Lac La Biche County

Plamondon Village Square Development

Request for Tenders (RFT): Construction

RFT # PS-72-2025-20

Lac La Biche County
Bold Centre, Guest Services Desk
100, 8702 – 91 Ave.
Lac La Biche, AB T0A 2C0

Tender Contact: John Buchko, EDS Group Inc.
Tel: 780.271.1689
Email: jbuchko@edsgroup.ca

Closing Date & Time: Tuesday, March 25th - 12:00:00 noon local time

Consultant Project No. 32325

CCDC 2 – STIPULATED PRICE CONTRACT

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INVITATION TO BID

INVITATION TO BID

Owner: **Lac La Biche County**

Project: **Plamondon Village Square Development**

Reference No. **32325**

The Owner invites Bids for construction of the work, which in general terms, will consist of the following:

- site survey and construction layout;
- materials testing by a qualified geotechnical engineer and laboratory;
- site excavation and grading;
- supply and installation of topsoil, seed, sod, plant material and other landscape amenities such as benches, picnic tables, waste receptacles, etc.;
- supply and installation of a concrete plaza and curbing;
- electrical works including overhead lighting, bollards and conduit / cables;
- supply and installation of a prefabricated wood structure;
- granular trail; and
- One-year landscape maintenance on trees.

The successful Bidder will be required to enter into a CCDC 2 – stipulated price contract.

Responses must be submitted by hard copy, delivered to the main reception desk of the Lac La Biche Bold Centre, at the address noted on the cover page. In addition, Bidders must include a digital .pdf file on a USB drive, included in the sealed envelope. The closing date and time for this tender is **Tuesday, March 25th at 12:00:00 noon local time**. Proponents must submit their Bids in hard copy format including a complete digital file on a USB drive within a sealed envelope, delivered to the Closing Location and be received before the Closing Date and Time.

The close of questions is end of business day on Tuesday, March 18th, 2025 to the County's Owner's Representative: John Buchko of EDS Group Inc., contacted by email at jbuchko@edsgroup.ca. Responses will be provided no later than end of business day on Thursday, March 20th, 2025.

Bid documents and reference material for this contract will only be distributed electronically in digital format (.pdf) through the tendering website at: www.purchasingconnection.ca and through Buildworks Canada, at: www.buildworkscanada.com

CCDC 2- STIPULATED PRICE CONTRACT
LAC LA BICHE COUNTY
PLAMONDON VILLAGE SQUARE DEVELOPMENT

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CCDC 2- STIPULATED PRICE CONTRACT
LAC LA BICHE COUNTY
PLAMONDON VILLAGE SQUARE DEVELOPMENT

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INSTRUCTIONS TO BIDDERS

INSTRUCTIONS TO BIDDERS

Contract: **Plamondon Village Square Development**
Reference No. **32325**

1.0 INTRODUCTION

1.1 These Instructions to Bidders apply to govern the preparation of Bids for the *Work,* which generally involves the work listed below and which is as set out generally and by inference in the *Bid Documents*:

- site survey and construction layout;
- materials testing by a qualified geotechnical engineer and laboratory;
- site excavation and grading;
- supply and installation of topsoil, seed, sod, plant material and other landscape amenities such as benches, picnic tables, waste receptacles, etc.;
- supply and installation of a concrete plaza and curbing;
- electrical works including overhead lighting, bollards and conduit / cables;
- supply and installation of a prefabricated wood structure;
- granular trail; and
- One-year landscape maintenance on trees.

1.2 For further information, Bidders shall direct all inquiries to:

Name: John Buchko – Principal, EDS Group Inc.

Phone: 780.271.1689

Email: jbuchko@edsgroup.ca

The close of questions is end of business day on Tuesday, March 18th, 2025 to jbuchko@edsgroup.ca and responses will be provided no later than end of business day on Thursday, March 20th, 2025.

1.3 All italicized items are as defined in the Definitions and Supplementary Definitions.

1.4 This Bid is being issued electronically through Alberta Purchasing Connection and Buildworks Canada. Any interested party may download the *Bid Documents* directly from the aforementioned website(s). No registration, tracking or other recording of *Bid Document* holders will be performed by the *Owner* or *Consultant*. All addenda, amendments or further information will be published on the Alberta Purchasing Connection website. It is the sole responsibility of the Bidder to monitor the website regularly to check for updates.

INSTRUCTIONS TO BIDDERS

2.0 SUBMISSION OF BIDS

2.1 Responses must be submitted by hand delivery – hard copy documents in a sealed envelope. Proponents must submit their Bids and ensure they are received before the Closing Date and Time.

2.2 The time and date for the delivery of Bids shall be prior to:
12:00:00 noon local time, Tuesday, March 25th, 2025
(the "Bid Closing").

2.3 Bids delivered after the Bid Closing shall not be accepted or considered.

2.4 In the event of a dispute or issue about whether or not a *Bid* complies with the Instructions to Bidders, the *Owner* reserves the right to retain and open a copy of the Bid in question in order to seek and obtain a legal opinion in relation thereto.

2.5 Any *Bid* revisions must be provided in writing and authorized by the same individual as in the original *Bid* provided.

3.0 BID DOCUMENTS

3.1 The Bid Documents consist of all of the documents listed in Article A-3 of the *Agreement* between the *Owner* and the *Contractor*.

4.0 FORM OF BID

4.1 Each *Bidder* shall submit a complete *Bid* on the Stipulated Price Bid Form, which forms part of the *Bid Documents*, with the blank spaces filled in. The Bid Price shall be for a sum in Canadian Dollars including all tariffs, freight, duties, assessments and taxes other than the Value Added Taxes, which are payable with respect to the Work prior to the Bid Closing.

4.2 Any discrepancies between the Stipulated Price Bid Form and a post Bid Closing submission required by the Bid Documents shall be resolved in favor of the Stipulated Price Bid Form.

4.3 Bids shall be written in English.

4.4 A *Bid* must include the following:

.1 Stipulated Price Bid Form;
.2 Bid Deposit as required by Article 8.0 of the Instructions to Bidders.
.3 Completed Supplementary Tender Forms.

The completed Supplementary Tender Forms include the requirement for a listing of comparable past projects completed by the *Bidder* within the past five years. Failure to provide evidence of adequate experience may be reason for the *Owner* or the *Consultant* as advisor to the *Owner* to reject the *Bid.*

4.5 The *Bid Price* shall represent the entire cost, excluding *Value Added Taxes*, to the *Owner* of the complete *Work*. Notwithstanding the generalities of the above, *Bidders* shall, unless specified otherwise in the *Bid Documents*, include in the *Bid Price* sufficient amounts to cover:

4.5.1 the costs of all labour, equipment and materials included in or required for the *Work*;
4.5.2 all assessments payable with respect to labour as required by any statutory scheme such as Workers' Compensation, employment insurance, holiday pay, insurance, Canada Pension Plan and all employee benefits;
4.5.3 all overhead costs, including head office and on-site overhead costs, and all amounts for the *Bidder's* profit; and
4.5.4 all escalation of costs or tariffs imposed for the *Contract Time*.

4.6 The *Bid Price* shall allow for compliance with all applicable laws regarding trade or other qualifications of employees performing the Work, and payment of appropriate wages for labour included in or required for the *Work*.

4.7 Along with the Stipulated Price Bid Form executed in accordance with the terms and conditions of these Instructions to Bidders, a *Bidder* shall submit, prior to *Bid Closing*, such further and other documents as required by the *Bid Documents*.

5.0 VARIATION IN AND INTERPRETATION OF BID DOCUMENTS AND NO IMPLIED OBLIGATIONS

5.1 The *Bidder* shall carefully examine the *Bid Documents*. If a *Bidder* is in doubt as to the correct meaning of any provision of the *Bid Documents*, the *Bidder* may request clarification from the person named in Article 1.2 of the Instructions to Bidders. Any errors, omissions, discrepancies or clauses requiring clarification shall be reported in writing to the person identified in Article 1.2 of the Instructions to *Bidders* at least ten (10) calendar days prior to the *Bid Closing*. Where necessary, the *Owner* shall respond to reported errors, omissions, discrepancies or clauses requiring clarification by way of addenda. However, the *Bidder*(s) acknowledge and agree that the *Owner* does not have an obligation to provide a response to any written inquiry and that it is in the sole and unfettered discretion of the *Owner* to provide any written response to a written inquiry. Telephone inquiries will not be replied to.

5.2 A Bidder shall immediately notify the person named in Article 1.2 of the Instructions to Bidders if a *Bidder* becomes aware of any discrepancies between a provision of the Bid Documents and conditions at the *Place of the Work*, as observed in an examination under Article 10.1 of the Instructions to Bidders.

5.3 The *Owner* shall be the sole judge as to the intent of the Bid Documents should a Bidder fail to report any such errors, omissions, discrepancies or clauses requiring clarification at least ten (10) calendar days prior to the Bid Closing.

5.4 No implied obligation of any kind by or on behalf of the *Owner* shall arise from anything in the Bid Documents, and the express covenants and agreements contained in the Bid Documents and made by the *Owner*, are and shall be, the only covenants and agreements that apply.

5.5 Without limiting the generality of Article 5.4 of the Instructions to Bidders, the *Bid Documents* supersede all communications, negotiations, agreements, representations and warranties either written or oral relating to the subject matter of the Bid made prior to the *Bid Closing*, and no changes shall be made to the *Bid Documents* except by written addenda. No oral interpretation or representations from the Owner or any representative of the *Owner* will affect, alter or amend any provision of the *Bid Documents*.

6.0 ADDENDA

6.1 Any addenda issued to the *Bidder* shall form part of the *Bid Documents*, whether or not the receipt of same has been acknowledged by a *Bidder*, and the cost for doing the *Work* therein shall be included in the *Bid Price*.

7.0 BID

7.1 Submission of a bid by a *Bidder* gives the *Owner* the right to require the *Bidder* to execute the *Contract* to perform the *Work* as set out within the *Bid Documents*.

7.2 *Bidders* submitting *Bids* shall be actively engaged in the line of work required by the Bid Documents and shall be able to refer to work of a similar nature performed by them. They shall be fully conversant with the general technical phraseology in the English language of the lines of work covered by the Bid Documents. By submitting a Bid, a Bidder is representing that it has the capacity, competence, qualifications and relevant experience required to do the Work.

7.3 Each Bidder shall review the Bid Documents provided by the Owner and confirm that it is in possession of a full set of Bid Documents when preparing its Bid.

7.4 Bids should be properly executed in full compliance with the following requirements:

7.4.1 The signatures of persons executing the Bid must be in their respective handwriting; and

7.4.2 If the Bid is made by a limited company, the full name of the company shall be accurately printed immediately above the signatures of its duly authorized officers and the corporate seal shall be affixed;

7.4.3 If the Bid is made by a partnership, the firm name or business name shall be accurately printed above the signature of the firm and the Bid shall be signed by a partner or partners who have authority to sign for the partnership;

7.4.4 If the Bid is made by an individual carrying on business under the name other than its own, its business name together with its name shall be printed immediately above its signature; or

7.4.5 If the Bid is made by a sole proprietor who carries on business in its own name, the proprietor shall print its name immediately below its signature.

7.5 Bids received from agents representing principals shall be accompanied by a Power of Attorney signed by the said principals showing that the agents are duly authorized to sign and submit the Bid and have full power to execute the Contract on behalf of their principals. The execution of the Contract shall bind the principals and have the same effect as if it were duly signed by the principals.

8.0 BID DEPOSIT

8.1 The *Bidder* shall submit with its Bid a bid bond in a form acceptable to the *Owner*, or in lieu of a bid bond, a *Bidder* may submit a certified cheque or an irrevocable letter of credit in favor of the Owner equal to 10% of the Bid Price as a guarantee that, if awarded the Contract for the Work, the *Bidder* shall execute a Contract and submit the Performance Bond and the Labour and Materials Payment Bond referred to in Article 9.0 of the Instructions to *Bidders* within the specified time frames.

8.2 The Bid Deposit of the unsuccessful *Bidders* shall be returned as soon as possible after the Contract has been duly executed by the *Successful Bidder*.

8.3 The Owner will not pay any interest on money furnished as security.

8.4 The bid bond shall be issued by a Surety Company licensed in the Province of Alberta and satisfactory to the Owner.

9.0 PERFORMANCE AND LABOUR AND MATERIALS PAYMENT BONDS

9.1 The *Successful Bidder* shall be required to furnish at its own expense a Performance Bond and Labour and Materials Payment Bond. For the purposes of this Article, both of these bonds shall be referred to as the "*Bonds*".

9.2 The *Bonds* are to be issued by a *Surety Company* licensed in the Province of Alberta, satisfactory to the *Owner* and each in the amount of 50% of the *Contract Price*.

9.3 The Performance Bond shall remain in force as a maintenance Bond for the Warranty period as defined in the *Contract*.

9.4 The form of the Bonds shall be in accordance with the latest edition of CCDC 221 and CCDC 222.

10.0 INSPECTION OF THE PLACE OF THE WORK

10.1 The *Bidder* shall be responsible for inspecting the *Place of the Work* and for making whatever inquiries or arrangements necessary for it to become fully informed of the nature of the *Place of the Work*, including information regarding the subsurface conditions as made available by the *Owner* and topography of the site, and of the Work to be performed and all matters which may in any way affect the Work. Without limiting

the foregoing, by the submission of its *Bid*, the *Bidder* acknowledges that it has investigated and satisfied itself as to:

10.1.1 the nature of the *Work*;
10.1.2 the location and all conditions relating to the location of the *Work* including, but not limited to, accessibility, general character, surface and sub-surface conditions, information regarding the subsurface conditions as made available by the *Owner*, utilities, road, uncertainties of seasonal weather and all other physical, topographical, geological and geographic conditions;
10.1.3 the conditions, laws and restrictions applicable to the *Work* that might affect the performance of the *Work*; and
10.1.4 all environmental risks, conditions, laws and restrictions applicable to the *Work* that might affect the *Work*.

10.2 The *Bidder* shall be fully responsible for obtaining all information required for the preparation of its Bid and for the execution of the Work. The *Owner* shall not be responsible for undertaking any investigations to assist the *Bidder*. The Non-Bid Information forms no part of this *Bid*. The *Owner* and the *Consultant* assume no responsibility of any kind whatsoever arising from or relating to its failure to include or refer to such *Non-Bid Information*. *Bidders* who obtain or rely upon such Non-Bid Information or other documents do so entirely at their own risk. Such additional information is made available only for the assistance of Bidders who must make their own judgment about its reliability, accuracy, completeness and relevance to the Work, and neither the Owner nor any representative of the *Owner*, including the *Consultant*, gives any guarantee or representation that the additional information is reliable, accurate, complete or relevant.

10.3 The *Bidder's* obligation to become familiar with the information described in Article 10.1 of the Instructions to Bidders is not lessened or discharged by reason of any technical reports, including soils reports or data, test hole drilling reports or other soils information, made available or supplied in conjunction with the bidding process. Any technical reports so provided are for information only and neither the *Owner* nor the *Consultant* accept or assume any responsibility for the contents or accuracy of such technical reports and the *Bidder* agrees that the *Owner* and the *Owner's* consultants and their representatives shall not be liable in any way to the Bidder in respect of such technical reports. The Bidder further agrees that it shall not rely upon any oral information provided to it by the *Owner*, the *Consultant* or their representatives.

11.0 AMMENDMENT BID

11.1 *Bids* shall not be revoked, amended, or clarified after being delivered in accordance with the Bid Documents unless such revocation, amendment or clarification is made in writing and actually received by the person named in Article 2.1 of the Instructions to Bidders prior to the *Bid Closing*.

11.2 An amendment or revocation that is received after the *Bid Closing* shall not be considered and shall not affect a Bid as submitted.

11.3 Any amendment that expressly or by inference discloses the *Bidder's Bid Price* or other material element of the *Bid* such that in the opinion of the *Owner* the confidentiality of the *Bid* is breached, shall invalidate the entire *Bid*.

11.4 If a *Bid* amendment or revocation is sent by fax the *Bidder* assumes the entire risk that equipment and staff at the location referred to in Article 2.1 of the Instructions to Bidders will properly receive the fax containing the amendment or revocation before the *Bid Closing*. The *Owner* assumes no risk or responsibility whatsoever that any fax will be received as required by Article 11.1 of the Instructions to Bidders, and shall not be liable to any *Bidder* if for any reason a fax is not properly received.

12.0 DURATION OF BID

12.1 The *Bid* shall be irrevocable and open for acceptance by the *Owner* for forty-five (45) calendar days following the end of the day of the *Bid Closing*.

13.0 BID SELECTION

13.1 As it is the purpose of the *Owner* to obtain the Bid most suitable and most advantageous to the interests of the *Owner*, notwithstanding anything else contained within the Bid Documents, the *Owner* reserves the right, in its sole and unfettered discretion, to reject or accept any *Bid*, including the right to reject all *Bids*.

13.2 Without limiting the generality of the foregoing, any *Bid* which:

13.2.1 is incomplete, obscure, irregular, unrealistic or not completed in accordance with these Instructions to Bidders;

13.2.2 is non-compliant in a trivial/immaterial or substantial/material manner, or conditional;

13.2.3 has erasures or corrections;

13.2.4 omits a price on any one or more items in the *Bid*;

13.2.5 fails to complete the information required in the *Bid*; or

13.2.6 does not include evidence of sufficient past experience

may at the *Owner's* sole and unfettered discretion be rejected or accepted.

13.3 Further, a *Bid* may be rejected or accepted on the basis of the *Owner's* unfettered assessment of its best interest, which includes, but is not limited to, the *Owner's* unfettered assessment as to a *Bidder's* past work performance for the *Owner* or for anyone else or as to a *Bidder's* financial capabilities, completion schedule, or ability to perform the *Work*, or the *Owner's* desire to reduce the number of different contractors on the location of the *Project* at any given time.

13.4 In the event that a Court of competent jurisdiction should find that the *Owner* has committed a breach of the law as it applies to this bidding process, which breach would include but not be limited to a breach of contract law, *Bid* law, a fundamental breach, an anticipatory breach (the "Breaches"), the Bidder and the Owner acknowledge and agree that the *Owner's* liability for the Breaches will be a maximum of $2,000 dollars all inclusive.

13.5 The *Owner* reserves the right to negotiate after *Bid Closing* with the *Bidder* that the *Owner* deems has provided the most advantageous *Bid* in all circumstances, including, but not limited to, when the *Bid Price* exceeds the *Owner's* budget. In no event shall the *Owner* be required to offer any modified terms to any other *Bidder* prior to entering into a *Contract* with the *Successful Bidder* and the *Owner* shall incur no liability to any other Bidder as a result of such negotiation or modification.

13.6 In no event shall the *Owner* be liable for a *Bidder's* costs of preparing a *Bid*.

14.0 AWARD

14.1 Award of this *Contract* is pending:
14.1.1 The *Owner* obtaining a roadside development permit approval from Alberta Transportation, which will not be known until approximately April 10, 2025;
14.1.2 The *Owner* obtaining a development permit from Lac La Biche County, which will not be known until approximately April 20, 2025; and
14.1.3 Endorsement from the municipal council of the *Owner*.

14.2 Award of *Contract* by the *Owner* occurs once the *Bidder* receives a Notice of Award duly executed by an authorized signing officer or agent of the *Owner* after the authorized officer of the *Owner* has been duly and legally authorized by the *Owner* to send such Notice of Award.

14.2 The *Successful Bidder* shall, within fifteen (15) calendar days of receipt of the written Notice of Award, be required to deliver to the *Owner* the following items:

14.2.1 a construction schedule as provided by GC 3.5 – CONSTRUCTION SCHEDULE of the General Conditions of the Contract;

14.2.2 a letter of account indicating the *Successful Bidder* is in compliance with the applicable requirements of WCB Alberta. This letter is to be current and dated within 14 calendar days prior to the Bid Closing;

14.2.3 a copy of the insurance policies as specified in GC 11.1- INSURANCE of the General Conditions of the *Contract* indicating that all such insurance coverage is in place;

14.2.4 such bond(s) as set out in Article 9.0 of the Instructions to Bidders; 14.2.5 such further and other documents as required by the Bid Documents; and

14.2.5 a full copy of the *Contractor's* Occupational Health and Safety program manual.

14.3 Upon the *Successful Bidder* complying with the requirements of Articles 14.2 and 14.5 of the Instructions to Bidders, the *Bid Deposit* shall be returned to the *Successful Bidder*.

14.4 Within fifteen (15) calendar days of receipt of the written Notice of Award, the *Successful Bidder* shall execute the *Contract Documents*.

14.5 Within fourteen (14) calendar days of receipt of written *Notice to Proceed*, or such longer time as may be otherwise specified in the *Notice to Proceed*, the *Successful Bidder* shall commence the *Work*.

15.0 SUBCONTRACTORS

15.1 The *Owner* reserves the right to object to any of the *Subcontractors* listed in a *Bid*. If the *Owner* objects to a listed Subcontractor(s) then the *Owner* shall permit a Bidder to, within five (5) calendar days, propose a substitute *Subcontractor*(s) acceptable to the *Owner* provided that there is no resulting adjustment in the *Bid Price* or the *Substantial Performance* date set out in the Stipulated Price Bid Form. A *Bidder* shall not be required to make such a substitution and, if the *Owner* objects to a listed *Subcontractor*(s), shall consider its Bid rejected by the *Owner* and by written notice withdraw its Bid. The *Owner* shall, in that event, return the *Bidder's Bid Deposit*.

16.0 CONTINGENCY ALLOWANCE

16.1 If required, the *Bidder* shall include in the Stipulated Price Bid Form the specified *Contingency Allowance*, in accordance with GC4.2-CONTINGENCY ALLOWANCE of the General Conditions of the *Contract*.

17.0 BIDS EXCEEDING BUDGET OR BUDGET AVAILABILITY

17.1 If the *Bid Price* of every *Bidder* exceeds the amount the *Owner* has budgeted for the *Work*, the *Owner* may reject all *Bids*.

17.2 Award of this project is contingent on the *Owner* being granted funding for this project from its Council. Should the required funding not be received, the *Owner* may reject all *Bids* and not award the *Contract*.

17.3 The *Owner* maintains a strict available budget for this project and reserves the right to only award items for which funding is available at the time of award. Provisional items identified may fall within the available budget. The *Owner* also reserves the right to continue to seek funding for any items outside the available budget and may add items into the project at its own discretion and at the rates as provided in the *Bid Documents*.

18.0 LAW AND FORUM OF BID

18.1 The law to be applied in respect of the *Bid Documents* and the *Contract* shall be the law of the Province of Alberta and all civil actions commenced in relation to the *Bid Documents* or Contract shall be adjudicated by the Courts of the Province of Alberta and by submitting *Bids*, *Bidders* are taken to have agreed to attorn to the jurisdiction of the Courts of the Province of Alberta.

19.0 THE FREEDOM OF INFORMATION AND PROTECTION OF PRIVACY ACT

19.1 All documents submitted to the *Owner* will be subject to the protection and disclosure provisions of the Alberta Freedom of Information and Protection of Privacy Act ("FOIP"). FOIP allows persons a right of access to records in the *Owner's* custody or control. It also prohibits the *Owner* from disclosing the *Bidder's* personal or business information where disclosure would be harmful to the *Bidder's* business interests or would be an unreasonable invasion of personal privacy as defined in Part 3, Division 1 and Division 2 of FOIP. *Bidders* are encouraged to identify what portions of their submissions are confidential and what harm could reasonably be expected from its disclosure. However, the *Owner* cannot assure *Bidders* that any portion of the *Bidder's* documents can be kept confidential under FOIP.

20.0 ALTERNATIVE PRICE

20.1 The *Bidder* may submit an *Alternative Price* as follows;

20.1.1 For an *Alternate* submitted at the *Bidder's* election, and which has not been specified by the *Owner* in the Stipulated Price Bid Form, and which varies the materials, *Products*, designs or equipment from those approved under the

Contract Documents, or approved by the *Owner* as *Approved Equals* as the case may be, or;

20.1.2 For an *Alternate* specified by the *Owner* in the Stipulated Price Bid Form for which materials, *Products*, designs or equipment are provided in *the Contract Documents*.

20.2 An *Alternative Price* submitted in accordance with Articles 20.1.1 or 20.1.2 of the Instructions to Bidders must be in addition to, and not in substitution for, a *Bid* which conforms to the requirements of the Contract Documents, irrespective of whether the *Alternative Price* is in response to Articles 20.1.1 or 20.1.2 of the Instructions to Bidders.

20.3 The *Owner* may, at its sole discretion, accept any Alternate requested in accordance with Article 20.1.2 of the Instructions to Bidders.

20.4 An *Alternative Price* submitted at the *Bidder's* election in accordance with Article 20.1.1 of the Instructions to Bidders may be accepted by the *Owner* only if it has been submitted by a *Bidder* whose *Bid* would have been accepted by the *Owner* in preference to other conforming *Bids*, if no *Alternative Prices* had been submitted in accordance with Article 20.1.1 of the Instructions to Bidders.

21.0 APPROVED EQUALS

21.1 Up to seven (7) days prior to the *Bid Closing*, the *Bidder* may request the *Owner* to approve materials, *Products*, or equipment ("Approved Equal") to be included in a *Bid* in substitution for items indicated in the *Contract Documents*. No other requests for approved equals will be considered.

21.2 Applications for an *Approved Equal* shall be in writing, and supported by appropriate supporting information, data, specifications, and documentation.

21.3 If the *Owner* decides in its sole discretion to accept an *Approved Equal*, then the *Owner* shall issue an addendum to all *Bidders*.

21.4 The *Owner* is not obligated to review or accept any application for an *Approved Equal.*

22.0 OPTIONAL WORK

22.1 If the Stipulated Price Bid Form includes any item for *Optional Work*, then *Bidders* shall include such *Optional Work* in the *Bid Price* and complete all the unit and/or lump sum

prices for such *Optional* Work. Such unit and/or lump sum prices shall not include any general overhead costs, or other costs, or profit, not directly related to the *Optional Work*. *Bidders* are directed to GC 6.7 – OPTIONAL WORK of the Supplementary General Conditions of the *Contract*.

22.2 Notwithstanding that the *Owner* may elect not to proceed with the *Optional Work*, the bid prices for any *Optional Work*, including the extended totals for *Optional Wor*k unit prices, shall be included or not included, at the *Owner's* discretion, in the price for the purpose of price comparisons between *Bidders*.

23.0 ADDITIONAL INSTRUCTIONS TO BIDDERS

23.1 *Bidders* are directed to Supplementary General Condition 5.3.2.5. For the purposes of this *Contract*, the pre-estimate of the *Owner's* increased costs referred to in GC 5.3.2.5 (a) of the General Conditions of the *Contract* shall be $1,500 per *Working Day*.

END OF SECTION

STIPULATED PRICE BID FORM

STIPULATED PRICE BID FORM

Contract: **Plamondon Village Square Development**

Reference No. **32325**

TO:
Lac La Biche County
(Hereinafter called "the *Owner*")

1.0 WE, THE UNDERSIGNED:

1.1 have received and carefully reviewed all of the *Bid Documents*, including the Instructions to Bidders, and the following addenda:

_____

_____

_____

(**ADDENDA, IF ANY)**

1.2 have full knowledge of the *Place of the Work*, and the *Work* required; and

1.3 have complied with the Instructions to Bidders; and

1.4 hereby offer to perform the *Work* in accordance with the documents, for the *Bid Price* of

$ _____(numeric value) in Canadian dollars,
- Excluding *Value Added Taxes.*

2.0 ACCORDINGLY WE HEREBY AGREE:

2.1 to perform and complete all of the *Work* and to provide all the labour, equipment and material all as set out in the *Bid Documents*, in strict compliance with the *Bid Documents*; and

2.2 to achieve *Substantial Performance* of the *Work* on or before October 31, 2025.

3.0 WE CONFIRM:

3.1 that the *Bid Deposit* as required by Article 8.0 of the Instructions to Bidders is enclosed; and

3.2 this Bid is made without any connection, collusion, knowledge, comparison of figures or arrangement with any person or persons submitting a Bid for this same *Contract*.

STIPULATED PRICE BID FORM

4.0 WE AGREE:

4.1 that this Bid shall be irrevocable and open for acceptance by the *Owner* for a period of forty-five (45) calendar days following the end of the day of the *Bid Closing*, even if the Bid of another Bidder is accepted by the *Owner*. If within this period, the *Owner* delivers a *Notice of Award* by which the *Owner* accepts our Bid, we shall:

4.1.1 within fifteen (15) calendar days of receipt of the written *Notice of Award*, be required to deliver to the *Owner* the following:

(a) a Construction Schedule, as provided by *GC* 3.5 of the General Conditions of the *Contract*;

(b) a letter of account, from the Workers Compensation Board indicating that the Bidder's account with the Workers' Compensation Board is in good standing. This letter is to be current and dated within fourteen 14 calendar days prior to the *Bid Closing*;

(c) a copy of the insurance policies as specified in GC 11-INSURANCE of the General Conditions of the *Contract* indicating that all such insurance coverage is in place; and

(d) such further and other documents as required by the *Bid Documents*;

4.1.2 within fifteen (15) calendar days of receipt of the written Notice of Award, execute the *Contract Documents*.

4.1.3 within two (2) calendar days of receipt of written *Notice to Proceed*, or such longer time as may be otherwise specified in the *Notice to Proceed*, commence the *Work*.

