement or until 75% of the specified compressive concrete strength has been achieved.

Place fill material equally on all sides of structures and pipes to minimize unbalanced loading. Apply compaction effort for a minimum horizontal distance of 600 mm on each side of joints in the fill zones.

During placement and compaction operations, direct the movement of equipment to obtain uniform coverage. Disc and re-compact areas of non-uniformly compacted ridges or troughs resulting from placement or spreading equipment

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Unless otherwise authorized by the Consultant, maintain no more than 1000 mm maximum difference in elevation between adjacent fill zones, and maintain the temporary slopes within fill zones no steeper than 5H:1V.

#### **4.48.4 Moisture Control**

Compact each layer of fill material within the moisture content limits specified in Special Provision 4.48.6.

Add water to the fill material when its moisture content is below that specified. Use methods that permit water to be added in controlled amounts and which do not cause finer materials to be washed out. Work the water into the fill material until the specified moisture content is uniformly obtained throughout the material.

When the moisture content of the fill material exceeds the specified limits, dry the fill material prior to compaction by spreading, discing, and harrowing the fill material until the specified moisture content is uniformly obtained throughout the material.

Add sufficient quantities of water to sand and gravel fill materials during compaction, even when moisture content limits have not been specified, to achieve the required densities.

Do not add water to the fill material or perform drying operations such as spreading, discing, and harrowing when, in the opinion of the Consultant, such work cannot be performed because of cold weather. Mixing of suitable materials having different in situ moisture contents to obtain the required moisture content is permitted. Use discs or other methods to obtain a consistent material with the required uniformity of moisture content.

#### **4.48.5 Compaction Equipment**

Use compaction equipment of the type, size, and efficiency capable of achieving the densities specified in Special Provision 4.48.6.

Unless otherwise authorized by the Consultant, use the following types of equipment to compact the corresponding fill materials:

- Sheepsfoot roller for fill. Use a sheepsfoot roller consisting of two or more non-vibratory drums with each drum at least 1500 mm in diameter and having a fully ballasted operating mass of at least 6000 kg/m of drum length. Provide individual roller drums between 1500 mm and 2000 mm in length, with the space between drums not exceeding 400 mm. Provide roller feet that are between 230 mm and 280 mm long with a minimum centre-to-centre spacing of 230 mm and spread uniformly over the surface of the drum with at least 1 foot for each 60000 mm<sup>2</sup> (0.06 m<sup>2</sup>) of roller surface. The end area of each foot is not to exceed 6400 mm<sup>2</sup>. Tow the roller at a speed not exceeding 5 km/h, using equipment that does not leave compacted surfaces that prevent uniform penetration by the roller feet.
- Vibratory padfoot roller for fill with a minimum operating mass of 10000 kg and capable of exerting a minimum vibratory centrifugal force of 230 kN. Use a vibratory padfoot roller in areas that are inaccessible to the sheepfoot roller.

In areas that are not accessible to the specified compaction equipment, or which are within 1000 mm of structures and 600 mm of pipes, or other items susceptible to compaction induced damage, reduce the lift thickness, remove stones larger than 80 mm, and compact fill materials with hand operated pneumatic or mechanical tamping equipment.

#### 4.48.6 Compaction Schedule

Lift thickness, moisture content limits, and compaction requirements and densities to conform to the following:

Fill Material	Maximum Loose Lift Thickness <sup>(1)</sup> (mm)	Moisture Content Limits <sup>(2)</sup>	Minimum Number of Passes <sup>(3)</sup>	Density Limits <sup>(4)</sup>
Impervious Fill	150	-1% to +2%	6	≥97% SPMDD
Borrow Excavation	200	-1% to +2%	6	≥97% SPMDD
Riprap Bedding Gravel	300	N/A	4	N/A
Pipe Bedding Gravel	300	N/A	4	N/A

- (1) For areas specified in Special Provision 4.48.5 as requiring hand operated pneumatic or mechanical tamping equipment, reduce loose lift thickness to 100 mm and compact each lift using pneumatic or mechanical hand tamping equipment.
- (2) Moisture content range above (+) or below (-) Optimum Moisture Content (ASTM D698). Moisture content as determined by ASTM D2216.
- (3) A single pass means the complete coverage of the fill lift, overlap required for complete coverage will not be considered to provide any portion of a subsequent or previous pass. Achieve both specified density and the specified minimum number of passes with compaction equipment.
- (4) Standard Proctor Maximum Dry Density (SPMDD) as determined by ASTM D698. Maximum Vibrated Density (MVD), as determined by ASTM D4253.

#### 4.48.7 Placement Tolerances

Provide finished fill surfaces that are smooth, regular, and uniform. A deviation measured normal to the finished surface, of 0 mm to + 100 mm will be permitted between the finished surface and the lines, grades, slopes, and elevations specified in the Contract Documents or as established by the Consultant.

Limit the maximum rate of change in deviation from the specified grade of any surface to a ratio of height to length of 1:50. The height and length of the gradual irregularity will be measured normal and parallel, respectively, to the specified grade.

#### 4.48.8 Measurement and Payment

All costs associated with Fill Placement shall be included in the unit price bid for applicable work acceptably completed by the Consultant.

### **4.49 SURFACE DRAINAGE STRUCTURES – STATIONS 1+080, 1+246, 1+405**

As noted within the Contact Drawings C-213, C-214, & C-215 the Contractor shall construct drainage structures as detailed and as directed by the Consultant.

The Contractor shall supply all materials including precast manhole chamber sections, sluice gates, flap gates, entrance hatches, manhole connection materials, and all other materials needed to construct per the Drawings. A completed job is called for, therefore any labour, material, equipment, tool or incidental item not specifically mentioned, but necessary for the completeness, will be considered incidental to the Work and no separate or additional payment will be made.

Payment for the supply and installation for Surface Drainage Structures per location will be made at the lump sum price for "Surface Drainage Structure" for each surface drainage structure identified. Payment will be considered full compensation for all labour, equipment, tools and incidentals necessary to complete the Work to the satisfaction of the Consultant.

#### **4.50 MANHOLE STRUCTURES – LOCKABLE LIDS**

All manholes, regardless of location or type, shall include a lockable lid system. The cost for providing the lockable lids will be considered incidental to the supply and installation of the manhole and no separate or additional payment will be made.

The Contractor shall ensure that manhole covers do not reference or include graphics pertaining to any location or owner other than The Town of Drumheller.

#### **4.51 DIKE CROSS DRAINAGE – TIDEFLEX VALVES**

As noted within the Contact Drawings C-213, the Contractor shall construct drainage structures as detailed and as directed by the Consultant.

A single unit will consist of a Tideflex Series TF-1 Valve or approved equivalent and will include all materials, mounting hardware and accessories required to complete the job to the satisfaction of the Consultant.

Payment will be made as part of the unit price bid for " Tideflex Valve – Supply and Install" for each diameter specified, as applicable, and will be full compensation for all labour, equipment, tools and incidentals necessary to complete the Works as shown on the Drawings and to the satisfaction of the Consultant.

#### **4.52 CONCRETE FLARED ENDS**

The Contractor shall supply and install flared end outlets in accordance with the applicable requirements of Specification 2.18 "Concrete and /or Corrugated Steel Storm Sewer".

The Contractor shall supply and install flared ends at the ends of all storm sewer pipe leads that terminate within the side slope or slope protection zone. The flared ends shall be completed with the appropriate bar screen.

Measurement will be based on the number of flared ends sections supplied and installed.

Payment for this Work will be made at the unit price bid for "Concrete Flared End – Supply and Install" for each diameter of flared end section specified. This payment will be full compensation for the supply, excavation, installation, backfill, compaction, concrete toe wall, concrete thrust block, if necessary, rodent trap, bar screen and all labour, equipment, materials, tools and incidentals necessary to complete the Work to the satisfaction of the Consultant.

#### **4.53 CONCRETE HEADWALLS**

The Contractor shall supply and install headwalls in accordance with the applicable requirements of Specification 2.18 "Concrete and /or Corrugated Steel Storm Sewer".

The Contractor shall supply and install headwalls at the ends of all storm sewer pipe leads that terminate within the side slope or slope protection zone as shown in the Drawings. The headwall shall be completed with the appropriate bar screen or flap gate (separate pay item).

Measurement will be based on the number of headwall sections supplied and installed.

Payment for this Work will be made at the unit price bid for "Concrete Headwalls – Supply and Install" for each diameter of headwall section specified. This payment will be full compensation for the supply, excavation, installation, backfill, compaction, concrete toe wall, concrete thrust block, if necessary, rodent trap, bar screen and all labour, equipment, materials, tools and incidentals necessary to complete the Work to the satisfaction of the Consultant.

#### **4.54 CONCRETE PIPE AND HEADWALL SALVAGE**

The Contractor shall salvage existing concrete pipe and headwalls and re-install in accordance with the Drawings and applicable requirements of Specification 2.18 "Concrete and /or Corrugated Steel Storm Sewer".

Concrete pipe and headwalls should be inspected to ensure in good condition prior to reuse.

The headwall shall be completed with the appropriate new bar screen if currently not outfitted with one. This will be considered part of payment for this bid item.

Measurement will be based on the number of headwall sections salvaged and installed or the length in meters of pipe salvaged and installed.

Payment for this Work will be made at the unit price bid for "Concrete Headwalls – Salvage and Install" or "Concrete Pipe – Salvage and Install" for each diameter of headwall/pipe section specified. This payment will be full compensation for the salvage, excavation, installation, backfill, compaction, concrete toe wall, concrete thrust block, if necessary, rodent trap, bar screen and all labour, equipment, materials, tools and incidentals necessary to complete the Work to the satisfaction of the Consultant.

#### **4.55 CONCRETE PIPE – SUPPLY AND INSTALL**

Concrete pipe installation will also cover any bends or elbows required to fit pipe per alignment on the drawings.

Payment for this Work will be made at the unit price bid for "Concrete Pipe – Salvage and Re-install" or "Concrete Pipe – Supply and Install" for each diameter of pipe section specified. This payment will be full compensation for the supply, excavation, installation, backfill, compaction, concrete toe wall, concrete thrust block, if necessary, pipe bedding gravel supply and installation, and all labour, equipment, materials, tools and incidentals necessary to complete the Work to the satisfaction of the Consultant.

#### **4.56 IMPERVIOUS FILL – DRAINAGE STRUCTURE**

References to "Medium Plastic Clay" within these Specifications shall be synonymous with Impervious Fill.

As noted within the Contract Drawings, the Contractor shall supply and place impervious fill material adjacent to the concrete drainage structure. This material shall meet the following specifications:

- Free from organic, deleterious and / or frozen materials;
- Medium plasticity clay till as classified by Unified Soils Classification system as modified by PFRA with a maximum size of 150 mm, minimum plasticity index of 8% (as determined by ASTM D4318) and a minimum of 50% passing the 80um sieve size;
- High plasticity clays with a liquid limit greater than 50% will not be permitted.

Prior to hauling Impervious Fill, the Contractor shall submit evidence of compliance to the above requirements. The Contractor shall refer to Alberta Transportation Standard Specification 2.3 Grading Subsection 2.3.4.7.5.2 Test Methods for required test requirements; points 1, 2, and 3 are the minimum submission requirements. The Consultant, at their discretion, may request further sampling and testing. All requested testing will be considered incidental, and no separate or additional payment will be made.

Measurement for payment of "Impervious Fill – Contractor Supply" will be by the cubic metre measured by neat lines by the Consultant acceptably placed, measurement to the nearest 1 m<sup>3</sup>.

The quantity to be paid for will be based on the dimensions of impervious fill specified on the Drawings and as determined by the Consultant at the time of construction. Impervious Fill placed outside of the plans limits on the Drawings will not be paid for unless placement in these additional areas has been reviewed and accepted by the Consultant.

Payment will be made at the unit price bid for "Impervious Fill – Contractor Supply" and will be full compensation for royalties; permits; sampling and testing, excavation, loading, hauling, placing, conditioning, compaction, trimming; and all labour, material, equipment, tools, and any incidentals necessary to complete the Work as shown on the Drawings and to the satisfaction of the Consultant.

#### **4.57 SHORE BANK RESTORATION AND PROTECTION**

As noted within the Contract Drawings, areas along the Red Deer River shall have shore bank restoration and protection completed to stabilize or reconstruct existing banks. This work shall include but is not limited to the following: isolation of river, care of water, fish capture and release, excavation and backfill, supply and placement of turf reinforcement matting (TRM), granular bedding material, clearing and grubbing, supply and placement of heavy rock riprap Class 1M, or 2, trimming, site clean, and removal of isolation works.

The Consultant reserves the right to modify the work area in the following manner: overall length, start or finish location, and or type of work to be performed as noted on the drawings.

Measurement for payment will be based on actual quantities acceptably placed by the Consultant.

The Contractor shall, as part of the overall construction schedule, provide a detail work plan for the proposed work. This shall include 7-day advance notice to each property owner where shore bank restoration and protection will be completed, to be coordinated through the Consultant. Temporary Work Space agreements are in place with each property owner. Contractor and Consultant shall review each location prior to starting this activity to mark out limits of work, including tree removal and / or tree protection.

All costs associated with care of water, installing, maintaining, and removal of river isolation work, turbidity monitoring, testing and reporting, determining presence of fish, fish capture and release will be paid in accordance with the applicable Cash Allowance items for "Care of Water", "Turbidity Monitoring and Reporting" and "Fish Capture and Release" as discussed within these Specifications.

Measurement and Payment will be based on the individual items that make up the shore bank protection and each item will include and all labour, equipment, tools, any incidentals necessary to complete the work to the satisfaction of the Consultant.

The Contractor shall have no claim against the Owner for any revisions made to the overall length, start or finish location, and or type of work to be performed of Shore Bank Restoration and Protection Work, including but not limited to the following: "Care of Water", "Turbidity Monitoring and Reporting," or "Fish Capture and Release". No additional compensation will be paid by the Owner for any delay, inconvenience or damage sustained by the Contractor which is caused by the adjustment to the modification to Shore Bank Restoration work outside of the respective Cash Allowance.

#### **4.58 COMMON FILL - TERMINOLOGY**

Common Fill is used throughout the contract drawings to indicate areas of backfill, not material type to be used. The terminology is a generic wording and shall be defined as approved backfill material only. Any backfill material is subject to the approval of the Consultant. The following material type shall be used, Borrow Excavation – Contractor's Supply, and or Common Excavation, as approved by the Consultant.

In areas where the toe of the flood protection structure is below existing ground and not within the bed and shore, existing excavation material may be used as backfill subject to the approval of the Consultant. Areas where the toe of flood barrier structure is within the bed and shore, existing excavated material may be used, subject to the approval of the Consultant.

If this sequence of work occurs, payment will be paid under bid item "Common Excavation" per cubic meter for excavation and a second payment per cubic meter for backfill, as required. If the excavated material does not meet the requirements of approved backfill, payment will be made per cubic meter for "Common Excavation – Waste" and "Borrow Excavation – Contractor's Supply" for any backfill material required.