4.2 that, if we receive written *Notice of Award* of this *Contract* and, contrary to Article 4.1 of this Stipulated Price Bid Form, we:

4.2.1 fail or refuse to deliver the documents as specified by Article 4.1.1 of this Stipulated Price Bid Form; or

4.2.2 fail or refuse to commence the Work as required by the *Notice to Proceed*,

4.2.3 fail or refuse to execute the *Contract Documents* as specified by Article 4.1.3 of this Stipulated Price Bid Form, then such failure or refusal will be deemed to be a refusal by us to enter into the *Contract* and the *Owner* may, on written notice to us, award the *Contract* to another party. Furthermore, the *Owner* shall be at liberty to enforce its rights as available at law to the fullest extent.

STIPULATED PRICE BID FORM

5.0 OUR ADDRESS AND CONTACT INFORMATION is as follows:

Address: _____

_____

_____

Phone: _____

Email: _____

Attention: _____

This Bid is executed this _____ day of _____, 2020.

Contractor:

_____
(FULL LEGAL NAME OF CORPORATION, PARTNERHSIP OR INDIVIDUAL)

_____
(AUTHORIZED SIGNATORY)

_____
(AUTHORIZED SIGNATORY)

STIPULATED PRICE BID FORM

Appendix 'A' – LIST OF SUBCONTRACTORS

Contract: Plamondon Village Square Development

From (Bidder): _____

We, the above-named *Bidder*, propose to use for the above-named project/contract, the *Subcontractors* named below:

Item of Work	**Name of *Subcontactor***
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____

STIPULATED PRICE BID FORM

Contract: **Plamondon Village Square Development**

Reference No. 32325

1. This document is intended to provide information on the capacity, competence, and relevant experience of the *Contractor*. Applicant may supplement information with additional sheets if required.

2. *Bidder* shall have completed a minimum of four (4) *Contracts* that are similar in nature to this *Contract / Project*. An emphasis will be placed on establishing grass in newly graded areas and establishing new plant material in northern climates. Inadequate experience included in this Bid Form may lead to the *Bidder* being non-compliant, at the sole discretion of the *Client* and / or *Consultant*.

3. The *Bidder* must have performed in the role of *Contractor*, as opposed to the role of *Subcontractor*, on all of the previous *Contracts / Projects* noted in No. 2 above.

4. Legal Structure of Bidder: _____

Joint Venture ☐ Corporation ☐ Partnership ☐ Registered ☐ Sole Proprietor ☐ Other _____

Year Established: _____

5. Relevant Experience:

Project Title #1 and Location: _____

Description: _____ Project Value: $ _____

Owner: _____ Date Completed: _____

Refer to: _____

Phone: _____

Consultant: _____

Refer to: _____

Phone: _____

STIPULATED PRICE BID FORM

Project Title #2 and Location: _____

Description: _____ Project Value: $ _____

Owner: _____ Date Completed: _____

Refer to: _____

Phone: _____

Consultant: _____

Refer to: _____

Phone: _____

Project Title #3 and Location: _____

Description: _____ Project Value: $ _____

Owner: _____ Date Completed: _____

Refer to: _____

Phone: _____

Consultant: _____

Refer to: _____

Phone: _____

Project Title #4 and Location: _____

Description: _____ Project Value: $ _____

Owner: _____ Date Completed: _____

Refer to: _____

Phone: _____

Consultant: _____

Refer to: _____

Phone: _____

6. Key office personnel proposed for the project, attach resume of qualifications and experience.

a) Principal in Charge

Name: _____ Title: _____

b) Lead Estimator

Name: _____ Title: _____

7. Key site personnel proposed for the project, attach resume of qualifications and experience.

a) Project Manager

Name: _____ Title: _____

b) Superintendent

Name: _____ Title: _____

c) Foreman

Name: _____ Title: _____

SUPPLEMENTARY TENDER FORMS

SUPPLEMENTARY TENDER FORMS

Contract: Plamondon Village Square Development

Reference No. 32325

SCHEDULE 1 – Schedule of Manufacturers / Suppliers of Materials and Products

The Contractor states that the following Manufacturers / Suppliers of Material and Product will be utilized for the major supply items for this Contract:

Product	**Name of Manufacturer / Supplier & Telephone No.**
Imported Topsoil	
Sod	
Landscape Materials (Trees)	
Site Furniture	
Concrete	
Aggregate Material	
Electrical Hardware	
Electrical Cables	
Gazebo	
Screw Pile	

SUPPLEMENTARY TENDER FORMS

Contract: **Plamondon Village Square Development**

Reference No. 32325

SCHEDULE 2 – Schedule of Force Account Rates

The *Contractor* offers to do force account work for the following rates for personnel and equipment. Equipment rates include operator, fuel, maintenance, profit, and overhead. Personnel rates include payroll cost of labour, all payroll burdens, room and board, if applicable, overhead and profit. The cost of superintendents, timekeepers and other administrative and supervisory personnel and their vehicles, are included in overhead. Refer to Instructions to Bidders Item 23.2 for pertinent information regarding equipment.

Equipment

Description and Make	Model and Size	Hourly Rate

Primary Personnel

Occupation or Trade	Hourly Rate	Overtime Rate

SUPPLEMENTARY TENDER FORMS

SCHEDULE 3 – Schedule of Equipment

The *Bidder* states that the equipment listed shall be available for the *Work* on this *Contract*. Refer to Instructions to Bidders Item 23.2 for pertinent information regarding equipment.

Description of Unit	Size or Capacity	Condition & Age	Present Location

SCHEDULE 4 – Construction Schedule

Include a preliminary construction schedule and / or a Gantt chart.

SUPPLEMENTARY TENDER FORMS

SCHEDULE 5 – Schedule of Units and Stipulated Price

Category	Item	Description	Qty	Unit	Total
1.0 GENERAL	1.01	Mobilization / demobilization	1	l.s.	$ _____
1.0 GENERAL	1.02	Contractor Insurance	1	l.s.	$ _____
1.0 GENERAL	1.03	Landscape maintenance from CCC to FAC for trees only	1	year	$ _____
1.0 GENERAL	1.04	Traffic control, site fencing and signage	1	allow	$ _____
1.0 GENERAL	1.05	Material testing for topsoil, gravel and concrete	1	allow	$ _____
1.0 GENERAL	1.06	Relocation of gas line - abondon and cap at rear property line	1	allow	$ _____
2.0 CIVIL	2.01	General site grading, provide uniform drainage	1	allow	$ _____
3.0 SITE WORK	3.01	Site excavation for hard landscape areas 300mm depth. Dispose of material	343	sq.m.	$ _____
3.0 SITE WORK	3.02	Site excavation for sod areas to 150mm depth. Dispose of material	695	sq.m.	$ _____
3.0 SITE WORK	3.03	Site excavation for planting bed areas (plant beds) 500mm depth. Dispose of material	197	sq.m.	$ _____
3.0 SITE WORK	3.04	Supply and install 150mm depth topsoil for sod areas	695	sq.m.	$ _____
3.0 SITE WORK	3.05	Supply and install sod	695	sq.m.	$ _____
3.0 SITE WORK	3.06	Supply and install 400mm depth topsoil for plant beds	197	sq.m.	$ _____
3.0 SITE WORK	3.07	Supply and install 100mm depth wood chip mulch for plant bed areas	197	sq.m.	$ _____
4.0 HARD LANDSCAPING	4.01	Supply and install 1.5m gravel trail including subgrade preparation, granular surface, compaction	30	lin.m.	$ _____
4.0 HARD LANDSCAPING	4.02	Supply and install 100mm depth standard concrete on 200mm depth compacted granular base and prepared subgrade including sawcutting	281	sq.m.	$ _____
4.0 HARD LANDSCAPING	4.03	Supply and install concrete pad for picnic tables	2	ea.	$ _____
5.0 LANDSCAPING	5.01	Supply and install 60mm large caliper deciduous trees	16	ea.	$ _____
5.0 LANDSCAPING	5.02	Supply and install 5 gal deciduous shrubs	48	ea.	$ _____
5.0 LANDSCAPING	5.03	Supply and install 2 gal perennials	99	ea.	$ _____
6.0 PROVISIONAL	6.01	Supply and install 24' gazebo on 42sq.m. structural concrete slab. Price including slab and required subgrade preparation	1	ea.	$ _____
6.0 PROVISIONAL	6.02	Supply and install artisitic panel features - corten steel art pieces, approx. 2000x2400mm each including structural grade beam and pile	6	ea.	$ _____
6.0 PROVISIONAL	6.03	Install owner-supplied bronze figure - child with violin including boulder seat for sculpture (approx. 1m ht.)	1	ea.	$4,000.00
6.0 PROVISIONAL	6.04	Supply and install clock feature including structural pile and pile cap, not including electrial cable supply	1	ea.	$ _____
6.0 PROVISIONAL	6.05	Supply and Install screw pile with cap for future art installment	1	ea.	$ _____
7.0 FURNITURE	7.01	Supply and install waste receptacles c/w built in concrete pad	2	ea.	$ _____
7.0 FURNITURE	7.02	Supply and install picnic table - surface mounted on concrete	5	ea.	$ _____

SUPPLEMENTARY TENDER FORMS

SCHEDULE 5 – Schedule of Units and Rates, cont'd

8.0 ELECTRICAL	8.01	Supply and install bollard-style lights, including required cable for connection to power distribution cabinet	8	ea.	$ _____
8.0 ELECTRICAL	8.02	Supply and install conduit as required	1	L.S.	$ _____
8.0 ELECTRICAL	8.03	Supply and install owner supplied pole-mounted light including required cable and connection to power distribution cabinet	2	ea.	$ _____
8.0 ELECTRICAL	8.04	Supply and install combination electrical meter / power distribution cabinet and all required site cable	1	ea.	$ _____
8.0 ELECTRICAL	8.05	Certified electrician shop drawings for all electrical components including permits, fees, inspection fees, and approval of electrical work	1	L.S.	$ _____
9.0 PROVISIONAL	9.01	Supply and install 1.8m high uniform wood screen fence along north property line	55	l.m.	$ _____
PROJECT TOTAL (not including GST)					**$ _____**

END OF SECTION

SUPPLEMENTARY DEFINITIONS

SUPPLEMENTARY DEFINITIONS

DEFINITIONS

Add the following definitions:

27. ***Alternate***: has the meanings set out in paragraph 22.1.1 and 22.1.2 of the Instructions to Bidders.
28. ***Alternative Price***: The amount to be added to or deducted from the *Bid Price* for an *Alternate*.
29. ***Approved Equal***: has the meaning set out in paragraph 23.1 of the Instructions to Bidders.
30. ***Bid Closing***: is the time and date as specified in Instructions to Bidders, paragraph 2.2.
31. ***Bid Deposit***: means the documents set out in Instructions to Bidders 8.1.
32. ***Bid Documents***: means the documents set out in Article A-3 of the Agreement between Owner and Contractor.
33. ***Bid Price***: is the amount as provided by the Bidder in Item 1.4 of the Stipulated Price Bid Form.
34. ***Certificate of Substantial Performance***: means a certificate issued by the Consultant indicating that *Substantial Performance* of the *Work* has been achieved
35. ***Contemplated Change Order***: a written description of a proposed change in the *Work*.
36. ***Contingency or Contingency Allowance***: means an allowance to cover the costs of possible *Work*, such as *Concealed* or *Unknown Conditions*, or *Changes*, that is not identified at the *Bid Closing* but which may, pursuant to provisions of the *Contract Documents*, become part of the *Work*.
37. ***Labour and Materials Payment Bond***: means a bond to be supplied by the *Successful Bidder*, which bond will guarantee that all suppliers of labour or materials will be paid for labour and materials furnished to the *Contractor*, for use on the project.
38. ***Non-Bid Information***: means any information, plans, drawings, shop drawings of existing equipment or facilities, geotechnical reports or record drawings, photos, reports or other documents which are not included or are not referred to in the *Bid Documents*.
39. ***Notice of Award***: a written notice delivered by the *Owner* to the Bidder accepting a Bid.
40. ***Notice to Proceed***: a written notice delivered by the *Owner* instructing the *Contractor* to commence the *Work*.

SUPPLEMENTARY DEFINITIONS

41. ***Optional Work***: means *Work* which will/may be described in the Stipulated Price Bid Form that will be undertaken and included in the *Work* at the election of the *Owner*.

42. ***Performance Bond***: means a bond to be supplied by the *Successful Bidder*, which bond will guarantee the faithful performance of the *Contract*, and in default thereof, shall protect the *Owner* against any losses or damage arising by reason of failure of the *Successful Bidder* to faithfully perform the *Contract*.

43. ***Substantial Performance***: means the state of completion of when all Work, as certified by the Consultant, is capable of completion or correction at a cost of not more than:

    (1) 3% of the first $500,000 of the **Contract Price**;

    (2) 2% of the next $500,000 of the **Contract Price**; and

    (3) 1% of the balance of the **Contract Price**; and

    the *Work*, or a substantial part of it, is ready for use or is being used for the purposes intended.

44. ***Successful Bidder***: means the Bidder to whom a *Notice of Award* is sent.

45. ***Total Performance of the Work***: when all *Work*, including all deficiencies but excluding any correction of completed *Work* that appears during the warranty period or other on-going warranty or guarantee obligations as provided by the *Contract Documents*, has been performed as required by the *Contract Documents*, as certified by the *Consultant*.

46. ***Value Added Taxes***: means the Federal Government of Canada's Goods and Services Tax (GST).

END OF SECTION

SUPPLEMENTARY GENERAL CONDITIONS

SUPPLEMENTARY GENERAL CONDITIONS

PART 1 GENERAL PROVISIONS

GC 1.1 CONTRACT DOCUMENTS

1.1.7.1 Delete and replace with the following:

"If there is a conflict within the *Contract Documents*:
.1 The order of priority of documents, from highest to lowest, shall be:
- the *Agreement* between the *Owner* and the *Contractor*,
- the Addenda,
- the Supplementary Definitions,
- the Definitions,
- the Supplementary General Conditions
- the General Conditions,
- the General Requirements
- the Technical Specifications,
- the Drawings,
- the Appendices,
- the Unit Price Bid Form,
- the Instructions to Bidders."

PART 2 ADMINISTRATION OF THE CONTRACT

GC 2.3 REVIEW AND INSPECTION OF THE WORK

2.3.2 Add in the first sentence:

the word "review," before the word "tests".

2.3.8 Add:

"Should the *Consultant* be required to make more than one inspection of work not in conformance with the *Cont*ract Documents, including inspections associated with *Substantial Performance of the Work*, the *Contractor* shall compensate the *Owner* for such additional *Consultant* services including any expenses incurred. Adjustment for such compensation should be made as outlined under PART 6 - CHANGES IN THE WORK."

PART 3 EXECUTION OF THE WORK

GC 3.1 CONTROL OF THE WORK

SUPPLEMENTARY GENERAL CONDITIONS

3.1.3 Add:

"Prior to commencing the *Work*, the *Contractor* shall verify, at the *Place of the Work*, all relevant measurements and levels necessary for the proper completion of the *Work* and shall further carefully compare such field measurements and conditions with the requirements of the *Contract Documents*. Where dimensions are not included or exact locations are not apparent in the *Contract Documents*, the C*ontractor* shall immediately notify the *Consultant* in writing and obtain *Supplemental Instructions* from the *Consultant* before proceeding with any part of the affected work."

GC 3.2 CONSTRUCTION BY OWNER OR OTHER CONTRACTORS

3.2.3.4 Add:

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

GC 3.5 CONSTRUCTION SCHEDULE

3.5.1.1 Delete and replace with the following:

"prepare a construction schedule that indicates the timing of the major activities of the *Work* and provides sufficient detail of the critical events and their inter-relationship to demonstrate the *Work* will be performed by the *Contract Time*. The schedule shall be in electronic form and prepared using Microsoft Excel software."

SUPPLEMENTARY GENERAL CONDITIONS

3.5.1.4 Add:

"perform the *Work* in compliance with the *Construction Schedule*."

3.5.1.5 Add:

"as necessary, update the *Construction Schedule* so that it also reflects the *Contractor's* plans to complete the *Work*. If the *Contractor* submits a *Construction Schedule* indicating the *Contract Time* will not be met, then receipt of such schedule by the *Consultant* will not relieve the *Contractor* of the obligation to meet the *Contract Time*."

3.5.2 Add:

"In preparing the *Construction Schedule*, the *Contractor* shall respect and adhere to the following project scheduling considerations and constraints:

.1 The *Contractor* is permitted to work between the hours of 7:00 am to 10:00 pm, Monday to Saturday. Sunday work and Statutory Holiday work is permitted between the hours of 9:00 am to 9:00 pm only with permission from Lac La Biche County and in strict compliance with municipal Bylaws.

GC 3.6 SUPERVISION

3.6.1 Add after the last sentence:

"The appointed *Contractor* representative shall not be changed without consultation with, and written acceptance by, the *Owner*. This acceptance shall not be unreasonably withheld."

3.6.3 Add new paragraph 3.6.3:

"The *Owner* may, at any time during the course of the *Work*, request the replacement of the appointed representative(s), where the grounds for the request involve conduct which jeopardizes the safety and security of the site or the *Owner's* operations. Immediately upon receipt of the request, the *Contractor* shall make arrangements to appoint an acceptable replacement."

GC 3.7 SUBCONTRACTORS AND SUPPLIERS

3.7.1.4 Add:

"upon written notice from the *Owner*, forthwith clear title to the *Place of the Work*, any liens registered by *Subcontractors* or *Suppliers*."

3.7.4 Add at the end of the sentence:

"as outlined in GC 6.3 – CHANGE DIRECTIVE."

PART 4 ALLOWANCES

GC 4.1 CASH ALLOWANCES

4.1.2 Add after the first sentence:

"Unless noted otherwise, none of the *Work* is intended to be paid for by the cash allowances. Any cash allowances are for the *Owner's* use, at the *Owner's* sole discretion."

4.1.4 Delete in its entirety and replace with:

"Where the actual cost of the *Work* under any cash allowance exceeds the amount of the allowance, any unexpended amounts from other cash allowances shall be reallocated, at the *Consultant's* direction, to cover the shortfall, and, in that case, there shall be no additional amount added to the *Contract Price* for overhead and profit. Only where the actual cost of the Work under all cash allowances exceeds the total amount of all cash allowances shall the *Contractor* be compensated for the excess incurred and substantiated, plus an amount for overhead and profit on the excess only, as set out in the *Contract Documents*."

4.1.5 Delete in its entirety and replace with:

"The net amount of any unexpended cash allowances, after providing for any reallocations as contemplated in paragraph 4.1.4, shall be deducted from the *Contract Price* by *Change Order* without any adjustment for the *Contractor's* overhead and profit on such amount."

4.1.8 Add new paragraph 4.1.8:

"The *Owner* reserves the right to call, or to have the *Contractor* call, for competitive bids for portions of the *Work*, to be paid for extra work or cash allowances."

SUPPLEMENTARY GENERAL CONDITIONS

PART 5 PAYMENT

GC 5.2 APPLICATIONS FOR PROGRESS PAYMENT

5.2.3 Delete in its entirety and replace with:

"The amount claimed shall be for the value, proportionate to the amount of the *Contract*, of *Work* performed as of the last day of the payment period, less any holdbacks specified within the *Contract* or by required by law.

5.2.7 Delete in its entirety and replace with:

"Payment will not be made for Products purchased by the Contractor but not yet incorporated into the *Work* at the *Place of the Work*."

5.2.8 *Add*:

"An application for payment shall be deemed received only if submitted complete with required supporting documentation as determined by the *Consultant*."

5.2.9 Add:

"The *Contractor* shall with each and every application for payment subsequent to the first, submit a current CCDC 9A Statutory Declaration of Progress Payment Distribution by the *Contractor*, which shall be completed and sworn before a Notary Public or a Commissioner for Oaths.

GC 5.3 PROGRESS PAYMENT

5.3.1.2 Add:

"If, after a certificate of payment has been issued to the *Owner* (and prior to payment by the *Owner*), the *Consultant* determines on the basis of new information that the amount certified for payment is inappropriately high or low relative to the value of the work performed, then the *Consultant* shall issue a revised certificate of payment."

5.3.1.3 Delete in its entirety and replace with:

"The *Owner* shall make payment to the *Contractor*, on account, in the amount certified by the *Consultant* as provided in Article A-5 of the Agreement – PAYMENT, on or before the later of:

(a) twenty (20) calendar days after receipt by the *Consultant* of the application for payment, or

(b) twenty-eight (28) calendar days after the last day of the payment period for which the *Contractor's* application for payment is made."

5.3.2 Add:

"The *Consultant* may amend the application for payment by the *Contractor* to reflect holdbacks for, but not limited to:

1. Builders' Lien Holdback: The *Owner* shall hold back 10%, or other percentage as required by the Builders' Lien Act, of any amounts due to the *Contractor* as a builders lien holdback.

2. Defects and Deficiencies: The *Owner* may hold back from payments otherwise due to the *Contractor* a reasonable amount, as determined by the *Consultant*, on account of deficient or defective *Work* already paid for. This holdback may be held, without interest, until all deficiencies or defects are remedied. The items of defect or deficiency and the amounts of related holdback shall be listed separately on the *Payment Certificate*. In the case of a deficiency, the *Owner* may hold back twice the value of the deficiency, as determined by the *Consultant*.

3. Incomplete Work: If, after *Substantial Performance* of the *Work* is achieved, the *Contractor* is unable to complete any of the *Work* because of climatic or other conditions beyond the *Contractor's* reasonable control then the *Owner* may hold back from payments otherwise due to the *Contractor* the amount as estimated by the *Consultant* in consultation with the *Contractor* by which the cost to have others complete the *Work* exceeds the estimated *Contract Price* for such *Work*.

4. Filed Builders' Liens: The *Owner* may, in addition to other holdbacks as provided by the *Contract Documents*, hold back an amount equal to any lien which has been filed with respect to the *Work*. The *Owner* may, at its option, after five (5) *Days* written notice to the *Contractor*, pay such amount into court to discharge the lien. If the lien is discharged without payment of the holdback into court, then the *Owner* shall pay such holdback to the *Contractor*, without interest.

5. Liquidated Damages: If the *Contractor* fails to meet the date of *Substantial Performance* of the *Work* as set in the Unit Price Bid Form, and as may be adjusted pursuant to the provisions of the *Contract Documents*, then the *Owner* may deduct from any monies owing to the *Contractor* for the *Work*:

   (a) as a genuine pre-estimate of the *Owner's* increased costs for the *Consultant* and the *Owner's* own staff caused by such delay an amount as specified in the Instructions to Bidders Clause 23.1 for each *Working Day* the actual *Substantial Performance of the Work* is achieved after the *Substantial Performance of the Work* date as set out in the

Stipulated Bid Price Form or as may be adjusted pursuant to the provision of the *Contract Documents*.

(b) All direct out-of-pocket costs, such as costs for safety, security, or equipment rental, reasonably incurred by the *Owner* as a direct result of such delay.

(c) A deduction of $1,500 per calendar day beyond the contract completion date.

If the monies owing to the *Contractor* are less than the total amount owing by the *Contractor* to the *Owner* under (a) and (b) then any shortfall shall immediately, upon written notice from the *Owner*, and *upon Substantial Performance of the Work*, be due and owing by the *Contractor* to the *Owner*."

6. Record Drawings: If the *Contractor* fails to provide the record drawing information as per Section 01 33 00 – Submittal Procedures, this will be taken to be a deficiency and the *Owner* may hold back $15,000 from payments otherwise due to the *Contractor*. This holdback may be held until record drawing information is submitted and approved by the *Consultant*, and the conditions of SGC 5.3.2.2 are met.

7. Operating and Maintenance Manuals: If the *Contractor* fails to provide the operating and maintenance manuals as per Section 01 33 00 – Submittal Procedures, this will be taken to be a deficiency and the *Owner* may hold back $10,000 from payments otherwise due to the *Contractor*. This holdback may be held until record drawing information is manuals are received and approved by the *Consultant*, and the conditions of SGC 5.3.2.2 are met.

GC 5.4 SUBSTANTIAL PERFORMANCE OF THE WORK

5.4.1 Delete in its entirety and replace with:

"The *Consultant* shall, no later than ten (10) *Days*, after the receipt of a written application from the *Contractor* for a *Certificate of Substantial Performance*, make an inspection and assessment of the *Work* to verify the validity of the application and either shall:

(a) Issue the *Certificate of Substantial Performance* or

(b) if the *Consultant* determines that the conditions of *Substantial Performance* of the *Work* have not been achieved, consult with the *Contractor* and advise the *Contractor* of the deficiencies in the *Work* that must be corrected or completed in order to achieve *Substantial Performance of the Work*."

5.4.2 Delete in its entirety and replace with:

"The *Contractor* may, after performing the required *Work* noted in GC 5.4.1 (b), re-apply for the *Certificate of Substantial Performance* and the provisions GC 5.4.1 shall apply to the new application for the *Certificate of Substantial Performance*."

5.4.3 Delete in its entirety and replace with:

"An application for a *Certificate of Substantial Performance* shall be accompanied by:

(a) a sworn declaration in a form acceptable to the *Consultant* that all amounts relating to the *Work*, due and owing to third parties including all *Subcontractors* and *Suppliers*, as of the end of the month covered by the previous payment certificate, have been paid; and

(b) documentation satisfactory to the *Owner* demonstrating compliance with the *Workers' Compensation Act* and the *Occupational Health and Safety Act* requirements."

5.4.4 Add:

"Immediately following the issuance of the *Certificate of Substantial Performance*, the *Contractor*, in consultation with the *Consultant*, will establish a reasonable date for *Total Performance of the Work*.

GC 5.5 PAYMENT OF HOLDBACK UPON SUBSTANTIAL PERFORMANCE OF THE WORK

5.5.1.3 Add:

"When applying for release of holdback, the Contractor shall submit a current CCDC 9B Statutory Declaration of Progress Payment Distribution by *Subcontractor* from each of the *Subcontractors* and documentation satisfactory to the *Owner* demonstrating compliance with the *Workers' Compensation Act* and the *Occupational Health and Safety Act* requirements."

5.5.2 Delete the words, "the statement" and replace with the words "the documents".

5.5.3 Delete this paragraph in its entirety.

GC 5.6 PROGRESSIVE RELEASE OF HOLDBACK

5.6.4 Add:

"An application for progressive release of holdback shall not be considered complete until all related documentation required for the *Consultant's* review is received, including those requirements in GC 5.2.8, as determined by the *Consultant*."

GC 5.7 FINAL PAYMENT

5.7.2 Delete the words "calendar days" and replace with the words "*Working Days*".

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

5.7.5 Add:

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

PART 6 CHANGES IN THE WORK

GC 6.2 CHANGE ORDER

6.2.1 Delete in its entirety and replace with:

"When a change in the *Work* is proposed or required, the *Consultant* will provide the *Contractor* with a *Contemplated Change Order*. The *Contractor* shall promptly present, in a form acceptable to the *Consultant*, a method of adjustment or an amount of adjustment for the *Contract Price*, if any, and the adjustment in the *Contract Time*, if any, for the proposed change in the *Work*."

6.2.3 Add:

"The following shall determine *Contractor* mark-up in *Change Orders*, by percentage:

.1 To the cost of the *Work* performed by the *Contractor* directly, the *Contractor* may add a maximum of 20% mark-up for overhead and profit combined.

.2 To the cost of the *Work* performed by *Subcontractors* for the *Contractor*, before the *Subcontractor's* mark-up, the *Contractor* may add a maximum of 10% mark-up for overhead and profit combined.

.3 On *Work* deleted from the *Contract*, not covered by unit prices, the credit to the *Owner* shall be the cost of the *Work* as set out in GC 6.3 – CHANGE DIRECTIVE, article 6.3.7.

.4 For a detailed list of what the *Contractor* may include in the cost of work before adding mark-ups, refer to GC 6.3 – CHANGE DIRECTIVE, article 6.3.7."

GC 6.3 CHANGE DIRECTIVE

6.3.8 Delete in its entirety and replace with:

"The *Contractor* shall, for each day, keep full and detailed accounts and records necessary for the documentation of the cost of performing the *Work* attributable to the *Change Directive* and shall provide the *Consultant* with copies thereof before the end of the next *Working Day* for certification by the *Consultant*.

GC 6.6 CLAIMS FOR A CHANGE IN CONTRACT PRICE

6.6.1 Add:

"in no case more than ten (10) Working Days from the event or series of events giving rise to the claim."

GC 6.6 CLAIMS FOR A CHANGE IN CONTRACT PRICE

6.7.1 Add:

"*Optional Work* shall only be excluded from the *Work* if the *Consultant* so directs by *Change Order*."

PART 9 PROTECTION OF PERSONS AND PROPERTY

GC 9.4 CONSTRUCTION SAFETY

9.4.2 Add:

"Prior to commencing the *Work* the *Contractor* shall provide the following:

.1 a copy of a five-year WCB Alberta Employer Report;
.2 a signed copy of "Lac La Biche County – Prime Contractor Agreement". A sample is shown in Appendix B;
.3 a digital copy of the *Contractor's* Occupational Health and Safety Program for review;
.4 WCB Alberta Clearance Letter.

PART 10 GOVERNING REGULATIONS

GC 10.2 LAWS, NOTICES, PERMITS AND FEES

10.2.8 Add:

"The *Contractor* shall provide to the *Consultant* copies of all inspection reports from the various authorities having jurisdiction within two (2) *Working Days* of their receipt."