#### **4.59 TOPSOIL - TERMINOLOGY**

Topsoil is used throughout the contract drawings to indicate areas where organic material is to be placed, not material type to be used. The terminology is a generic wording and shall be defined as per Alberta Transportation Standard Specification "2.3.2.3 Description of Topsoil and Subsoil". Any topsoil material is subject to the approval of the Consultant. The following material type may be used, Common Excavation which has been salvaged and stockpiled and has been deemed by the Consultant useable material for Topsoil or "Topsoil – Contractor Supply".

The Consultant will have the final determination of type of material to be used in areas where topsoil as noted on the drawings is to be placed. Contractor shall be paid under the applicable bid items.

#### **4.60 BORROW EXCAVATION - CONTRACTOR'S SUPPLY**

The Contractor shall supply all borrow excavation required for the project through one of the sources provided in the attached Berm Material Borrow Source Memo (Parkland GEO, March 2022). The Work shall be carried out in accordance with Section 2.3, Grading, of the Standard Specifications for Highway Construction.

Borrow Excavation – Contractor's Supply shall be in accordance with the specifications outlined in the *Berm Material Borrow Source Memo* and the following:

1. Within 1000 mm of structures and 600 mm of pipes, remove stones larger than 80 mm from Common fill.
2. Any organic content present in granular or cohesive fill soil shall not be concentrated in layers or pockets within the fill.

The Contractor shall be required to submit all test results 7 calendar days prior to starting hauling to the Consultant for review and approval. The following tests shall be required:

- Determining the Liquid Limit of Soils AASHTO Designation T 89;
- Determining the Plastic limit and Plasticity Index of Soils AASHTO Designation T 90;
- Particle Size analysis of Soils AASHTO Designation T 91; and
- Moisture-Density Relation, Standard Compaction, -5,000 um Material ATT-23.

ATT – Alberta Transportation – Field Test Procedures

The Consultant reserves the right to request additional testing based on composition of borrow excavation. This work shall be considered incidental to the work and no separate or additional payment will be made.

All costs associated with sampling and testing shall be considered incidental to the work and no separate or additional payment will be made.

If in the opinion of the Consultant, borrow excavation composition within the provided sources of borrow changes, the Consultant will request additional testing to ensure the material is acceptable. Any costs associated with sampling and testing shall be considered incidental to the work and no separate or additional payment will be made.

The Contractor shall have no claim against the Owner for any additional testing of the provided borrow source. No additional compensation will be paid by the Owner for any delay, inconvenience or damage sustained by the Contractor which is caused by the sampling and testing of borrow material.

#### **4.61 GROUNDWATER**

Contractor shall make provisions within their tender bid for the possible effects of ground water within but not limited to the following: working limits, Town of Drumheller, Red Deer River, and surrounding area. Contractors shall thoroughly investigate and have knowledge of the groundwater and the possible effects during construction of the works as contained within the tender documents.

All excavations shall be kept in a dewatered state / condition, to the bottom of the excavation, until all backfilling is acceptably completed.

All costs associated with maintaining the control and management of ground water infiltrating into the work area, including excavated areas; pumping of groundwater; and the effects of groundwater, including changes in river elevation, rain, effects of rain and runoff, snow, snow melt, spring runoff, and all other sources of water below or above ground will be considered incidental to the Work, and no separate or additional payment will be made.

No additional compensation will be paid by the Owner for any delay, inconvenience or damage sustained by the Contractor which is caused by the effects of groundwater to the progress of work.

#### **4.62 COMMON EXCAVATION – WASTE**

Based on design quantities in certain zones, there may be Common Excavation which will be designated by the Consultant as "Common Excavation – Waste". This material, as classified by the Consultant, will be considered as non-useable for construction of landscape barriers, backfill adjacent to newly constructed concrete structures, or other locations where Common Fill is called for on the typical cross-section. The

Contractor shall assume ownership of this material and shall haul it from the project to their own storage site or otherwise dispose of it.

The Contractor shall have no claim against the Owner for any adjustment to grading quantities regardless of designation or classification. No additional compensation will be paid by the Owner for any delay, inconvenience or damage sustained by the Contractor which is caused by the adjustment or classification of grading quantities.

**4.63 CHANNEL EXCAVATION**

Contrary to Alberta Transportation’s General Specifications for Highway Construction, Specification 2.3 Grading, 2.3.3. Classes of Excavation, Subsection 2.3.3.2 Channel Excavation, the definition for Channel Excavation will not apply for any type of excavation along the banks of the Red Deer River. All excavation required for the construction of the flood barrier structure or bank stabilization, regardless of type of barrier or stabilization constructed, shall be classified as “Common Excavation” or “Common Excavation – Waste” or “Rock Excavation” as defined within these Specifications. Payment will be per applicable bid item.

**4.64 OVERHAUL**

For this Contract, Overhaul will not be measured or paid for. All costs associated with any required overhaul shall be included in the unit price bid for all types of excavation.

**4.65 COMMON AND/OR BORROW EXCAVATION LOADED TO TRUCKS:**

Regardless of the type of equipment used, no separate or additional payment will be made for Truck Haul of Common and/or Borrow Excavation Load to Trucks.

**4.66 TOPSOIL – CONTRACTOR SUPPLY**

Imported topsoil may not be required at this site, but the Contractor shall supply topsoil if required for the project which shall meet the requirements identified below. The Contractor shall submit the source of all topsoil supplied as part of the Work.

Topsoil shall meet the following requirements: fertile natural loam, capable of sustaining healthy growth; loose and friable; free of subsoil, clay lumps, stones in excess of 20 mm, live plants, roots or any other deleterious material greater than 20 mm diameter. Topsoil shall be free of litter, foreign matter and toxic materials harmful to plant growth. Topsoil containing construction debris, sod clumps, quack grass or other noxious weeds is not acceptable. Topsoil supplied to site shall meet the following requirements:

- Minimum 6% organic matter.
- 
- Acidity/alkalinity shall range from 5.9 pH to 7.0 pH.
- Electrical Conductivity (E.C.) - level of soluble salts shall not exceed 1.5 dS/m.
- Texture: “Loam Topsoil” in accordance with Canadian System of Soil Classification.
- Topsoil shall fall within an allowance of ±2% of the values stated in the table below:

Soil	Sand (%)	Silt (%)	Clay (%)	Class
Topsoil	35	35	30	Loam

Measurement for Topsoil – Contractor Supply will be by the cubic metre (m<sup>3</sup>), complete in place to the satisfaction of the Consultant.

When required, a conversion factor of  $1 \text{ m}^3 = 1.35 \text{ tonne}$  will be used.

Payment will be made at the unit price bid per  $\text{m}^3$  for "Supply and Place Screened Topsoil" will be full compensation for supply, loading, hauling, unloading, placing, conditioning, and site clean-up, including all labour, equipment, tools, and incidentals necessary to complete the Work to the satisfaction of the Consultant.

All costs associated with the quality control testing will be considered incidental to the work and no separate or additional payment will be made.

#### **4.67 TOPSOIL THICKNESS**

As noted on the contract drawings topsoil has a designated a thickness of 100 mm. This thickness is an estimate and will be adjusted depending upon quantity of actual topsoil and subsoil salvage during construction operations. The Consultant will have the final decision on the thickness of the topsoil to be placed on finished slopes.

The Contractor shall have no claim against the Owner for any adjustment to topsoil thickness or quantities. No additional compensation will be paid by the Owner for any delay, inconvenience or damage sustained by the Contractor which is caused by the adjustment of topsoil and grading quantities.

#### **4.68 PREPARE SUBGRADE SURFACE**

The Contractor shall prepare the subgrade surface in accordance with Alberta Transportation's Standard Specifications for Highway Construction, Specification 3.1, Subgrade Preparation for each applicable layer and as directed by the Consultant. Final measurement will be based on actual area of surface preparation in accordance with specifications and drawing requirements and to the satisfaction of the Consultant.

#### **4.69 STANDARD ACCESS GATE – SALVAGE AND RE-INSTALL**

The Contractor shall salvage and re-install existing access gate at the location noted within the applicable drawings and as directed by the Consultant. The Consultant will layout the location of the gate as required. Contractor shall notify the Consultant 48 hrs in advance of this work.

Measurement and Payment for the salvage and re-installation will be made at by the unit per each gate salvaged, installed, complete in place, and will be full compensation for the supply, including fabrication, installation, concrete, site clean-up, and all labour, equipment, tools and incidentals necessary to complete the Work to the satisfaction of the Consultant.

Supply and installation of Checkerboard sign will be paid under this bid item.

#### **4.70 STANDARD ACCESS GATE – SUPPLY AND INSTALL**

The Contractor shall supply and install standard access gates as per City of Calgary Standard Drawing File Number 454.1001.027 at locations as noted within the applicable drawings and as directed by the Consultant. The Consultant will layout the location of each gate as required. Contractor shall notify the Consultant 48 hrs in advance of this work.

Measurement and Payment for the supply and installation will be made at by the unit per each gate installed, complete in place, and will be full compensation for the supply, including fabrication, installation, concrete,

site clean-up, and all labour, equipment, tools and incidentals necessary to complete the Work to the satisfaction of the Consultant.

Supply and installation of Checkerboard sign will be paid under this bid item.

#### **4.71 SEEDING AND HYDRO-SEEDING, INCLUDING SOIL AMENDMENT**

##### **4.71.1 References**

Provide hydroseeding in accordance with the following standards (latest revision) except where specified otherwise.

Government of Canada  
Seeds Act and Seeds Regulations

Government of Alberta  
Weed Control Act and Weed Regulation.

##### **4.71.2 Submittals**

Provide the following submittals.

The following test results at least 15 days prior to the delivery of seeds to the Site.

- Seed Certificates of Analysis for each lot of seeds to be supplied with test results prior to seed blending and procurement showing:
  - germination rate, or when native seeds are specified and are not a part of the seed tables, the Tetrazolium results, and
  - purity.
- Seed mix composition expressed as a percentage of each seed species by dry mass for each seed mix specified.

Calibration certificate for the hydroseeding equipment.

Substitutions to specified seed species and variety require written approval of The DFMP's Representative before sowing. Contractor shall submit documentation from seed supplier verifying unavailability of any specified seed species and variety with recommendations.

The Contractor shall incorporate a soil amendment agent into the seeding operations. The soil amendment material/agent must be on Alberta Transportation's Product List under either Proven or Trial Products. The Contractor shall submit the product information for review prior to seeding operations commencement.

##### **4.71.3 Quality Control**

Retain a Registered Seed Laboratory to conduct specified seed testing.

Contractor: Experienced and knowledgeable in landscape work of contract.

Site Supervisor: Competent, experienced and knowledgeable to direct and supervise all staff and work of contract. Supervisor shall possess a Landscape Journeyman Gardner certification or other similar qualification acceptable to the Consultant.

Staffing: Experienced, competent and trained landscape personnel who will perform all tasks and services in a knowledgeable and professional manner. Workers shall act safely 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.

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.

Contractor shall obtain approvals as required by contract for suppliers, sub-contractors, and materials.

#### **4.71.4 Delivery, Storage, and Handling**

Provide seed in standard containers clearly labelled with the following information:

- Name and address of manufacturer and supplier.
- Lot number.
- Net mass.
- Mixture Composition: Names and percentages of individual seed species.

Protect seed from direct sunlight, moisture, mould, and other detrimental conditions, while in transit and storage.

Provide fertilizer in standard containers clearly labelled with the following information:

- Supplier's name and address.
- Specified composition.
- Net mass.

#### **4.71.5 Measurement and Payment**

Seeding, for the methods specified, will be measured in square meters to the nearest 1 m<sup>2</sup> based on horizontal measurements, as determined by the Consultant. No allowance will be made for uneven or sloping ground.

Payment for "Seeding - Hydro-Seed" will be made at the unit price bid per square metre for the specified seed mix. This payment will be considered full compensation for the supply and placement of seed, fertilizer, hydro-mulch, harrowing, and reseeding as applicable, and includes all labour, materials, equipment, tools, and incidentals necessary to complete the Work to the satisfaction of the Consultant.

The soil amendment material / agent shall be considered incidental to the hydro-seeding operations and shall be included in the price for each applicable operation. No separate or additional payment will be made for the inclusive of the soil amendment material / agent.

Placement of topsoil will be under applicable bid items "Common Excavation", "Topsoil Placement" and if directed by the Consultant "Topsoil – Contractor Supply".

#### 4.71.6 Seed Mixes

The following seed mixtures shall be used on the project:

- Wet Tolerant Seed Mix 1 – Below 1:2 year high water mark – Application Rate of 58 kg / ha.

Site Characteristics	
Seeding Method	broadcast
Habitat Type	wetland
Natural Subregion	Dry Mixedgrass
Incorporation Method	ATV Harrow or hand rake
Depth of Incorporation	5 cm to 10 cm

Botanical Name	Common Name	Target Cover	% of Seed Mix (PLS)	Kg Required (PLS)
<i>Deschampsia ceaspitosa</i>	Tufted Hairgrass	25%	3%	1.97
<i>Pascopyrum smithii</i> / <i>Agropyron smithii</i>	Western Wheatgrass	20%	32%	18.60
<i>Bromus carinatus</i>	Mountain Brome	5%	10%	5.68
<i>Elymus trachycaulus</i> / <i>Agropyron trachycaulum</i> var.	Slender Wheatgrass	10%	11%	6.39
<i>Elymus canadensis</i>	Canada Wildrye	15%	23%	13.34
<i>Spartina pectinata</i>	Alkali Cordgrass	25%	21%	11.66

- Cover Crop for Wet Tolerant Seed Mix 1: Add a cover crop of *Beckmannia Syzigachne* (Slough Grass) at 5kg / ha in areas of highwater erosion prone areas.
- Upland Seed Mix 2A – Upland Areas - Application Rate of 58 kg / ha.

Site Characteristics	
Seeding Method	broadcast
Habitat Type	deciduous forest
Natural Subregion	Dry Mixedgrass
Incorporation Method	ATV Harrow or hand rake
Depth of Incorporation	5 cm to 10 cm

Botanical Name	Common Name	Target Cover	% of Seed Mix (PLS)	Kg Required (PLS)
<i>Elymus lanceolatus</i> / <i>Agropyron dasystachyum</i>	Northern Wheatgrass	15%	16%	9.30
<i>Pascopyrum smithii</i> / <i>Agropyron smithii</i>	Western Wheatgrass	20%	30%	17.36
<i>Elymus trachycaulus</i> / <i>Agropyron trachycaulum</i> var.	Slender Wheatgrass	10%	10%	5.97

Botanical Name	Common Name	Target Cover	% of Seed Mix (PLS)	Kg Required (PLS)
<i>Bouteloua gracilis</i>	Blue Grama	10%	2%	0.88
<i>Elymus canadensis</i>	Canada Wildrye	10%	14%	8.30
<i>Nassella viridula</i> / <i>Stipa viridula</i>	Green Needlegrass	25%	27%	15.82
<i>Koeleria macrantha</i>	Junegrass	10%	1%	0.58

- Cover Crop for Upland Seed Mix 2A: Add a cover crop of *Lolium multiflorum* (Annual Ryegrass) at 5kg / ha for entirety of Upland Seed Mix areas.
- Top of Berm Seed Mix 3 – Top of Berm - Application rate of 50 kg/ha.