PART 12 INDEMNIFICATION, WAIVER OF CLAIMS AND WARRANTY

GC 12.3 WARRANTY

12.3.4 Add:

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

12.3.7 Add:

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

END OF SECTION

SUMMARY OF WORK

SUMMARY OF WORK

PART 1 GENERAL

1.1 PROJECT IDENTIFICATION

.1 Project Location: 9910 – 100 St, Plamondon Alberta

.2 Project Owner: Lac La Biche County
- .1 Address: 13422 Hwy 881, McArthur Place, Plamondon, AB T0A 2T0
- .2 Primary Contact: Mackenzie Zilinski – Senior Executive Assistant
- .3 Tel: 780.623.6809
- .4 Email: mackenzie.zilinski@laclabichecounty.com

.3 Prime Consultant / Landscape Architect: EDS Group Inc.
- .1 Address: 110, 13352 Lakeland Drive, Lac La Biche, AB T0A 2C0
- .2 Primary Contact: John Buchko, Principal
- .3 Tel: 780.271.1689
- .4 Email: jbuchko@edsgroup.ca

SUMMARY OF WORK

1.2 WORK COVERED BY CONTRACT DOCUMENTS

.1 Work of this *Contract* consists of the construction of a concrete plaza, gazebo, landscaping and other park related improvements.

1.3 CONTRACT METHOD

.1 Construct all work under a CCDC 2 - stipulated price contract.

1.4 WORK UNDER SEPARATE CONTRACT

.1 The County does not anticipate any construction concurrent with this *Contract* however reserves the right to pursue other work that does not impact the time and space of the Contractor.

1.5 WORK SEQUENCING AND PHASING

.1 The Contractor can determine its own work sequencing and phasing plan however must conform to any limitations identified by any Provincial and Federal regulatory agencies.

1.6 CONTRACTOR USE OF PREMISIS

.1 Unrestricted use of site identified in the project limits until *Substantial Performance*. Co-ordinate use of adjacent premises under direction of *Consultant* and *Owner*.

.2 Co-ordinate with the *Owner* for use of storage or work areas needed for operations under this *Contract*.

.3 Remove or alter existing work to prevent injury or damage to portions of existing work which remain.

.4 Repair or replace portions of existing work which have been altered during construction operations to match existing or adjoining work, as directed by *Consultant*.

.5 At completion of operations condition of existing work: equal to or better than that which existed before new work started.

1.7 OWNER OCCUPANCY

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

1.8 ALTERATIONS, ADDITIONS OR REPAIRS TO ADJACENT FACILITIES

.1 Execute work with least possible interference or disturbance to adjacent operations and normal use of premises. Arrange with *Consultant* and *Owner* to facilitate execution of *Work*.

1.9 EXISTING SERVICES

.1 Notify *Consultant*, *Owner* and utility companies of intended interruption of services and obtain required permission.

.2 Have utilities and services companies establish and confirm locations of all existing services in area of work. Ensure that the locations of all existing concealed services are known prior to starting work. **Utility information shown on the Existing Conditions Drawings should be verified on site and used only as a guide**.

.3 Where *Work* involves breaking into or connecting to existing materials, give *Owner* 48-hour's notice. Minimize duration of interruptions. Carry out work at times as directed by the *Owner* with minimum disturbance to pedestrian and vehicular traffic.

.4 Provide alternative routes for pedestrian and vehicular traffic.

.5 Establish location and extent of service lines in area of work before starting Work. Notify *Consultant* of findings.

.6 Where unknown services are encountered, immediately advise *Consultant* and *Owner* and confirm findings in writing.

.7 Protect, relocate or maintain existing active services. When inactive services are encountered, cap off in manner approved by authorities having jurisdiction.

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

.9 Maintain at job site, one copy of each document as follows:

.1 Contract Drawings;
.2 Specifications;
.3 Addenda;
.4 Reviewed Shop Drawings;
.5 List of Outstanding Shop Drawings;
.6 Change Orders;
.7 Other Modifications to Contract;
.8 Field Test Reports;
.9 Copy of Approved Work Schedule;
.10 Health and Safety Plan and Other Safety Related Documents;
.11 Other documents as specified; and
.12 All crossing agreements, proximity agreements, regulatory approvals.

1.10 Plain Language Summary of Scope

See the following pages for plain language summary of bid items:

1.01 – Mobilization / Demobilization. Includes all costs of delivery of goods, materials, staff and equipment to and from the site. Eligible for 50% payment once construction commences, and the remaining 50% upon Substantial Performance of the Contract and removal of all extra supplies and goods, temporary features, equipment, temporary fencing, amongst other items deemed necessary by the Consultant.

1.02 – Contractor Insurance. Costs of securing insurance for the full duration of the Contract. Eligible for payment upon Total Performance of the Contract (expiration of the one-year maintenance period).

1.03 – Landscape Maintenance from CCC to FAC for trees only. One year of maintenance for trees after Substantial Performance of the contract and total completion of tree planting. Eligible for payment as a single payment after total performance and expiration of the one-year warranty and maintenance period.

1.04 – Traffic Control, site fencing and signage – providing all temporary signage as required, and for a sturdy aluminum fence around the entire perimeter of the site for the full duration of the contract. 50% eligible for payment once contract is approximately 50% complete, remaining 50% eligible at Substantial Performance and removal of all signs, traffic control measures and temporary fencing.

1.05 – Materials testing for topsoil, gravel and concrete – includes the Contractor coordinating all necessary testing and providing the Consultant with test results that conform to all requirements, specifications and detailed drawing requirements. Eligible for payment in proportions that align with percentage of total project performance.

SUMMARY OF WORK

1.06 – Relocation of gas line – abandon and cap at rear property line. Includes coordination with the local gas franchise to abandon the existing gas line. Existing riser on site to be removed, however existing gas line may remain. Line to be pinched off by gas franchise provided at the rear property line.

2.01 – General site grading, provide uniform drainage. Site grading will remain relatively the same as existing, however gentle swales per design drawings are required to move water away from the proposed gazebo structure. Eligible for payment upon completion of all rough grading.

3.01 – Site excavation for sod areas to 150mm depth of material. Excavate to accept required aggregate base material at specified compaction rates. Intention is to 'lose' any excess material on site in areas of sod, where structure is not important. Eligible for payment as single payment upon completion of excavation and removal of any excess materials from the site.

3.02 – Site excavation for sod areas to 150mm depth. Dispose of material. Eligible for payment upon completion of excavation and removal of all materials from the site.

3.03 – Site excavation for plant bed areas (plant beds) 500mm depth. Dispose of material. Eligible for payment upon completion of excavation and removal of all materials from the site.

3.04 – Supply and install 150mm depth topsoil for sod areas. Contractor to provide a topsoil composition test of the material proposed to come to site, including composition (sand, silt, clay), pH, salinity, organic matter. Eligible for payment once topsoil tests are approved by the Consultant, topsoil is delivered to site, placed and ready for sod.

3.05 – Supply and install sod. Eligible for payment once sod has been laid, has been fully knit and has been mowed twice. Sod to be entirely weed free at time of Substantial Performance.

3.06 – Supply and install 400mm depth topsoil for plant beds. Contractor to provide a topsoil composition test of the material proposed to come to site, including composition (sand, silt, clay), pH, salinity, organic matter. Eligible for payment once topsoil tests are approved by the Consultant, topsoil is delivered to site, placed and ready for shrub planting / mulching.

3.07 – Supply and install 100mm depth wood chip mulch for plant bed areas. Sample to be provided to the Consultant prior to delivery of material to site. Eligible for payment once all mulch has been installed.

4.01 – Supply and install 1.5m gravel trail including all subgrade preparation, granular surface, compaction. Also requires any additional excavation and removal of any unsuitable subgrade material that may be encountered. Contractor responsible for providing density compaction test results from a qualified laboratory and tester and all work in place conforming to design parameters. Eligible for payment once results are received and all gravel trail is in place.

SUMMARY OF WORK

4.02 – Supply and install 100mm depth standard concrete on 200mm depth compacted granular base and prepared subgrade including sawcutting. Also requires any additional excavation and removal of any unsuitable subgrade material that may be encountered. Contractor responsible for providing density compaction test results from a qualified laboratory and tester and all work in place conforming to design parameters. Concrete testing to also be provided. Eligible for 50% payment once results are received and all base is in place, and the remaining 50% eligible for payment after 28-day test results have been received. Any pay deductions will be made at that time.

4.03 – Supply and install concrete pad for picnic tables. Also requires any additional excavation and removal of any unsuitable subgrade material that may be encountered. Contractor responsible for providing density compaction test results from a qualified laboratory and tester and all work in place conforming to design parameters. Concrete testing to also be provided. Eligible for 50% payment once results are received and all base is in place, and the remaining 50% eligible for payment after 28-day test results have been received. Any pay deductions will be made at that time.

5.01 – Supply and install 60mm large caliper deciduous trees. Trees to be inspected and approved by the Consultant at the tree farm prior to delivery of any trees to the site. Eligible for payment once trees have been installed on site and approved by the Consultant.

5.02 – Supply and install 5 gal deciduous shrubs. Eligible for payment once shrubs have been installed on site and approved by the Consultant.

5.03 – Supply and install 2 gal perennials. Eligible for payment once perennials have been installed on site and approved by the Consultant.

6.01 – Supply and install 24’ gazebo on 42 sq.m. structural concrete slab. Price including slab and required subgrade preparation. Contractor to provide certified shop drawings approved by professional engineer certified in the Province of Alberta for review and acceptance. Also requires any additional excavation and removal of any unsuitable subgrade material that may be encountered. Contractor responsible for providing density compaction test results from a qualified laboratory and tester and all work in place conforming to design parameters. Concrete testing to also be provided. Eligible for 50% payment as a deposit at the time of contract award and proof that the gazebo has been ordered. 25% payment eligible at the time of completion of concrete slab, and remaining 25% eligible for payment once all work related to the bid item has been accepted. Any deduction due to poor concrete strength will be taken from the final payment. This is a provision item that may be removed if budget is insufficient.

SUMMARY OF WORK

6.02 – Supply and install artistic panel features – corten steel art pieces. Artwork to be provided by the Consultant by May 15, 2025. Eligible for 50% payment as a deposit at the time of contract award and proof that the steel panels have been ordered. Remaining 50% payment eligible upon completion of installation and acceptance by the Consultant.

6.03 – Supply and install bronze figure – child with violin including boulder seat for sculpture. Allowance has been provided. Consultant to provide further direction after contract award. Owner shall select an art piece and purchase it directly and have it delivered to site. Allowance noted in the schedule covers Contractor costs to install, which will be compensated on a time and materials basis using rates included in Tender Forms.

6.04 – Supply and install clock feature including structural pile and pile cap. Includes supply and installation of a prefabricated clock feature and a pile as recommended by the supplier. Shop drawings to be provided included structural pile information, provided by a certified pile installation company and shop drawings approved by professional engineer certified in the Province of Alberta for review and acceptance. Eligible for 50% payment as a deposit at the time of contract award, acceptance of shop drawings and proof that the structural pile and clock has been ordered. Remaining 50% eligible for payment upon completion of installation to the satisfaction of the Consultant. This is a provision item that may be removed if budget is insufficient.

6.05 – Supply and install screw pile with cap for future art installment. Install a helical pile for a future art piece weighing 3000lb or less. Include a pile cut-off plate at finished grade 300x300mm square. Shop drawings to be provided included structural pile information, provided by a certified pile installation company and shop drawings approved by professional engineer certified in the Province of Alberta for review and acceptance. Eligible for 50% payment as a deposit at the time of contract award, acceptance of shop drawings and proof that the structural pile has been ordered. Remaining 50% eligible for payment upon completion of installation to the satisfaction of the Consultant. This is a provision item that may be removed if budget is insufficient.

7.01 – Supply and install waste receptacles c/w built in concrete pad. Eligible for 50% payment as a deposit at the time of contract award and proof that the furniture has been ordered. Remaining 50% payment eligible upon completion of installation and acceptance by the Consultant.

7.02 – Supply and install picnic table – surface mounted on concrete. Eligible for 50% payment as a deposit at the time of contract award and proof that the furniture has been ordered. Remaining 50% payment eligible upon completion of installation and acceptance by the Consultant.

8.01 – Supply and install bollard-style lights, including required cable for connection to power distribution cabinet. Eligible for 50% payment as a deposit at the time of contract award and proof that the fixtures have been ordered. Remaining 50% payment eligible upon completion of installation, acceptance by the Consultant and approval from Lac La Biche County electrical inspection agency.

SUMMARY OF WORK

8.02 – Supply and install conduit as required. Installation of empty conduit for work by others in the future as shown in detailed drawings and waterproof capping both ends. Eligible for payment upon completion of installation and acceptance by the Consultant.

8.03 - Supply and install owner-supplied pole-mounted light including required cable and connection to power distribution cabinet. Eligible for payment upon acceptance by the Consultant and approval from Lac La Biche County electrical inspection agency.

8.04 – Supply and install combination electrical meter / power distribution cabinet and all required site cable. Includes all shop drawings provided by a certified electrician, obtaining an electrical permit from Lac La Biche County, coordination with any local utility companies, connection fees and site cleanup. Eligible for 50% payment as a deposit at the time of contract award, acceptance of shop drawings and obtaining all necessary permits from authorities. Remaining 50% eligible for payment upon completion of installation to the satisfaction of the Consultant and approval from Lac La Biche County electrical inspection agency and local utility companies.

8.05 – Certified electrician shop drawings for all electrical components including permits, fees, inspection fees, and approval of electrical work. 50% eligible for payment upon acceptance of shop drawings, and final 50% eligible for payment upon acceptance of all work by Lac La Biche County electrical inspection agency and local utility companies.

9.01 – Supply and install 1.8m ht uniform wood screen fence along north property line. Eligible for payment upon completion and acceptance by the Consultant. This is a provision item that may be removed if budget is insufficient.

END OF SECTION

MEASUREMENT AND PAYMENT

MEASUREMENT AND PAYMENT

PART 1 GENERAL

.1 Payments shall be made on the basis of the lump sum prices in the *Stipulated Price Schedule* in the *Bid Form* and in the Supplementary Tender Forms.

.2 The prices bid for various items of work, unless specifically noted otherwise, shall include the supply of all labour, material, plant, and equipment required to construct the work in accordance with the drawings and specifications.

.3 The method of measurement of the quantities for payment and the basis for payment will be in accordance with the Summary of Work in 1.10 - Plain Language Summary of Scope the *Bid Form* and the items of this section. All measurements will be carried out by the *Consultant*.

.4 The prices bid for supply and installation of materials shall be full compensation for supplying, delivering, loading, unloading, handling, storage, breakage, waste, hauling, installing, cleaning, testing and placing in service the work together with all work subsidiary and incidentals thereto for which separate payment is not provided elsewhere. Payment shall be only for materials actually installed at the time of invoicing and forecasting completion of *Work* to a post-dated invoice will not be acceptable.

.5 All existing materials on-site whether structures, vegetation, topsoil, gravel, sand or other excavated, or piled materials are the property of the *Owner* on which the work is located. Only those materials specifically noted in the specifications or on the drawings as belonging to the *Contractor* shall become the *Contractor's* property.

.6 The sum of the payments in the *Stipulated Price Schedule* of the *Bid Form* shall constitute full payment for the complete works as described in these documents. Extra payment will only be made for items adding to the scope of the works, as described in these documents and/or shown on the drawings and as evident from the inspection of the site of the works.

PART 2 NON-PAYMENT ITEMS

.1 There shall be no separate payment for incidental work. Payment for incidental work shall be considered to be included in the total tendered price of the *Stipulated Price Schedules* of the *Bid Form*.

.2 All work shown on the plans and drawings, or referred to in the *General Conditions*, the *Supplementary General Conditions*, or the *General Specifications* shall be considered as part of the complete work unless specifically deleted.

PART 3 Measurement and Payment

.1 All items to be paid based on field measurement and site verification of completion, measured by the *Contractor* and accepted by the *Consultant*. All grading will be based on lump sum values as included in the *Stipulated Price Schedules*.

END OF SECTION

SUBMITTAL PROCEDURES

SUBMITTAL PROCEDURES

PART 1 GENERAL

1.1 ADMINISTRATIVE

.1 Submit to *Consultant* submittals listed for review. Submit promptly and in orderly sequence to not cause delay in *Work*. Failure to submit in ample time is not considered sufficient reason for extension of *Contract Time* and no claim for extension by reason of such default will be allowed.

.2 Do not proceed with *Work* affected by submittal until review is complete.

.3 Present shop drawings, product data, samples and mock-ups in Metric units.

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

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

.6 Notify *Consultant*, in writing at time of submission, identifying deviations from requirements of *Contract Documents* stating reasons for deviations.

.7 Verify field measurements and affected adjacent *Work* are co-ordinated.

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

.9 *Contractor's* responsibility for deviations in submission from requirements of *Contract Documents* is not relieved by *Consultant* review.

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

1.2 SHOP DRAWINGS AND PRODUCT DATA

.1 The term "shop drawings" means drawings, diagrams, illustrations, schedules, performance charts, brochures and other data which are to be provided by *Contractor* to illustrate details of a portion of *Work*.

.2 Submit drawings stamped and signed by professional engineer registered or licensed in Province of Alberta, or other related qualified professional for the type of *Work*.

.3 Indicate materials, methods of construction and attachment or anchorage, erection diagrams, connections, explanatory notes and other information necessary for completion of *Work*. Where articles or equipment attach or connect to other articles or equipment, indicate that such items have been co-ordinated, regardless of the section under which adjacent items will be supplied and installed. Indicate cross references to design drawings and specifications.

.4 Allow seven (7) days for *Consultant's* review of each submission.

.5 Adjustments made on shop drawings by *Consultant* are not intended to change *Contract Price*. If adjustments affect value of *Work*, state such in writing to *Consultant* prior to proceeding with *Work*.

.6 Make changes in shop drawings as *Consultant* may require, consistent with *Contract Documents*. When resubmitting, notify *Consultant* in writing of revisions other than those requested.

.7 Accompany submissions with transmittal letter, containing:

- .1 Date.
- .2 Project title and number.
- .3 *Contractor's* name and address.
- .4 Identification and quantity of each shop drawing, product data and sample.
- .5 Other pertinent data.

.8 Submissions include:

- .1 Date and revision dates.
- .2 Project title and number.
- .3 Name and address of:
  - .1 Subcontractor.
  - .2 Supplier.
  - .3 Manufacturer.
- .4 *Contractor's* stamp, signed by *Contractor's* authorized representative certifying approval of submissions, verification of field measurements and compliance with *Contract Documents*.
- .5 Details of appropriate portions of Work as applicable:
  - .1 Fabrication.
  - .2 Layout, showing dimensions, including identified field dimensions, and clearances.
  - .3 Setting or erection details.
  - .4 Capacities.
  - .5 Performance characteristics.

.6 Standards.

.7 Operating weight.

.8 Wiring diagrams.

.9 Single line and schematic diagrams.

.10 Relationship to adjacent work.

.9 After *Consultant's* review, distribute copies.

.10 Submit electronic copy of shop drawings for each requirement requested in specification Sections and as *Consultant* may reasonably request.

.11 Submit electronic copies of product data sheets or brochures for requirements requested in specification Sections and as requested by *Consultant* where shop drawings will not be prepared due to standardized manufacture of product.

.12 Submit electronic copies of test reports for requirements requested in specification Sections and as requested by *Consultant*.

.1 Report signed by authorized official of testing laboratory that material, product or system identical to material, product or system to be provided has been tested in accord with specified requirements.

.13 Submit electronic copies of certificates for requirements requested in specification Sections and as requested by *Consultant*.

.1 Statements printed on manufacturer's letterhead and signed by responsible officials of manufacturer of product, system or material attesting that product, system or material meets specification requirements.

.2 Certificates must be dated after award of project contract complete with project name.

.14 Submit electronic copies of manufacturer’s instructions for requirements requested in specification Sections and as requested by *Consultant*.

.1 Pre-printed material describing installation of product, system or material, including special notices and Material Safety Data Sheets concerning impedances, hazards and safety precautions.

.15 Submit electronic copies of Manufacturer's Field Reports for requirements requested in specification Sections and as requested by *Consultant*.

.16 Documentation of the testing and verification actions taken by manufacturer's representative to confirm compliance with manufacturer's standards or instructions.

.17 Delete information not applicable to project.

.18 Supplement standard information to provide details applicable to project.

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

1.3 SAMPLES

.1 Submit for review samples in triplicate as requested in respective specification Sections. Label samples with origin and intended use.

.2 Notify Consultant in writing, at time of submission of deviations in samples from requirements of *Contract Documents*.

.3 Where colour, pattern or texture is criterion, submit full range of samples.

.4 Adjustments made on samples by the *Consultant* are not intended to change *Contract Prices*. If adjustments affect value of *Work*, state such in writing to *Consultant* prior to proceeding with *Work*.

.5 Make changes in samples which *Consultant* may require, consistent with *Contract Documents*.

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

1.4 MOCK-UPS

.1 Erect mock-ups in accordance with 01 45 00 - Quality Control.

1.5 CERTIFICATES AND TRANSCRIPTS

1 Immediately after award of *Contract*, submit WCB Alberta status.

.2 Submit transcription of insurance immediately after award of *Contract*.

END OF SECTION

QUALITY CONTROL

QUALITY CONTROL

PART 1 GENERAL

1.1 INSPECTION

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

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

.3 If *Contractor* covers or permits to be covered *Work* that has been designated for special tests, inspections or approvals before such is made, uncover such *Work*, have inspections or tests satisfactorily completed and make good such *Work*.

.4 *Consultant* will order part of *Work* to be examined if *Work* is suspected to be not in accordance with *Contract Documents*. If, upon examination such work is found not in accordance with *Contract Documents*, correct such *Work* and pay cost of examination and correction. If such *Work* is found in accordance with *Contract Documents*, *Owner* shall pay cost of examination and replacement.

1.2 INDEPENDENT INSPECTION AGENCIES

.1 Independent Inspection/Testing Agencies may be engaged by *Owner* for purpose of inspecting and/or testing portions of *Work*. Cost of such services will be borne by *Owner* and services will be coordinated by the *Consultant*. The *Contractor* is responsible for proving testing for all aspects of the *Work* at the *Contractor's* cost. Any testing coordinated by the *Consultant* is for verification purposes only. Provide equipment required for executing inspection and testing by appointed agencies.

.2 Employment of inspection/testing agencies does not relax responsibility to perform *Work* in accordance with *Contract Documents*.

.3 If defects are revealed during inspection and/or testing, appointed agency will request additional inspection and/or testing to ascertain full degree of defect. Correct defect and irregularities as advised by *Consultant* at no cost to *Owner*. The *Contractor* must pay costs for retesting and re-inspection.

1.3 ACCESS TO WORK

.1 Allow inspection/testing agencies access to *Work*, off site manufacturing and fabrication plants.

.2 Co-operate to provide reasonable facilities for such access.

1.4 PROCEDURES

.1 Notify appropriate agency in advance of requirement for tests, in order that attendance arrangements can be made.

.2 Submit samples and/or materials required for testing, as specifically requested in specifications. Submit with reasonable promptness and in orderly sequence to not cause delays in *Work*.

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

1.5 REJECTED WORK

.1 Remove defective *Work*, whether result of poor workmanship, use of defective products or damage and whether incorporated in *Work* or not, which has been rejected by *Consultant* as failing to conform to *Contract Documents*. Replace in accordance with *Contract Documents*.

.2 Make good other *Contractor's* work damaged by such removals or replacements promptly.

.3 If in opinion of *Consultant* (and the *Owner*) it is not expedient to correct defective *Work* or *Work* not performed in accordance with *Contract Documents*, *Owner* will deduct from *Contract Price* difference in value between *Work* performed and that called for by *Contract Documents*, amount of which will be determined by *Consultant*.

1.6 REPORTS

.1 Submit electronic copy of inspection and test reports to *Consultant*.

.2 Provide copies to subcontractor of work being inspected or tested or manufacturer or fabricator of material being inspected or tested.

1.7 TESTS AND MIX DESIGNS

.1 Furnish test results and mix designs as requested.

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

1.8 MOCK-UPS

.1 Prepare mock-ups for *Work* specifically requested in specifications. Include for *Work* of Sections required to provide mock-ups.

.2 Prepare mock-ups for *Consultant's* review with reasonable promptness and in orderly sequence, to not cause delays in *Work*.

.3 Failure to prepare mock-ups in ample time is not considered sufficient reason for extension of *Contract Time* and no claim for extension by reason of such default will be allowed.

.4 Specification section identifies whether mock-up may remain as part of *Work* or if it is to be removed and when.

END OF SECTION

TEMPORARY UTILITIES AND REQUIREMENTS

TEMPORARY UTILITIES AND REQUIREMENTS

1.0 GENERAL

1.1 INSTALLATION AND REMOVAL

.1 Provide temporary utilities as required in order to execute *Work* expeditiously.

.2 Remove from site all such work after use.

1.2 DEWATERING

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

1.3 WATER SUPPLY

.1 Coordinate with the *Owner* the source for water for construction use. The *Contractor* shall be responsible for the cost of any water obtained from municipal sources.

1.4 TEMPORARY POWER AND LIGHT

.1 Provide and pay for temporary power during construction for temporary lighting and operating of power tools.

.2 Arrange for connection with appropriate utility company. Pay costs for installation, maintenance and removal.

.3 Provide and maintain temporary lighting throughout project.

.4 Make good any damage to electrical system caused by use under this *Contract*.

1.5 TEMPORARY COMMUNICATION FACILITIES

.1 Provide and pay for temporary telephone fax data hook up, line equipment necessary for own use as required.

1.6 FIRE PROTECTION

.1 Maintain fire protection equipment during performance of Work required by insurance companies having jurisdiction and governing codes, regulations and bylaws.

.2 Burning rubbish and construction waste materials is not permitted on site.

2.0 PRODUCTS

2.1 NOT USED

.1 Not Used.

3.0 Execution

3.1 TEMPORARY EROSION AND SEDIMENTATION CONTROL

.1 Provide temporary erosion and sedimentation control measures to prevent soil erosion and discharge of soil-bearing water runoff or airborne dust to adjacent properties and walkways, according to requirements and regulations of Federal, Provincial and Municipal authorities.

.2 Inspect, repair, and maintain erosion and sedimentation control measures during construction until permanent vegetation has been established.

.3 Remove erosion and sedimentation controls and restore and stabilize areas disturbed during removal.

.4 Maintain existing erosion and sedimentation controls onsite until required removal to complete *Work*.

3.2 REFUELLING AREAS

.1 Undertake a detailed review of the construction site access routes, equipment maintenance area and the designated refuelling areas. These locations are to be submitted for *Consultant* approval prior to use. Refuelling and maintenance of equipment shall not be undertaken in or adjacent to a watercourse. All equipment maintenance and refuelling shall be conducted in the approved areas during normal working hours. Ensure that materials required for clean-up of fuel spillages are readily accessible onsite.

3.3 DUST CONTROL

.1 Ensure that surrounding residents, businesses and adjacent landowners do not endure dust as a result of construction activities.

.2 Have all dust control measures available onsite at all times and be prepared to implement them as required or requested. This would include, but is not limited to, water trucks and street sweeping equipment.

.3 Dust control is incidental to the work of the contract and no measurement or payment will be made.

3.4 NOISE CONTROL

.1 Ensure vehicles and motorized equipment are equipped with efficient mufflers to minimize noise levels in the vicinity of the site. Also ensure excessive idling of motorized equipment is minimized and conforms to the requirements of Lac La Biche County's Noise Bylaw.

END OF SECTION

CONSTRUCTION FACILITIES

CONSTRUCTION FACILITIES

1.0 GENERAL

1.1 REFERENCES

.1 Canadian Standards Association (CSA International).

.1 CSA-A23.1/A23.2-04, Concrete Materials and Methods of Concrete Construction/Methods of Test and Standard Practices for Concrete.
.2 CSA-0121-M1978(R2003), Douglas Fir Plywood.
.3 CAN/CSA-S269.2-M1987(R2003), Access Scaffolding for Construction Purposes.
.4 CAN/CSA-Z321-96(R2001), Signs and Symbols for the Occupational Environment.

1.2 INSTALLATION AND REMOVAL

.1 Prepare site plan indicating proposed location and dimensions of area to be fenced and used by *Contractor*, number of trailers to be used, avenues of ingress/egress to fenced area and details of fence installation.

.2 Identify areas which have to be gravelled to prevent tracking of mud.

.3 Indicate use of supplemental or other staging area.

.4 Provide construction facilities in order to execute work expeditiously.

.5 Remove from site all such work after use.

1.3 HOISTING

.1 Provide, operate and maintain hoists as required for moving of workers, materials and equipment. Make financial arrangements with *Subcontractors* for their use of hoists.

.2 Hoists to be operated by qualified operator.

1.4 SITE STORAGE/LOADING

.1 Confine *Work* and operations of employees by *Contract Documents*. Do not unreasonably encumber premises with products.

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

1.5 CONSTRUCTION PARKING

.1 Parking will be permitted on site provided it does not disrupt performance of *Work* or surrounding properties. Coordinate with *Owner* location for parking facilities.

.2 Provide and maintain adequate access to project site.

1.6 SECURITY

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

1.7 OFFICES

.1 Provide temporary office as required. Coordinate with *Owner* the location of office.

.2 Provide marked and fully stocked first-aid case in a readily available location.

.3 *Subcontractors* to provide their own offices as necessary. Direct location of these offices.