Site Characteristics	
Seeding Method	Broadcast or manual
Habitat Type	Deciduous forest
Natural Subregion	Dry Mixedgrass
Incorporation Method	ATV Harrow or hand rake
Depth of Incorporation	5 cm to 10 cm

Botanical Name	Common Name	Target Cover	% of Seed Mix (PLS)	Kg Required (PLS)
<i>Elymus lanceolatus</i> / <i>Agropyron dasystachyum</i>	Northern Wheatgrass	23%	46%	22.91
<i>Pascopyrum smithii</i> / <i>Agropyron smithii</i>	Western Wheatgrass	10%	23%	11.16
<i>Bouteloua gracilis</i>	Blue Grama	20%	6%	2.83
<i>Hesperostipa comata</i> / <i>Stipa comata</i>	Needle and Thread	2%	4%	2.13
<i>Poa sandbergii</i>	Sandberg Bluegrass	15%	6%	3.07
<i>Nassella viridula</i> / <i>Stipa viridula</i>	Green Needlegrass	5%	9%	4.24
<i>Koeleria macrantha</i>	Junegrass	23%	4%	2.13
<i>Dalea purpurea</i>	Purple Prairie Clover	2%	2%	1.02

- Cover Crop for Top of Berm Seed Mix 3: Add a cover crop of *Lolium multiflorum* (Annual Ryegrass) at 5kg / ha for entirety of Top of Berm Seed Mix areas.
- Ensure seed mixture is free of any weed seeds listed as “Prohibited Noxious” or “Noxious” under the Weed Control Act and seeds of other species that will interfere with the growth of the specified seed mixture.
- Fertilizers:
  - Do not apply fertilizers where native seed mixes are applied.
- Water: Free of impurities that would inhibit or adversely affect germination and growth of the seed.

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#### 4.71.7 Preparation

All areas are to be prepared prior to placement of seed.

For areas with slopes steeper than 3 horizontal : 1 vertical, all Native Seed Mixes listed above to be installed at rate of 60 kg / ha.

Preparing surface prior to placement of seed or the supply and application of amendments shall be considered incidental to Work and no separation or additional payment will be made.

#### 4.71.8 Mechanical And Broadcast Seeding of Native Seed Mixes

Sow at the rate indicated with Seed Mixes, during calm weather and when soil moisture content is adequate for germination.

For slopes 2:1 or flatter areas to be seeded that are easily accessible apply seed using a mechanical dry spread "Brillion" Seeder that places seed at specified depth and rate and rolls in a single operation.

For steeper than 2:1 slopes or slopes that are not easily accessible use manually operated broadcast seeder.

Sow seed in two directions, 50% of seed in one direction and remaining 50% of seed at right angles to first seeding pattern, using same method of seeding.

Cover broadcasted seed by hand raking and ATV harrowing-in.

#### 4.71.9 Optimal Seeding Periods for Native Grasses

Mid to late May, early June – no later than June 15th.

Late September – after first hard frost, when plants go dormant. Do not seed near end of season until the risk of seed germination is low. Seed that germinates and does not fully establish prior to end of growing season will likely not overwinter.

#### 4.71.10 Hydromulching with Cover Crop

Any of EcoAnchor, Promatric or Flexterra® High Performance-Flexible Growth Medium™ (HP-FGM™) are acceptable and commonly used hydro mulch and contain 80% wood fibers (see component below).

- Thermally Processed\* (within a pressurized vessel) Virgin Wood Fibers – 80%
  - \*Heated to a temperature greater than 380 degrees Fahrenheit (193 degrees Celsius) for 5 minutes at a pressure greater than 50 psi (345 kPa)
- Wetting agents (including high-viscosity colloidal polysaccharides, cross-linked biopolymers, and water absorbents) – 10%
- Crimped Biodegradable Interlocking Fibers – 5%
- Micro-Pore Granules – 5%

Water: free of impurities that would inhibit germination and growth.

Application rate: As recommended by manufacturer's written technical data for the % slope upon which it is being applied.

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## Preparation of slurry

- Refer to manufacturer's recommended procedures.

## Slurry application

- Hydraulic seeding equipment:
  - Slurry tank.
  - Agitation system for slurry to be capable of operating during charging of tank and during seeding, consisting of recirculation of slurry and/or mechanical agitation method.
  - Capable of seeding by 50 m hand operated hoses and appropriate nozzles.
  - Tank volume to be certified by certifying authority and identified by authorities "Volume Certification Plate".
  - Before application, ensure hydro seeding/mulching truck tank is clean. Thoroughly flush the tank, pumps and hoses to remove all material.
- Hydromulch slurry mixture applied per hectare.
  - Only covercrop seeds are to be installed per hydromulch method.
  - Hydromulch mixture: Application rate as recommended by manufacturer's written technical data for % slope.
  - Recommended hydromulch application to be 5000 kg/ha to 5500 kg/ha due to limited access and inability to apply secondary slurry.
  - Adjust application rate based on slope gradient, as recommended by manufacturer.
- Follow manufacturer's recommendations for application.
  - Follow a two (2) application method, as directed by manufacturer, to increase germination results and enhance erosion protection.
- Blend application 500 mm into adjacent grass areas or sodded areas to form uniform surfaces.
- Re-apply where application is not uniform.
- Remove slurry from items and areas not designated to be sprayed.
- Optimal seeding periods for native grasses are:
  - Mid to late May, early June – no later than June 30.
  - Late September – after first hard frost, when plants go dormant.
- Do not seed near end of season until the risk of seed germination is low. Seed that germinates and does not fully establish prior to end of growing season will likely not overwinter and will require re-application at no additional cost to The DFMP.
- Do not hydroseed on frozen ground, snow or during adverse weather conditions. Do not hydroseed within 24 hours of rainfall, or if rain is forecast in the next 24 hours.

### **4.71.11 Notification of Commencement of Work**

Notify the DFMP at least 48 hours prior to any seeding work. Do not commence seeding operations until all areas designated for seeding have been prepared to the satisfaction of the DFMP.

Do not commence seeding operations until the DFMP has reviewed the Certificate of Seed Analysis and verified the specified seed mix composition supplied.

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#### **4.71.12 Weather Conditions**

Do not proceed with the work when, in the opinion of the DFMP, weather conditions are unsuitable. The DFMP will not allow work to proceed when wind conditions are such that material is being carried beyond the designated work areas or that the material is not being uniformly applied.

Do not perform work under adverse field conditions such as wind speeds over 10 km / h.

Provide prepared surfaces that are free of frost and standing water.

#### **4.71.13 Protection**

Take care to prevent the contamination of structures, signs, guardrails, fences, utilities, and other installations from the seeding operations. Remove offending contamination using methods acceptable to the DFMP.

Protect existing work, and the Work of the Contract, and repair any damage to such Work.

#### **4.71.14 Watering**

Water the seeded areas after seeding to achieve germination and a uniform stand of grass. The DFMP will determine the watering schedule and will provide the Contractor with at least 24 hours advance notice to commence watering seeded areas.

Apply water uniformly to seeded areas without causing displacement or erosion of the materials and topsoil.

Minimize travel on seeded surfaces.

Use watering equipment and techniques authorized by the DFMP.

#### **4.71.15 Reseeding**

At locations that fail to show a uniform stand of grass for any reason during the calendar year following the year of initial seeding, repair the defective locations as determined by the DFMP. A uniform stand of grass will be considered as grass that shows no deterioration or exposed soil greater than 1 square metre in size and provides a minimum of 80 percent ground cover as determined by the DFMP.

The DFMP will inspect the seeded areas during the month of May of the calendar year following the year of initial seeding. Complete any required reseeded work prior to June 15 of that year. This date will be extended if, in the opinion of the DFMP, the weather conditions prior to June 15 are not suitable for reseeded Work.

Meet all the requirements for initial seeding, including seeding method, seed compositions, [fertilizer composition], and application rates, Surface Tracking as applicable.

Contractor will not be required to reseed any area more than once.

The Contractor shall reseed as required during the warranty period to ensure uniform growth. Any costs associated with reseeded during the warranty period shall be considered incidental and no separate or additional payment will be made.

#### 4.71.16 Maintenance Log Requirements:

Maintain and complete a maintenance log for each day of maintenance activity throughout maintenance period.

Submit maintenance log data to the Consultant each week for verification and approval of services performed. Contractor shall ensure maintenance log data is true and accurate. Site supervisor must complete and sign maintenance log.

Record all maintenance activities including date/time of activities, quantity of water applied on site, materials used and quantity in maintenance of sodded areas, location where activities were carried out, number of employees and name of supervisor on site.

#### 4.71.17 Final Acceptance and Termination of Initial Maintenance

For final acceptance of seeded areas, the following percentages of cover must be achieved:

End of Growing Season	Percent Coverage Target	Comments
1	35 - 50%	
2	70%	<b>Required for Final Acceptance Certificate</b> 70% coverage with 40% native species – seeded areas Less than 5% noxious weeds

Procedure for measuring percentage coverage:

- Plant cover estimation will occur within 5% of the planting area, within randomly placed 1 m by 1 m quadrats. (e.g., 120 m<sup>2</sup> area = 6 quadrats, 80 m<sup>2</sup> area = 4 quadrats)
- The area of plant cover measured is the area of ground that is occupied by the above-ground parts of each species when viewed from above, measured as a percent of the area of reference (quadrat).
- To record percentage cover in a quadrat, look down on the quadrat from above and estimate the percentage cover occupied. Complete cover with no bare ground would equal 100% cover.
- Quadrats will be randomly spaced throughout the seeded area and will include a range of plant coverage of the landscape, from highest to lowest plant coverage.
- Document percent cover estimates with representative photos of each quadrat.
- Utilize Alberta's Range Health Assessment Guidelines – Field Worksheet for Grasslands (Alberta Sustainable Resource Development 2005) Percent Cover Examples as a guideline for estimating percent cover within the quadrat.
- Volunteer species and cover crops are not acceptable substitutes in percent coverage calculations.
- The DFMP will be sole judge of assessing compliance with percentage of cover requirements.

#### 4.71.18 Clean-up and Repairs

During work of contract, keep all hard and soft surfaces clean and tidy. Sweep and wash all walkways and other pavement surfaces to maintain clean appearances. Clear soil and rubble from catch basins, manholes, valves and other hard surface features.

Collect all litter and other debris from site during work of contract.

Remove and dispose of excess materials, soil, litter, debris, and grass clippings at approved disposal site. Contractor shall be responsible for all disposal costs.

Repair all damages resulting from Work of this Contract.

#### **4.71.19 Warranty**

Contractor shall provide warranty for all seed, related works and other materials for a minimum period of two years, inclusive of two full and complete growing seasons (May 1st to October 30th) commencing from the Date of Construction Completion.

The DFMP reserves the right to extend the Contractor's warranty responsibilities for an additional one (1) year or as determined by the Consultant on all replacement sod where colour, growth and development are not sufficient to ensure future survival.

During the warranty period, the Contractor shall immediately reseed all areas which are dead or unhealthy or / in unsatisfactory growing condition and shall install replacement sod in accordance with the Contract Specifications.

The DFMP shall be the sole judge as to condition of seed regarding warranty replacements.

#### **4.72 LANDSCAPE - SODDING**

##### **4.72.1 Submittals**

Submit the following, for Town of Drumheller's review and approval as applicable:

- Name and location of sod supplier including certification for grass species.
- Site supervisor's credentials for approval. Submit information minimum two weeks prior to commencement of work.
- Work schedule showing approximate dates for commencement and completion of each item of work. Submit prior to commencement of work.
- Copies of all permits and licenses as applicable to work of this contract.
- Submit all other required information and documents as requested or specified.

##### **4.72.2 Quality Control**

Examination

- Contractor shall advise the Consultant, in writing, of any conditions or defects encountered on site before or during construction upon which the work of this section depends and which may adversely affect its performance.
- Do not commence work until adverse conditions or defects have been evaluated by the Consultant and corrective measures taken.
- Commencement of work shall imply acceptance of existing surfaces and conditions and no claims for damages or extras resulting from such conditions or defects will be accepted later, except where such conditions could not have been known prior to commencing work.

## Delivery, Storage and Handling

- Use all means necessary to protect all materials before, during and after installation, and to protect the installed work and materials of other contractors.
- Packaged materials shall be delivered in sealed containers clearly marked with contents, weight, analysis and name of manufacturer.
- Schedule deliveries in order to keep storage at site to a minimum without causing delays.
- Protect sod during transportation with tarpaulin from drying out. Unload and store sod on pallets. Keep sod moist and cool until installed
- Deliver sod to site within 24 hours of being harvested. Install all sod within 36 hours of being harvested.
- Dried out, damaged, deteriorated and unhealthy sod is not acceptable. Broken or irregular pieces of sod are not acceptable. Promptly remove all unacceptable sod from site.

### 4.72.3 Measurement and Payment

Sod will be measured in square meters (m<sup>2</sup>) to the nearest 0.1 m<sup>2</sup> based on horizontal measurements as determined by the Consultant. No allowance will be made for uneven or sloping ground.

Payment for supply and placement of sod will be made at the unit price bid per square metre (m<sup>2</sup>) for "Supply and Placement of Sod". This payment will be considered full compensation for the supply, prepare ground for placement of sod, placement of sod, resodding as required, and includes all labour, materials, equipment, tools, and incidentals necessary to complete the Work to the satisfaction of the Consultant.

The Contractor shall re-sod as required during the two (2) year warranty period to ensure uniform growth.

Any cost associated with re-sodding during the warranty period shall be considered incidental and no separate or additional payment will be made. Deliver sod to site within 24 hours of being harvested. Install all sod within 36 hours of being harvested.

### 4.72.4 Products

Material:

- Fertilizer: synthetic fertilizer, granular in composition, minimum 50% of elements derived from organic sources.
- Nursery Sod: certified number one turf grass sod of premium grade. Sod shall comply with standards outlined in current edition of "Canadian Standards for Nursery Stock - (Nursery Sod)", published by the Canadian Nursery Landscape Association.
  - Permeated with a strong fibrous root system; be freshly cut and in good healthy condition with no decay or bare spots; be uniform in texture and free from weeds, undesirable native grasses and foreign debris; and contain adequate moisture to maintain its vitality during transportation and placement.
  - Grown on fertile topsoil, by a sod producer specializing in sod production and harvesting. Sod shall be 18 to 24 months in age prior to harvesting. Submit sod certification for grass species and location of source.
  - Broken, dry, deteriorated, damaged and discoloured sod shall be rejected.
  - Thickness of soil portion of nursery sod shall be 15 mm.

- Water: clean, fresh, and free of substances or matter that would inhibit vigorous and healthy growth of grass.
  - Contractor shall supply clean water, equipment, methods of transportation, water tanker, hoses, attachments, and other accessories as necessary to adequately apply water to all sodded areas and for other work in contract.
  - All costs for supply of water incurred during the contract and maintenance period shall be borne by Contractor and will be considered incidental to the Work and no separate or additional payment will be made.
- Staples: u-shaped steel wire staples, 150 mm to 200 mm in length as recommended by manufacturer of geotextile fabric material.
- Geotextile Fabric: biodegradable square netting for slope reinforcement.
- Biodegradable Pegs: 17 mm x 8 mm x 200 mm.
- Wood Pegs: of sufficient size and length to ensure anchorage of sod on slope.

Sod Type:

- Fescue Sod: sod grown from certified Canada No. 1 fescue grass seeds. Seed mixture shall be a 100% mixture of Creeping red fescue, Chewing fescue, Hard fescue and Sheep fescue grass seeds.

#### **4.72.5 Execution**

Fertilizing:

- Apply fertilizer prior to sodding, after final grade is approved by the Consultant.
- Apply 12-51-0, 16-32-6 or other similar granular starter fertilizer evenly at 3kg/100m<sup>2</sup> using a calibrated mechanical distributor.
- Lightly rake and incorporate fertilizer into topsoil.

Laying Sod:

- During progress of work, the Consultant will inspect the Contractor's workmanship and performance to ensure compliance with the specifications.
- Obtain the Consultant's approval of sodbed finish grades, final tilth, surface flatness and fertilizer application before laying sod.
- Firm sodbed by rolling before laying sod as necessary. Lightly moisten and rake soil prior to laying sod.
- Do not perform work during hot and dry conditions, or when ground is frozen or covered in snow or during times of unfavourable climatic conditions.
- Lay sod smooth and even; butt sod pieces close and tight with no open joints visible. Stagger end joints minimum of 30 cm minimum between adjacent rows to avoid continuous seams. Do not stretch or overlap sod pieces.
- Finish sod edges at walks, curbs, planting, tree well, mulch edges, manholes, and other vertical surface by cutting neatly and fitting tightly to edge and line.
- Lay sod smooth and flush with adjoining grass areas, curbs, walk and pavement. Where new sod abuts existing turf, cut edge of existing grass with sharp tool to form a straight line. Level subgrade and butt new sod tight and flush with existing grass. Adjacent to hard surfaces, finish grade of new sod installation shall match finish grade of existing hard surface.

Protect Subgrade and Sod from Damage During Installation.

- Where large rolls of sod are placed, remove reinforcement netting used to assist in harvesting and/or placement of sod roll before final sod placement.
- Cut and remove all irregular, unhealthy and thin sections of sod with a sharp knife and install new replacement sod.
- Water in sufficient quantities to obtain moisture penetration through sod and into upper 100 mm of topsoil immediately after laying sod.
- After sod and soil have dried from initial watering, roll newly laid sod using a mechanical roller having adequate weight. Roll sod to ensure good contact with topsoil, to eliminate air pockets, remove minor depressions and irregularities, and to form a smooth even surface. Heavy rolling to correct irregularities in grade is not acceptable. Sod adjacent to existing fixtures shall be thoroughly tamped.

Laying Sod on Slopes:

- On sloped areas 3:1 and steeper, lay sod perpendicular to slope and secure with wooden pegs. Place 4 to 6 wooden pegs/m<sup>2</sup>, to prevent shifting of sod. Drive pegs flush with sod surface. Initiate sod installation from bottom of slope.
- Prior to placing sod on steep slopes where erosion may occur, place geotextile fabric netting over graded topsoil for reinforcement. Install and securely anchor sod in place over fabric with metal staples in accordance with manufacturer's instructions.

Protection of Sodded Areas:

- Contractor shall provide adequate protection to protect sodded areas from all damage, disturbance, or other construction activity after sodding operations are complete. Remove protection after sod areas are properly established or as directed by the Consultant.
- Damaged sod resulting from inadequate protection shall be repaired with topsoil, fertilizer and new sod at Contractor's expense. All damages shall be repaired prior to final acceptance.
- Keep site well drained and landscape excavations dry. Remove excess water from sodded areas.

Initial Maintenance Period:

- Maintain sodded areas from time of sodding until minimum 8 (Eight) weeks, after Date of installation acceptable to the satisfaction of the Consultant.
- Maintenance services shall be performed during the landscape growing season (May 1st to September 30th). The Consultant, however, reserves the right to determine actual date of commencement and termination of maintenance based on existing climatic conditions, soil moisture and plant health.
- Any additional maintenance beyond the specified maintenance and warranty period required for Contractor to achieve final acceptance shall be provided at Contractor's own expense.
- Any incomplete weeks or months of maintenance shall be carried over to the following landscape growing season.
- The Consultant reserves the right to extend maintenance period and/or reduce monthly progress payments for maintenance services any time Contractor fails or neglects to provide proper and adequate maintenance services in accordance with contract specifications as determined by the Consultant.

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**Maintenance and Establishment (8 Weeks after Installation):**

- Work of maintenance period shall be performed each week and as frequently during the week to enable the proper establishment of all new sod and other landscaping installed to ensure that required services and tasks are satisfactorily completed and sustainable.
- Watering: apply water with sufficient frequency to maintain adequate soil moisture, promote root development and prevent sod shrinkage during maintenance/establishment period. During hot dry weather increase frequency of watering to maintain sod health.
- Provide clean water, equipment, water tanker, methods of transportation, hoses, sprinklers, and labour necessary to adequately and efficiently apply water to all sodded areas. Record quantity of water supplied and applied on site in maintenance log.
- Supply all necessary equipment, accessories and labour in use of building water sources where available. Operate existing irrigation facilities, where applicable, to ensure adequate watering of sodded areas.
- Cut grass at regular intervals and maintain at height of 70 mm. Do not cut more than 30% of leaf blade at any one mowing. Remove clippings.
- Pick and remove all litter, debris, and animal waste from lawn areas before mowing. Dispose of collected debris off site.
- Repair areas which show root growth failure, deterioration, bare or thin spots, or which have been damaged by any means or cause, including replacement operations by installing new sod. Ensure all repairs are completed prior to final acceptance.
- Correct any erosion and settlement that results from faulty workmanship and/or material. Restore areas by removing sod, adding topsoil as necessary and laying new sod. Repair ruts resulting from maintenance equipment and personnel. Produce a uniformly smooth surface by removing rutted turf areas and placing new topsoil and sod.
- Apply second application of 20-5-10, 24-5-11 or similar slow release granular turf fertilizer five to six weeks after sodding. Spread evenly at rate of 3 kg/100 m<sup>2</sup> and water in well after application. Postpone fertilizing until spring if application will occur after August 15th.
- Apply fertile topsoil to fill all minor open joints to prevent sod edges from drying.
- Control weeds, disease, insects and other pests using acceptable integrated pest management practices to reduce pesticide use. However, when necessary, apply chemical pesticides in accordance with manufacturer's instructions and government regulations.
- Repeat rolling of sod as necessary to maintain a smooth grass surface.
- Maintenance Inspections: during progress of the maintenance period, the Contractor and the Consultant will conduct site inspections every 30 days or less to determine whether ongoing maintenance activities have been performed in accordance with specifications. Any maintenance not performed by Contractor in a satisfactory manner shall be immediately completed to the Consultant's satisfaction.

**Maintenance Log Requirements:**

- Maintain and complete a maintenance log for each day of maintenance activity throughout maintenance period.
- Submit maintenance log data to the Consultant each week for verification and approval of services performed. Contractor shall ensure maintenance log data is true and accurate. Site supervisor must complete and sign maintenance log.
- Record all maintenance activities including date/time of activities, quantity of water applied on site, materials used and quantity in maintenance of sodded areas, location where activities were carried out, number of employees and name of supervisor on site.

Final Acceptance and Termination of Initial Maintenance:

- The Consultant may accept work at end of maintenance period provided:
  - Sod is properly anchored into underlying topsoil, well established, vigorously growing and healthy.
  - Sod is green, even coloured, and free of weeds and other pests.
  - Sod is free of bare and dead spots, visible joints, ruts, undulations and settlement.
  - Sod areas have been recently mowed and thoroughly watered.
  - Sod areas are clean and free of all debris.
  - Sod areas have received all required applications of turf fertilization.
- Contractor shall use specified materials to re-establish sod installations that do not comply with requirements for acceptance and continue with specified maintenance/establishment until deemed acceptable by the Consultant.

Clean-up and Repairs:

- During work of contract, keep all hard and soft surfaces clean and tidy. Sweep and wash all walkways and other pavement surfaces to maintain clean appearances. Clear soil and rubble from catch basins, manholes, valves and other hard surface features.
- Collect all litter and other debris from site during work of contract.
- Remove and dispose of excess materials, soil, litter, debris, and grass clippings at approved disposal site. Contractor shall be responsible for all disposal costs.
- Repair all damages resulting from Work of this Contract.

#### **4.72.6 Warranty**

Contractor shall provide warranty for all sod, related works and other materials for a minimum period of two years, inclusive of two full and complete growing seasons (May 1<sup>st</sup> to October 30<sup>th</sup>) commencing from the Date of Construction Completion.

The Consultant reserves the right to extend the Contractor's warranty responsibilities for an additional one (1) year or as determined by the Consultant on all replacement sod where colour, growth and development are not sufficient to ensure future survival.

During the warranty period, the Contractor shall immediately remove and replace all sod which is dead or unhealthy or / in unsatisfactory growing condition and shall install replacement sod in accordance with the Contract Specifications.

The Consultant shall be the sole judge as to condition of sod regarding warranty replacements.

### **4.73 LANDSCAPE MAINTENANCE – WARRANTY PERIOD**

#### **4.73.1 Hours of Work**

Perform maintenance work during regular working hours of 09:00 to 18:00, Monday to Friday unless directed otherwise by the Consultant. No work shall be conducted on any statutory holiday.

Obtain the Consultant's approval prior to performing maintenance outside of regular working hours.

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#### **4.73.2 Maintenance Period**

Maintain exterior landscape work for a minimum of 12 (twelve) months, over a two-year period after Date of Construction Completion Acceptance of the landscape portion of Work in Contract. The Contractor shall start the maintenance work one month after Construction Completion Acceptance by the Consultant.

Maintenance services shall generally be performed during the landscape growing season (May 1<sup>st</sup> to September 30<sup>th</sup>). The Consultant reserves the right to determine actual date of commencement and termination of maintenance based on existing climatic conditions, soil moisture and plant health.

Any additional maintenance beyond the specified maintenance and warranty period required for Contractor to achieve final acceptance shall be provided at the Contractor's own expense.

Any incomplete weeks or months of maintenance shall be carried over to the following landscape growing season.

The Consultant reserves the right to extend the maintenance period and / or reduce monthly progress payments for maintenance services any time the Contractor neglects to provide adequate maintenance services in accordance with the Contract Specifications, as determined by the Consultant.

#### **4.73.3 Maintenance Schedule**

The Contractor shall submit a neat, legible and detailed maintenance schedule prior to commencement of maintenance period. List all daily, weekly, and monthly maintenance services and tasks to be performed.

#### **4.73.4 Quality Control**

Site Supervisor: competent, experienced and knowledgeable to direct and supervise all staff and maintenance work of contract. Supervisor shall possess a Landscape Journeyman Gardener certification or other similar qualification acceptable to the Consultant. Submit supervisor's credentials for the Consultant's approval prior to commencement of work.

Weekly Site Visits: provide adequate site visits each week with sufficient staff to ensure that all required maintenance services are performed and completed on schedule in accordance with specifications.

Site Security: Contractor's personnel shall carry personal identification at all times while on site. Identification shall be presented when requested. All employees must check in with the Consultant upon entering and leaving the premises where applicable.

Employee Attire/Safety Vests: all workers shall be properly attired at all times. Each employee working on site shall wear a reflective brightly coloured safety vest for safety and visibility.

Submittals: submit all required information and documents for the Consultant's approval where specified in the Contract Documents and applicable to work of the Contract and as requested by the Consultant.

#### **4.73.5 Safety Precautions**

The Contractor shall supply and ensure that all workers use appropriate personal protective equipment as required by Alberta's Occupational Health and Safety Act, Regulations and Code.

The Contractor shall provide training and ensure all workers practice appropriate safety measures and safe use of tools and equipment in accordance with WHMIS GHS (Workplace Hazardous Materials Information System).

The Consultant reserves the right to have the Contractor remove any employee from site if not wearing personal protective equipment or if not practicing safe work procedures.

Regulatory Requirements: perform work in accordance with all applicable laws, codes and regulations required by authorities having jurisdiction over such work and provide all permits required by local authorities.

#### **4.73.6 Site Inspection / Meetings**

The Contractor and the Consultant shall have a start up meeting prior to starting maintenance for each year following Construction Completion. This meeting will be held on site to review the status of the project and outline any special considerations for the upcoming maintenance period.

During the initial maintenance establishment period, site meetings and inspections shall be conducted every two weeks or less between the Contractor and the Consultant. The Contractor's workmanship and performance will be reviewed, and other landscape concerns or issues addressed and evaluated.

Subsequent site meetings and inspections shall be held every 30 days or less after landscape has adequately established, as determined by the Consultant.

The Consultant shall, at their discretion, conduct random site inspections throughout the maintenance period to evaluate work performed. The Contractor shall promptly correct all deficient work within three days of the Consultant's notification.

#### **4.73.7 Maintenance Log Requirements**

Maintain and complete a maintenance log for each day of maintenance activity throughout the maintenance period.

Submit maintenance log data to the Consultant each week for verification and approval of services performed. The Contractor shall ensure maintenance log data is true and accurate. Site supervisor must complete and sign maintenance log.

Record all maintenance activities including date/time of activities, quantity of water supplied and applied on site, materials used and quantity during maintenance of landscape installations, location where activities were carried out, number of employees and name of supervisor on site.

Maintenance Invoices: invoices submitted without verifiable maintenance log data to support the invoice will not be accepted. The Consultant will defer payment of the Contractor's invoice until all maintenance services are deemed acceptable and in compliance with specifications as determined by the Consultant.

#### **4.73.8 Soil Analysis**

The Contractor shall perform all horticultural soil tests during the maintenance period at seed and turf locations randomly selected by the Contractor. The Contractor shall arrange and pay for the services of an accredited testing laboratory subject to the approval of the Consultant.

The Contractor shall submit an original copy of each soil test to and review the results with the Consultant.

Soil analysis for horticultural use shall include results for: existing major soil nutrients; soil pH value; total soluble salts (electrical conductivity); percentage of organic matter; soil texture and percentage of sand, silt and clay; nutrient recommendations; and recommendations for soil amendments, including fertilizer type and application rate.

The Contractor shall amend soil conditions as recommended by soil analysis report and indicate all corrective measures taken, documenting final soil condition results in the maintenance log.

#### **4.73.9 Delivery, Storage and Handling**

Remove all equipment and materials off site each day unless on site storage is approved by the Consultant.

Store tools, equipment and materials in a secure area when not in use during period of operation and at the completion of each scheduled task.

Contractor shall be present on site to accept delivery of all equipment and/or material shipments. Acceptance of delivery by the Consultant shall not constitute acceptance or responsibility for any of the materials or equipment.

#### **4.73.10 Damage to Property**

The Contractor shall be held directly responsible for all damages to private and public property, the personal property of all employees, staff and visitors and the property of adjacent landowners resulting from the actions of the Contractor, the Contractor's employees, subcontractors or representatives who provide service under this Contract.

The Contractor shall immediately report all damages to the Consultant.

The Contractor shall repair, replace or restore all damaged property to its original condition or better as directed by the Consultant. Damages shall be promptly corrected within seven days of approval unless directed otherwise by the Consultant.

Scalping of turf, mechanical damage or injury to plant material, improper plant pruning, and damages resulting from improper use of chemical pesticides and fertilizers will be considered property damage.

All costs associated with the repair and replacement of damaged property shall solely be the responsible of the Contractor.