1.8 EQUIPMENT, TOOL AND MATERIALS STORAGE

.1 Provide and maintain, in clean and orderly condition, lockable weatherproof sheds for storage of tools, equipment and materials.

.2 Locate materials not required to be stored in weatherproof sheds on site in manner to cause least interference with work activities. Coordinate with *Owner* a suitable location for the facilities.

1.9 SANITARY FACILITIES

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

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

1.10 CONSTRUCTION SIGNAGE

.1 Provide and erect any project sign as requested by the *Owner*, within three weeks of signing *Contract*, in a location designated by *Owner*.

.2 Maintain approved signs and notices in good condition for duration of project, and dispose of off-site on completion of project or earlier if directed by *Owner*.

1.11 PROTECTION AND MAINTENANCE OF TRAFFIC

.1 Provide access and temporary relocated roads as necessary to maintain traffic.

.2 Maintain and protect traffic on affected roads during construction period except as otherwise specifically directed by *Owner*.

.3 Provide measures for protection and diversion of traffic, including provision of watch-persons and flag-persons, erection of barricades, placing of lights around and in front of equipment and work, and erection and maintenance of adequate warning, danger, and direction signs

.4 Protect travelling public from damage to person and property.

.5 Contractor's traffic on roads selected for hauling material to and from site to interfere as little as possible with public traffic. Coordinate with Owner construction traffic routes.

.6 Verify adequacy of existing roads and allowable load limit on these roads. Contractor: responsible for repair of damage to roads caused by construction operations.

.7 Construct access and haul roads necessary.

.8 Haul roads: constructed with suitable grades and widths; sharp curves, blind corners, and dangerous cross traffic shall be avoided.

.9 Provide necessary lighting, signs, barricades, and distinctive markings for safe movement of traffic.

.10 Provide adequate dust control to ensure safe operation at all times and to prevent disruption of adjacent uses.

.11 Provide snow removal as required during period of *Work*. (To be coordinated with Lac La Biche County).

1.12 CLEAN-UP

.1 Remove construction debris, waste materials, packaging material from work site daily.

.2 Clean dirt or mud tracked onto paved or surfaced roadways.

.3 Store materials resulting from demolition activities that are salvageable.

.4 Stack stored new or salvaged material not in construction facilities.

END OF SECTION

STIPULATED PRICE CONTRACT – CCDC 2

Contact your local construction association for copies of this contract document

CCDC INSURANCE REQUIREMENTS – CCDC 41

Contact your local construction association for copies of this contract document

APPENDIX A
LAC LA BICHE COUNTY PRIME CONTRACTOR AGREEMENT

Lac La Biche County
welcoming by nature.

PRIME CONTRACTOR AGREEMENT

Project #:	Project Title:
Site Location(s):	
Prime Contractor Name:	Prime Contractor Address:
Project Manager:	Contact (phone/email):
Project Health and Safety Coordinator:	Contact (phone/email):

As per the requirements of the Workers' Compensation Act, which states:

Coordination at multiple-employer workplaces

1) In this section:

***"multiple-employer workplace"** means a workplace where workers of 2 or more employers are working at the same time;*

***"prime contractor"** means, in relation to a multiple-employer workplace,*

a) the directing contractor, employer or other person who enters into a written agreement with the owner of that workplace to be the prime contractor for the purposes of this Part, or

b) if there is no agreement referred to in paragraph (a), the owner of the workplace.

2) The prime contractor of a multiple-employer workplace must

a) ensure that the activities of employers, workers and other persons at the workplace relating to the occupational health and safety are coordinated, and

b) do everything that is reasonably practicable to establish and maintain a system or process that will ensure compliance with this Part and the regulations in respect of the workplace.

3) Each employer of workers at a multiple-employer workplace must give to the prime contractor the name of the person the employer has designated to supervise the employer's workers at that workplace.

By signing this Agreement, the Contracting Firm accepts all responsibilities of a prime contractor as outlined in the Workers' Compensation Act and WCB Alberta Regulation.

As a Contractor signing this Prime Contractor Agreement form with Lac La Biche County (the "owner"), you are agreeing that your company, management staff, supervisory staff and workers will comply with Workers' Compensation Act, OH&S Regulations and all other applicable legislative requirements.

Any OH&S violation by the prime contractor may be considered a breach of contract, resulting in possible termination or suspension of the agreement and/or any other actions deemed appropriate at the discretion of the owner.

Actions of the prime contractor resulting in any penalties, sanctions or additional costs levied against the owner, is the responsibility of the prime contractor.

The prime contractor is required to maintain and have documentation available that includes, but is not limited to:

- All notices which the Prime Contractor is required to provide to WCB Alberta as per OH&S Regulation.

Please return a signed copy of this agreement to the Owner's Representative. If you have any questions, please contact John Buchko at 780.271.1689 or by email at jbuchko@edsgroup.ca

- All directives and inspection reports issued by WCB Alberta.
- Records of any incidents and accidents occurring within the Prime Contractor's area of responsibility.
- Completed accident investigations for any incidents and accidents occurring within the Prime Contractor's area of responsibility.

The following additional documents must be maintained and readily available by the prime contractor at the construction workplace:

- Records of all orientation and regular safety meetings held between contractors and their workers, including topics discussed, worker names and companies in attendance.
- Written evidence of regular inspections within the workplace.
- Occupational first aid records.
- Worker training records.
- Current list of the name of a qualified person designated to be responsible for each subcontractor (employer's) site health and safety activities.
- Emergency procedures

The following information must be provided to the Owner prior to work commencing:

- WCB Alberta Clearance Letter
- Prime Contractor's OH&S Safety Program
- Prime Contractor's OH&S Safety Program Document
- First aid provisions
- Certificate of COR Certification

The Contractor acknowledges having read and understood the information above. The contractor understands and accepts the responsibilities of prime contractor in accordance with the Workers' Compensation Act while contracted by Lac La Biche County for this project and will abide by all applicable legislative requirements.

By signing this Prime Contractor Agreement, the Contractor agrees as a representative of the firm noted above, to accept all responsibilities of the prime contractor for this project.

Prime Contractor Representative (print)	Lac La Biche County Representative (print)
Prime Contractor Rep. Signature	Lac La Biche County Rep. Signature
Date	Date

Please return a signed copy of this agreement to the Owner's Representative. If you have any questions, please contact John Buchko at 780.271.1689 or by email at jbuchko@edsgroup.ca

APPENDIX B
GEOTECHNICAL REPORT

GEOTECHNICAL INVESTIGATION

Proposed Town Square Redevelopment
Plamondon, Alberta

Prepared for:

EDS Group Inc.

Date:

22 October 2024

Project File #: PG24-1807

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Edmonton, AB, T6E 5R9

Cold Lake : **Tel.: 780.545.3545**
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Cold Lake, AB,T9M 1S6

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5406 52 Avenue
Lloydminster, AB, T9V 2T5

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1.0 INTRODUCTION

This report presents the results of the geotechnical investigation conducted for the proposed town square redevelopment within the Hamlet of Plamondon, Alberta. SolidEarth Geotechnical Inc. (SolidEarth) was commissioned by EDS Group Inc. to complete the geotechnical investigation.

The purpose of the geotechnical investigation was to assess the subsurface soil and groundwater conditions at selected locations within the proposed development area, and to provide geotechnical recommendations for the associated development.

2.0 PROJECT DESCRIPTION AND INVESTIGATION SCOPE

Based on information provided to SolidEarth, it was understood that the project consists of the construction of a gazebo, new paved trails, as well as associated concrete surface works.

The scope of work completed by SolidEarth included drilling boreholes, conducting laboratory review and testing on recovered soil samples, undertaking geotechnical engineering analysis, and preparation of this report.

3.0 SITE DESCRIPTION

The development area was located within the Hamlet of Plamondon, north of the existing Servus Credit Union building. The development area was bounded by residential houses to the north, Servus Credit Union building to the south, 100 Street to the east, and an unpaved access lane to the west. At the time of the field investigation, the site was vacant, grass-covered, and relatively flat.

A key plan showing the approximate extents of the development area on an aerial photograph is presented as Figure 1. Photographs showing site conditions that existed at the time of the field investigation are presented in Appendix A.

4.0 FIELD AND LABORATORY INVESTIGATION

4.1 GROUND DISTURBANCE AND SAFETY PERFORMANCE

Prior to field drilling, a SolidEarth representative completed internal ground disturbance procedures, which included placing an Alberta One Call. Before starting onsite work, a daily field level hazard assessment was conducted by the SolidEarth representative and was communicated with all workers involved during the tailgate meeting. The fieldwork was completed without any near misses or incidents.

4.2 FIELD DRILLING AND TESTING

The borehole locations were selected and marked in the field by SolidEarth based on the proposed development plan, access restrictions, and underground utility locations. The borehole location plan is presented as Figure 1.

The field investigation consisted of drilling four (4) boreholes to approximate depths ranging between 3 and 6 m below the existing ground surface. SolidEarth subcontracted All Service Drilling Inc., of Nisku, Alberta, to drill the boreholes. Drilling was completed on 1 October 2024 using a track-mounted auger drill rig utilizing 150 mm solid-stem continuous flight augers.

During drilling, soil samples were collected at approximately 0.75 m intervals along the depth of the boreholes. Pocket penetrometer testing was conducted on selected cohesive soil samples to obtain an indication of the unconfined compressive strength of disturbed soil samples from the auger. Standard Penetration Tests (SPT) were conducted at selected depths (typically every 1.5 m) to assess the in-situ strength of the soils encountered. The soil sampling and testing sequences are shown on the borehole logs in Appendix B.

A SolidEarth geotechnical technologist monitored the drilling operations and logged the recovered soil samples from the auger cuttings and the SPT samples. The soils were logged according to the Modified Unified Soil Classification System, which is described in the Explanation of Terms and Symbols in Appendix B. Due to the method by which the soil cuttings were returned to surface, the depths noted on the borehole logs may vary by ± 0.3 m from those recorded.

Groundwater seepage conditions were monitored during and immediately following completion of drilling. Slotted standpipe piezometers were installed at selected borehole locations after completion of drilling to monitor short term groundwater levels. Groundwater seepage and sloughing conditions are noted on the borehole logs in Appendix B.

The lateral coordinates (northing and easting) of the borehole locations advanced by SolidEarth were recorded using a hand-held GPS unit. These coordinates are shown on the borehole logs in Appendix B.

4.3 LABORATORY INVESTIGATION

All collected samples were submitted to the laboratory for further examination and testing. Laboratory testing conducted included visual examination, determination of the natural moisture content on all collected samples, Atterberg limits and grain size distribution analysis on selected samples. The results of the laboratory testing are presented on the borehole logs, Appendix B.

5.0 SUBSURFACE CONDITIONS

The subsurface soil encountered at the borehole locations generally consisted of topsoil at the ground surface, followed by fill, clay, and underlain by clay till. A brief summary of the subsurface conditions encountered is presented below. A detailed description of the subsurface conditions encountered at each borehole location is provided on the borehole logs.

Topsoil

Topsoil was encountered at the ground surface at all four borehole locations and ranged in thickness between approximately 50 and 175 mm. It should be noted that the thickness of topsoil across the development area may vary from what was encountered at the borehole locations.

Fill

Fill was encountered below the topsoil at all four borehole locations and extended to approximate depths ranging between 0.2 and 0.8 m below the existing ground surface. The fill encountered was mainly silty, however, layers of sand and clay fill were also encountered. The thickness and quality of the fill across the development area may vary from what was encountered at the borehole locations.

The fill contained varying degrees of organic inclusions and was generally classified as “silt, clayey to and clay, some sand”, was low plastic, brown-black, and moist.

The moisture contents of the near surface fill generally ranged between 21 and 23 percent with an average of 22 percent. The consistency of the fill was assessed based on the SPT “N” and pocket penetrometer values to be generally firm.

Clay

Clay was encountered below the fill at all four borehole locations and extended to an approximate depth ranging between 2 and 3 m below the existing ground surface. The clay was generally classified as “clay, and silt, trace to some sand”, was medium plastic, grey-brown, and moist.

The moisture contents of the clay generally ranged between 21 and 23 percent with an average of 27 percent. Liquid and plastic limits of the clay till sample were in the order of 44 percent and 16 percent, respectively. Based on comparison with the plastic limit of the soil, it was expected that the average moisture content of the clay was generally higher than the optimum moisture content of the soil.

The consistency of the clay till was assessed based on the SPT “N” and pocket penetrometer values to be generally firm.

Clay Till

Clay till was encountered below the clay at the two deeper borehole locations and extended beyond the borehole exploration depth. The clay till was generally classified as "clay, and silt, trace sand, trace gravel", was medium to high plastic, grey-brown, and very moist.

The moisture contents of the near surface clay till generally ranged between 33 and 37 percent with an average of 34 percent. Liquid and plastic limits of the clay till sample were in the order of 51 percent and 17 percent, respectively. Based on comparison with the plastic limit of the soil, it was expected that the average moisture content of the clay till was generally higher than the optimum moisture content of the soil.

The consistency of the clay till was assessed based on the SPT "N" and pocket penetrometer values to be generally firm to stiff.

Groundwater Levels

The measured groundwater levels at the borehole locations are shown in Table 1.

Table 1: Measured Groundwater Levels

Borehole ID	Depth of Borehole (mbgs) Note 1	Depth of Installed Standpipe (mbgs)	Groundwater Depth (mbgs)	
			At Completion of Drilling (01 October 2024)	On 17 October 2024
BH24-01	2.7	N/A	Dry	N/A
BH24-02	5.8	5.8	3.0	1.3
BH24-03	2.7	N/A	Dry	N/A
BH24-04	3.0	3.0	Dry	1.0

Note 1: mbgs – metres below the existing ground surface

The groundwater table generally takes time to recover and stabilize following the completion of drilling. The length of time required depends on the hydraulic conductivity of the soils and the presence of fissures and seams in the soil matrix. The depth of the groundwater table also fluctuates seasonally depending upon several factors that include the local geology, hydrogeology, and surface infiltration.

6.0 GEOTECHNICAL ANALYSIS AND RECOMMENDATIONS

It was understood that the proposed development would involve site grading, concrete slab-on-grade elements, new paved trails, and foundation requirements for a lightly loaded gazebo structure. The project may also involve some associated adjustment of the vertical profile.

The site design grades were not available at the time of preparation of this report. Accordingly, the amount of cut and fill was not known. It is anticipated however, that the final design grades

will be comparable to the grades that existed at the time of the investigation. Recommendations and discussions presented in this report are based on the assumption that the final site grades are within 0.5 m of the grades that existed at the time of the investigation.

The subsurface soil conditions encountered at the borehole locations were considered feasible for the proposed development.

Given that the proposed structure will be a relatively light load, both floating edge thickened concrete slab and deep pile foundation systems, consisting of screw piles, may be considered to support the proposed gazebo at this site.

Grade supported elements placed over the heterogeneous fill are considered very risky and is not recommended by SolidEarth. Settlement and cracking of the grade supported flatworks will likely be encountered. Complete sub-excavation of the poor soil and replacement with suitable imported clay fill placed as engineered fill is recommended.

6.1 SITE DEVELOPMENT CONSIDERATIONS

6.1.1 Site Grading

During initial site grading, all topsoil and vegetation should be stripped and removed from the proposed development areas. Organic soils should not be mixed with mineral soils or be used as engineered fill material.

In areas where subgrade support is required (such as floating concrete slab, paved trails, concrete surface works, etc.), then complete sub-excavation of the poor soils (fill with organic inclusions) and replacement with suitable imported clay fill placed as engineered fill with strict control of the placement density and moisture content is recommended.

Soft and wet subgrade conditions may be encountered at some locations within the site particularly following snow melt and heavy rain events. Where soft and wet subgrade conditions are encountered, subgrade replacement and/or improvement may be required. The extent of required subgrade improvement and modification will depend to a greater degree on field observations during construction and is best determined in the field based on visual observation and proof-roll testing.

Construction traffic on the unprotected subgrade should be kept to a minimum and restricted to low pressure track equipment to the extent possible. The use of heavy rubber-tire equipment (such as rock trucks) during construction will likely lead to significant disturbance to the subgrade and should be avoided to the extent possible.

All exposed subgrades following achievement of rough grades (in areas under cut) and prior to placement of engineered fill (in areas under fill) should be inspected by the geotechnical engineer. The inspection may include a proof-roll test to confirm that deflections from

construction traffic are minimal. Soft and weak areas identified during inspection should be strengthened and improved.

Regardless of the above, it is recommended that where subgrade support is required, the upper 150 mm of the subgrade soil be strengthened/improved. Subgrade strengthening/improvement would include scarifying and re-compacting the subgrade (if good weather conditions prevail) or the soft wet material removed and replaced with drier clay or granular material placed as engineered fill. Requirements for engineered fill are discussed below.

6.1.2 Requirement for Engineered Fill

Engineered fill should consist of low to medium plastic clay or a well-graded granular material. Silt or sand which is uniformly graded, or which contains more than 10 percent passing the 0.080 mm sieve is not recommended as these materials are generally frost susceptible and are difficult to compact (require strict control of moisture content). All fill soils should be free from any organic materials, contamination, deleterious construction debris, and stones greater than 150 mm in diameter.

The existing medium plastic clayey soils were generally considered suitable for re-use as engineered fill. Very moist soils need to be moisture conditioned before being used as engineered fill. Soils containing organics should be discarded and not re-used as engineered fill.

Fill should be thawed and placed during non-frozen conditions. If winter construction is proposed, SolidEarth can provide additional recommendations at the time and once the overall development plan has been finalized.

All engineered fill should be compacted to a minimum of 95 percent of SPMDD. The standard of compaction should be increased to 98 percent of SPMDD for the upper 150 mm of the subgrade soil (below the underside of the granular base).

The fill should be compacted in lift thicknesses of 300 mm (loose) or less. Fill placement procedures and quality of the fill soils should be monitored by geotechnical personnel on a full-time basis. Field monitoring should include compaction testing at regular intervals.

Even for well compacted fill, some fill settlement under self-weight will occur. Settlement in the order of one to three percent of the fill thickness should be anticipated for engineered fill compacted between 98 and 95 percent SPMDD. The majority of this settlement is expected to occur within the first year following construction.

6.1.3 Frost Susceptibility of Soils

Frost heave of the subgrade soils and formation of ice lenses are generally related to the particle size distribution of the soils, moisture content, and the presence of a relatively shallow groundwater table.

The near surface clayey soils (within the upper 2 m of the soil profile) encountered at the site consisted of either silt or clay of medium plasticity. The grain size distribution of the near surface clayey soil samples consisted of approximately 42 percent by weight of clay size particles with the remaining portions as silt and sand size particles. These soils were generally considered to be moderately susceptible to frost heaving and formation of ice lenses in the presence of water. The silt, on the other hand, was considered highly susceptible to frost heaving and the formation of ice lenses in the presence of water.

The measured groundwater levels at the borehole locations were generally deeper than 1.0 m below existing grade. Additionally, the moisture content of the near surface clayey soils was generally higher than the anticipated optimum moisture content of the soil.

Given the above and with proper drainage and surface water management (as discussed below), the risk of frost heaving was considered to be moderate to high. It is to be noted that poor surface drainage leading to water inundating the subgrade soils will significantly increase the risk level.

Due to the general variability in the soil makeup and groundwater seepage paths in soil deposits, it is not possible to predict with certainty the magnitude of frost heaving at specific locations. It is generally recommended that an observational approach be adopted over the first two winter seasons to identify problematic areas.

Frequently, areas exhibiting the formation of ice lenses and frost heaving during one winter season will exhibit the same during subsequent winter seasons. If areas with problematic frost conditions are observed, then remedial measures may be implemented.

The most suitable remedial measure will have to be assessed on a case by case basis as it depends on the severity of the problem, service/use interruption of the affected area, and the sensitivity of the pavement structure to frost heaving. Remedial measures may include soil replacement (where silt is encountered), ground insulation, or periodic maintenance (in the case of low use areas).

6.1.4 Surface Water Management Considerations

The performance of the pavement structure will be enhanced to a greater degree with proper management of surface water. It is recommended that adequate slope be provided at the subgrade level, and that the pavement gravel material be properly drained into a positive gravity drainage system (catch basins, etc.). This will reduce the risk of water ponding above the subgrade and potential of softening and/or volume change associated with the presence of excess water.

A minimum grade of two percent is recommended at the subgrade level to accommodate surface water runoff away from the subgrade. The final pavement grade should also be adequately sloped to accommodate surface water runoff.

Positive drainage away from the pavement surface is particularly important during the spring thaw and snow melt season. If water from melting snow is allowed to remain on the paved surface and subsequently freezes, significant damage to the pavement (and formation of potholes) may be encountered.

6.2 FOUNDATION OPTIONS AND DESIGN CONSIDERATIONS

It was expected that the foundations within the proposed gazebo will be predominantly subject to vertical static loads with little resistance required for horizontal or dynamic loading.

It was understood by SolidEarth that the gazebo building may be supported by floating concrete slabs with thickened edges. It was understood that the thickened edges will be designed to behave similar to shallow footings.

Recommendations for floating thickened edge concrete slab and screw piles are provided in this report. If other foundation systems are proposed, or if the foundations are to support large lateral or dynamic loads, then SolidEarth should be contacted and additional recommendations will be provided, as required.

6.2.1 Foundations Design Method

The current design standard in foundation engineering is based on limit state design. Accordingly, geotechnical recommendations associated with this standard are provided.

As of the date of this report, the *2020 National Building Code (NBC) Structural Commentaries* has not been released. Accordingly, the discussion provided below is based on the *2015 National Building Code (NBC) Structural Commentaries* and *the 2023 Canadian Foundation Engineering Manual.*

The *2015 National Building Code (NBC) Structural Commentaries* defines limit states “as conditions under which a structure or its component members no longer perform their intended function”. Limit states are generally classified into two main groups: ultimate limit state and serviceability limit state. Below is a brief discussion on both states.

Ultimate Limit State (ULS)

Ultimate limit states are primarily concerned with collapse mechanisms for the structure and, hence, safety. For foundation design, the ULS consists of ultimate bearing capacity failure, sliding, overturning, loss of stability, uplift, or large deformation.

The basic foundation design equation using ULS approach is presented as:

$$\Phi R_n \geq \sum \alpha_i S_{ni}$$ [1]

where:

- ΦR_n - is the factored geotechnical resistance
- Φ - geotechnical resistance factor
- R_n - the nominal (ultimate) geotechnical resistance determined using unfactored values for geotechnical parameters or performance data
- $\Sigma \alpha_i S_{ni}$ - is the summation of the factored overall load effects for a given load combination condition
- α_i - is the load factor corresponding to a particular load
- S_{ni} - is a specified load component of the overall load effects (e.g. dead load due to weight of structure or live load due to wind)
- $_i$ - represents various types of loads such as dead load, live load, wind load, etc.

Geotechnical resistance factors for foundations as provided in *Commentary K of the 2015 NBC Structural Commentaries* are provided in Table 2, which are similar to the recommended resistance factors in the *2023 Canadian Foundation Engineering Manual*[2] based on a "typical" degree of understanding of subsurface conditions.

The critical design events and their corresponding load combination and load factors should be assessed and determined by the structural engineer.

Table 2: Geotechnical Resistance Factors for Foundations

Foundation Type	Loading Condition	Geotechnical Resistance Factor (ULS)
Shallow Foundations	Vertical Resistance by semi-empirical analysis Sliding (Frictional) Resistance Sliding (Cohesive) Resistance	0.5 0.8 0.6
Deep Foundations	resistance to axial load (i) semi-empirical analysis (ii) analysis using static loading test results (iii) analysis using dynamic monitoring results (iv) uplift resistance by semi-empirical analysis (v) uplift resistance using load test results	 0.4 0.6 0.5 0.3 0.4
	resistance to horizontal load	0.5

1 Page K-2, Commentary K of the 2015 NBC Structural Commentaries, 2017
2 Page 199, 2023 Canadian Foundation Engineering Manual (5th Edition)

Serviceability Limit State (SLS) – Limit States Design

Serviceability limit states are primarily concerned with mechanisms that restrict or constrain the intended use, occupancy, or function of the structure under working loads. For foundation design, SLS are usually associated with:

- excessive foundation movements (e.g. settlement, differential settlement, heave, etc.)
- unacceptable foundation vibrations
- local damage or deterioration

In general, the SLS criteria can be expressed as follows:

Serviceability Limit ≥ *Effect of Service Loads*

The soil bearing pressure under SLS conditions is evaluated using unfactored geotechnical parameters (settlement and compressibility properties), such that the bearing pressure does not cause the foundation to exceed the specified serviceability criteria.

The soil-structure interaction and load-deformation characteristics of soils are non-linear and complex and depend on several considerations (e.g., foundations size and configuration, range of movement, etc.). The number of possible combinations is infinite and generic design charts cannot be prepared. Specific design charts under SLS condition can be provided upon request and once preliminary design requirements have been established.

6.2.2 Recommendations for Floating Edge Thickened Slab

As outlined above, the building may incorporate a grade supported slab with thickened edges based within the frost penetration depth zone. Given the soil conditions and shallow depth of water table, the risk of frost heaving was considered to be moderate to high.

Proper protection of the structure foundation/slab against frost effects is recommended. This can be accomplished by using rigid thermal insulation. The required thickness and placement extent of insulation should be as per the building code, local regulations, and manufacturer recommendations.

The floating concrete slab should not be based on the existing fill. The floating concrete slab should only be based on the native clay or new fill placed as engineered fill (as outlined in Section 6.1. *"Site Development Considerations"*. Footings bearing on engineered fill may be designed based on un-factored (ultimate) bearing resistance of 150 kPa.

This recommended design value was based on estimated total and differential settlements of less than 25 and 15 mm, respectively. The geotechnical resistance factors outlined in Table 2

should be used in the ULS design scenario. For SLS conditions, the settlement of footings designed with 70 to 80 percent of the factored ULS bearing resistance are expected to be small.

It is recommended that a layer of gravel base (150 mm thick minimum) be placed above the prepared subgrade and below the slab. The gravel should consist of well graded, crushed gravel material comparable to Alberta Transportation 20 mm crushed granular base (AT Designation 2 Class 20) specifications. The gravel should be placed at moisture content within two percent of the optimum moisture content of the soil and compacted to a minimum of 100 percent of SPMDD.

To prevent water from collecting below the concrete slab base, which could cause ground softening, it is recommended that the subgrade beneath the concrete pad foundation be raised to a minimum of 200 mm above the adjacent finished grade level. Alternatively, proper drainage away from the slab subgrade may be provided. Positive drainage away from the pad will be key to maintaining the stability and strength of the subgrade.

Good construction quality control, including inspection of the subgrade, approval of fill materials, and compaction testing, should be performed on a full-time basis by qualified geotechnical personnel.

All foundations must comply with the National Building Code-Alberta Edition minimum requirements. The minimum footing width should be 0.6 m regardless of bearing capacity considerations.

Foundation excavations should be carried out using excavators with a smooth edge trimming bucket. Final cleanup of footing subgrade soils may be required.

No loose, disturbed, remoulded or slough material should be allowed to remain on the foundation bearing surface. Should wet and/or soft soils be encountered at the design footing depth, the footing excavations should be deepened and replaced with engineered fill such that footings bear on competent soils.

Groundwater seepage into the foundation excavations is not expected to be a concern during construction. However, if encountered, groundwater seepage could be controlled by a sump and pump dewatering system.

Foundation excavations must be protected from drying, desiccation, rain/snow, freezing, and the ingress of water. Foundation subgrade soils that become frozen, dried, or softened, should be removed and replaced with concrete, or the excavation should be extended to reach soil in an unaffected condition.

Any over-excavation of unsuitable soils could be brought back to design grades using lean-mix concrete (minimum 28 day compressive strength of 5 MPa) or an approved granular engineered fill. Engineered fills should extend laterally 1 m or equal to full depth of fill (whichever is greater)

beyond the edge of the footing and be compacted to 100 percent of the SPMDD at moisture content within two percent of the optimum moisture content.

It is recommended that the foundation bearing surface excavation be inspected and approved by a qualified geotechnical engineer prior to concrete placement to confirm soil conditions and bearing capacity.

6.2.3 Recommendations for Screw Piles

Screw piles are generally designed and installed by specialty contractors. It is recommended that the screw pile contractor review this report and the borehole logs prior to pile installation. Considerations should be given to the installation and extraction of a few test piles to examine the proposed installation procedure and the ability of the proposed piles to be installed through the existing soils without being damaged. General guidelines are provided in the following sections.

Axial Load Resistance

To determine the factored ULS resistance, a resistance factor of 0.4 and 0.3 should be applied to the un-factored resistances for compression and tension, respectively. The geotechnical resistance factor may be increased to 0.6 and 0.4, for compression and tension respectively, with the performance of a sufficient number of static load tests on representative piles.

For SLS conditions, piles designed with 70 to 80 percent of the factored ULS parameters are expected to undergo settlement equivalent to approximately 0.5 to 1 percent of the pile helix diameter.

Table 3 provides soil parameters needed in the calculation of the ultimate bearing capacity of screw piles in soils encountered.

Table 3: Recommended Design Parameters for Screw Piles

Depth (m)	Soil Layer	C_u (kPa)	ϕ (degrees)	γ (kN/m^3)
0 to 2.5	Clay	0	-	18
2.5 to 6.0	Clay Till	45	-	20

Note: The uppermost helix should be based below the frost penetration depth.