#### **4.73.11 Protection**

Protect landscape plantings and turf areas at all times against damage of all kinds for the duration of the maintenance period. Maintenance includes temporary protections, fencing, barriers, and signs as required for protection. If any plant material or turf becomes damaged or injured because of insufficient protection, the Contractor shall treat or replace plant material or turf at the Contractor's sole expense.

#### **4.73.12 Final Acceptance and Termination of Maintenance**

Work under this section may be accepted by the Consultant at the end of the maintenance period provided all requirements for acceptance contained within the Contract documents have been satisfactorily completed.

#### 4.73.13 Maintenance Instructions

The Contractor shall provide two (2) copies of detailed written maintenance instructions identifying the maintenance and care instructions for all seed, turf areas and plant material installed in the Contract.

#### 4.73.14 Measurement and Payment

Landscape maintenance shall be paid at the unit price bid per month for "Maintenance – Warranty Period". Unit price shall include for all materials, equipment, labour and incidentals necessary to complete maintenance item of work.

All associated costs for amending soil conditions will be considered incidental to the Work, and no separate or additional payment will be made.

The Town of Drumheller will have the option of extending the maintenance period, under the sole discretion of the Town of Drumheller. The payment per month for additional monthly maintenance will be paid at the price bid per month for Maintenance – Warranty Period.

The Town of Drumheller will deem unacceptable any work that is determined to be improper, inadequate, incomplete and not in accordance with the Contract Specifications.

#### 4.73.15 Products

Fertilizer:

- Synthetic Turf Fertilizer: apply a complete premium grade synthetic fertilizer, granular in composition, with over 50% of total nitrogen derived from a slow or controlled release nitrogen source to maintain turf in a healthy, vigorous, and green condition. Fertilizer shall contain all essential macronutrients plus 1%-2% iron and other micronutrients.
  - "Weed and Feed" fertilizers are not allowed.
- Fertilizer: apply controlled or slow-release fertilizers in accordance with soil analysis where applicable.

Topsoil and Peat Moss:

- Topsoil: fertile natural loam, capable of sustaining healthy growth, loose and friable, free of subsoil, clay lumps, stones in excess of 20 mm, live plants, roots or any other deleterious material greater than 20 mm diameter. Topsoil shall be free of litter, foreign matter and toxic materials harmful to plant growth. Topsoil containing construction debris, sod clumps, quack grass or other noxious weeds is not acceptable. Topsoil supplied to site shall meet the following requirements:
  - Minimum 6% organic matter.
  - Acidity/alkalinity shall range from 5.9 pH to 7.0 pH.
  - Electrical Conductivity (E.C.) - level of soluble salts shall not exceed 1.5 dS/m.
  - Texture: "Loam Topsoil" in accordance with Canadian System of Soil Classification. Topsoil shall fall within an allowance of  $\pm 2\%$  of the values stated in the table below:

Soil	Sand (%)	Silt (%)	Clay (%)	Class
Topsoil	35	35	30	Loam

- Peat Moss: decomposed plants, fairly elastic and homogeneous, free of decomposed colloidal residue, wood, sulphur and iron. Minimum of 80% organic matter by mass, pH value between 4.5 and 6.0. Furnished in an air-dry state, packed in standard bags or bales showing name of manufacturer.

Water:

- The Contractor shall submit a detailed watering plan to the Consultant 30 days prior to the start of the maintenance period for review and comments.
- The Contractor shall be fully responsible for all aspects of the providing watering requirements during the maintenance period.
- No motorized vehicles will be allowed on private property during the maintenance periods.
- Supply clean fresh water, water tanker, equipment, sprinklers, and labour necessary to adequately and efficiently apply water to all turf areas and plant materials.
- Record quantity of water supplied and applied on site in maintenance log.

#### **4.73.16 Execution**

General Workmanship:

- The Consultant will be the sole assessor of the Contractor's maintenance performance and workmanship.
- Schedule timing of operations to growth, weather conditions and use of site. Do each operation continuously and complete within reasonable time period.
- Do not perform work in any location or manner that may endanger the health and safety of the public.
- Collect and dispose of excess material and debris to approved municipal disposal site following collection.
- Coordinate maintenance practices with Town of Drumheller. Alter maintenance schedules, when necessary, to accommodate Town of Drumheller's site activities.
- Contact the Consultant when specified maintenance requirements cannot be met for any reason.
- Submit name and contact number of company representative for immediate or emergency service when necessary.
- Keep a copy of contract specifications and applicable reference documents on site at all times for employee use and reference.
- Contractor's site supervisor must attend all site meetings called by the Consultant to review workmanship and performance.
- The Contractor shall promptly correct all maintenance deficiencies noted by the Consultant during site inspection meetings or following notification of the Consultant's own work inspection results.

Spring Clean-Up:

- Complete spring clean-up by May 15th or sooner, weather permitting.
- Remove and dispose of protective coverings and mulch used in winter protection.
- Clean, sweep, collect and remove sand, rock chips, salt and other debris accumulated during winter months from all maintained turf and hard surface areas. Re-sweep turf and hard surface areas until completely clean and acceptable to the Consultant. Dispose of all collected debris to approved municipal disposal site.
- Winter protection materials supplied by Contractor shall be removed from site.

- Collect and remove all dead vegetation, leaves, litter, and other debris from turf areas. Rake clean snow mold, where existing, from lawn areas.
- Sweep and clean hard surface areas and along curbs to remove all litter and debris to maintain clean and tidy site appearances.
- Roll turf areas lightly where grass has lifted due to frost action. Repair damaged or deficient turf areas.

#### **4.73.17 Seeding Turf Maintenance**

##### Watering – Seed and Turf Areas:

- Provide proper and adequate watering services to all seeded and turf areas to ensure healthy vigorous growing conditions.
- Seeded Areas: provide adequate watering of seeded areas to ensure proper seed germination and turf establishment. Supply and operate a portable and mobile irrigation system to water seeded turf areas as necessary until adequately and well established.
- Sodded Areas: regularly and adequately apply water to all sodded areas. Water shall be deeply and thoroughly applied to keep new sod and underlying soil from drying out and to ensure healthy vigorous growing conditions are maintained. Apply water during early morning or evening to achieve efficient use of water.
- Water Supply: where water is not available, Contractor shall supply clean water, water truck, pumps, portable sprinkler systems and labour and apply water as necessary to maintain healthy turf conditions.
- Provide 25 to 40 mm of water weekly including natural rainfall to wet upper 100 to 150 mm of soil in maintained seed and turf areas.
- During periods of drought stress, apply additional water to maintain healthy turf conditions if necessary.

##### Topdressing and Reseeding:

- Top-dress and reseed areas which show root growth failure, deterioration, bare, burnt and thin spots, ruts, wash outs and erosion or which have been damaged by any means or cause, including replacement operations.
- Mow grass to height of 40 mm. After mowing, rake thoroughly, removing loose and dead grass, stones and debris.
- Spread topsoil to maximum thickness of 15 mm, filling in low areas and bare spots. For severely damaged turf areas place sufficient topsoil and rake level with finish grade.
- Overseed areas with seed mixture equivalent to existing grasses and approved by the Consultant. Seed at rate of 4 kg/100 m<sup>2</sup>.
- Rake seed into topsoil. Roll lightly.
- Water to ensure penetration of 80 mm and at frequent intervals to maintain vigorous growth.

##### Sod Replacement:

- Cut out and remove all areas of dead, or unhealthy sod or which has been damaged by any means or cause and replace with new healthy sod. All repair areas to be square or rectangular.
- Rake existing topsoil before installing new sod. Add topsoil to fill uneven and low areas.
- Butt new sod tightly to adjacent existing sod. Topsoil open and exposed joints.
- Water to ensure penetration of 80 mm and at frequent intervals to maintain healthy growth.

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#### **4.73.18 Turf Establishment and Erosion:**

Until seed and turf areas are established, the Contractor shall be responsible for replacing soils that have eroded into hard surface areas. Residual soils on hard surfaces shall be removed and if not mingled with objectionable materials may be re-used in eroded areas. In the event this is a continuous problem, the Contractor shall install "jute mat" or other methods to prevent the erosion problem until the seed and turf areas are established.

#### **4.73.19 Fertilizing**

The Contractor shall be responsible for determining the application type and rate for fertilizer to ensure end product specification is achieved. Prior to any fertilizing being completed, the Contractor shall submit a detailed plan for the Consultant's review and comments.

Apply fertilizer as directed by the Consultant or as indicated in soil analysis. Use only mechanical equipment to spread fertilizer. Check spreader calibration to ensure specified application rate is used.

Spread 50% of fertilizer in one direction, then 50% at right angles.

Synthetic Fertilizer: apply the following slow-release granular fertilizer unless approved otherwise by the Consultant. Indicate total quantity of fertilizer applied on site in Maintenance Log for each turf area.

The following type of fertilizer is for guidance only. The Contractor shall be required to complete Spring, Summer and Fall application as noted at a minimum.

- Spring Application: all turf areas. Apply 26-14-6 or similar slow-release granular fertilizer at rate of 3 kg/100 m<sup>2</sup> by May 20th.
- Summer Application: all turf areas. Apply 24-5-11 or similar slow-release granular fertilizer at rate of 3 kg/100 m<sup>2</sup> by July 15th.
- Fall Application: all turf areas. Apply 12-3-18 or similar slow-release granular fertilizer at rate of 2 =kg/100 m<sup>2</sup> by September 30th.

Water: apply water immediately after spreading fertilizer. Alternatively, Contractor shall time fertilizer applications prior to natural rainfall that will activate the fertilizer and produce the desired response. Ensure moisture penetration of 50 mm minimum.

Advise the County prior to any application of turf fertilizer. Upon completion of service, provide documentation along with invoice to support type and quantity of turf fertilizer applied.

Public notice, to be coordinated through the Consultant, shall be given and posted for each property prior to application.

#### **4.73.20 Mowing - Maintained Areas**

Mowing Height: cut and maintain turf areas at required variable minimum heights respective of the growing season. During periods of active growth turf shall be mowed at minimum required mowing height. During hot dry conditions and slow growth periods turf shall be mowed at increased or maximum heights to maintain turf health. Turf shall generally be cut and maintained as follows:

- Sodded Areas: cut and maintain turf at 60 - 80 mm height.

- Seeded Native Grass: provide weed control during seed establishment by mowing weed growth to 100 mm height and remove from site. Mow native seed areas during the last two weeks of June and August or as directed by the Consultant. Mow tall growing native grass at a height of 135 to 150 mm and short growing native grass at a height of 90 to 100 mm. Do not mow native grass lower than specified. Provide an additional cut due to active and/or accelerated growth when directed by the Consultant.

Mowing Schedule: mow sodded areas on weekly intervals during periods of active growth and more frequently during accelerated growth periods to maintain sod at required height. During periods of hot dry seasonal climatic conditions and when sod growth is slow, sod shall be cut less frequently at an increased height to maintain sod health.

Mowing shall generally be performed when "one-third" of grass blade can be removed during a single cutting to achieve required turf height. Schedule and complete mowing in one continuous operation, weather permitting. Do not mow sod when insufficient growth is evident or cut sod lower than specified height.

Mow areas only when dry. Use mowers with sharp blades that will cut turf cleanly. Areas mowed when wet or with dull blades that tear and leaves ragged leaf edges are unacceptable. Town of Drumheller will periodically inspect mowers for acceptance.

During periods of extended moisture and excessive sod growth, increase mower blade height and pre-cut sod at an increased height. Remove clippings. After sod dries, lower blade height to specified height and mow sod a second time to achieve required height.

Remove clippings after each mowing. Small and unnoticeable grass clippings may be left on lawns that are regularly mowed at the desired height.

Remove papers, rocks, animal waste, and other foreign material before cutting.

Change direction of cut with each mowing to avoid soil compaction and sod wear or ruts from mower wheels. In the event that sod damage or ruts result, the Contractor shall immediately repair all damaged areas.

During each cutting operation, temporarily relocate movable site furnishings. Replace to approximate original location after mowing lawn.

Trimming: trim grass areas as follows:

- trim grass along fences, walls, signposts, structures, monuments and other select lawn areas not accessible to mowers using a mechanical trimmer. Trim turf at a height no lower than 60 mm. Never scalp turf or damage any plant when using trimmers. Remove resulting plant debris from site.
- use hand trimmers to trim grass adjacent to trees and other plants to prevent damage to tree trunks, plant stems and roots. Do not use string line trimmers near live plants.
- cut and neatly trim grass around irrigation equipment, manholes, valves and other surface features in lawn areas. Remove resulting plant debris from site.

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Clean all sidewalks, stairs, roads, parking lots, curbs, hard surfaces, building walls and other required locations of all grass clippings after each mowing to maintain clean site appearances.

#### **4.73.21 Integrated Pest Management**

Manage and control pests using Integrated Pest Management (IPM) principles 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.

Use IPM principles to reduce or eliminate a reliance on chemical pesticides.

The Contractor shall be knowledgeable regarding the identification of pests on site, controls to be implemented in management of pests and assessing outcome of treatment actions. Inform the Consultant of all pest concerns on site and controls to be implemented in management of pests. Record all information in the maintenance log.

#### **4.73.22 Pests: Weed, Insect and Disease Control**

Pest Monitoring:

- Pest Monitoring: regularly monitor and visually inspect all turf and other landscape areas to identify potential pest problems and determine appropriate pest controls. Pest problems include insect, disease and weed infestations that pose a serious and on-going threat to plant life on site.
- Ensure proper, positive identification of infestations. Reference "Backyard Pest Management" for identification and control of pests.
- Indicate results of each monitoring inspection in maintenance log. Review all pest concerns with the Consultant. Record all actions taken to control pest problems in log.

General Considerations:

- Use of chemical pesticides are restricted as Town of Drumheller supports the use of IPM practices. Advise Town of Drumheller on whether IPM practices are practical in managing and controlling any existing pests on site.
- Determine susceptibility of plant species to pesticide damage before requesting chemical pesticides. Request the Consultant's approval before use, where chemical pesticides are deemed necessary in the management and control of pest infestations.
- Applications of pesticides shall be performed in accordance with Alberta Environment's current legislation. Provide the Consultant with three days advance notification of intent to apply chemical pesticides on site.
- Use equipment and containers free of harmful residues not related to specific control measures applicable to situation.
- Certified Applicator: when pesticides are deemed necessary to control pests, the application of each pesticide on site shall be performed by a certified pesticide applicator. Personnel assisting the certified applicator on site shall be thoroughly trained and knowledgeable in pesticide applications and use of all equipment in accordance with Alberta Environment's Code of Practice for Pesticides. Applicator shall maintain pesticide application record books and submit at completion of each pesticide application.
- 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.

- 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.
- Ineffective and improper application of pesticide shall be immediately terminated and corrected by Contractor. Additional application of pesticides shall be completed approximately two weeks after initial application is noted as visibly inadequate or deemed deficient by the Consultant.

#### **4.73.23 Pest Control**

Weeds:

- Provide ongoing weed control and eradication methods during active growth and establishment, by cultivation, physical removal and use of approved chemical pesticides.
- Completely eliminate and remove from site all noxious weeds in accordance with government regulations.
- Control and elimination of weeds within soft and hard landscaped surfaces on site on an ongoing basis. Ensure weed seed heads are removed before maturity.

Insects and Disease:

- Apply pesticides based on development stage of insects' life cycles to prevent loss or damage to plant material. Monitor turf areas and plants and apply pesticides, if approved, to control pest infestations.

Monitor effectiveness of each pesticide application and promptly correct any inadequate or deficient application.

Repair and pay for damage caused by application of herbicides.

Do not use soil sterilants.

Eliminate rodents using controls and methods approved by Town of Drumheller.

#### **4.73.24 Cleanliness of Grounds**

Keep grounds in clean and tidy condition to ensure clean site appearances are continually maintained. Provide minimum twice monthly clean-up services as directed by the Consultant. Sweep, clean, collect and remove all debris, litter, rubbish and pests from project limits.

Provide prompt service, within 3 hours, when directed by the Consultant to correct or complete clean-up services deemed inadequate or incomplete.

Pay all costs for collecting and disposing of excess material and debris to municipal disposal site following each site clean-up. Do not dispose of any debris in Town of Drumheller disposal bins on site.

Sweep and clean all walkways and other hard surface areas weekly, or more frequently, as required. Provide mechanical power wash equipment to clean and wash paved surfaces near buildings if directed by the Consultant.

Record all cleaning services performed each week in the maintenance log.

Make weekly inspections for vandalism and damage. Immediately report vandalism and damage to the Consultant. Note all findings in the maintenance log.

Provide same day response to the Consultant's request to correct, repair, and adjust damage or defacement of plant materials caused by vandalism, accident or weather.

#### **4.74 LANDSCAPE BARRIER ACCESS – RAMPS OR INTEGRATED STEPS**

##### **4.74.1 Submittals**

Where size, colour or finish is criterion, submit full range of samples.

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

##### **4.74.2 Product Delivery and Storage**

Schedule delivery of components to site to coincide with installation of this Work.

Store components to prevent damage and distortion.

##### **4.74.3 Quality Assurance**

The Consultant shall examine the Rundle Steps upon delivery to the site and report any deviations from project specifications to the contractor.

##### **4.74.4 Measurement and Payment**

Measurement and Payment will be based on type of installation per side of landscape barrier. The compensation will be based on work required to complete the work to satisfaction of the Consultant. Payment will be full compensation for all labour, materials, equipment, tools, and any incidentals required to complete the Work.

Payment shall be under applicable Bid Item "Common Excavation", "Borrow Excavation - Contractor's Supply", "Supply and Installation of Landscape Step" (based on each step installed).

##### **4.74.5 2.1 Materials**

Natural stone steps shall meet the following requirements:

- Large Rundle Steps (4ft x 4ft x 6 – 8" rise) Exposed tread to be 12 – 16"
- Stone must be high quality sedimentary limestone that originated as fine grained and marine siltstone. The Contractor shall review the quality of stone prior to ordering to ensure the stone meets the requirements of the Consultant.

Base Materials:

- 25mm minus road crush.

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**4.74.6 3.1 Installation**

The contractor shall take necessary precautions to prevent migration of base material into dike construction.

The Contractor shall construct integrated ramps and / or steps as shown on the typical details on Contract Drawing L-300. Each Lot shall be jointly reviewed by the Contractor and Consultant prior to starting work to coordinate the type and location of each access requirement over the structure. All work shall be done to the satisfaction of the Consultant.

Level gravel base material, ensuring specified depth is achieved with uniform coverage.

Water and lightly roll mulch to compact and reduce looseness of surface.

Hose natural boulder features down after installation to remove dust and debris.

**4.75 PERMANENT EROSION CONTROL BARRIER (SILT FENCE / ROLLED EROSION CONTROL PRODUCT / STRAW ROLLS / WATTLES)**

Erosion Control Barriers shall be installed by the Contractor in accordance with Best Management Practices (BMP) #1, 13, and 38C of Alberta Transportation's Design Guidelines for Erosion and Sediment Control for Highways.

Erosion Control Barrier (Silt Fence), Soil Covering, and Straw Rolls/Wattles shall be installed at the locations designated or as specified by the Consultant.

Earth percussion anchor systems and or staples will be required on all areas where turf reinforcing matting is to be installed. Type and model of earth percussion anchors are depended upon manufacture specifics. All work associated with the supply and installation of earth percussion anchoring systems and staples will be considered incidental to the supply and installation of the turf reinforcement matting and no additional or separate payment will be made.

The Contractor and Consultant shall review areas to receive permanent erosion and sediment control products for installation and select the appropriate type of product to be installed after the construction is completed and as required by the Consultant.

The Contractor shall be fully responsible for any temporary erosion and sediment control requirements during their construction operations prior to the installation of the permanent erosion and sediment control products to control the release of sediment into a waterbody.

A complete job is called for, therefore any labour, material, equipment, tool, or incidental item not specifically mentioned, but necessary for completeness, and other temporary measures used on the project will be paid by the submittal of costs towards the Cash Allowance for "Erosion and Sediment Control Measures Implementation".

**4.76 VIBRATION MONITORING**

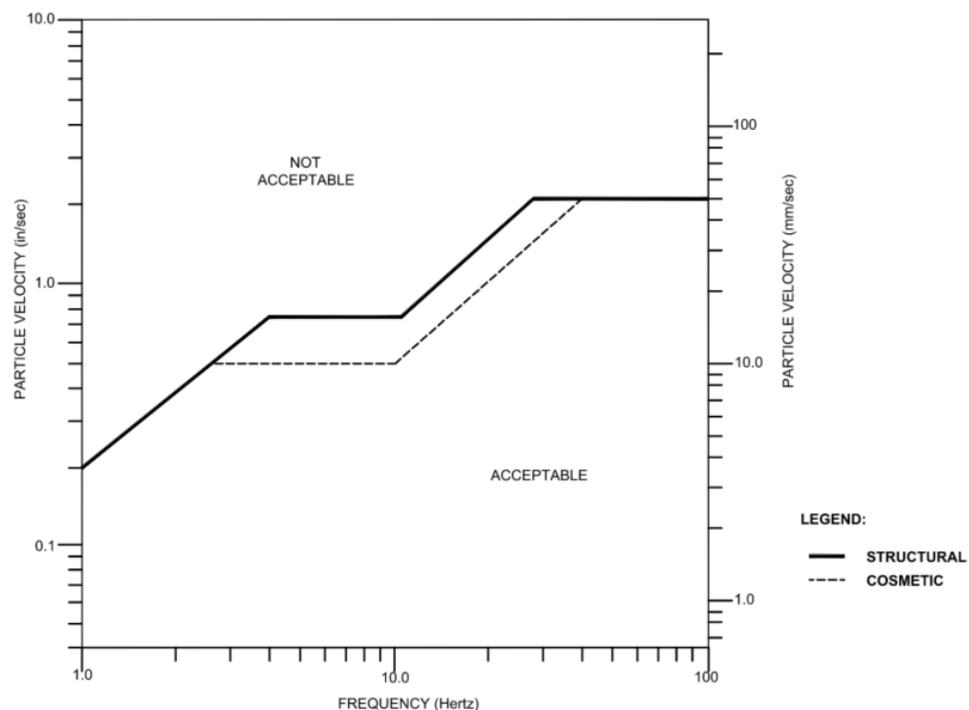
This section provides the minimum requirements for vibration monitoring control to be completed by the Contractor and Owner's Representative during all phases of the construction activities. Contractor is advised that the ground vibration may restrict the construction practices.

- The purpose of the construction vibration monitoring program is to assess possible impacts that construction activities might have on adjacent facilities in order to protect these facilities from vibration induced damage during all phases of the work. The facilities include, but are not limited to, adjacent residential buildings within proximity of the Work.

The Contractor shall be responsible for the following requirements:

- The Contractor shall sign off on the Vibration Monitoring Plan prepared by the Town and work with the Owner's Representative to ensure that construction vibrations do not exceed the levels described below. The Owner's Representative shall monitor the vibration levels generated at any stage during construction.
- All Areas: Conduct construction activities so that vibration levels at a distance of 30m from construction limits or at nearest affected building (whichever is closer) do not exceed the cosmetic threshold as listed in the Figure below.

**FIGURE 1: STRUCTURAL AND COSMETIC THRESHOLDS FOR VIBRATION (USBM & OSMRE)**



- The Owner's Representative shall be responsible to complete the following:
  - Prepare and deliver notices to all adjacent residential buildings within 30m of construction activities notifying them of a public pre-construction meeting for property owners within the zone of influence (30m of proposed dike), which shall be arranged by the Consultant. This meeting is an opportunity to inform property owners of the construction and provide notice of the potential for construction vibrations, discuss the methodology and inform residents of the limits to vibration levels. Residents will also be informed that exterior inspections will be taking place on all buildings within 30m of the dike footprint. Residents will also be advised that they can request interior inspections if they desire.

- Owner's Representative will complete exterior inspections on all residential buildings within 30 m of the dike footprint. Owner's Representative will also complete interior inspections for all residents that request one. A report shall be prepared and delivered to the Town summarizing all inspections.
- The Owner's Representative, or retained Vibration Monitoring Firm, shall prepare a Vibration Monitoring Plan that adheres to the Vibration Monitoring Requirements listed in this specification. The Vibration Monitoring Plan shall be submitted to the Town for Review and Approval. The Contractor shall also sign off on the Vibration Monitoring Plan.
- The Owner's Representative, or qualified Vibration Monitoring Firm, shall implement the vibration monitoring plan during construction of the dike and shall work with the Town and Contractor to ensure the plan is followed and that vibration impacts are minimized as much as possible.
- Prepare and submit weekly vibration monitoring reports to the Town as described in the Vibration Monitoring Plan.
- Complete post-construction damage inspections for any building owners that report damages during the construction of the berms. Owner's Representative shall prepare and submit a report summarizing the post-construction damage inspections to the Town.

#### Vibration Monitoring Requirements

- This section provides the details of the Vibration Monitoring Requirements that will be implemented by the Owner's Representative, or third party, and the Contractor during the construction of the dikes.
  - Ensure construction vibrations remain below the Cosmetic threshold level shown on Figure 1 above.
  - During the first stage of work a comprehensive vibration monitoring test section shall be developed, which monitors the construction activities which could create noticeable vibrations and identifies those key construction activities which create the largest vibrations and warrant closer monitoring during the project. The results of the test section shall be used to modify the Contractor's procedures, if required, to maintain vibrations below the alert levels at the adjacent buildings / facilities. The frequency of ongoing monitoring for the remainder of the project will depend on the Contractor's ability to maintain vibrations below the alert level. As a minimum, periodic vibration monitoring shall be carried out every two days during the key construction activities, to provide a record of vibration measurements in each stage / area of work.
  - The results of the vibration monitoring during the first stage of work will be used to determine the frequency of required monitoring for the remainder of the project. The Owner's Representative will provide the Town with a recommendation on the level and frequency of monitoring moving forward.
  - Vibration monitors shall be capable of measuring PPV levels triaxially in three directions over a frequency range of 1 to 100 Hz. The monitors shall be InstanTel Blastmate Series III or Minimate Plus seismographs or equivalent equipment. The Vibrations monitor shall be capable of recording peak triaxial PPV values in at least 5-minute interval histogram plots.

The method of coupling the geophones to the ground shall be described in the vibration monitoring plan. The vibration monitors shall be calibrated and a proof of calibration shall be submitted to the consultant prior to mobilization to site.

- The Owner's Representative shall be responsible for protection and maintenance of the vibration monitoring instruments. The Contractor shall cooperate with the Owner's Representative to maintain the monitoring instruments.
- The Owner's Representative shall be notified of any vibration-related complaint that is received. The Contractor shall investigate the complaint and prepare an assessment and proposed solution for review by the Owner's Representative. The activity that created the complaint shall be halted until an appropriate solution / resolution has been agreed to and implemented.
- The post-construction vibration monitoring summary report shall be submitted to the Town three weeks after the completion of the construction activities.

## 5 SPECIFICATION AMENDMENTS

### 5.1 **AMENDMENT TO SPECIFICATION 1.1, DEFINITION AND INTERPRETATION**

Unless otherwise noted, the following shall apply to all Specifications:

- The word "Department" shall be replaced by the word "Owner"
- The word "Minister" shall be replaced by the word "Owner"

Add the following definitions:

- *The Owner is the person, firm, or corporation identified as such in the Agreement and may, in some contracts, mean "Alberta Transportation," is referred to throughout the Contract Documents as if singular in number and masculine in gender. The term Owner means the Owner or their authorized agent or representative as designated to the Contractor in writing but does not include the Consultant.*
- *The Consultant is the Owner's representative during construction and until completion of any correction of defects, or until the issuance of the Final Acceptance Certificate, whichever is later, and will continue to the end of the warranty period. The Owner's instructions to the Contractor shall be forwarded through the Consultant. The Consultant will have authority to act on behalf of the Owner only to the extent provided in the Contract Documents, unless otherwise modified by written agreement.*

In the event of the termination of the employment of the Consultant, the Owner shall immediately appoint a Consultant to whom the Contractor makes no reasonable objection and whose status under the Contract shall be that of the former Consultant.

Nothing contained in the Contract Documents shall create any contractual relationship between the Consultant and the Contractor; their Subcontractors; their suppliers; or their agents, employees, or other persons performing any of the Work.

The word "Utilities" shall mean, but not be limited to, pipelines, drainage works, water works, sewage works, power facilities, telephone facilities, cable facilities, appurtenances, and facilities which are located on, in, or near the right-of-way and which may be affected by construction.