The minimum recommended spacing (centre to centre) of screw piles is three times the larger helix diameter.

Installation Torque

The *2023 Canadian Foundation Engineering Manual* suggests that an estimate of the ultimate capacity of a screw pile may be achieved by monitoring the installation torque. Monitoring the pile installation torque will also serve as a quality control process to identify piles that do not meet the minimum required installation torque and thus which will require additional evaluation. Further, the manual recommends the completion of a loading test field program to validate the ultimate axial capacity estimates based on installation torque.

The relationship between the pile ultimate capacity and installation torque, as provided by Canadian Foundation Manual can be described as follows:

$$Q_u = K_T T_{Inst}$$

Where:

Q_u : Ultimate Capacity of the Pile (Compression or Tension, kN)

T_{Inst} : Average Installation Torque (kN-m)

K_T : Empirical Torque Factor (1/m)

The *2023 Canadian Foundation Engineering Manual* suggests that the value of K_T may range between 10/m to 66/m. According to the previous *2006 Canadian Foundation Engineering Manual*[3], the recommended default K_T value for pipe shaft piles (90 mm outside diameter) is 23/m, with the value decreasing to 10/m for shaft outside diameter approaching 200 mm. Other publications suggest that K_T can be taken as 17/m for pile shafts with outside diameter of 114 mm, and 9/m for larger pile shafts.

The maximum allowable installation torque should be determined according to the chosen pile geometry (wall thickness, shaft diameter, and helix diameter and thickness) to ensure that the structural pile integrity (welding capacity, pile deformation, etc.) is not compromised.

Frost Considerations for Piles and Grade Beams

Piles supporting components that will be outside the influence of any beneficial heat transfer may be subject to upward frost jacking forces. For those foundation components within the depth of frost penetration, frost jacking pressures are likely to develop along pile shafts, and along the underside and sides of pile caps and grade beams, if any. If not properly resisted, frost uplift forces may cause irrecoverable vertical movement in the pile and may lead to impaired functionality of the structure.

[3] Page 268, 2006 Canadian Foundation Engineering Manual (4th Edition)

Resistance to frost uplift forces will be provided by pile resistance below the depth of frost penetration and by sustained vertical loads. Uplift live loads would not be additive to frost jacking forces. For design purposes, the following may be assumed:

- Depth of frost penetration: 2.5 and 1.5 m for piles isolated from positive heat transfer and piles in heated buildings, respectively.
- Frost uplift pressure of 100 kPa on the pile shaft applied over a depth of frost penetration for steel piles.
- A load factor, α, of 1.2 may be used for frost heave forces.
- A geotechnical resistance factor, Φ, of 1 may be used since frost jacking force is a serviceability issue.

To reduce the effects of upward frost forces on pile caps and grade beams, it is recommended that a compressible material, such as “voidform” (or equivalent), be placed between the underside of the pile cap and grade beams, and the soil. In such case, uplift pressure acting on the underside of the pile caps and grade beams may be taken as the crushing strength of the compressible medium. The minimum thickness of the voidform should be 100 mm.

The finished grade adjacent to each pile cap should be capped with clay, and sloped away, so that surface runoff is not allowed to infiltrate and collect in the void space. If water is allowed to accumulate in the void space, then full frost heaving pressures will likely occur on the underside of the pile caps. Frost forces up to 1,800 kPa have been reported in literature and are dependent on the restraints offered by the surrounding soils.

It is to be noted that all piles should be structurally designed to resist frost heave forces if the piles are allowed to freeze during construction.

6.3 CONCRETE SURFACE WORKS

Grade-supported floor slab placed over a prepared subgrade was considered suitable. The recommendations presented in Section 6.1 “*Site Development Considerations*” should be followed.

Generally, grade-supported slabs are expected to exert loads in the order of 10 to 15 kPa on the subgrade. Based on the density/consistency of the native soils encountered during drilling and provided that the subgrade is prepared and inspected as per the recommendations outlined in Section 6.1 “*Site Development Considerations*”, the magnitude of vertical movement in the slab is expected to be small.

It should be realized that with all slabs-on-grade, heave, settlement, and associated movements of the slab could occur if the moisture content of the subgrade was to change significantly during the lifetime of the structure, if the subgrade was to freeze in the presence of excess

moisture, or if the slab is constructed over un-engineered fill. Shrinkage and swell potentials of the medium plastic clay soils due to moisture change are considered to be moderate to high.

If the subgrade becomes wet during the operational life of the structure, loss of strength and non-uniform support should be anticipated. The potential movement as a result of non-uniform subgrade support could be mitigated with proper subgrade preparation and the use of a free draining base material.

Regardless of the fill requirements, at a minimum, a 150 mm layer of well graded granular base course material should be placed directly below the grade-supported slab. The granular material should:

- have no more than 10 percent fines
- have maximum aggregate size of 20 mm
- be uniformly compacted to a minimum of 100 percent of SPMDD at moisture content within two percent of the optimum moisture content

The slab should be structurally designed to carry all anticipated loading. A modulus of subgrade reaction of 15 MPa/m may be used in the design.

The slab should be designed as free floating. Expansion joints should be placed at regular intervals as directed by the structural engineer to reduce random cracking.

6.4 SUBSURFACE CONCRETE

Concrete in contact with the existing site soils should conform to the cement type requirements recommended by local regulations for sidewalks.

Additional restrictions may be required due to structural or other considerations. To enhance durability, an appropriate amount of air entrainment is recommended for all concrete exposed to freezing and thawing conditions, as per CAN/CSA specification CSA A23.1:19.

6.5 PAVEMENT STRUCTURE FOR TRAILS

It was understood that graveled and asphalt pavements are being considered for trails at the proposed development. The trails will predominantly be for pedestrian use, and may not be for shared use (i.e., light vehicle access).

Recommendations presented in Section 6.1 *"Site Development Considerations"* regarding subgrade preparation, inspection, and drainage should be followed. Recommendations presented in this section are based on the assumption that a stable and competent subgrade is achieved prior to the placement of the pavement structure.

The minimum recommended gravel section for the trails is provided in Table 4 below.

Table 4: Gravel Pavement Sections

Material	Recommended Minimum Thickness (mm) Walking Trail (pedestrian only)
20 mm Base Aggregate (Alberta Transportation Designation 2 Class 20)	150
Subgrade Preparation	150

It should be recognized that periodic maintenance, which would include the placement of additional lifts of the 20 mm gravel, may be required.

The minimum recommended asphaltic concrete pavement section for the trails is provided in Table 5.

Table 5: Asphaltic Concrete Pavement Section

Material	Recommended Minimum Thickness (mm) Walking Trail (pedestrian only)
Hot Mix Asphalt	75
20 mm Base Aggregate (Alberta Transportation Designation 2 Class 20)	150
Subgrade Preparation	150

Other gravel gradation may be acceptable and should be submitted to the geotechnical engineer for review and approval.

The granular base aggregate (20 mm material) should be uniformly compacted to a minimum of 100 percent of SPMDD at moisture content within two percent of the optimum moisture content of the soil. A reduced lift thickness may be required depending on the capability of the compaction equipment available to achieve the required densities.

Asphaltic concrete material and placement requirements should comply with the industry and local standards. Alternatively, Alberta Transportation asphalt mix type L1 with asphalt grade type PG 52-34 may be used.

7.0 TESTING AND INSPECTION

Recommendations presented in this report may not be valid if adequate engineering inspection and testing programs during construction are not implemented or if other building code requirements are not followed. Testing and inspection programs should consist of:

- Full-time monitoring and compaction testing during site grading, subgrade preparation and fill placement.
- Design review and bearing inspection for the floating slab foundation.
- Design review and full-time installation monitoring of pile foundations.
- Testing for asphaltic concrete and Portland cement concrete as per industry and/or local standards.

8.0 CLOSURE

The recommendations presented in this report are based on the results of soil sampling and testing at four (4) borehole locations advanced across the project area during this investigation. Soil conditions by nature can vary across any given site. If different soil conditions are encountered at subsequent phases of this project, SolidEarth should be notified immediately and given the opportunity to evaluate the situation and provide additional recommendations as necessary.

The recommendations presented in this report should not be used for another site or for a different application at the same site. If the intended application of the site is changed or if the assumptions outlined in this report became invalid, SolidEarth should be notified and given the opportunity to assess if the recommendations presented should be modified.

This report has been prepared for the exclusive use of EDS Group Inc. and their authorized users for the specific application outlined in this report. No other warranties expressed or implied are provided. This report has been prepared within generally accepted geotechnical engineering practices.

Respectfully submitted,
SolidEarth Geotechnical Inc.

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Figures

Figure 1: Project Layout and Borehole Location Plan

SCALE: 1 : 400	DRAWN BY: CB	FIGURE No.: 1	REVISION No.: 0	PROJECT NAME: Proposed Town Square Redevelopment Plamondon, Alberta	CLIENT: EDS environmental design solutions
DATUM: -	DATE: October 2024	PROJECT No.: PG24-1807			
SolidEarth Geotechnical Inc. #105, 4604 50 Street, Cold Lake, AB, T9M 1S6		SolidEarth GEOTECHNICAL		DRAWING TITLE: Project Layout and Borehole Location Plan	

Appendix A

Site Photographs Taken During the Field Investigation

Photograph 1: Looking northeast towards BH24-1

Photograph 2: Looking west across the site

Photograph 3: Looking southwest towards BH24-3

Photograph 4: Looking east across the site

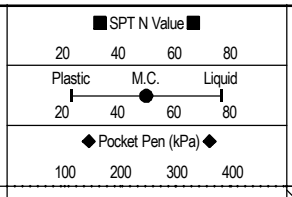
Appendix B

Borehole Logs
Explanation of Terms and Symbols

Project Name: Proposed Town Square Redevelopment
Client Name: EDS Group Inc.
Site: Plamondon, Alberta
Northing: 6078745 Easting: 413611
Elevation:

Borehole #: **BH24-1**
Project #: PG24-1807
Logged By: JS / Reviewed By: TF
Driller: All Service Drilling Inc.
Drill Method: 150 mm Solid Stem Auger

SolidEarth GEOTECHNICAL
Completion Date: 24-10-1
Page 1 of 1



Depth (m)	Soil Symbol	USCS	Material Description	Sample Symbol	Sample #	SPT (N-Value)	BACKFILL DETAILS	Additional Data & Notes	Depth (m)
0		OR	**TOPSOIL (~150 mm Thick)**, black, damp to moist						0
		FILL	**FILL (SILT)**, clayey to and clay, some sand, low plastic, brown-black, trace to some organics, moist		1				
					2	7			
1			**CLAY**, and silt, trace to some sand, medium plastic, grey-brown, trace oxides, moist to very moist		3	3			1
			- becoming brown						
		CI			4				
2			- becoming grey-brown layered		5	7			2
			COMPLETION DEPTH: 2.7 m below ground surface						
			At Completion No accumulation of water or slough material. Borehole backfilled with drill cuttings and bentonite plug.						
3									3
4									4
5									5
6									6
7									

Sample Symbol: Shelby Tube; No Recovery; SPT Test (N); Grab Sample; Split-Pen; Core

Backfill Symbol: Bentonite; Pea Gravel; Slough; Grout; Drill Cuttings; Sand

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Project Name: Proposed Town Square Redevelopment
Client Name: EDS Group Inc.
Site: Plamondon, Alberta
Northing: 6078741 Easting: 413627
Elevation:

Borehole #: **BH24-2**
Project #: PG24-1807
Logged By: JS / Reviewed By: TF
Driller: All Service Drilling Inc.
Drill Method: 150 mm Solid Stem Auger

SolidEarth GEOTECHNICAL

Completion Date: 24-10-1

SPT N Value
20 40 60 80
Plastic M.C. Liquid
20 40 60 80
Pocket Pen (kPa)
100 200 300 400

Depth (m)	Soil Symbol	USCS	Material Description	Sample Symbol	Sample #	SPT (N-Value)	SLOTTED PIEZOMETER	Additional Data & Notes	Depth (m)
0		OR	**TOPSOIL (~175 mm Thick)**, black, damp						0
		FILL	**FILL (SILT)**, clayey, some sand, low plastic, some organics, trace rootlets, moist		1				
			CLAY, and silt, trace to some sand, firm, medium plastic, grey-brown, trace oxides, trace coal, moist		2	4			
1			- becoming very moist		3	4			1
		CI			4				
2									2
			CLAY (TILL), and silt, trace sand, firm, medium to high plastic, grey-brown, very moist		5	7			
			- trace sand pockets		6			Liquid Limit: 51% Plastic Limit: 17% Sand: 3% Silt: 48% Clay: 49%	3
4		CI/CH	- becoming stiff		7	9			4
			- becoming grey		8				
5									5
					9	9			
6			**COMPLETION DEPTH: 5.8 m below ground surface** At Completion Accumulation of water at 3.0 m below ground surface. No accumulation of slough material. Slotted standpipe installed to 5.8 m below ground surface. Borehole backfilled with drill cuttings and bentonite plug.					Water Level: 1.3 m below ground surface on 17 October 2024.	6
7									

Sample Symbol: Shelby Tube | No Recovery | SPT Test (N) | Grab Sample | Split-Pen | Core

Backfill Symbol: Bentonite | Pea Gravel | Slough | Grout | Drill Cuttings | Sand

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Project Name: Proposed Town Square Redevelopment
Client Name: EDS Group Inc.
Site: Plamondon, Alberta
Northing: 6078741 Easting: 413644
Elevation:

Borehole #: **BH24-3**
Project #: PG24-1807
Logged By: JS / Reviewed By: TF
Driller: All Service Drilling Inc.
Drill Method: 150 mm Solid Stem Auger

SolidEarth GEOTECHNICAL

Completion Date: 24-10-1

SPT N Value
20 40 60 80
Plastic M.C. Liquid
20 40 60 80
Pocket Pen (kPa)
100 200 300 400

Depth (m)	Soil Symbol	USCS	Material Description	Sample Symbol	Sample #	SPT (N-Value)	BACKFILL DETAILS	Additional Data & Notes	Depth (m)
0		OR	**TOPSOIL (~150 mm Thick)**, black, damp						0
		FILL	**FILL (CLAY)**, and silt, some sand, trace gravel, low to medium plastic, brown-black, trace to some organics, trace oxides, moist		1				
			CLAY, and silt, trace to some sand, firm, medium plastic, brown, trace oxides, moist		2	5		Liquid Limit: 44% Plastic Limit: 16% Sand: 5% Silt: 53% Clay: 42%	
1			- trace sand pockets		3	5			1
		CI			4				
2			- becoming grey-brown, moist to very moist		5	6			2
			COMPLETION DEPTH: 2.7 m below ground surface At Completion No accumulation of water or slough material. Borehole backfilled with drill cuttings and bentonite plug.						
3									3
4									4
5									5
6									6
7									

Sample Symbol: Shelby Tube; No Recovery; SPT Test (N); Grab Sample; Split-Pen; Core

Backfill Symbol: Bentonite; Pea Gravel; Slough; Grout; Drill Cuttings; Sand

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Project Name: Proposed Town Square Redevelopment
Client Name: EDS Group Inc.
Site: Plamondon, Alberta
Northing: 6078737 Easting: 413656
Elevation:

Borehole #: **BH24-4**
Project #: PG24-1807
Logged By: JS / Reviewed By: TF
Driller: All Service Drilling Inc.
Drill Method: 150 mm Solid Stem Auger

SolidEarth GEOTECHNICAL

Completion Date: 24-10-1

SPT N Value
20 40 60 80
Plastic M.C. Liquid
20 40 60 80
Pocket Pen (kPa)
100 200 300 400

Depth (m)	Soil Symbol	USCS	Material Description	Sample Symbol	Sample #	SPT (N-Value)	SLOTTED PIEZOMETER	Additional Data & Notes	Depth (m)
0		OR FILL	**TOPSOIL (~50 mm Thick)**, black, damp		1				0
			FILL (SAND), fine to medium grained, some gravel, trace silt, trace clay, poorly graded, brown, moist						
			CLAY, and silt, trace to some sand, stiff, medium plastic, brown, trace oxides, moist		2	9			
1					3				1
		CI	- becoming firm, moist to very moist		4	4			
2			**CLAY (TILL)**, and silt, trace sand, trace gravel, medium to high plastic, grey-brown, moist to very moist		5				2
		CI/CH							
3					6			Water Level: 1.0 m below ground surface on 17 October 2024.	3
			COMPLETION DEPTH: 3.0 below ground surface						
			At Completion No accumulation of water or slough material. Slotted standpipe installed to 3.0 m below ground surface. Borehole backfilled with drill cuttings and bentonite plug.						
4									4
5									5
6									6
7									

Sample Symbol: Shelby Tube; No Recovery; SPT Test (N); Grab Sample; Split-Pen; Core

Backfill Symbol: Bentonite; Pea Gravel; Slough; Grout; Drill Cuttings; Sand

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EXPLANATION OF TERMS & SYMBOLS

The terms and symbols used on the borehole logs to summarize the results of the field investigation and laboratory testing are described on the following two pages.

1. VISUAL TEXTURAL CLASSIFICATION ON MINERAL SOILS

CLASSIFICATION	APPARENT PARTICLE SIZE	VISUAL IDENTIFICATION
Boulders	> 200 mm	> 200 mm
Cobbles	75 mm to 200 mm	75 mm to 200 mm
Gravel	4.75 mm to 75 mm	5 mm to 75 mm
Sand	0.075 mm to 4.75 mm	Visible particles to 5 mm
Silt	0.002 mm to 0.075 mm	Non-plastic particles, not visible to naked eye
Clay	< 0.002 mm	Plastic particles, not visible to naked eye

2. TERMS FOR CONSISTENCY & DENSITY OF SOILS

Cohesionless Soils

DESCRIPTIVE TERM	APPROXIMATE SPT "N" VALUE
Very Dense	> 50
Dense	30 to 50
Compact	10 to 30
Loose	4 to 10
Very Loose	< 4

Cohesive Soils

DESCRIPTIVE TERM	UNDRAINED SHEAR STRENGTH	APPROXIMATE SPT "N" VALUE
Hard	>200 kPa	> 30
Very Stiff	100 to 200 kPa	15 to 30
Stiff	50 to 100 kPa	8 to 15
Firm	25 to 50 kPa	4 to 8
Soft	10 to 25 kPa	2 to 4
Very Soft	< 10 kPa	< 2

* SPT "N" Values – Refers to the number of blows by a 63.5 kg hammer dropped 760 mm to drive a 50 mm diameter split spoon sampler for a distance of 300 mm after an initial penetration of 150 mm.

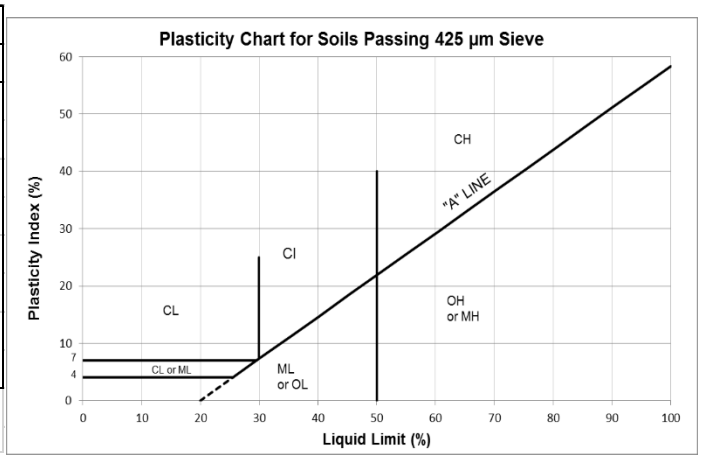
3. SYMBOLS USED ON BOREHOLE LOGS

SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION
N(■)	Standard Penetration Test (CSA A119 1-60)	SO_4	Concentration of Water-Soluble Sulphate
N_d	Dynamic Cone Penetration Test	C_u	Undrained Shear Strength
pp (♦)	Pocket Penetrometer Strength	γ	Unit Weight of Soil or Rock
q_u	Unconfined Compressive Strength	γ_d	Dry Unit Weight of Soil or Rock
w (●)	Natural Moisture Content (ASTM D2216)	ρ	Density of Soil or Rock
w_L	Liquid Limit (ASTM D 4318)	ρ_d	Dry Density of Soil or Rock
w_P	Plastic Limit (ASTM D 4318)	▽	Short-Term Water Level
I_P	Plastic Index	▼	Long-Term Water Level

MODIFIED UNIFIED CLASSIFICATION SYSTEM FOR SOILS

MAJOR DIVISION			GROUP SYMBOL	TYPICAL DESCRIPTION	LABORATORY CLASSIFICATION CRITERIA	
COARSE GRAINED SOILS (MORE THAN HALF BY WEIGHT LARGER THAN 75 µm)	GRAVELS (MORE THAN HALF COARSE GRAINS LARGER THAN 4.75mm)	CLEAN GRAVELS (LITTLE OR NO FINES)	GW	WELL GRADED GRAVELS AND GRAVEL-SAND MIXTURES, LITTLE OR NO FINES	$C_u = D_{60}/D_{10} > 4$ $C_c = (D_{30})^2/(D_{10} \times D_{60}) = 1$ to 3	
			GP	POORLY GRADED GRAVELS AND GRAVEL-SAND MIXTURES, LITTLE OR NO FINES	NOT MEETING ABOVE REQUIREMENTS	
		GRAVELS (WITH SOME FINES)	GM	SILTY GRAVELS, GRAVEL-SAND-SILT MIXTURES	CONTENT OF FINES EXCEEDS 12%	ATTERBERG LIMITS BELOW 'A' LINE I_p LESS THAN 4
			GC	CLAYEY GRAVELS, GRAVEL-SAND-CLAY MIXTURES		ATTERBERG LIMITS ABOVE 'A' LINE I_p MORE THAN 7
	SANDS (MORE THAN HALF COARSE GRAINS SMALLER THAN 4.75mm)	CLEAN SANDS (LITTLE OR NO FINES)	SW	WELL GRADED SANDS, GRAVELLY SANDS, LITTLE OR NO FINES	$C_u = D_{60}/D_{10} > 6$ $C_c = (D_{30})^2/(D_{10} \times D_{60}) = 1$ to 3	
			SP	POORLY GRADED SANDS, GRAVELLY SANDS, LITTLE OR NO FINES	NOT MEETING ALL GRADATION REQUIREMENTS FOR SW	
		SANDS (WITH SOME FINES)	SM	SILTY SANDS, SAND-SILT MIXTURES	CONTENT OF FINES EXCEEDS 12%	ATTERBERG LIMITS BELOW 'A' LINE I_p LESS THAN 4
			SC	CLAYEY SANDS, SAND-CLAY MIXTURES		ATTERBERG LIMITS ABOVE 'A' LINE I_p MORE THAN 7
FINE GRAINED SOILS (MORE THAN HALF BY WEIGHT SMALLER THAN 75 µm)	SILTS (BELOW 'A' LINE NEGLIGIBLE ORGANIC CONTENT)	$W_L < 50$ %	ML	INORGANIC SILTS AND VERY FINE SANDS, ROCK FLOUR, SILTY SANDS OF SLIGHT PLASTICITY	CLASSIFICATION IS BASED UPON PLASTICITY CHART (SEE BELOW)	
		$W_L > 50$ %	MH	INORGANIC SILTS, MICACEOUS OR DIATOMACEOUS FINE SANDY OR SILTY SOILS		
	CLAYS (ABOVE 'A' LINE NEGLIGIBLE ORGANIC CONTENT)	$W_L < 30$ %	CL	INORGANIC CLAYS OF LOW PLASTICITY, GRAVELLY, SANDY, OR SILTY CLAYS, LEAN CLAYS		
		30 % < W_L < 50 %	CI	INORGANIC CLAYS OR MEDIUM PLASTICITY, SILTY CLAYS		
		$W_L > 50$ %	CH	INORGANIC CLAYS OF HIGH PLASTICITY, FAT CLAYS		
	ORGANIC SILTS & CLAYS (BELOW 'A' LINE)	$W_L < 50$ %	OL	ORGANIC SILTS AND ORGANIC SILTY CLAYS OF LOW PLASTICITY		
		$W_L > 50$ %	OH	ORGANIC CLAYS OF HIGH PLASTICITY		
HIGHLY ORGANIC SOILS			Pt	PEAT AND OTHER HIGHLY ORGANIC SOILS	STRONG COLOUR OR ODOUR, AND OFTEN FIBROUS TEXTURE	
BEDROCK			BR	SEE REPORT DESCRIPTION		

Soil Components			
Component	**Size Range (mm)**	**Descriptor**	**% by Weight**
Cobbles	> 76	and	> 35
Gravel	76 to 4.75		
Coarse	76 to 19	-y, -ey	35 to 20
Fine	19 to 4.75		
Sand	4.75 to 0.075	some	20 to 10
Coarse	4.75 to 2		
Medium	2 to 0.425	trace	10 to 1
Fine	0.425 to 0.075		
Fines (Silt or Clay)	< 0.075		



TECHNICAL SPECIFICATIONS

Part 1 General

1.1 RELATED SECTIONS

.1 Section 31 23 33.01 – Excavating, Trenching and Backfilling.

.2 Section 32 13 15 – Concrete Walks, Curbs and Gutters.

1.2 REFERENCES

.1 American Society for Testing and Materials International (ASTM)

- .1 ASTM A185-05, Standard Specification for Steel Welded Wire Reinforcement, Plain, for Concrete.
- .2 ASTM D260-86(2001), Standard Specification for Boiled Linseed Oil.
- .3 ASTM D1751-04, Standard Specification for Preformed Expansion Joint Filler for Concrete Paving and Structural Construction (Non extruding and Resilient Bituminous Types).

.2 Canadian General Standards Board (CGSB)

- .1 CAN/CGSB-19.24-M90, Multicomponent, Chemical-Curing Sealing Compound.

.3 Canadian Standards Association (CSA International)

- .1 CSA-A23.1/A23.2-2004, Concrete Materials and Methods of Concrete Construction/Methods of Test and Standard Practices for Concrete.
- .2 CAN/CSA-A3000-03, Cementitious Materials Compendium (Consists of A3001, A3002, A3003, A3004 and A3005).
  - .1 CSA-A3001-03, Cementitious Materials for Use in Concrete.
- .3 CAN/CSA-G30.18-M92(R2002), Billet-Steel Bars for Concrete Reinforcement.

1.3 DESIGN REQUIREMENTS

.1 Do cast-in-place concrete work in accordance with CAN3-A23.1 except where specified otherwise.

1.4 SUBMITTALS

.1 Submittals in accordance with Section 01350 – Submittals.

.2 Shop Drawings:

- .1 Submit placing drawings prepared in accordance with plans to clearly show size, shape, location and all necessary details of reinforcing.
- .2 Submit drawings showing formwork and falsework design to: CSA-A23.1/A23.2.
- .3 Drawings to bear stamp and signature of qualified professional engineer registered or licensed in Province of Alberta.

.3 At least 4 weeks prior to beginning Work, inform Engineer source of fly ash and submit samples to Engineer.

.1 Do not change source of Fly Ash without written approval of Engineer.

.4 At least 4 weeks prior to beginning Work, submit to Engineer samples of following materials proposed for use: curing compound, joint filler, waterstops.

.5 Submit samples of materials to be used in concrete mix for testing:

.1 Supplementary cementing materials.

.2 Blended hydraulic cement.

.3 Admixture.

.6 Submit testing and inspection results and reports for review by Engineer and do not proceed without written approval when deviations from mix design or parameters are found.

.7 Concrete hauling time: submit for review by Engineer deviations exceeding maximum allowable time of 120 minutes for concrete to be delivered to site of Work and discharged after batching.

1.5 QUALITY ASSURANCE

.1 Submit to Engineer, minimum 4 weeks prior to starting concrete work, valid and recognized certificate from plant delivering concrete.

.2 Quality Control Plan: submit written report, as described in the verifications section below, to Engineer verifying compliance that concrete in place meets performance requirements.

.3 Health and Safety Requirements: do construction occupational health and safety in accordance with Alberta Occupational Health and Safety.

1.6 DELIVERY, STORAGE AND HANDLING

.1 Concrete hauling time: maximum allowable time limit for concrete to be delivered to site of Work and discharged not to exceed 120 minutes after batching.

.1 Modifications to maximum time limit must be agreed to by the Engineer and concrete producer as described in CSA A23.1/A23.2.

.2 Deviations to be submitted for review by the Engineer.

.2 Concrete delivery: ensure continuous concrete delivery from plant meets CSA A23.1/A23.2.

1.7 MATERIALS

.1 Cement: to CAN/CSA-A3001, Type 10 or Type 50 as indicated.

.2 Supplementary cementing materials: pozzolanic mineral or fly ash shall conform to the requirements of CSA CAN3-A23.5, Supplementary Cementing Materials and their use in concrete construction. Fly ash to be Type C or Type F. No additional payment will be made for the use of pozzolanic mineral or fly ash.

.3 Water: to CSA-A23.1/A23.2.

.4 Reinforcing bars: to CAN/CSA-G30.18, Grade 400.

.5 Welded steel wire fabric: to ASTM A185.

.6 Pre-moulded joint filler:

.1 Bituminous impregnated fibreboard: to ASTM D1751.

.7 Joint sealer/filler: grey to CAN/CGSB-19.24, Type 1, Class B.

.8 Other concrete materials: to CSA-A23.1/A23.2.

1.8 MIXES

.1 An independent testing firm shall prepare concrete mix designs which will be submitted to the Engineer for each source of concrete supply prior to the commencement of the contract. Concrete suppliers may submit their own mix designs provided they submit documentation to show that they have been approved by an independent testing firm.

.2 Trial mixes shall be prepared in the batch plant and/or truck mixed in accordance with the City concrete specifications. In each case where there is a change in the materials used, a new trial mix will be required.

.3 Concrete supplied shall conform to the following minimum requirements:

TABLE 1

CONCRETE DESIGN REQUIREMENTS

Concrete Class	Concrete Uses	Concrete Strength (MPa)	Air Content (%)	Slump (mm)	Cement Type
A	Traffic Davit Base (Type 10)	32	5.5-8	80	50
B	Curb and Gutter - Machine Poured (Type 50)	32	5.0-8	10-30	50
B	Sidewalk, Curb and Gutter - Hand Poured (Type 50)	32	5.0-8	40-80	50
B	Sidewalk - Machine Poured (Type 50)	32	5.0-8	20-40	50
C	Manhole and Catch Basin Bases, Benching, Thrust Blocks, Class A Bedding and Underground Ducts (Type 50)	32	5-7	80	50
D	Lean Concrete Slurry Mix for Road Repairs (Type 10)	10-15	5-7	150	50
E	Fill Concrete for Trench Backfill (Type 10)	0.4	6-8	125	50

Part 2 Execution

2.1 PREPARATION

.1 Provide Engineer 24 hours' notice before each concrete pour.

.2 During concreting operations:

.1 Development of cold joints not allowed.

.2 Ensure concrete delivery and handling facilitates placing with minimum of rehandling, and without damage to existing structure or Work.

.3 Protect previous Work from staining.

.4 Clean and remove stains prior to application of concrete finishes.

2.2 CONSTRUCTION

.1 Perform cast-in-place concrete work in accordance with CSA-A23.1/A23.2.

2.3 INSERTS

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

.1 Sleeves and openings greater than 100 mm x 100 mm not indicated, must be reviewed by Engineer.

2.4 FINISHES

.1 Formed surfaces exposed to view: sack rubbed finish in accordance with CSA-A23.1/A23.2.

.2 Equipment pads: provide smooth trowelled surface.

.3 Pavements, walks, curbs and exposed site concrete:

.1 Screed to plane surfaces and use [aluminum] [magnesium] [wood] floats.

.2 Provide round edges and joint spacings using standard tools.

.3 Trowel smooth to provide lightly brushed non-slip finish.

2.5 CONTROL JOINTS

.1 Cut and form control joints in slabs on grade at locations indicated, in accordance with CSA-A23.1/A23.2 and install specified joint sealer/filler.

2.6 EXPANSION AND ISOLATION JOINTS

.1 Install premoulded joint filler in expansion and isolation joints full depth of slab flush with finished surface to CSA-A23.1/A23.2.

2.7 CURING

.1 Use curing compounds compatible with applied finish on concrete surfaces free of bonding agents and in accordance with CSA-A23.1/A23.2.

2.8 FIELD QUALITY CONTROL

.1 Concrete supplied for this contract will be tested by a recognized testing laboratory appointed by the Engineer which will test according to CSA A23.2 testing procedures unless otherwise specified for the following:

.1 Methods of Tests for Concrete: CSA A23.2.
.2 Sampling of plastic concrete: CSA A23.2-1C.
.3 Making and curing concrete compressions and Flexural test specimen: CSA A23.2-3C.
.4 Air Content of plastic concrete by pressure method: CSA A23.2-4C.
.5 Slump of concrete: CSA A23.2-5C.
.6 Density, yield and cement factor of plastic concrete: CSA A23.2-6C.
.7 Compressive strength of cylindrical concrete specimens: CSA A23.2-9C.
.8 Obtaining and testing drilled cores for compressive CSA A23,2-14C.
.9 Recommended practice for microscopical determination of air void content and parameters of the air void system is hardened concrete: ASTM C457.

.2 Where reference is made to an ASTM designation or a CSA standard the current standard applies.

.3 There shall be at least one strength test, slump test and air content test for each 50 cubic meters of concrete or fraction thereof, and in any event, not less than one test for each class of concrete used. For the purposes of this section, each test shall represent the total volume of concrete placed on the day the test cylinders were cast, divided by the number of tests taken that day for each class of concrete.

.4 When making tests on fresh concrete, not less than three specimens for each test shall be molded for compressive tests. One cylinder is to be tested at seven (7) days and two (2) at 28 days. The Engineer may require more tests than outlined above.

.5 When the temperature is below 0º C during concrete placement or is likely to fall below minus 3C within 24 hours after a placement, two (2) additional cylinders will be made for each test. These two cylinders will be field cured in a manner that simulates curing of the concrete placed.

.6 A minimum of two (2) field cured cylinders will be required for any cast in place concrete which is to be post tensioned.

.7 The Contractor shall give the Engineer 24 hours notice prior to any concrete placement or any work requiring testing in order that the Engineer may arrange for required testing. The Engineer shall be reimbursed by the Contractor for any charges to the Engineer by testing agency as a result of testing agency being called out prematurely or as a result of having to wait for the Contractors for any reason.

.8 The foregoing does not apply to preparation of concrete mix designs for projects which the Contractor shall engage an independent testing agency. Cost of such mix design shall be borne by the Contractor. Copies of mix designs shall be submitted to Engineer for approval however such approval does not constitute acceptance of final product which shall meet requirements set forth elsewhere in this Section.

.9 If testing indicates substandard materials and workmanship, further testing as approved by the Engineer shall be completed at the Contractor's expense.

.10 The Contractor shall supply as part of the contract all materials scaffolding, labor etc. required to facilitate the testing services on a job site.

2.9 VERIFICATION

.1 Quality Control Plan: ensure concrete supplier meets performance criteria of concrete as established in PART 2 - PRODUCTS, by Engineer and provide verification of compliance as described in PART 1 - QUALITY ASSURANCE.

2.10 CLEANING

.1 Use trigger operated spray nozzles for water hoses.

.2 Designate cleaning area for tools to limit water use and runoff.

END OF SECTION

Part 1 General

1.1 RELATED SECTIONS

.1 Section 01350 - Submittals.

.2 Section 31 23 33.01 – Excavating, Trenching and Backfilling.

.3 Section 32 11 23 – Aggregate Materials.

.4 Section 32 12 16.01 – Asphalt Paving – Short Form.

1.2 REFERENCES

.1 American Society for Testing and Materials (ASTM)

.1 ASTM D4791-99, Standard Test Method for Flat Particles, Elongated Particles, or Flat and Elongated Particles in Coarse Aggregate.

1.3 SAMPLES

.1 Submit samples in accordance with Section 01350 - Submittals.

.2 Allow continual sampling by Engineer during production.

.3 Provide Engineer with access to source and processed material for sampling.

.4 Pay cost of sampling and testing of aggregates which fail to meet specified requirements.

Part 2 Products

2.1 MATERIALS

.1 Aggregate quality: sound, hard, durable material free from soft, thin, elongated or laminated particles, organic material, clay lumps or minerals, or other substances that would act in deleterious manner for use intended.

.2 Flat and elongated particles of coarse aggregate: to ASTM D4791.

.1 Greatest dimension to exceed five times least dimension.

.3 Fine aggregates satisfying requirements of applicable section to be one, or blend of following:

.1 Natural sand.

.2 Manufactured sand.

.3 Screenings produced in crushing of quarried rock, boulders, gravel or slag.

.4 Coarse aggregates satisfying requirements of applicable section to be one of or blend of following:

.1 Crushed rock.

.2 Gravel and crushed gravel composed of naturally formed particles of stone.

.3 Light weight aggregate, including slag and expanded shale.

2.2 SOURCE QUALITY CONTROL

.1 Inform Engineer of proposed source of aggregates and provide access for sampling at least 4 weeks prior to commencing production.

.2 If, in opinion of Engineer, materials from proposed source do not meet, or cannot reasonably be processed to meet, specified requirements, locate an alternative source or demonstrate that material from source in question can be processed to meet specified requirements.

.3 Advise Engineer 4 weeks in advance of proposed change of material source.

.4 Acceptance of material at source does not preclude future rejection if it fails to conform to requirements specified, lacks uniformity, or if its field performance is found to be unsatisfactory.

Part 3 Execution

3.1 PREPARATION

.1 Handling

.1 Handle and transport aggregates to avoid segregation, contamination and degradation.

.2 Stockpiling

.1 Stockpile aggregates on site in locations as indicated unless directed otherwise by Engineer. Do not stockpile on completed pavement surfaces.

.2 Stockpile aggregates in sufficient quantities to meet Project schedules.

.3 Stockpiling sites to be level, well drained, and of adequate bearing capacity and stability to support stockpiled materials and handling equipment.

.4 Except where stockpiled on acceptably stabilized areas, provide compacted sand base not less than 300 mm in depth to prevent contamination of aggregate. Stockpile aggregates on ground but do not incorporate bottom 300 mm of pile into Work.

.5 Separate different aggregates by strong, full depth bulkheads, or stockpile far enough apart to prevent intermixing.

.6 Do not use intermixed or contaminated materials. Remove and dispose of rejected materials as directed by Engineer within 48 h of rejection.

.7 Stockpile materials in uniform layers of thickness as follows:

.1 Max 1.5 m for coarse aggregate and base course materials.

.2 Max 1.5 m for fine aggregate and sub-base materials.

.3 Max 1.5 m for other materials.

.8 Uniformly spot-dump aggregates delivered to stockpile in trucks and build up stockpile as specified.

.9 Do not cone piles or spill material over edges of piles.

.10 Do not use conveying stackers.

.11 During winter operations, prevent ice and snow from becoming mixed into stockpile or in material being removed from stockpile.

3.2 CLEANING

.1 Leave aggregate stockpile site in tidy, well drained condition, free of standing surface water.

.2 Leave any unused aggregates in neat compact stockpiles as directed by Engineer

END OF SECTION

Part 1 Execution

1.1 TEMPORARY EROSION AND SEDIMENTATION CONTROL

.1 Provide temporary erosion and sedimentation control measures to prevent soil erosion and discharge of soil-bearing water runoff or airborne dust to adjacent properties and walkways, according to requirements of authorities having jurisdiction. Costs associated with required temporary erosion and sedimentation control measures shall be considered incidental to the work being completed.

.2 Inspect, repair, and maintain erosion and sedimentation control measures during construction until permanent vegetation has been established.

.3 Remove erosion and sedimentation controls and restore and stabilize areas disturbed during removal.

1.2 STRIPPING OF TOPSOIL

.1 Ensure that procedures are conducted in accordance with applicable Provincial and Municipal requirements.

.2 Remove topsoil before construction procedures commence to avoid compaction of topsoil.

.3 Handle topsoil only when it is dry and warm.

.4 Strip topsoil to required depths as indicated by Engineer.

.1 Avoid mixing topsoil with subsoil.

.5 Topsoil will either be stockpiled onsite or hauled offsite to a contractor acquired dumpsite as described in the unit price schedule.

.6 If topsoil is to be stockpiled onsite, then the stockpile location must be approved by the Engineer.

.7 If topsoil is to be disposed of at dumpsite acquired by Contractor, then the following items apply:

.1 Contractor is to obtain all require permitting for hauling to the dumpsite and disposing of topsoil at the dumpsite.

.2 Contractor is to keep all haul roads and public roads clear of debris from the construction site.

.3 Contractor is to maintain all haul roads and public roads in the same or better condition than pre-construction conditions.

1.3 CLEANING

.1 On completion and verification of performance of installation, remove surplus materials, excess materials, rubbish, tools and equipment.

END OF SECTION

Part 1 General

1.1 SECTION INCLUDES

.1 This section includes the excavation of trench materials and rocks, as well as the backfill of trenches, for the purpose of installing water, sanitary, and storm utility piping/fixtures.

1.2 RELATED SECTIONS

.1 Section 31 05 16 – Aggregate Material.

.2 Section 33 41 00 – Storm Utility Drainage Piping.

1.3 REFERENCES

.1 American Society for Testing and Materials International (ASTM)

- .1 ASTM C117-04, Standard Test Method for Material Finer than 0.075 mm (No.200) Sieve in Mineral Aggregates by Washing.
- .2 ASTM C136-05, Standard Test Method for Sieve Analysis of Fine and Coarse Aggregates.
- .3 ASTM D422-632002, Standard Test Method for Particle-Size Analysis of Soils.
- .4 ASTM D698-00ae1, Standard Test Methods for Laboratory Compaction Characteristics of Soil Using Standard Effort (12,400 ft-lbf/ft ;) (600 kN-m/m ;).
- .5 ASTM D1557-02e1, Standard Test Methods for Laboratory Compaction Characteristics of Soil Using Modified Effort (56,000 ft-lbf/ft ;) (2,700 kN-m/m ;).
- .6 ASTM D4318-05, Standard Test Methods for Liquid Limit, Plastic Limit, and Plasticity Index of Soils.

.2 Canadian General Standards Board (CGSB)

- .1 CAN/CGSB-8.1-88, Sieves, Testing, Woven Wire, Inch Series.
- .2 CAN/CGSB-8.2-M88, Sieves, Testing, Woven Wire, Metric.

.3 Canadian Green Building Council (CaGBC)

- .1 LEED Canada-NC Version 1.0-December 2004, LEED (Leadership in Energy and Environmental Design): Green Building Rating System For New Construction and Major Renovations.

.4 Canadian Standards Association (CSA International)

- .1 CAN/CSA-A3000-03, Cementitious Materials Compendium (Consists of A3001, A3002, A3003, A3004 and A3005).
  - .1 CSA-A3001-03, Cementitious Materials for Use in Concrete.
- .2 CSA-A23.1/A23.2-04, Concrete Materials and Methods of Concrete Construction/Methods of Test and Standard Practices for Concrete.

.5 U.S. Environmental Protection Agency (EPA)/Office of Water

.1 EPA 832R92005, Storm Water Management for Construction Activities: Developing Pollution Prevention Plans and Best Management Practices.

1.4 DEFINITIONS

.1 Excavation classes: two classes of excavation will be recognized; common excavation and rock excavation.

.1 Rock: solid material in excess of 1.00 cubic meter; and which cannot be removed by means of heavy-duty mechanical excavating equipment. Frozen material not classified as rock.

.2 Common excavation: excavation of materials of whatever nature, which are not included under definitions of rock excavation.

.2 Unclassified excavation: excavation of deposits of whatever character encountered in Work.

.3 Topsoil:

.1 Material capable of supporting good vegetative growth and suitable for use in top dressing, landscaping, and seeding.

.2 Material reasonably free from subsoil, clay lumps, brush, objectionable weeds, and other litter, and free from cobbles, stumps, roots, and other objectionable material larger than 25 millimeters in any dimension.

.4 Waste material: excavated material unsuitable for use in Work or surplus to requirements.

.5 Initial backfill: Non frozen material placed within the trench, above the spring line of the pipe to 300 mm above the crown of the pipe in layers not exceeding 150mm and compacted by manual forces (wacker tampers) to 95% Standard Proctor Density.

.6 Class 1 backfill: Class 1 backfilling shall consist of backfilling the trench with non-frozen sand or gravel compacted in even layers not exceeding 300 mm in depth so that there is no subsequent subsidence in the trench. Backfill shall be compacted to a minimum of 100% Standard Proctor Density. Fillcrete may be used in lieu of Class 1 backfill.

.7 Class 2 backfill: Class 2 backfilling shall consist of replacing the non-frozen excavated material in even layers not exceeding 300 mm in depth, and compacting each layer by mechanical means to the compaction densities identified in the below table.

Location	Compaction (% of Standard Proctor Density)		
	From finished grade to 1.0m below finished grade	From 1.0m below finished grade to 1.5m below subgrade	From 1.5m below subgrade to pipe zone
Within Paved Roadways	98	98	95
Within Gravelled laneway	98	95	95
Within Landscaped Areas	95	95	95

.8 Bedding class:

.1 Class A

.1 Concrete cradle: Pipe is bedded in concrete up to ½ outside pipe diameter for a minimum width of pipe diameter plus 200 mm. Above

cradle, granular backfill is placed and compacted to 300 mm above pipe to a density of 98% Standard Proctor Density.

.2 Concrete arch: Pipe is bedded in carefully compacted granular bedding to spring line. Top half of pipe is covered with concrete to minimum depth of ¼ of inside diameter of pipe. Arch width is to be a minimum of pipe outside diameter plus 200 mm.

.2 Class B

.1 Granular Bedding: Pipe is bedded in material meeting the requirements of item 2.1.2 within this section according to the standard trench bedding detail. Granular backfill is placed and compacted to 300 mm above pipe to a density of 95% Standard Proctor Density.

.9 Borrow material: material obtained from locations outside area to be graded, and required for construction of fill areas or for other portions of Work.

.10 Recycled fill material: material, considered inert, obtained from alternate sources and engineered to meet requirements of fill areas.

.11 Unsuitable materials:

.1 Weak, chemically unstable, and compressible materials.

.2 Frost susceptible materials:

.1 Fine grained soils with plasticity index less than 10 when tested to ASTM D4318, and gradation within limits specified when tested to ASTM D422 and ASTM C136: Sieve sizes to CAN/CGSB-8.1.

.2 Table:

Sieve Designation	% Passing
2.00 mm	100
0.10 mm	45 - 100
0.02 mm	10 - 80
0.005 mm	0 - 45

.3 Coarse grained soils containing more than 20% by mass passing 0.075 mm sieve.

.12 Unshrinkable fill: very weak mixture of cement, concrete aggregates and water that resists settlement when placed in utility trenches, and capable of being readily excavated.

1.5 SUBMITTALS

.1 Make submittals in accordance with Section 01350 – Submittals.

.2 Quality Control: in accordance with Section 01400 – Quality Control:

.1 Submit condition survey of existing conditions as described in EXISTING CONDITIONS article of this Section.

.2 Submit for review by Engineer proposed dewatering and heave prevention methods as described in PART 3 of this Section.

.3 Submit to Engineer written notice at least 7 days prior to excavation work, to ensure cross sections are taken.

.4 Submit to Engineer written notice when bottom of excavation is reached.

.5 Submit to Engineer testing and inspection results and reports as described in PART 3 of this Section.

.3 Preconstruction Submittals:

.1 Submit construction equipment list for major equipment to be used in this section prior to start of Work.

.2 Submit records of underground utility locates, indicating: location plan of existing utilities as found in field, clearance record from utility authority, and location plan of relocated and abandoned services, as required.

.3 Prior to construction, submit proposed plan for staging of material including

.4 Samples:

.1 Submit samples in accordance with Section 01350 – Submittals Procedures.

.2 Inform Engineer at least 4 weeks prior to beginning Work, of proposed source of fill materials and provide access for sampling.

.3 Submit 70 kg samples of type of fill specified including representative samples of excavated material.

.4 Ship samples prepaid to Engineer, in tightly closed containers to prevent contamination and exposure to elements.

.5 At least 4 weeks prior to beginning Work, inform Engineer source of fly ash and submit samples to Engineer.

.1 Do not change source of Fly Ash without written approval of Engineer.

1.6 QUALITY ASSURANCE

.1 Qualification Statement: submit proof of insurance coverage for general liability.

.2 Submit proof that Work by Engineer is included in Contractor's insurance coverage.

.3 Submit design and supporting data at least 2 weeks prior to beginning Work.

.4 Design and supporting data submitted to bear stamp and signature of qualified professional engineer registered or licensed in Provinces of Alberta, Canada.

.5 Keep design and supporting data on site.

.6 Engage services of qualified professional Engineer who is registered or licensed in Province of Alberta, Canada in which Work is to be carried out to design and inspect cofferdams, shoring, bracing and underpinning required for Work.

.7 Do not use soil material until written report of soil test results are reviewed and approved by Engineer.

.8 Health and Safety Requirements:

.1 Observe and adhere to all applicable sections of the Alberta Regulations 271/76 or any revisions thereto made under the Occupational Health and Safety Act covering the worker safety in trenches and excavations, shoring and bracing as required. Open cut trenches shall be shaped as required by the Act and the Accident Prevention Regulations of the Occupational Health and Safety Division

of the Department of Labor and Municipal Ordinances and as may be necessary to protect life, property, the environment and the Work.

.2 Adhere to all crossing permit (railway, pipeline, telecommunications, etc.) requirements.

.3 Provide barricades, flares, etc. to adequately denote area of excavation adjacent to roadways and public thoroughfares.

1.7 EXISTING CONDITIONS

.1 Examine soil report available at Engineer's office.

.2 Buried services:

.1 Before commencing work establish location of buried services on and adjacent to site.

.2 Arrange with appropriate authority for relocation of buried services that interfere with execution of work: pay costs of relocating services.

.3 Remove obsolete buried services within 2 m of foundations: cap cut-offs.

.4 Size, depth and location of existing utilities and structures as indicated are for guidance only. Completeness and accuracy are not guaranteed.

.5 Prior to beginning excavation Work, notify applicable authorities having jurisdiction and establish location and state of use of buried utilities and structures. Authorities having jurisdiction to clearly mark such locations to prevent disturbance during Work.

.6 Confirm locations of buried utilities by careful test excavations or soil hydrovac methods. There will be no additional compensation for the location and protection of existing utilities.

.7 Maintain and protect from damage, water, sewer, gas, electric, telephone and other utilities and structures encountered.

.8 Where utility lines or structures exist in area of excavation, obtain direction of Engineer before removing or re-routing. Costs for such Work to be paid by Owner.

.9 Record location of maintained, re-routed and abandoned underground lines.

.10 Confirm locations of recent excavations adjacent to area of excavation.

.3 Existing buildings and surface features:

.1 Conduct, with Engineer, condition survey of existing buildings, trees and other plants, lawns, fencing, service poles, wires, rail tracks, pavement, survey bench marks and monuments which may be affected by Work.

.2 Protect existing buildings and surface features from damage while Work is in progress. In event of damage, immediately make repair as directed by Engineer.

.3 Where required for excavation, cut roots or branches as directed by Engineer.

Part 2 Products

2.1 BEDDING AND INITIAL BACKFILL MATERIALS

.1 Well graded sand consisting of hard durable particles free from clay lumps, cementation, organic material, frozen material and other deleterious materials.

.2 The material shall meet the following gradation:

Seive Size (mm)	Percent Passing (by weight)
10.000	100
5.000	95 - 100
2.500	80 – 100
1.250	50 – 85
0.630	30 - 65
0.315	10 - 30
0.160	2 - 10

.3 Native hand placed material may be used as initial backfill gradation.

.4 Material to be used as specified by Engineer or as shown on drawing.

.5 Concrete required for Class A bedding, grades, supports, and encasement to be 25 MPa sulphate resistant (Type 50).

.6 Native backfill to be approved material selected from trench excavation or other source, unfrozen and free from deleterious material and with moisture content within 2% of optimum.

2.2 ROADWAY TRENCH BACKFILL MATERIAL

.1 To minimize fill settlement under self-weight, excavated soil with a moisture content exceeding 2% of optimum shall be conditioned and dried prior to use as backfill.

.2 Wet fill material must be dried or blended with drier material to produce a uniform homogenous material prior to use as a trench backfill. If this is not practical, the wet material should be wasted or used in landscape areas and berms where bearing capacity is not required.

.3 Suitable replacement soils would include imported clay with a moisture content within 2 % of its optimum moisture content for compaction or imported granular materials suitable for compaction.

.4 Backfill shall be Class II as defined in item 1.5.7 of this section.

2.3 FILTER FABRIC

.1 The synthetic filter fabric shall consist of a durable, permeable, non-woven, polyester fabric composed of continuous synthetic filaments in a random arrangement with typical properties as follows:

Tensile Grab Strength — ASTM D4632	700 N
Trapezoid Tear Strength — ASTM D4533	285 N
Mullen Burst Strength — ASTM D3786	2,100 kPa
Puncture — ASTM 04833	400 N

Filter fabric shall be Amoco 4551, Layfield 601 or approved equal.

2.4 FILLCRETE

.1 Non-shrinking fill made up of a mixture of portland cement, sand, water and admixtures conforming to the following:

.1	Minimum 28 day compressive strength	0.40 MPa
.2	Slump	125 mm
.3	Maximum Aggregate Size	5.0 mm
.4	Air entrainment	6.0 – 8.0%
.5	Minimum Portland Cement	30 kg/m^3

Part 3 Execution

3.1 TEMPORARY EROSION AND SEDIMENTATION CONTROL

.1 Provide temporary erosion and sedimentation control measures to prevent soil erosion and discharge of soil-bearing water runoff or airborne dust to adjacent water bodies, or outside of the work areas according to requirements of authorities having jurisdiction.

.2 Inspect, repair, and maintain erosion and sedimentation control measures during construction until permanent vegetation has been established.

.3 Remove erosion and sedimentation controls and restore and stabilize areas disturbed during removal.

3.2 SITE PREPARATION

.1 Remove obstructions, ice and snow, from surfaces to be excavated within limits indicated.

.2 Cut pavement or sidewalk neatly along limits of proposed excavation in order that surface may break evenly and cleanly.

3.3 PREPARATION/PROTECTION

.1 Protect existing features in accordance with applicable local regulations.

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

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

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

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

.6 Contractor to provide dust suppression measures for all public roadways and haul routes at no additional cost to the Owner.

3.4 COFFERDAMS, SHORING, BRACING AND UNDERPINNING

.1 Maintain sides and slopes of excavations in safe condition by appropriate methods and in accordance with Occupational Health and Safety Act for the Province of Alberta.

.1 Where conditions are unstable, Engineer to verify and advise methods.

.2 Obtain permit from authority having jurisdiction for temporary diversion of water course.

.3 Construct temporary Works to depths, heights and locations as indicated or directed by Engineer.

.4 During backfill operation:

.1 Unless otherwise indicated or directed by Engineer, remove sheeting and shoring from excavations.

.2 Do not remove bracing until backfilling has reached respective levels of such bracing.

.3 Pull sheeting in increments that will ensure compacted backfill is maintained at elevation at least 500 mm above toe of sheeting.

.5 When sheeting is required to remain in place, cut off tops at elevations as indicated.

.6 Upon completion of substructure construction:

.1 Remove cofferdams, shoring and bracing.

.2 Remove excess materials from site and restore watercourses as indicated and as directed by Engineer.

3.5 DEWATERING AND HEAVE PREVENTION

.1 Keep excavations free of water while Work is in progress.

.2 Provide for Engineer's review and approval details of proposed dewatering or heave prevention methods, including dikes, well points, and sheet pile cut-offs.

.3 Avoid excavation below groundwater table if quick condition or heave is likely to occur.

.1 Prevent piping or bottom heave of excavations by groundwater lowering, sheet pile cut-offs, or other means.

.4 Protect open excavations against flooding and damage due to surface run-off.

.5 Dispose of water in to approved collection or runoff areas and in a manner not detrimental to public and private property, or portion of Work completed or under construction.

.1 Provide and maintain temporary drainage ditches and other diversions outside of excavation limits.

.6 Provide flocculation tanks, settling basins, or other treatment facilities to remove suspended solids or other materials before discharging to storm sewers, watercourses or drainage areas.

3.6 EXCAVATION

.1 Advise Engineer at least 7 days in advance of excavation operations for initial cross sections to be taken.

.2 Excavate to lines, grades, elevations and dimensions as indicated.

.3 Remove concrete, masonry, paving, walks, demolished foundations and rubble, and other obstructions encountered during excavation.

.4 Excavation must not interfere with bearing capacity of adjacent foundations.

.5 Do not disturb soil within branch spread of trees or shrubs that are to remain.

.1 If excavating through roots, excavate by hand and cut roots with sharp axe or saw.

.6 For trench excavation, unless otherwise authorized by Engineer in writing, do not excavate more than 30 m of trench in advance of installation operations and do not leave open more than 15 m at end of day's operation.

.7 Keep excavated and stockpiled materials safe distance away from edge of trench as directed by Engineer.

.8 Restrict vehicle operations directly adjacent to open trenches.

.9 Dispose of surplus and unsuitable excavated material in approved location.

.10 Do not obstruct flow of surface drainage or natural watercourses.

.11 Earth bottoms of excavations to be undisturbed soil, level, free from loose, soft or organic matter.

.12 Notify Engineer when bottom of excavation is reached.

.13 Obtain Engineer approval of completed excavation.

.14 Remove unsuitable material from trench bottom including those that extend below required elevations to extent and depth as directed by Engineer.

.15 Correct all areas of unauthorized over-excavation with approved material as directed by Engineer.

.16 Hand trim, make firm and remove loose material and debris from excavations.

.1 Where material at bottom of excavation is disturbed, compact foundation soil to density at least equal to undisturbed soil.

.2 Clean out rock seams and fill with concrete mortar or grout to approval of Engineer.

3.7 FILL TYPES AND COMPACTION

.1 Bedding and initial backfilling shall be as specified for the particular pipe installed.

.2 General backfilling:

.1 Class 2 backfill as defined in Section 1.5 - Definitions shall be used. If Class 2 backfill is unsuitable then Class 1 backfill as defined in Part 1.5 – Definitions shall be used.

.2 No boulders, ice, snow, organic material or debris shall be permitted in the trench. These unsuitable materials shall be hauled away.

.3 All surplus excavated material shall also be hauled away, or disposed of as directed. In the event of deficiency of backfill material, suitable material shall be supplied by the Contractor at his expense.

.4 All trenches shall be backfilled as the work proceeds and no more than 30 m shall be left open at the end of a day's work.