### 5.2 **AMENDMENT TO SPECIFICATION 1.2, GENERAL SPECIFICATIONS**

#### 5.2.1 **Section 1.2.5, Safety Prequalification**

The first five (5) paragraphs of Subsection 1.2.5.2, Safety Prequalification, are replaced with the following:

*Contracts will only be awarded to Bidders who, prior to the time fixed for receiving tenders, possess a valid Certificate of Recognition (COR) or a valid Temporary Letter of Certification (TLC) for a standard COR or COR Equivalency Letter (COREL) for out of province Bidders, as issued by the Alberta Construction Safety Association (ACSA) or another certifying partner authorized by the Alberta Ministry of Labour to issue CORs, TLCs, or CORELs. The COR, TLC, or COREL must be relevant to the work. Possession of a Certificate of Recognition other than a standard COR, TLC, or COREL, such as a Small Employer Certificate of Recognition (SECOR) is not acceptable*

*It is the Bidder's responsibility to ensure their registration in the program is properly documented with the issuing certifying partner and the Department will assume no liability for errors or omission in the regard.*

### **5.2.2 Section 1.2.6, Delivery of Tenders**

Add the following to this section:

*Where the Owner is other than Alberta Transportation, all Tenders must be addressed to the business office of the Owner as instructed in the "Instructions to Bidders."*

### **5.2.3 Section 1.2.8.1, Tender Changes**

Add the following:

*Email changes to the Unit Price Schedule shall be sent to the office of the Owner as required in the "Instructions to Bidders" section of the Tender documents.*

### **5.2.4 Section 1.2.9.2, Alternative Forms of Security**

Add the following:

*Where the Owner is other than Alberta Transportation, the following shall apply:*

- *Alternative forms of security are subject to the approval of the Owner.*
- *Performance bonding or security in lieu of bonds shall remain in force until the end of the Warranty Period.*

### **5.2.5 Section 1.2.10, Insurance**

Add the following to paragraph (i):

*The Owner and the Consultant shall be included in the Contractor's Comprehensive or Commercial General Liability Insurance as additional insured.*

### **5.2.6 Section 1.2.20, Failure to Complete On Time**

The following is revised to subsection (i)(a):

*The reference to " \$1,350.00" remains as is.*

### **5.2.7 Section 1.2.26.3.1, Requirements**

Add the following:

*Where the Owner is other than Alberta Transportation, alternatives to retaining holdback are subject to the approval of the Owner. No payment made by the Owner under this Contract, or partial or entire use or occupancy of the Work by the Owner, shall constitute an acceptance of work or products which are not in accordance with the requirements of the Contract Documents.*

### **5.2.8 Section 1.2.51, Goods and Services Tax**

Add the following:

*Where the Owner is other than Alberta Municipal Affairs, G.S.T. will be added on to payments made to the Contractor.*

### **5.2.9 Section 1.2.54.1.2, Resolution of Claims**

Modify as follows:

*Where the Owner is other than Alberta Transportation, the administrative review structure shall be:*

- Consultant Project Manager/Engineer
- Consultant Project Director
- Consultant Regional Area Manager
- The Owner (with assistance from the Regional Director, Alberta Transportation, where applicable)

### **5.3 AMENDMENT TO SPECIFICATION 2.3, GRADING, RE: DRYING WET MATERIAL**

#### **5.3.1 Subsection 2.3.6.13.5.2, Lime for Drying**

Is revised as follows:

Delete the second paragraph and replace with the following:

*All cost associated with the supply and incorporated lime into wet material will be considered incidental to the Work and will not be paid for separately.*

### **5.4 SPECIFICATION 3.6, GRANULAR BASE COURSE**

#### **5.4.1 Table 3.6.3.1, "Test Methods"**

Add another test:

Plasticity Index - AASHTO T90 - As required

### **5.5 AMENDMENT TO SPECIFICATION 3.8, GRANULAR FILL**

#### **5.5.1 Section 3.8.4.1, Granular Fill**

Add the following:

*Where granular fill is placed in layers the maximum compacted thickness of a layer shall not exceed 200 mm.*

### **5.6 AMENDMENT TO SPECIFICATION 4.5, HAULING**

#### **5.6.1 Section 4.5.3.3, Construction, Initial Conditioning, and Maintenance of Haul Roads**

For the second paragraph, first sentence, delete the remainder of the sentence and section after the word "Contractor" and bullets (a) and (b).

#### **5.6.2 Section 4.5.5.2, Haul Roads**

For the first paragraph, delete the initial portion of the sentence up to and including the word "Subsection."

### **5.7 AMENDMENT TO SECTION 10, HEAVY ROCK RIPRAP, OF THE STANDARD SPECIFICATIONS FOR BRIDGE CONSTRUCTION, RE: CLASS 1M MATERIAL DIMENSIONS**

The nominal diameter for Class 1M heavy rock riprap, for the 20% to 50% shown in Table 10-1 of Subsection 10.3, **Heavy Rock Riprap Material**, is revised from 1 200 mm to 200 mm.

## 6 SUPPLEMENTAL SPECIFICATIONS

This Supplementary Condition modifies the following Alberta Transportation standard documents, as specified herein:

- Section 00630 - Payment Conditions.

Provisions which are not so modified shall remain in full force and effect.

### 6.1 SECTION 00630 PAYMENT CONDITIONS

Add article 14 - Diesel Fuel Cost Adjustment

### 6.2 SECTION 00805 DIESEL FUEL COST ADJUSTMENT

#### PART 1 GENERAL

##### 1.1 GENERAL

- .1 The Owner will make adjustments to the monthly progress payments due to the Contractor when the Owner determines that the Monthly Price Index for low sulphur diesel fuel has increased or decreased in excess of 15% of the Base Price Index.
- .2 The Monthly Price Index will be published on the Government of Alberta web site <https://www.alberta.ca/unit-prices-and-cost-adjustments.aspx>.
- .3 This section only applies to low sulphur diesel fuel, for the category of Work and at the consumption rates specified herein.
- .4 The Base Price Index that applies to the Contract is **\$ 145.31**.

##### 1.2 DEFINITIONS

- .1 Monthly Price Index (MPI):  
  
The Monthly Price Index will be based on the average Edmonton and Calgary Rack Rates for low sulphur diesel as published by the Oil Price Information Service (OPIS). The MPI will be calculated as the average of the first 3 Mondays of each month. New MPI's will be established each month by the Owner. In the event of a statutory holiday, the Rack Rate from the next working day will be used to determine the MPI.
- .2 Base Price Index (BPI):  
  
The Base Price Index specified for this Contract will be the most current MPI, as determined solely by the Owner, prior to the initial tender advertising date.
- .3 Monthly Diesel Price Index (MDPI):

The Monthly Diesel Price Index is the MPI published by the Owner for the month in which Work is performed. The MDPI will be effective from the 26th day of the previous month to the 25th day of the current month.

**1.3 DIESEL FUEL CONSUMPTION RATES**

- .1 For the purpose of the diesel fuel cost adjustment, the following category of Work and diesel fuel consumption rate will be used:

<b>Category of Work</b>	<b>Diesel Fuel Consumption Rate (CR) (1)</b>
Common Excavation, Borrow Area Excavation, Impervious Fill, Riprap Bedding Gravel, and Riprap (excludes Topsoil and Subsoil Placement)	1.6 litres/m <sup>3</sup>

Note 1: The specified consumption rates include overhaul and truck haul. No adjustments to the specified consumption rates will be made for Contractor’s choice of equipment, type of fuel, construction methodologies, efficiencies, or haul distances. No diesel fuel price adjustments will be made to Lump Sum Items.

**1.4 CALCULATION OF DIESEL FUEL COST ADJUSTMENT**

- .1 The Owner will calculate the diesel fuel cost adjustment for the months in which the specified category Work is performed.
- .2 The Owner will compute the ratio of Monthly Diesel Price Index / Base Price Index each month the specified category of Work is performed. If the ratio falls between 0.85 and 1.15, inclusive, no fuel cost adjustment will be made for that month. If the ratio is less than 0.85 a credit to the Owner will be computed. If the ratio is greater than 1.15 additional payment to the Contractor will be computed. Diesel Fuel Cost Adjustments will be computed as follows:

- .1 Diesel Fuel Price Decrease: When the MDPI is less than 85% of the Base Price Index, a diesel fuel de-escalation assessment will be calculated. This assessment will be deducted from any monies due the Contractor on the monthly progress payment.

$$P.R. = (0.85 - (MDPI / BPI)) \times (Q) \times (BPI) \times (CR) \text{ where:}$$

P.R. = Price Rebate

Q = the monthly quantity of the specified category of Work performed, as determined by the Owner and as reported on the monthly progress estimate

CR = the diesel fuel consumption rate for the specified category of Work.

- .2 Diesel Fuel Price Increase: When the MDPI is more than 115% of the Base Price Index, a diesel fuel escalation assessment will be calculated. This assessment will be added to any monies due the Contractor on the monthly progress payment.

P.I. =  $((\text{MDPI} / \text{BPI}) - 1.15) \times (Q) \times (\text{BPI}) \times (\text{CR})$  where:

P.I. = Price Increase

Q = the monthly quantity of the specified category of Work performed, as determined by the Owner and as reported on the monthly progress estimate

CR = the diesel fuel consumption rate for the specified category of Work.

- .3 The Price Rebate or Price Increase will be authorized by means of a Change Order.

## **1.5 CONTRACTOR'S OPTION TO PARTICIPATE**

- .1 The Contractor shall have the option to participate or opt-out of the Minister's diesel fuel cost adjustment process.
- .2 If the Contractor wishes to opt-out of the Owner's diesel fuel cost adjustment process, the Contractor shall state its intent in writing to the Owner prior to execution of the Contract.
- .3 If the Contractor does not state its intent in writing to the Owner prior to execution of the Contract, the Owner will deem that the Contractor's intent was to participate in the diesel fuel cost adjustment process and no further changes will be considered.
- .4 The Contractor will not be permitted to either opt-in or opt-out of the diesel fuel cost adjustment process after the Owner's execution of the Contract.

## **1.6 CONCLUSIONS OF DIESEL FUEL COST ADJUSTMENT**

- .1 The calculation of Price Rebates and Price Increases on diesel fuel costs will only be considered for the category of Work specified and performed prior to the date of Substantial Performance of the Work.
- .2 For any of the category of Work specified and performed after the date of Substantial Performance of the Work, the Owner will process payments without applying any diesel fuel cost adjustments.

## **1.7 FINAL PAYMENTS**

- .1 If the Contractor fulfills the prerequisites to Substantial Performance by the specified date, the Owner will determine the difference between the cumulative monthly estimated quantities for the category of Work specified and the final quantities for that same Work. An average Monthly Diesel Price Index will be calculated by averaging the Monthly Diesel Price Indexes for all months in which the category of Work specified was performed. This average Monthly Diesel Price Index will be applied to the quantity differences for such work.

- .2 If the Contractor does not fulfill the prerequisites to Substantial Performance by the specified date, diesel fuel price adjustments will not be applied to any difference between the estimated and final quantities of the category of Work specified.

END OF SECTION

The following Supplemental Specifications are from Alberta Transportation's Civil Works Master Specifications for Construction of Provincial Water Management Projects.

The following Specifications pertain to the following type of work only: Bedding Gravel.

### **6.3 SECTION 02371 BEDDING GRAVEL PLACEMENT**

#### **PART 1 GENERAL**

##### **1.1 QUALITY CONTROL**

- .1 Perform quality control tests of bedding gravel as specified in Section 02330 – Earthwork Materials and Alberta Transportation's Standard Specifications for Highway Construction, Specification 3.2, Aggregate Production and Stockpiling.
- .2 Minimum bedding gravel sample sizes to be a minimum of 400 kg.
- .3 Transport only suitable materials meeting the specifications to the Site.

##### **1.2 QUALITY ASSURANCE**

- .1 The Minister will perform any testing to assure conformance to the specified requirements after the materials have been placed.
- .2 The Minister may reject bedding gravel at the source, in the transport vehicle, in the stockpile, or in place.
- .3 The Minister may take samples of bedding gravel for quality assurance testing. Co-operate with Minister during sampling and testing. Load and dispose of sampled materials when no longer required by the Minister.
- .4 The frequency of gradation testing may be increased as deemed necessary by the Minister until the Contractor consistently meets the specified requirements.

#### **PART 2 PRODUCTS**

##### **2.1 MATERIALS**

- .1 Provide materials in accordance with the following.

- 
- .2 References to "Gravel Armour 5C" within these Specifications shall be synonymous with Riprap Bedding Gravel
  - .3 References to "40 mm Drain Rock" within these Specifications shall be synonymous with Pipe Bedding Gravel
  - .4 Riprap Bedding Gravel (Gravel Armour Zone 5C): Refer to Section 02330 – Earthwork Materials for material specifications.
  - .5 Pipe Bedding Gravel (40 mm Drain Rock): Refer to Section 02330 – Earthwork Materials for material specifications.

### **PART 3 EXECUTION**

#### **3.1 STOCKPILES**

- .1 Obtain prior authorization from the Minister for temporary stockpile locations on Site. Do not stockpile bedding gravel in areas where contamination with the underlying soils can occur.
- .2 Use stockpiling methods that do not cause loss of materials, segregation, or particle damage.

#### **3.2 PLACEMENT**

- .1 Place bedding gravel at the locations, and to the lines, grades, slopes, and elevations specified in the Contract Documents.
- .2 Surfaces to receive bedding gravel may be frozen, but remove water, snow, ice, frozen lumps, or deleterious materials from receiving surfaces.
- .3 Do not place bedding gravel until the receiving surfaces have been inspected by the Minister. Rectify defects, including any identified by the Minister, until the receiving surfaces meet the requirements of the Contract Documents.
- .4 Place bedding gravel to its full thickness in one operation to provide a uniform thickness without any large unfilled voids.
- .5 Not Used.
- .6 Obtain the specified distribution of the various sizes of particles throughout the mass by using selective loading at the source or stockpiles, by controlled dumping of successive loads during placing, or by other methods of placement.
- .7 During placement, regularly check the thickness of the placed material to enable prompt adjustments to be made to the placement methodology. If measurements indicate that the specified thickness are not being attained, temporarily terminate placement and implement corrective measures, as authorized by the Minister, to provide the specified thickness.

- .8 Do not cause segregation, particle damage, breakdown, or displacement of adjacent previously placed bedding gravel. Replace or repair damaged or displaced material.
- .9 Commence placement from the toe of the slope and proceed up the slope. Dozing or pushing of bedding gravel downslope from the top of the slope is not permitted.
- .10 Compaction of bedding gravel is not required.
- .11 Provide a completed bedding gravel surface that is smooth, regular, and uniform.

**3.3 PLACEMENT TOLERANCES**

- .1 Place bedding gravel on the soil subgrade to a minimum thickness of -10 mm and a maximum thickness of +50 mm of the specified thickness at any location, and to an average variation in specified thickness of between 0 and +20 mm over the length of the placement areas.
- .2 Place bedding gravel within a tolerance of +100 mm of the specified top of armour elevation. Limit the maximum rate of change in deviation from the specified top of armour elevation to a ratio 1V:50H.

END OF SECTION

## 6.4 SECTION 02330 EARTHWORK MATERIALS

### PART 1 GENERAL

#### 1.1 GENERAL

- .1 This section is a reference section specifying the quality of earthwork materials. Requirements for the inclusion of such materials in the Work are specified elsewhere in the Contract Documents.

#### 1.2 DEFINITIONS

- .1 "Effective Particle Size ( $D_e$ )" of rock particles is calculated as follows:

$$D_e = \sqrt[3]{\frac{M}{523.6 \times G_s}}$$

Where  $D_e$  = Effective particle size measured in metres.

$M$  = Particle mass measured in kilograms.

$G_s$  = Specific gravity of particle = 2.60 unless otherwise measured.

- .2 "Percent Passing by Mass" means the cumulative mass of particles that are finer than a specified size expressed as a percentage of the total mass of the sample.

#### 1.3 REFERENCES

- .1 Provide earthwork materials in accordance with the following standards (latest revision) except where specified otherwise.
- .2 American Society for Testing and Materials (ASTM)
- |    |            |  |
|----|------------|--|
| .1 | ASTM D422  | Standard Method for Particle Size Analysis of Soils.   |
| .2 | ASTM D1140 | Standard Test Methods for Amount of Material in Soils Finer than the No. 200 (75µm) Sieve.                   |
| .3 | ASTM D2487 | Standard Practice for Classification of Soils for Engineering Purposes (Unified Soil Classification System). |
| .4 | ASTM D4318 | Standard Test Methods for Liquid Limit, Plastic Limit and Plasticity Index of Soils.                         |
- .3 California Division of Highways
- |    |          |   |
|----|----------|---|
| .1 | CAL. 206 | Method of Test for Specific Gravity and Absorption of Coarse Aggregate. |
| .2 | CAL. 229 | Method of Test for Durability Index.                                    |

- .4 Canadian General Standards Board (CGSB)
  - .1 CAN/CGSB-8.2-M Sieves, Testing, Woven Wire, Metric.
- .5 Canadian Standards Association (CSA)
  - .1 CAN/CSA-A23.1/A23.2 Concrete Materials and Methods of Concrete Construction.
- .6 Prairie Farm Rehabilitation Administration (PFRA)
  - .1 Unified Soils Classification System as Modified by PFRA.

#### **1.4 SUBMITTALS**

- .1 Provide the following submittals.
- .2 A listing of the proposed source for each type of imported material at least 10 days prior to delivery to the Site.
- .3 Samples, of suitable quantities of each type of imported material at the Site requested by the Minister for testing purposes prior to placement.
- .4 Results of quality control tests of imported materials taken at the source at least 7 days prior to delivery of such materials to the Site.
- .5 Copies of quality control test results of placed materials with 48 hours of sampling.

#### **1.5 QUALITY CONTROL**

- .1 General
  - .1 Provide a quality control program to ensure that the specified requirements will be consistently attained throughout the Work. Incorporate the specified testing, and any additional testing or measures as required by the Contractor. The frequency of quality control testing may be increased as deemed necessary by the Minister until the Contractor consistently meets the specified requirements.
  - .2 Conduct testing in accordance with the standards listed in clause 1.3 as determined by the Minister.
  - .3 Engage an independent CSA certified and qualified earthworks materials testing laboratory, with a permit to Practice in the Province of Alberta to sample and test earthwork materials.
  - .4 Do not import any materials to the Site that may be contaminated with "Prohibited Noxious" or "Noxious" weeds under the Weed Control Act.
  - .5 Transport only suitable materials meeting the specifications to the Site.

- 
- .2 Sources of Sand, Gravel and Rock Materials
    - .1 Conduct quality control tests, in addition to those specified in clause 1.5.1, at the source to confirm that it can provide materials that will meet the specified durability requirements prior to commencing processing operations.
    - .2 During processing of sand and rock materials, test materials from the discharge conveyor belt to verify that the material meets the specified gradation requirements. Notify the Minister at least 48 hours prior to starting production of materials intended for incorporation in the Work.
    - .3 Promptly notify the Minister if any test fails to meet the specified requirements, and immediately take corrective measures as required to produce materials that are in accordance with the Contract Documents.
    - .4 Dispose of or, where appropriate, reprocess any material which does not meet the requirements of the Contract Documents.

## **1.6 QUALITY ASSURANCE**

- .1 The Minister will perform testing to assure conformance to the specified requirements after the materials have been placed.
- .2 The Minister may reject earthwork materials at the source, in the transport vehicle, in the stockpile or in place.
- .3 Samples of earthworks materials will be taken by the Minister for quality assurance testing. Testing will be conducted in accordance with the standards listed in clause 1.3 as determined by the Minister. The frequency of quality assurance testing will be as deemed necessary by the Minister. Co-operate with Minister during sampling and testing. Load and dispose of sampled materials when no longer required by the Minister.
- .4 Quality assurance testing of bedding gravel is specified in Section 002371 – Bedding Gravel Placement.
- .5 Permit Minister access to the sources to inspect, sample and test the materials being produced for incorporation in the Work. Minister may test materials in the stockpile or at the conveyors. Provide equipment and labour for testing, when and as, required by the Minister. Such inspection or testing does not relieve the Contractor from any obligations under the Contract Documents.

## **1.7 NOT USED**

## **PART 2 PRODUCTS**

### **2.1 MATERIALS**

- .1 Provide materials in accordance with the following.

.2 Gradations for earthworks materials except riprap: in accordance with ASTM D422 and ASTM D1140. Specified sieve sizes are based on the nominal sieve opening sizes, in millimetres, under the Canadian Metric Sieve Series in accordance with CAN/CGSB-8.2-M.

.3 Not Used.

.4 Not Used.

.5 Not Used.

.6 Not Used.

.1 Not Used.

.2 Pipe Bedding Gravel (40 mm Drain Rock)

.1 Drain rock shall be washed, graded, crushed, durable rock with a gradation that falls completely within the upper and lower bounds of the envelope defined by straight lines drawn directly between the following points plotted on a standard semi-log soil grain size distribution plot

.2 40 mm Drain Rock

<u>Sieve Size</u>	<u>Percent Passing by Mass</u>
40 mm	100%
5 mm	0% – 10%
2.5 mm	0% – 5%
0.08 mm	0% – 5%

.3 Not Used.

.4 Not Used.

.5 Not Used.

.6 Not Used.

.7 Not Used.

.8 Not Used.

.9 Riprap Bedding Gravel (Gravel Armour 5C):

.1 Well graded gravel and cobbles with a gradation that falls completely within the upper and lower bounds of the envelope defined by straight lines drawn directly between the following points plotted on a standard semi-log soil grain size distribution plot:

Effective Particle or Sieve Size	Percent Passing by Mass
200 mm	100%
150 mm	85% – 100%
100 mm	60% – 85%
40 mm	30% – 55%
20 mm	15% – 30%
10 mm	5% – 15%
5 mm	0% – 5%

.2 Less than 12% loss of weight after 5 cycles in accordance with the requirements of CAN/CSA-A23.2-9A.

.10 Not Used.

.7 Riprap and Boulders:

.1 General

.1 Sound, hard, durable particles free from silt, clay, shale, sandstone, flaky particles, topsoil, organic matter, and other deleterious materials.

.2 Meet the following minimum requirements for soundness and durability.

Method of test	Requirements
California Division of Highways, CAL. 206	Minimum Specific Gravity: = 2.60 Maximum Absorption: = 2%
California Division of Highways, CAL 229	Minimum Durability Index: = 52 Durability Index may be less than 52 if DAR* > 23

$$*Durability Absorption Ratio (DAR) = \frac{\text{Durability Index}}{\text{Absorption \%} + 1\%}$$

.3 Ratio of maximum dimension to minimum dimension of individual pieces not to exceed 3.0.

.2 Not Used.

.3 Not Used.

.4 Not Used.

.5 Not Used.

.6 Not Used.

.7 Not Used.

---

**PART 3 EXECUTION****3.1 STOCKPILING OF SAND, GRAVEL, AND ROCK MATERIALS AT THE SOURCE**

- .1 Temporarily stockpile Common Excavation as required to permit drainage of excess water prior to utilizing as Fill. Strategically place materials such that drier materials are placed at the outermost edge of the stockpile first, i.e. closest to the watercourse, to minimize the potential for wet materials to drain directly into the watercourse and create undue turbidity.
- .2 Temporarily stockpile all sand, gravel, and rock materials that have been processed by washing methods for a minimum of 48 hours to permit drainage of excess water. Do not place recently washed materials on top of or with drier stockpiled materials.
- .3 Use equipment and methods that minimizes the amount of material handling, and that do not cause segregation or material breakdown.
- .4 Do not stockpile materials where contamination with the underlying soils can occur.
- .5 Do not construct stockpiles by cone piling.
- .6 For gravel materials, construct temporary stockpiles by first distributing material over the entire base and then by building upwards in successive layers which do not exceed a thickness of 2 m per layer. Construct each layer working from the outer edges toward the centre of the stockpile. Complete each layer over the entire area before starting the subsequent layer. Keep traffic on the materials to a minimum during stockpiling. Do not push or dump gravel material over the edges or down the faces of the stockpile.
- .7 Keep stockpiles neat and regular in form.
- .8 Do not construct stockpiles that are more than 6 m in height.
- .9 Maintain a minimum clearance of 5 m between stockpiles of each material.
- .10 Replace stockpiled material that becomes contaminated, damaged or lost at no cost to the Minister.

**3.2 PLACEMENT**

- .1 Refer to other sections for subgrade preparation and placement of earthwork materials.

END OF SECTION

## 7 PLANS

The following drawings, which are included separately, form part of the tender documents.

<b>Drawing No.:</b>	<b>Description</b>
DRAWINGS: G-000	GENERAL
G-001	Location Plan, Project Site, Drawing List
G-002	Legend
G-501	Typical Access Ramps
G-502	Typical Culvert and Manhole Sections and Details
DRAWINGS: C-000	WILLOW ESTATES
C-111	Dike Plan
C-112	Dike Plan and Profile Sheet 1 of 2
C-113	Dike Plan and Profile Sheet 2 of 2
C-114	7 <sup>th</sup> Avenue Ditch Realignment Plan and Profile
C-115	7 <sup>th</sup> Avenue East Road Plan and Profile
C-116	Tree Clearing Plan
C-117	Concrete Culvert Plan and Profile
C-211	Dike Culvert Sections
C-212	Dike Access Ramp Culvert Section
C-213	Dike Culvert Sections
C-214	Dike Culvert Upgrade at STA 1+246 Plan and Profile
C-215	Dike Existing Drain Retrofit Plan and Profile
C-311	Dike Sampled Sections
C-411	Swift Water Rescue/River Intake Access Route Plan and Sections
DRAWINGS: L-000	LANDSCAPE DRAWINGS
L-100	Key Plan
L-101	Legend and Notes
L-200	Planting Plan
L-201	Planting Plan
L-300	Dike Details

**8 ADDENDA**

*(Attach addenda, if any, behind this page.)*

## 9 AGREEMENT

This Agreement made on the \_\_\_\_\_ day of \_\_\_\_\_ in the year **Two Thousand Twenty Two**

by and between **Town of Drumheller**  
hereinafter called the **"Owner"**

and  
hereinafter called the **"Contractor"**

witnesses that the parties agree as follows:

### 9.1 ARTICLE A-1 THE WORK

The Contractor shall:

Perform the Work required by the Contract Documents for **Town of Drumheller Resiliency and Flood Mitigation** which have been signed by the parties, and which were prepared by **Wood Environment & Infrastructure Solutions, a Division of Wood Canada Limited**

- (a) acting as and hereinafter called **"Consultant"** and
- (b) Do and fulfill everything indicated by this Agreement, and
- (c) Attain Final Acceptance of the Work, as certified by the Consultant, by the **30<sup>th</sup> day of June 2023**.

### 9.2 ARTICLE A-2 CONTRACT DOCUMENTS

The following is an exact list of the Contract Documents referred to in Article A-1 of this Agreement and as defined in item 1.1.4 of DEFINITIONS. This list is subject to subsequent amendments in accordance with the provisions of the Contract and agreed upon between the parties.

1. Instructions to Bidders
2. Tender Forms
3. Tender Amendment Forms
4. Special Provisions
5. Specification Amendments
6. Plans
7. Environmental Permits & Authorizations
8. Addenda
9. Agreement

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### 9.3 ARTICLE A-3 CONTRACT PRICE

- (a) The quantities shown in the Unit Price Schedule are estimated. The Contract Price shall be the final sum of the products of the actual quantities that are incorporated in, or made necessary by the Work, as confirmed by count and measurement, and the appropriate Contract Unit Prices, together with any adjustments that are made in accordance with the provisions of the Contract Documents.
- (b) The Estimated Contract Price shall be the sum of the products of the estimated quantities and the appropriate Contract Unit Prices in the Schedule.
- (c) See Unit Price Schedule in the Tender Form.

### 9.4 ARTICLE A-4 PAYMENT

- (a) The Owner shall pay the Contractor in Canadian Funds for the performance of the Contract, the amounts being determined by actual measured quantities of the individual work items contained in the Unit Price Schedule in Article A-3(c) of this Agreement and measured in accordance with the methods of measurement given in the specifications.
- (b) Subject to applicable legislation and the provisions of the Contract Documents, and in accordance with legislation and statutory regulations respecting holdback percentages and, where such legislation or regulations do not exist or apply, subject to a **10% holdback**, the Owner shall:
- (1) Make progress payments to the Contractor on account of the work performed as certified by the Consultant, which will become due and payable 45 days following the cut-off date of the progress certificate, (which unless agreed to differently, will be the 25th day of the month), and
  - (2) Upon Final Construction Acceptance of the Work as certified by the Consultant pay to the Contractor the unpaid balance of holdback monies then due, and
  - (3) Upon termination of the warranty period as certified by the Consultant pay to the Contractor the unpaid balance of monies then due.
- (c) If the Owner fails to make payments to the Contractor as they become due under the terms of this Contract or in an award by arbitration or court, interest of **three percent (3%)** per annum on such unpaid amounts shall also become due and payable until payment. Such interest shall be calculated and added to any unpaid amounts monthly.

### 9.5 ARTICLE A-5 RIGHTS AND REMEDIES

- (a) The duties and obligations imposed by the Contract Documents and the rights and remedies available thereunder shall be in addition to and not a limitation of any duties, obligations, rights and remedies otherwise imposed or available by law.
- (b) No action or failure to act by the Owner, Consultant or Contractor shall constitute a waiver of any right or duty afforded any of them under the Contract, nor shall any such action or failure to act constitute an approval of or acquiescence in any breach thereunder, except as may be specifically agreed in writing.

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**9.6 ARTICLE A-6 RECEIPT OF AND ADDRESSES FOR NOTICES**

Communications in writing between the parties or between them and the Consultant shall be considered to have been received by the addressee on the date of delivery if delivered by hand to the individual or to a member of the firm or to an officer of the corporation for whom they are intended or if sent by post or by telegram, to have been delivered within five (5) working days of the date of mailing, dispatch or of delivery to the telegraph company when addressed as follows:

The Owner at                   **702 Premier Way  
Drumheller, Alberta  
T0J 0Y0**

The Contractor at

The Consultant at           **#401, 1925 – 18<sup>th</sup> Avenue NE  
Calgary, Alberta  
T2E 7T8**

**9.7 ARTICLE A-7 LAW OF THE CONTRACT**

The law of the Place of the Work shall govern the interpretation of the Contract.

**9.8 ARTICLE A-8 LANGUAGE OF THE CONTRACT**

This Agreement is drawn in English at the request of all parties hereto; ce marche est redige en anglais a la demande de toutes les parties.

**9.9 ARTICLE A-9 SUCCESSION**

The General Specifications of the Contract, and the other aforesaid Contract Documents, are to be read into and form part of this Agreement and the whole shall constitute the Contract between the parties and subject to law and the provisions of the Contract Documents shall ensure to the benefit of and be binding upon the parties hereto, their respective heirs, legal representatives, successors and assigns.

**In witness whereof** the parties hereto have executed this Agreement under their respective corporate seals and by the hands of their proper officers thereunto duly authorized.

**SIGNED, SEALED AND DELIVERED**

in the presence of:

**OWNER**

**TOWN OF DRUMHELLER**

\_\_\_\_\_  
**Name**

\_\_\_\_\_  
**Signature**

\_\_\_\_\_  
**print name and title**

\_\_\_\_\_  
**Signature**

\_\_\_\_\_  
**print name and title**

\_\_\_\_\_  
**Date**

**CONTRACTOR**

\_\_\_\_\_  
**Name**

\_\_\_\_\_  
**Signature**

\_\_\_\_\_  
**print name and title**

\_\_\_\_\_  
**Date**

\_\_\_\_\_  
**Witness**

\_\_\_\_\_  
**print name and title**

\_\_\_\_\_  
**Witness**

\_\_\_\_\_  
**print name and title**

*N.B. Where legal jurisdiction, local practice, or Owner or Contractor requirement calls for proof of authority to execute this document, proof of such authority in the form of a certified copy of a resolution naming the person or persons in question as authorized to sign the Agreement for and on behalf of the corporation or partnership, parties to this Agreement, should be attached.*