.3 The Contractor shall be responsible for adequate compaction of the trenches and for the correction of settlement during the maintenance period of the Contract. Mechanical compaction equipment shall not be used until there is sufficient cover to prevent damage to the pipe.

.4 The type of compaction equipment shall be chosen with regard to minimizing the vibration effect on nearby buildings and utilities. The Contractor shall inspect the condition of buildings prior to construction. The Contractor is responsible for any damage caused to buildings due to construction.

3.8 BEDDING AND SURROUND OF UNDERGROUND SERVICES

.1 Place and compact granular material for bedding and surround of underground services as indicated and according to Section 33 11 16 - Site Water Utility Distribution Piping.

.2 Place bedding and surround material in unfrozen condition.

3.9 BACKFILLING

.1 Do not proceed with backfilling operations until completion of following:

.1 Engineer has inspected and approved installations.

.2 Engineer has inspected and approved of construction below finish grade.

.3 Inspection, testing, approval, and recording location of underground utilities.

.4 Removal of concrete formwork.

.5 Removal of shoring and bracing; backfilling of voids with satisfactory soil material.

.2 Areas to be backfilled to be free from debris, snow, ice, water and frozen ground.

.3 Do not use backfill material which is frozen or contains ice, snow or debris.

.4 Place backfill material in uniform layers not exceeding 200 mm compacted thickness up to grades indicated. Compact each layer before placing succeeding layer. Backfill placed within 3m of an existing building face is to be compacted with static compaction equipment only in lifts not exceeding 150mm in loose depth.

.5 Backfilling around installations:

.1 Place bedding and surround material as specified elsewhere.

.2 Do not backfill around or over cast-in-place concrete within 24 hours after placing of concrete.

.3 Place layers simultaneously on both sides of installed Work to equalize loading.

.4 Where temporary unbalanced earth pressures are liable to develop on walls or other structures:

.1 Permit concrete to cure for minimum 14 days or until it has sufficient strength to withstand earth and compaction pressure and approval obtained from Engineer or:

.2 If approved by Engineer, erect bracing or shoring to counteract unbalance, and leave in place until removal is approved by Engineer.

.6 Place unshrinkable fill in areas as indicated.

.7 Consolidate and level unshrinkable fill with internal vibrators.

3.10 TESTING BACKFILL COMPACTION

.1 Compaction results shall be based on a minimum of one density test per 100 meters of trench for each 0.3 meter of compacted vertical backfill. Additional tests may be called for as deemed necessary.

.2 If a density test indicates insufficient compaction at any depth, then two more densities, that are proportionally representative of trench length, shall be taken at that depth. If the average of these tests is below the required density, the trench shall be re-excavated and re-compacted to meet the specified density.

.3 This testing in no way relieves the Contractor of his maintenance responsibilities with respect to settlements as specified. The Contractor shall repair any settlement and damaged surface improvements due to the settlement which occurs during the maintenance period.

.4 The cost of all initial testing will be borne by the Owner. Non-conformity with the specified density or moisture content shall constitute sufficient grounds for rejection of the work. The cost of all re-tests shall be borne by the Contractor.

3.11 RESTORATION

.1 Upon completion of Work, remove waste materials and debris, trim slopes, and correct defects as directed by Engineer.

.2 Replace topsoil as directed by Engineer.

.3 Reinstate lawns to elevation which existed before excavation.

.4 Reinstate pavements and sidewalks disturbed by excavation to thickness, structure and elevation which existed before excavation.

.5 Clean and reinstate areas affected by Work as directed by Engineer.

.6 Use temporary plating to support traffic loads over unshrinkable fill for initial 24 hours.

.7 Protect newly graded areas from traffic and erosion and maintain free of trash or debris.

END OF SECTION

Part 1 General

1.1 RELATED SECTIONS

.1 Section 31 05 16 – Aggregate Material.

.2 Section 31 23 10 – Excavating, Trenching and Backfilling.

.3 Section 32 12 16.01 – Asphalt Paving – Short Form.

1.2 REFERENCES

.1 American Society for Testing and Materials (ASTM)

.1 ASTM C117-95, Standard Test Methods for Material Finer Than 0.075 mm Sieve in Mineral Aggregates by Washing.

.2 ASTM C131-96, Standard Test Method for Resistance to Degradation of Small-Size Coarse Aggregate by Abrasion and Impact in the Los Angeles Machine.

.3 ASTM C136-96a, Standard Test Method for Sieve Analysis of Fine and Coarse Aggregates.

.4 ASTM D698-00a, Standard Test Methods for Laboratory Compaction Characteristics of Soil Using Standard Effort (12,400ft-lbf/ft^3) (600kN-m/m^3).

.5 ASTM D1557-00, Test Method for Laboratory Compaction Characteristics of Soil Using Modified Effort (56,000ft-lbf/ft^3) (2,700kN-m/m^3).

.6 ASTM D1883-99, Standard Test Method for CBR (California Bearing Ratio) of Laboratory Compacted Soils.

.7 ASTM D4318-00, Standard Test Methods for Liquid Limit, Plastic Limit and Plasticity Index of Soils.

.2 Canadian General Standards Board (CGSB)

.1 CAN/CGSB-8.1-88, Sieves, Testing, Woven Wire, Inch Series.

.2 CAN/CGSB-8.2-M88, Sieves, Testing, Woven Wire, Metric.

.3 Alberta Transportation Standard Specifications for Highway Construction

1.3 DELIVERY, STORAGE, AND HANDLING

.1 Deliver and stockpile aggregates in accordance with Section 31 05 16 - Aggregate Materials.

.2 Store cement in weathertight bins or silos that provide protection from dampness and easy access for inspection and identification of each shipment.

Part 2 Products

2.1 MATERIALS

.1 Aggregate base: material in accordance with Section 31 05 16 - Aggregate Materials.

.2 Aggregate base shall meet the following gradation on Table 3.2.3.1 when tested to ASTM C136 and ASTM C117, and give a smooth curve without sharp breaks when plotted on a semi-log grading chart:

Table 3.2.3.1

TABLE 3.2.3.1, SPECIFICATIONS FOR AGGREGATE

DESIGNATION		1			2				3				4			5		6		7	8	9
Class (mm)		10	12.5	16	*16(N2)	20	25	40	12.5AW	12.5BW	12.5C	16	20	25	40	10A	10B	80	125	40	25	8
Percent Passing Metric Sieve (CGSB 8-GP-2M) μm	125 000																		100			
	80 000																	100				
	50 000																	55-100	55-100			
	40 000							100							100					100		
	25 000						100	70-94						100				38-100	38-100		100	
	20 000					100	82-97						100		55-90							
	16 000			100	100	84-94	70-94	55-85				100						32-85	32-85		90-100	
	12 500		100	80-92	89-100				100	100	100	72-95										
	10 000	100	83-92	70-84	78-94	63-86	52-79	44-74	35-65	55-75	70-93	53-82	35-77	30-77	25-72	100	100			85-100	45-75	
	8 000																					100
	5 000	60-75	55-70	50-65	55-70	40-67	35-64	32-62	0-15	0-15	30-60	27-54	15-55	15-55	8-55	70-90	45-70	20-65	20-65		0-15	85-100
	1250	26-45	26-45	26-45	26-45	20-43	18-43	17-43	0-3	0-3	9-28	9-28	0-30	0-30	0-30	20-45	20-45			40-100	0-5	45-75
	630	18-38	18-38	18-38	18-38	14-34	12-34	12-34														30-50
	315	12-30	12-30	12-30	12-30	9-26	8-26	8-26			0-15	0-15				9-22	9-22	6-30	6-30	17-100		18-30
	160	8-20	8-20	8-20	8-20	5-18	5-18	5-18			0-11	0-11				5-15	5-15					10-21
	80	4-10	4-10	4-10	4-10	2-10	2-10	2-10	0-0.3	0-0.3	0-8	0-8	0-12	0-12	0-12	0-10	0-10	2-10	2-15	6-30		5-15
% FRACTURE BY WEIGHT (2 FACES)	ALL +5000	60+	60+	* SEE NOTE (N1)	60+	60+	60+	50+	75+ (100% 1 Face)	75+ (100% 1 Face)	60+	60+	40+	40+	25+	N/A	N/A	N/A	N/A	N/A	N/A	N/A
PLASTICITY INDEX (PI)		NP	NP	NP	NP	NP-6	NP-6	NP-6	N/A	N/A	NP-4	NP-4	NP-8	NP-8	NP-8	NP-6	NP-6	NP-8	NP-8	NP-5	NP-5	NP
L.A. ABRASION LOSS PERCENT MAX.		40	40	40	50	50	50	50	35	35	35	35	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	35
FLAKINESS INDEX		N/A							MAX 15		N/A											
COEFFICIENT OF UNIFORMITY (Cu)		N/A																		3+	N/A	

Designations:

Designation 1 - Asphalt Concrete Pavement
Designation 2 - Base Course Aggregate
Designation 3 - Seal Coat Aggregate
Designation 4 - Gravel Surfacing Aggregate
Designation 5 - Sanding Material
Designation 6 - Pit- Run Gravel Fill
Designation 7 - Cement Stabilized Base Course Aggregate
Designation 8 - Granular Filter Aggregate
Designation 9 - Slurry Seal Aggregate

* Notes:

N1. Asphalt Concrete Mix Type 1 - 90+ (98% 1 face)
Asphalt Concrete Mix Type 2 - 70+
Other Asphalt Concrete Mix Types - 60+

N2. Designation 2 Class 16 Material is for ASBC

N3. For crushed aggregates other than all Designation 5 and Designation 9 materials, a tolerance of three percent in the amount passing the maximum size sieve will be permitted provided all oversize material passes the next larger standard sieve size.

.3 Do not place aggregate base course until finished sub base or sub grade is inspected and approved by Engineer.

Part 3 Execution

3.1 SEQUENCE OF OPERATION

.1 Place Aggregate base after subgrade surface is inspected and approved by Engineer.

.2 Placing

.1 Construct Aggregate base to depth and grade in areas indicated.

.2 Ensure no frozen material is placed.

.3 Place material only on clean unfrozen surface, free from snow and ice.

.4 Begin spreading base material on crown line or on high side of one-way slope.

.5 Place material using methods which do not lead to segregation or degradation of aggregate.

.6 For spreading and shaping material, use spreader boxes having adjustable templates or screeds which will place material in uniform layers of required thickness.

.7 Place material to full width in uniform layers not exceeding 150 mm compacted thickness. Engineer may authorize thicker lifts (layers) if specified compaction can be achieved.

.8 Shape each layer to smooth contour and compact to specified density before succeeding layer is placed.

.9 Remove and replace that portion of layer in which material becomes segregated during spreading.

.3 Compaction equipment to be capable of obtaining required material densities.

.4 Compacting

.1 Compact to density not less than 100% corrected maximum dry density in accordance with ASTM D698. The material shall have a minimum bearing ratio as defined by ASTM D1883 of fifty-five percent (55%).

.2 The Contractor shall compact areas such as entrances, using a vibratory steel-wheeled roller. Shape and roll alternately to obtain smooth, even and uniformly compacted base.

.3 Apply water as necessary during compacting to obtain specified density.

.4 In areas not accessible to rolling equipment, compact to specified density with mechanical tampers approved by Engineer.

.5 Correct surface irregularities by loosening and adding or removing material until surface is within specified tolerance.

.5 Proof rolling

.1 The vehicle used to perform the proof rolling shall be a tandem axle or dual wheel dump truck, tire pressure shall not be less than 90% of the manufacturer's recommended maximum inflation and the minimum gross weight of the loaded truck shall be 24,800kg. A weigh scale slip shall be available upon request to confirm the truck weight.

.2 Engineer may authorize use of other acceptable proof rolling equipment. Proof roll top of base upon completion of fine grading and compaction. Make sufficient passes with proof roller to subject every point on surface to three (3) separate passes of a loaded tire.

.3 Where proof rolling reveals defective base or sub base, remove defective materials to depth and extend directed and replace with new materials to requirement this Section at no extra cost to owner.

3.2 SITE TOLERANCES

.1 Finished base surface to be within plus or minus 10 mm of established grade and cross section but not uniformly high or low.

3.3 PROTECTION

.1 Maintain finished base in condition conforming to this Section until succeeding material is applied or until acceptance by Engineer.

END OF SECTION

Part 1 General

1.1 RELATED SECTIONS

.1 Section 32 11 23 - Aggregate Base Course.

.2 Section 03 30 00.01 – Cast-In-Place Concrete – Short Form

1.2 REFERENCES

.1 Alberta Transportation Standard Specifications for Highway Construction

.2 Lac La Biche County General Municipal Servicing Standards

2.0 Products

2.1 CEMENT

.1 All cement used shall be Portland Cement and shall conform to CSA standard CAN3-A5 Type 50 sulphate resistant cement.

2.2 AGGREGATES

.1 Aggregates shall conform to CSA standard CAN3-A.23.1 and Table 3.2.3.1 in section 32.11.23 – Aggregate Base Course.

2.3 WATER

.1 Water shall conform to CSA standard CAN3-A.23.1. Water shall be clear, free from injurious amounts of oil, acid, alkali, organic matter, sediment, or other substances harmful to mixing and curing of concrete.

2.4 AIR ENTRAINING MIXTURE

.1 Air entraining mixture shall conform to CSA standard CAN3-A.266.1-M.

2.5 REINFORCING STEEL

.1 Reinforcing steel shall conform to the following requirements:

.1 Welded steel wire fabric shall conform to CSA standard G30.5.
.2 Billet steel bars shall conform to CSA standard G30.12-M.

2.6 EXPANSION JOINT FILLER

.1 Preformed expansion joint fillers shall conform to the requirements in the most recent edition of A.S.T.M. Designation D1751 and shall be of adequate dimensions to fill the joint fully and continuously throughout its entire depth.

2.7 EXPANSION JOINT SEALER

.1 Joint sealer shall conform to CGSB standard specification for polyurethane sealing compound 19-GP-15 or ASTM standard specification for hot poured joint sealer D-1190.

2.8 MEMBRANE CURING COMPOUND

.1 Curing compound shall be impervious resin based, liquid membrane-forming compound conforming to ASTM standard specification C309, Type 2, Class B with white pigmentation.

2.9 CONCRETE

.1 The concrete mix shall be designed as follows:

.1	Minimum 28 day compressive strength	32 MPa
.2	Slump for machine poured curb and gutter	[20 ± 10] mm
.3	Slump for machine poured sidewalks	[30 ± 10] mm
.4	Slump for hand poured concrete	[60 ± 20] mm
.3	Maximum aggregate size	20 mm
.4	Air entrainment	5.0% to 8.0%

.2 Ready mixed concrete shall be mixed and transported in accordance with ASTM C-94 for Ready Mixed Concrete.

2.10 LEVELLING COURSE

.1 Levelling course shall be medium to coarse graded sand meeting the following gradation when tested to ASTM C136 and ASTM C117, and give a smooth curve without sharp breaks when plotted on semi-log grading chart. Refer to Table 3.2.3.1 in section 32.11.23 – Aggregate Base Course for Specifications of Aggregates.

3.0 Execution

3.1 GRADE PREPARATION

.1 Soft, yielding or unsuitable subgrade material shall be removed and disposed of, as directed by the Consultant, and replaced with approved material. The subgrade material shall be thoroughly compacted to 100% of Standard Proctor Density at optimum moisture to the depth specified in the detail drawings and finished to a smooth, uniform surface, true to established line and grade. subgrade preparation shall extend sufficiently beyond the edges of the structure to enable forming and construction of the Work.

The Contractor shall place and compact granular base course to 100% of Standard Proctor Density upon the prepared subgrade at the depth specified in the detail drawings, or as otherwise specified or directed by the Consultant. Granular base course material shall be placed to the widths as specified or as directed by the Consultant, and shall be thoroughly compacted to a smooth, uniform surface, true to established lines and grade. Granular base course material shall extend sufficiently beyond the edges of the structure to enable support, forming and construction of the Work.

3.2 FORMS

.1 Forms shall be of steel or wood of sufficient strength to resist the pressure of wet concrete, and the supply shall be sufficient to permit their remaining in place not less than 12 hours after concrete has been placed, or longer if the Engineer considers it necessary. The use of bent, twisted, battered or worn-out forms will not be permitted. Forms shall be held securely by approved methods to prevent movement and bulging when the concrete is placed. Forms will be checked for alignment and elevation by the Engineer before concrete is poured, and shall be cleaned and oiled before each use.

3.3 REINFORCEMENT

.1 Where required, reinforcement shall be secured in the location shown on the drawings and shall be free from mill scale, grease and rust immediately prior to placing concrete. Reinforcement shall be drilled and dowelled into existing concrete at all joints. Longitudinal bars shall extend through all contraction joints, and shall terminate a minimum of 50 mm from any expansion or construction joint. Bars shall overlap at splices by at least 300 mm.

3.4 PLACEMENT

.1 The concrete shall be placed as soon as possible after mixing, but not later than one hour after mixing has begun. Retempered concrete shall not be used. The concrete shall be transported by methods which will prevent segregation and deposited on the subgrade to that as little handling as possible is required.

.2 Concrete shall be placed continuously until a complete section between expansion joints has been poured.

.3 The concrete shall be thoroughly consolidated against and along the faces of the forms. Hand spreading shall be done with shovels, not with rakes, in order that the concrete will not be segregated. Precautions should be taken to prevent overworking of the concrete.

.4 Concrete shall not be placed on frozen bedding, or during rain or other adverse weather conditions.

.5 Concrete placement between construction joints shall be continuous. Where there is a delay of more than 30 minutes in the placement of concrete a construction joint shall be formed.

.6 Mechanical Extruding Machines:

.1 If an extruding machine is used in constructing curbs, curb and gutter, walk or combined curb and walk, the material excavated to accommodate the machine shall be either stockpiled at a specified location or windrowed to the centre of the street with a minimal disruption to traffic. After the installation of the concrete works the excavated material shall be replaced to the original street grade or the elevations designated by the Engineer and compacted to not less than 95% Standard Proctor Density. Granular material which may have existed shall be replaced on the street. Backfill material required behind curbs or walks shall be hauled in from surplus stockpiles or a location designated by the Engineer.

3.5 APPURTENANCES

.1 Appurtenances shall be located, examined for deficiencies and staked by the Contractor prior to work beginning on a particular section and any deficiencies noted must be reported to the Engineer immediately. Upon completion of a block of work, the Contractor shall relocate these structures and inspect them with the Engineer. Any damage which may have occurred during the concreting operations and deficiencies not previously reported to the Engineer, shall be repaired at the Contractor's expense.

3.6 FINISHING

.1 Surfaces shall be struck off and screeded to the slope, cross-section and elevation shown on the drawings and staked by the Engineer. The surface shall be consolidated and smoothed using a wood float. Light street trowelling shall be used followed by a uniform brush finish. After brushing and before the concrete has taken its initial set, surfaces shall be edged at all joints to prevent chipping of the concrete. No patching will be allowed. Exposed edges on sidewalks including contraction and surface joints, shall be tooled for a width of 50 mm and rounded to a radius of 6 mm, or as otherwise specified.

3.7 EXPANSION AND CONTRACTION JOINTS

.1 Contraction joints shall be constructed at 3 metre intervals, and shall not be less than 50 mm deep. In the case of monolithic or separate walks, an additional midway surface joint, 13 mm deep, shall be constructed in walks and shall not extend through the curb and gutter.

3.8 CURING

.1 All concrete shall receive two applications of membrane curing compound. The first application is to be applied after the disappearance of the water sheen and the final finishing of the concrete. During hot, dry, windy days, the first application shall be applied immediately after final finishing and before all free water on the surface has evaporated. The second application shall be made immediately at right angles to the first so that complete coverage on the surface is attained. Immediately after removal of the forms all exposed surfaces shall be thoroughly wetted with water and then sprayed with membrane curing compound. The membrane curing compound shall be applied in accordance with the manufacturer's instructions.

3.9 COLD WEATHER REQUIREMENTS

.1 When the temperature of the surrounding atmosphere is at, or below 4°C, the aggregate and the mixing water shall be heated. The aggregate and mixing water shall have a temperature of not less than 4°C and be entirely free of frozen materials. The aggregate shall not be heated to more than 60°C, and the concrete when deposited in the forms shall have a temperature of not less than 10°C nor more than 38°C. The concrete shall be maintained at a temperature of 10°C for not less than four days after placing.

3.10 TOLERANCES

.1 The finished surfaces of all concrete work shall be true to the required cross-section with a tolerance of plus or minus 6 mm from the required elevation and dimensions. Surface of curbs, gutters or walks shall not show any depressions or bumps exceeding 3 mm under a

straight edge 3 m long placed parallel to the curb or walk. Concrete not meeting the requirements specified shall be removed to the nearest joint and replaced at the Contractor's expense.

3.11 FIELD TESTS

.1 Tests shall be made of the concrete to ensure that it meets these specifications. Testing shall be done to conform to the following standard specifications:

Test	Current Issue of ASTM
Sampling of Fresh Concrete	C172
Test for Slump of Concrete	C143
Compression and Flexure Test	C31
Compressive Strength of Moulded Concrete Cylinders	C39
Measurement of Air Content	C173 or C231

.2 Three concrete cylinders shall constitute one test and shall be made from the same batch or load. They shall be stored undisturbed on site for 24 hours, covered with a plastic sheet to prevent loss of moisture. They shall then be delivered to an approved testing laboratory, and laboratory cured with one cylinder tested at seven days and the other two at twenty-eight days. A set of three cylinders shall be taken for every 100 m^3 of concrete poured, or as directed by the Engineer.

.3 When construction begins, the Engineer reserves the right to request additional cylinders to be made in order to establish a concrete strength pattern as quickly as possible.

.4 The Engineer or his representative shall make the cylinders and slump tests.

3.12 PENALTIES FOR INSUFFICIENT STRENGTH

.1 Where there are variations from specified design strength, the following adjustments will be made based on the 28 day, laboratory cured cylinders.

.1 When concrete strength of any set exceeds 95% of design strength, full payment for the work shall be made at the contract unit prices.

.2 When concrete strength of any set is greater than 80% but less than 95% of design strength, the price paid to the Contractor for the work represented by that set of cylinders shall be determined by the following formula:

$$P - \left[\frac{2P(A - B)}{A}\right]$$

Where:

P = unit price
A = specified strength
B = average 28 day cylinder strength.

.3 If concrete strength of any set is less than 80% of design strength, the work represented by that set of cylinders will be rejected.

.4 Where the average strength of all tests for the total work falls below design strength,

but above 95% of design strength, that work not already having a price adjustment under the preceding clauses shall be subject to the following adjustment. The price paid by the Contractor shall be determined by the following formula:

$$P - [\frac{2P(A - B)}{A}]$$

Where:

P = unit price
A = specified strength
B = average 28 day cylinder strength.

3.13 PROTECTION

.1 For a minimum of 7 days after finishing, or until the concrete has attained 70% of the specified concrete strength, whichever is greater; concrete shall be protected against damage by any form of traffic. The Contractor may block off areas containing fresh concrete to safeguard the Work from traffic.

Hot-weather curing requirements shall apply when the concrete is placed with an air temperature of 27ºC or higher, or when the air temperature is forecast to exceed this value during the 7 day curing period. During periods of hot-weather curing, the Contractor shall use a water spray or saturated absorptive fabric to achieve cooling by evaporation.

3.14 BACKFILLING

.1 For outlet gutters, sidewalks and monolithic curb, gutter and sidewalks, the Contractor shall backfill as soon as possible after the removal of forms. The backfill shall be mechanically tamped and trimmed. The backfill shall be mechanically tamped in maximum lifts of 150 mm to a minimum density of 95% Standard Proctor Density.

For curb and gutter the Contractor shall backfill behind the curb with suitable material after the seven day curing and protection period has elapsed. The backfill shall extend to at least 600 mm behind the curb and shall be compacted in two lifts. The densities shall be obtained by means of a hand operated mechanical tamper or other equipment as approved by the Consultant.

Organic soils shall not be permitted for backfilling, except where topsoil is specified for the top 100 mm of fill.

3.15 FINAL CLEANUP

.1 As the work progresses, clean up the site and all areas in which work has been done shall be left in a neat and presentable condition. All gutters and street drainage ditches which have been blocked as a result of the Contractor's trenching operation shall be restored or repaired at the Contractor's expense.

.2 The Contractor shall, at his own expense, dispose of all surplus excavated material, organic soil, rock, boulders and pieces of concrete and masonry, including those less than 0.1 m^3 in volume at a location designated by the Engineer or Owner.

3.16 CONCRETE DETERIORATION

.1 Concrete that shows surface scaling, deterioration or loss of cement or aggregate during the maintenance period will be rejected and require removal and replacement by the Contractor at no cost to the Owner.

END OF SECTION

EDS

EXTERIOR SITE FURNISHINGS

1.0 GENERAL

1.1 REFERENCE STANDARDS

.1 All site furnishings shall be installed as per manufacturer's instructions and shall be ordered immediately after award of contract.

1.2 RELATED REQUIREMENTS

.1 Section 31 00 99 – Earthwork

.2 Section 32 16 15 – Concrete Walks, Curbs and Paving

1.3 ACTION AND INFORMATIONAL SUBMITTALS

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

.2 Product Data:

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

.3 Shop Drawings

.1 Submit shop drawings indicating dimensions, sizes, assembly, anchorage and installation details for each furnishing specified.

1.4 CLOSEOUT SUBMITTALS

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

1.5 DELIVERY, STORAGE AND HANDLING

.1 Deliver, store and handle materials in accordance with manufacturer's written instructions.

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

.3 Storage and handling requirements:

.1 Store materials in dry location and in accordance with manufacturer's recommendations in clean, dry, well-ventilated area.

.1 Store and protect furnishings from nicks, scratches, and blemishes. Replace defective or damaged materials with new.

.4 Develop Construction Waste Management Plan and Waste Reduction Workplan related to Work of this Section.

.5 Packaging Waste Management: remove for reuse or return to manufacturer.

1.6 MEASUREMENT AND PAYMENT

.1 Measurement unit for each unit of furniture shall be per each component installed.

.2 Payment for this work shall be full compensation for the supply and install all site furnishing components as detailed on the drawings and specifications, plus any other related work not paid for elsewhere.

2.0 PRODUCTS

.1 See Landscape Architectural drawings for site furnishings – manufacturer, supplier and model number/series.

2.1 PREPARATION

.1 Locate and protect utility lines.

.2 Notify and acquire written acknowledgment from utility authorities before beginning installation *Work*.

2.2 INSTALLATION

.1 Assemble in accordance with manufacturer's written recommendations and *approved Shop Drawings*.

.2 Install true, plumb, anchored firmly supported, as indicated by approved *Shop Drawings*.

.3 Touch-up damaged finishes to the approval of the *Consultant*.

2.3 CLEANING

.1 Leave work area clean at end of each day.

.2 Final Cleaning: upon completion remove surplus materials, rubbish, tools and equipment. All exposed treaded rod or bolt ends shall be cut flush with the top of nuts.

.3 Waste Management: separate waste materials for reuse or recycling.

2.4 PROTECTION

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

END OF SECTION

EDS

TOPSOIL PLACEMENT AND GRADING

1.0 GENERAL

1.1 REFERENCE STANDARDS

.1 Canadian Landscape Standard, Second Edition, available from the Canadian Society of Landscape Architects

1.2 RELATED REQUIREMENTS

.1 Section 32 93 10 - Trees, Shrubs and Ground Cover Planting

.2 Sodding 32 92 23 - Sodding

1.3 TESTING

.1 Testing of topsoil: *Contractor* shall be responsible to coordinate and pay cost of tests as required. The quality of all stripped, stockpiled and imported topsoil shall be tested prior to using for new soft landscaping.

.2 Testing shall determine the agricultural capability of the proposed soils used. This includes as a minimum; particle size analyse, soil textural classification, NPK (nitrate-nitrogen, available phosphorus, available potassium), extractable sulphur, soil pH, salinity (EC), SAR (sodium sorption ratio) % of OM (organic matter).

1.4 MEASUREMENT AND PAYMENT

.1 Topsoil placement and fine grading measurement and payment shall be per square metres as per the schedule of quantities and as determined from field measurements as required. Payment for this work shall be full compensation for subgrade preparation, transporting material from stockpiles on site, spreading, fine grading, plus any other related work not paid for elsewhere.

2.0 PRODUCTS

2.1 MATERIALS

.1 Reuse existing screened and raw topsoil stripped from site and stockpiled on site during stripping and grading operations. The topsoil shall be a fine friable medium loam, capable of sustaining good agricultural growth, meeting accepted horticultural practices and approved by Consultant. Topsoil shall meet the following requirements:

.1 Contain a minimum 5% organic matter for clay loams and minimum 6% for sandy loams to a maximum of 8%.

.2 Acidity range pH of 6.0 to 7.5.

.3 Sand content 20-40%, Silt content 20-40% and Clay content 20-40%.

.3 Free of subsoil, roots, vegetation, clods, sticks, concrete, gravel, stones larger than 50mm in greatest dimension, or any other extraneous material. Imported topsoil is to

be screened. On-site source topsoil to be cleaned and these undesirable materials removed from the site and disposed of appropriately.

.4 Topsoil containing known and actively growing noxious weeds is not acceptable

2.2 HERBICIDE

.1 "Round-Up" or other approved chemical base glysophate equal.

3.0 EXECUTION

3.1 TOPSOIL DEPTH

.1 Topsoil depth in all sod areas to be a minimum of 400mm for planting beds and planters, and min. 200mm for sod and seed areas. Depths measured after light compaction of placed topsoil.

3.2 PREPARATION

.1 Apply herbicide 10 days in advance of grading to kill existing weeds and grasses on-site, if required by the *Consultant*.

.2 Fine grade subgrade, within 50 mm of design rough grade.

.3 Fine grade subgrade, eliminating uneven areas and low spots. Remove debris, roots, branches, stones in excess of 50 mm diameter, and building materials. Remove subsoil that has been contaminated with oil or gasoline.

3.3 SPREAD TOPSOIL

.1 Spread dry topsoil during dry weather over approved, dry unfrozen subgrade, where indicated.

.2 Bring topsoil up to finished grade.

.3 Manually spread topsoil around existing trees and plant to prevent damage by grading equipment.

.4 Care must be taken not to raise existing soil levels within drip line of existing plant material.

.5 Apply 10-47-0 or equivalent fertilizer at a rate of 450 kg/ha.

.6 Prepare loose friable seed bed by means of rototilling or the use of a gill or soil conditioner to a depth of 100 mm.

.7 Dispose of debris.

.8 Level surface to final design grades within a tolerance of 25 mm and ensure positive drainage.

.9 Ensure that the topsoil is properly blended into the adjacent property.

3.4 TIMING

.1 Generally, work shall not commence in the spring until the ground has completely thawed.

.2 Topsoil shall be placed after it has been tested and approved, and only when seeding can proceed immediately afterwards.

3.5 EXISTING UTILITIES

.1 All existing utility appurtenances shall be adjusted to final finished grade elevations prior to topsoiling of site.

.2 Prevent damage to all existing features: fencing, trees, landscaping, natural features, buildings, culverts and utility lines which are to remain. Repair any damage.

3.6 CLEANUP

.1 Remove all waste materials and debris from the site on a regular basis. Burying of debris is not permitted. Leave site and surrounding public and private properties completely free of all debris.

END OF SECTION

EDS

SODDING

1.0 GENERAL

1.1 RELATED WORK

.1 Topsoil Placement and Grading, Section 32 91 19

.2 Landscape Maintenance, Section 32 94 14

1.2 SOURCE QUALITY CONTROL

.1 *Contractor* or Client to nominate the source of the sod and approved by the *Consultant*.

1.3 SCHEDULING

.1 Schedule sod laying to coincide with topsoil operations.

1.4 MEASUREMENT PROCEDURES

.1 Sod and seed areas will be measured in square metres. Cutting grass and pegging sod in place as required by this Section in incidental to this work, and no additional payment will be made.

2.0 PRODUCTS

2.1 MATERIALS

.1 Nursery sod: quality and source to comply with standards outlined in "Guide Specification for Nursery Stock", published by Canadian Nursery Landscape Association (www.canadanursery.com). The seed mixture to be confirmed based on the availability of noted products/blends or approved equal. Refer to landscape architectural drawings for seed mixes.

.2 Wooden pegs: 17 mm x 17 mm x 200 mm.

.3 Mesh: jute, nylon, or plastic erosion control netting approved by *Consultant*.

.4 Fertilizer: complete synthetic slow release fertilizer with maximum 35% water soluble nitrogen.

.5 Herbicide: type, rate, and method of application subject to approval by *Consultant*.

2.2 WATER

.1 Free of impurities that would inhibit growth. Supplied by *Contractor*.

3.0 EXECUTION

3.1 WORKMANSHIP

.1 Do not perform work under adverse field conditions such as frozen soil, excessively wet soil or soil covered with snow, ice, or standing water.

.2 Remove and dispose of weeds, debris, stones greater than 50 mm in diameter and larger, soil contaminated by oil, gasoline, and other deleterious materials.

3.2 PREPARATION OF SURFACE

.1 Verify that grades are correct. If discrepancies occur, notify *Consultant* and do not commence *Work* until instructed by *Consultant*.

.2 Fine grade surface free of humps and hollows to smooth, even grade, to elevations indicated to tolerance of plus or minus 25 mm.

.3 Ensure areas to be sodded have been scarified to depth of placed topsoil. Fine grade free of humps and hollows and free of deleterious and refuse materials.

3.3 LAYING OF SOD

.1 Prior to sodding, obtain approval from *Consultant* that finished grade and depth of topsoil are satisfactory.

.2 Lay sod within 24 hours of being delivered to site.

.3 Sodding during excessively wet conditions, at freezing temperatures or over frozen soils is not acceptable.

.4 Lay sod in rows, perpendicular to slope, and with joints staggered. Butt sections closely without overlapping or leaving gaps between sections or existing grassed areas. Cut out irregular or thin sections with sharp implements.

.5 Provide close contact between sod and soil by light rolling. Use of heavy roller to correct irregularities in grade is not permitted.

.6 Water sod immediately after laying to obtain moisture penetration into top 100 mm of topsoil.

3.4 LAYING OF PEGGED SOD

.1 Place mesh on top of topsoil of slopes as indicated. Secure mesh in place with wooden pegs at maximum intervals of 1000 mm. Cover mesh lightly with topsoil.

.2 Lay sod sections perpendicular to slopes steeper than 3:1, or as indicated, and secure with wooden pegs. Place pegs three per m2, 100 mm below top edge to prevent shifting of sod and drive pegs flush with top of sod soil. Place six pegs around entire edge of each square metre of sod in drainage swales.

3.5 MAINTENANCE PRIOR TO CONSTRUCTION COMPLETION CERTIFICATE

.1 Maintain sodded and seeded areas from start of installation until acceptance.

.2 Water sodded areas in sufficient quantities and at frequency required to maintain soil under sod continuously moist to depth of 70 to 100 mm.

.3 The grass to shall be maintained to a cutting height of 75mm and shall not be permitted to exceed a height of 150mm. Remove clippings that will smother grassed areas.

.4 Maintain sodded areas free of noxious or prohibited noxious weeds.

3.6 ACCEPTANCE FOR ISSUE OF CONSTRUCTION COMPLETION CERTIFICATE

.1 Sodded areas will be accepted by Consultant provided that:

.1 Sodded areas are properly established.

.2 Sod is free of bare and dead spots, repair rutting and areas of settlement, and without noxious or prohibited noxious weeds as defined under the Alberta weed Control Act.

.3 No surface soil is visible when grass has been cut to height of 50 mm.

.4 Sodded areas and turf grass shall be maintained to a cutting height of 75mm and shall not be permitted to exceed a height of 150mm.

.2 Lawns sodded in fall will be accepted after June 30 the following year provided acceptance conditions are fulfilled.

3.7 MAINTENANCE DURING WARRANTY PERIOD

.1 Refer to Section 32 95 00 – Exterior Landscape Maintenance.

END OF SECTION

EDS

PLANTING OF TREES, SHRUBS AND GROUND COVERS

1.0 GENERAL

1.1 RELATED WORK

.1 Site Grading – Section 31 22 13

.2 Topsoil Placement and Grading – Section 32 91 19

1.2 REFERENCE STANDARDS

.1 The installation of trees, shrubs and ground covers shall be in accordance with the Canadian Standards for Nursery Stock, Current Edition, except where specified otherwise.

1.3 SOURCE QUALITY CONTROL

.1 *Consultant* will be provided the opportunity to inspect trees at the nursery prior to delivery to site. Any tree not pre-approved for delivery may be rejected.

.2 Obtain approval from the *Consultant* of plant material at source prior to replacement or planting.

.3 Imported plant material must be accompanied with necessary permits and import licenses. Conform to Federal and Provincial Regulations.

1.4 SCHEDULING

.1 Obtain approval from the *Consultant* of schedule, seven (7) days in advance of shipment of plant material.

.2 Schedule to include:

- .1 Date for selection of plant material or representative sample at source by *Consultant*.
- .2 Quantity and type of plant material.
- .3 Shipping dates.
- .4 Arrival dates on site.
- .5 Planting dates.

1.5 PRODUCT DATA

.1 Provide product data for

- .1 Fertilizer.
- .2 Anti-desiccant.
- .3 Guying assembly including collar, guying rope, and anchors.
- .4 Mulch.
- .5 Root barriers.

1.6 SAMPLES

.1 Provide samples for mulch.

1.7 DELIVERY, STORAGE, AND PROTECTION

.1 Protect plant material from frost, excessive heat, wind, and sun during delivery.

.2 Immediately store and protect plant material which will not be installed within one day after arrival at site in storage location approved by Consultant.

.3 Protect plant material from damage during transportation:

.1 When delivery distance is within 5 km of Hamlet Limits, use tree spade operated at a maximum speed of 50 km/hr.

.2 When delivery distance is 5 - 30 km, or vehicle speed is less than 80 km/hr, tie tarpaulins around plants or over vehicle box.

.3 When delivery distance exceeds 30 km or vehicle travels at speeds over 80 km/hour, use enclosed vehicle.

.4 Protect stored plant material from frost, wind, sun, and as follows:

.1 For bare root plant material preserve moisture around roots by heeling-in or burying roots in sand, topsoil, or sawdust and watering to full depth of root zone.

.2 For pots and containers maintain moisture level in containers. Heel-in fibre pots.

.3 For balled and burlaped and/or wire basket root balls, place to protect branches from damage. Maintain moisture level in root zones.

1.8 MEASUREMENT PROCEDURES

.1 Measurement for trees and shrubs will be based on a unit price per tree or shrub for the supply of all materials, labour, and equipment to prepare soil bed, plant trees/shrubs, cover planting bed with mulch, and maintain plant material during the warranty period.

1.9 WARRANTY

.1 The warranty period for plant material shall be two years. End of warranty inspection will be conducted by the *Consultant*.

.2 *Consultant* reserves the right to extend *Contractor's* warranty responsibilities on specific trees for an additional one year if, at end of initial warranty period, leaf development and growth is not sufficient to ensure future survival.

.3 Any disease or insect infestations must be under control by the end of the warranty period. Any deformed or damaged plants must be removed and replaced.

.4 Specific tree or shrub replacements shall be under warranty for two years from the date of replacement.

2.0 PRODUCTS

2.1 PLANT MATERIAL

.1 Type of root preparation, sizing, grading, and quality: comply with Canadian Standards for Nursery Stock, Current Edition of Canadian Nursery Landscape Association (www.canadanursery.com).

.2 Supply trees and shrubs to the sizes as specified in the detailed drawings

.1 Tree caliper is to be measured as diameter at breast height (approx. 1.2m of the ground)

.3 Source of plant material to be in accordance with current edition of the Canadian Standards for Nursery Stock, must be grown in Zones 2A, 2B, and 3A of the Canadian Hardiness Map. Plants grown outside of the previously listed Zones must be approved by the *Consultant*.

.4 Plant material: structurally sound with strong fibrous root system, free of disease, insects, defects, or injuries.

.5 Plant material: plant material that is balled and burlaped or in wire baskets must be planted in the current year's harvest. Container grown stock must be grown in the container for a minimum of three (3) months, or have a well-established root system reaching the sides of the container, so as to maintain a firm root ball.

.6 Trees: with straight trunks, well and characteristically branched for species except where specified otherwise.

.7 Trees larger than 130 mm in calliper: half root pruned during each of two successive growing seasons, the latter at least one growing seasons prior to arrival on site.

.8 Bare rootstock: nursery grown, in dormant stage, not balled and burlaped or container grown.

.9 Collected stock: maximum 40 mm in calliper, with well developed crowns and characteristically branched, no more than 40% of overall height may be free of branches unless otherwise specified. Note: Collected Stock are not acceptable for park or boulevard tree planting. They may be acceptable in a reclamation area only.

.10 Conifers are to exhibit strong top leaders (not sheared in previous years) and be planted in the same year of harvest.

.11 Plant material to be inspected by the *Consultant* on site prior to planting.

.12 Special conditions will apply for spading of trees with a caliper greater than 180 mm. Contact Town staff for information.

2.2 WATER

.1 Free of impurities that would inhibit plant growth.

2.3 GUYING ROPE

.1 Ropes for fastening to anchors shall be 6 mm nylon capable of some 'give' and able to withstand high wind pressure. Pliable 12-gauge wire with 2-ply rubber hose to protect trunk is also acceptable

2.4 STAKES

.1 Stakes required for the support of the guyed trees 50 mm – 80 mm shall be metal "T" bars 1800 mm long or approved equal.

.2 Stakes for the support of guyed trees greater than 80 mm shall be 50 mm x 50 mm diameter by 700 mm long wooden stakes or iron/metal "T" bar stakes (above) or 25 mm diameter galvanized pipes that are 2,150 mm long.

2.5 TRUNK PROTECTION

.1 Commercial tree trunk wrap to be installed at planting time on all new Mayday, Amur Cherry and Chokecherry Trees. Wrap to be removed after a minimum of one calendar year.

.2 Plastic Tree Collars: Black plastic drainage tubing, split lengthways, 100 mm in diameter & 200-250 mm high or, commercial grade plastic trunk protectors.

.3 Wire mesh: galvanized, electrically welded 1.4 mm wire with 25 mm x 25 mm mesh and fastener are recommended near water bodies of known/historical beaver populations.

.4 Plastic: perforated spiralled strip or tubes.

2.6 MULCH

.1 Double Shredded Bark Mulch: varying in size from 25 mm to 50 mm in diameter, consisting of a mixture of coniferous and deciduous material.

.2 Wood chip: varying in size from 50 mm to 50 mm and 5 mm to 20 mm thick.

.3 Shredded wood: varying in size from 25 mm to 50 mm in length.

.4 No other mulch types will be permitted.

Note: all mulch and wood chips used shall be free of pest related insects and diseased material.

2.7 FERTILIZER

.1 Plants: At planting time:

.1 Fertilizer shall be standard commercial grade with a guaranteed chemical analysis. Fertilizer shall be water-soluble granular type.

.2 Fertilizer content requirements are:

- 11% Total Nitrogen
- 58% Available Phosphoric Acid
- 0% Potash

.2 Plants: Coniferous: required products during maintenance period

.1 Fertilizer shall be standard commercial grade with a guaranteed chemical analysis. Fertilizer shall be water-soluble granular type.

.2 Fertilizer content shall be:

- 30% Total Nitrogen
- 10% Available Phosphoric Acid
- 10% Potash

(RX 30, MURACID, used as per manufacturer's instructions.

.3 Plants: Deciduous: required products during maintenance period

.1 Fertilizer shall be standard commercial grade with a guaranteed chemical analysis. Fertilizer shall be slow-release coated fertilizer: (Apex, Nutricoat, Osmicoat) , with a release period of 3-4 months.
Fertilizer content shall be:

- 21% Total Nitrogen
- 5% Available Phosphoric Acid
- 6 % Potash

2.9 WEED KILLER

.1 Broadleaf weed killer - Type 1: 2-4-D Amine for broadleaf plants (Par 3, Killex). Type 2: Mecoprop for clover, chickweed and other species resistant to 2-4-D.

.2 When herbicides are used, they shall be applied in accordance with manufacturer's recommendations and by a licensed applicator. Control for noxious weeds specific to species and manufactures rates/recommendations.

2.10 EDGING FOR SHRUBS

.1 Commercial lawn edging with anchor stakes & connectors shall be 'Black Diamond' or an equivalent professional grade approved by the Municipal Consultant, black polyethelene 5" lawn edging.

2.11 ANTI-DESICCANT

.1 Wax-like emulsion

2.12 FLAGGING TAPE

.1 Fluorescent, orange colour.

3.0 EXECUTION

3.1 PREPLANTING OPERATIONS

.1 Verify all underground utility locations and maintain setbacks in accordance with local standards.

3.2 EXCAVATION AND PREPARATION FOR PLANTING

.1 Preparation of planting soil is specified in Section 32 91 19.

.2 Stake out locations of planting holes as per the design drawings.

.3 Prepare planting hole as follows:

.1 Depth of hole to be equal to height of root ball. Minimum depth of hole to be 400 mm.

.2 Hole volume to be a minimum of four times the root ball diameter, 400mm minimum depth and loosely backfilled with topsoil compacted to no more than 1400 Kg/m3or 1.4 g/cm3 bulk density.

.4 Remove subsoil, rocks, roots, debris, and toxic material from excavated material that will be used as planting soil for trees and individual shrubs. Dispose of excess material.

.5 Remove water which enters excavations prior to planting. Notify Consultant if water source is groundwater.

3.3 PLANTING

.1 Hedge plants shall be spaced 1.0 m apart.

.2 Place plant in centre of hole and adjust height until original growing level matches surrounding ground level. Use topsoil to adjust height in hole. Lift plant by root ball only.

.3 Remove root ball support material as follows:

.1 Wire baskets and burlap container:

.1 Remove bottom rings before placing tree in hole.

.2 Place tree at proper height in the hole and remove top two rings.

.3 Remove accessible burlap.

.2 Fibre pots:

.1 Remove entire pot.

.2 Place in hole to proper height.

.3 On shrubs – cut roots of bound plants to stimulate new growth.

.3 Bare root ball preparation:

.1 Remove all damaged tissue, taking care not to damage the remaining root material and leaving a clean cut surface.

.2 Place in hole on firm base to proper elevation.

.4 Tree spade:

.1 Prepare planting area as specified in Section 32 91 19.

.2 Remove soil plug using same tree spade used to relocate tree. Place tree to grade.

3.4 SITE WORK AFTER PLANTING

.1 Backfill any voids between spaded plug and the native soil with topsoil in 150 mm lifts. Soil to be hand tamped only, maximum density not to exceed 1.4 Kg/m3.

.2 Construct 100 mm high water reservoir berm using topsoil at the outside edge of prepared root zone.

3.5 WATERING

.1 Add water to reservoir within two hours of plants being installed.

.1 Minimum amount: 70 litres of water per 25 mm of trunk DBH (diameter at breast height). Water weekly for the first month after planting, then water a minimum of 12 times per growing season with last water prior to freeze up

during the warranty period. Additional water may be required when recommended by the *Consultant*.

.2 Refill voids with topsoil to re-establish grade.

.3 Surface water only, subsurface probing is not permitted.

.4 Provide the *Consultant* with a copy of the watering schedule in accordance with Section 01 32 16.

3.6 MULCH

.1 Bark chip mulch or an approved equivalent shall be supplied and placed by the Contractor to a depth of 75 mm in all tree rings and shrub beds. It shall be kept 100 mm back from the trunk or stem of all plants. Prior to mulching all planting pits and shrub beds shall be cleared of grass and weeds to the full area of the soil ring or plant bed.

3.7 TREE CARE AFTER PLANTING

.1 Remove only broken and dead branches in accordance with good horticultural practice and ISA Standards.

3.8 TREE SUPPORTS

.1 Use tree anchors when specified or directed by *Consultant*.

.2 Use type as specified on detailed drawings.

.3 Double stakes with ties are to be placed on the West and East sides of the tree. Trees with three stakes shall have two stakes facing the prevailing wind.

.4 Rope/wire for trees requiring three guys shall be looped around the tree and anchored in such a manner that the looped rope can be kept reasonably taut with some slack at all times. Trees requiring three guys and a turnbuckle shall have a turnbuckle inserted in each guy in such a manner that the guy can easily be kept taut, with some slack.

.5 Guy ropes/wires shall be covered with a protective material to avoid rubbing at points of contact with the bark. Guys shall be placed around the trunk at points to ensure adequate support of the tree and in such a manner that the branches will not be subjected to undue strain.

.6 Ties shall be placed around the trunk to provide adequate support and prevent damage.

.7 All stakes to be removed one year from date of planting. Exception from the staking requirement for deciduous stock on a site basis with approval of the Municipal Consultant. Evergreen stock shall not be exempt from the staking requirements.

.8 Place a 2 m long stake driven 600 mm into the soil outside of the root ball through the tree well. Use hose and rope to secure the tree to the stakes

.9 After tree supports have been installed remove broken branches with clean, sharp tools in accordance with good horticultural practice and ISA Standards.

3.9 MAINTENANCE PRIOR TO CONSTRUCTION COMPLETION CERTIFICATE

.1 Perform following maintenance operations from time of planting to time of issue of the Construction Completion Certificates.

.1 Water to maintain soil moisture conditions for optimum establishment, growth, and health of plant material without causing erosion. Minimum amount: 70 litres of water per 25 mm of trunk DBH (diameter at breast height). Water weekly for the first month after planting and then water a minimum of 12 times per growing season during the warranty period. Water thoroughly in late fall prior to freeze-up. Additional water may be required when recommended by *Consultant*.

.2 Remove weeds before they set seed, on a monthly basis or more frequently if required.

.3 Replace or respread damaged, missing, or disturbed mulch. Taper away from the trunks of trees and the crowns of shrubs.

.4 Apply pesticides in accordance with federal, provincial, and municipal regulations as and when required to control insects, fungus, and disease. Obtain product approval from *Consultant* prior to application.

.5 Remove dead or broken branches from plant material in accordance with good horticultural practice and ISA Standards.

.6 Keep trunk protection and guy ropes in proper repair and adjustment.

.7 Remove and replace dead plants and plants not in healthy growing condition. Make replacements in same manner as specified for original plantings.

3.10 ACCEPTANCE FOR ISSUE OF CONSTRUCTION COMPLETION CERTIFICATE

.1 Plant material will be accepted by *Consultant* after planting operation is completed provided that plant material exhibits healthy growing condition and is free from disease, insects, and fungal organisms. Application for CCC is subject to all landscaping being completed within the appropriate development phase and a verified to-date watering schedule being provided at the time of inspection.

3.11 MAINTENANCE DURING WARRANTY PERIOD

.1 Refer to Section 32 95 00 – Exterior Landscape Maintenance.

END OF SECTION

EDS

EXTERIOR LANDSCAPE MAINTENANCE

1.0 GENERAL

1.1 HOURS OF WORK

.1 Perform maintenance work during regular working hours of 07:00 to 18:00, Monday to Friday. Maintenance may be prohibited during scheduled public events at the discretion of the *Owner*. A schedule of events will be provided to the *Contractor*.

.2 Obtain the *Owner's* approval to perform maintenance outside of regular working hours.

1.2 MAINTENANCE LOG

.1 Keep daily maintenance log throughout contract. Complete log during each day of maintenance activity. Submit legible and signed copy of maintenance log data to the *Consultant* each week for verification.

.2 Failure to maintain and submit log to the *Owner* as required may delay payment of invoice to *Contractor*.

.3 The *Owner* may extend maintenance period at no additional cost or reduce payments: when *Contractor* fails to keep or submit an accurate log; when inadequate site maintenance occurs; or when unsatisfactory work is performed.

1.3 REGULATORY REQUIREMENTS

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

1.4 DELIVERY, STORAGE AND HANDLING

.1 Deliver and store fertilizer and seed in waterproof bags showing mass, analysis and name of manufacturer.

.2 Provide storage space for material and equipment.

1.5 DAMAGE TO PROPERTY

.1 Repair and pay for damages caused by contractor's personnel and equipment during the term of the *Contract*.

.2 Immediately report damages to the *Owner*.

.3 Obtain *Consultant's* approval for repairs and replacements. Return grass areas, plants, equipment, paved surfaces and buildings to their original condition before damage.

.4 Scalping of turf, mechanical damage to trees and shrubs including tearing of bark, improper pruning of plants, and damages resulting from improper use of chemical pesticides and fertilizers will be considered damage.

.5 Complete repairs and replacements within seven days from date of approval given for repair or replacement.

1.6 MAINTENANCE PERIOD

.1 The *Contractor* will protect and maintain all sodded areas until acceptance. Acceptance will be given when sodded areas have received a minimum of 8 waterings, have sufficient

root establishment to prevent lifting, can survive without supplemental watering and meets the minimum conditions for acceptance as per The *Owner's* requirements to assume maintenance.

.2 The *Contractor* will maintain trees, shrubs and shrub beds for a period of 2 years after a Construction Completion Certificate is issued.

.3 The *Contractor* will protect and maintain all seeded areas until acceptance. Acceptance will be given when seeded areas have received a minimum of 8 waterings, has minimum 95% coverage of vigorously growing grass, is entirely weed free, can survive without supplemental watering and meets the minimum conditions for acceptance as per The *Owner's* requirements to assume maintenance.

2.0 PRODUCTS

2.1 FERTILIZER

.1 Turf fertilizer: as per Owner's Representative, recommended fertilizer. Do not use any "weed and feed" fertilizer unless authorized by the *Consultant*. Type and use of turf fertilizer on site to meet the following:

- .1 Organic Fertilizer: balanced, high quality, slow release organic granular fertilizer with minimum 35% to 40% of nitrogen content in a water-insoluble form.
- .2 Commercial Fertilizer: dry quick release mixed chemical granular fertilizer containing two or more recognized plant nutrients that promote plant growth.

.2 Plant fertilizer: as directed by *Consultant* in conformance with project specifications.

2.2 TOPSOIL

.1 Refer to specification Section 32 91 19.

3.0 EXECUTION

3.1 GENERAL WORKMANSHIP

.1 The *Consultant* will be the "Sole Judge" for assessing the *Contractor's* maintenance and workmanship performance.

.2 Provide the *Consultant* with a detailed maintenance schedule at commencement of maintenance. List all regular, weekly and monthly maintenance services that will be completed. Obtain approval of schedule from the *Consultant*.

.3 Schedule timing of operations to growth, weather conditions and use of site. Do each operation continuously and complete within reasonable time period.

.4 Do not perform work in any location or manner that may endanger the health and safety of the public.

.5 Supply sufficient experienced manpower to complete all required maintenance services as scheduled to good horticultural practice and in accordance with specifications.

.6 Perform all landscape maintenance services in contract under the site direction and supervision of an experienced and certified Landscape Journeyman Gardener or a qualified experienced person knowledgeable in horticulture meeting the *Consultant's* approval.

3.2 SPRING CLEAN-UP

.1 Maintenance period will commence in early May on such date as mutually agreed upon by the *Owner* and the *Contractor*.

.2 Complete spring clean-up by May 15 or as soon as working conditions are favourable.

.3 Rake, clean and remove all dead vegetation, leaves, debris, and snow mould from turf areas.

.4 Clean planting beds and planters of debris and dead plant material and remove from site. Loosen and lightly cultivate soil without disturbing roots of permanent plantings.

3.3 TURF MAINTENANCE

.1 Sod Replacement:

.1 Cut out and remove areas of dead, or unhealthy sod or which has been damaged by any means or cause and replace with new healthy sod. All repair areas to be square or rectangular.

.2 Rake existing topsoil before installing new sod. Add topsoil to fill uneven and low areas.

.3 Butt new sod tightly to adjacent existing sod. Topsoil open and exposed joints.

.4 Water to ensure penetration of 80 mm and at frequent intervals to maintain healthy growth.

.2 Watering – Mowed Areas:

.1 Areas with no underground irrigation systems: supply labour, hoses, and sprinkler equipment, to provide adequate watering. Provide clean water, water truck and accessories when necessary or directed by The Landscape Architect to apply water efficiently and adequately to keep turf healthy and vigorous.

.2 Water turf deep and thoroughly to keep turf and underlying soil from drying out and to maintain healthy vigorous growing conditions. Avoid shallow and frequent waterings. Apply water during early morning to achieve efficient use of water.

.3 Provide 25 to 40 mm of water weekly including natural rainfall to wet upper 100 to 150 mm of soil in well maintained and manicured turf areas. In other low maintained turf areas, provide 15 to 25 mm of water minus any rainfall each week, only when necessary to keep turf healthy.

.4 Maintain turf at 60 mm during growing season using mowers with sharp blades to cut turf cleanly. Turf mowed with dull blades that tears and leaves ragged leaf edges is unacceptable.

.5 Cut lawn areas on a regularly scheduled weekly basis during periods of active growth and more frequently during accelerated growth periods to maintain lawn at required height. During periods of slower growth cut turf on a biweekly basis or as needed.

.6 Mow turf preferably when dry and often enough so that not more than one-third of the grass leaf blade is removed during a single cutting.

.7 When necessary during periods of extended moisture and excessive turf height increase mower blade height and cut turf. After clippings dry, lower blade height to original height and double cut by mowing lawn a second time.

.8 Remove excessive clippings that shade and smother the turf and present an unsightly appearance.

.9 During extended periods of hot dry weather mow turf less frequently. When necessary, increase mowing height and mow during early morning or late evening.

.10 Leave small and unnoticeable grass clippings on lawns that are mowed regularly and frequently at desired height. Remove heavy clipping deposits that result from infrequent mowing of excessive long turf. Use mulching mower and double cut long clippings when necessary.

3.4 SHRUB MAINTENANCE

.1 Maintenance of Plant Beds:

.1 Remove and dispose of debris, rubbish, animal waste, dead and unhealthy plants on a regular weekly basis.

.2 Edge plant beds evenly to depth of 100 mm monthly or as required to maintain original line and shape.

.3 Respread disturbed mulch or replace to maintain original mulch depth.

.2 Plant Replacement

.1 Promptly replace plants that die or become unhealthy during the maintenance and warranty periods. All replacement plants shall be noted in maintenance log.

.2 All plants must be in healthy and vigorous growing condition at end of maintenance period.

.3 Watering of Plants:

.1 Deep water trees and shrubs thoroughly on a regular basis using a deep root feeder to maintain adequate moisture level within root systems and ensure healthy vigorous growing conditions.

.2 Thoroughly hand water all planters weekly or more frequently to maintain adequate moisture within the root systems and to ensure healthy growth.

.3 Supply clean water and water truck including all accessories to adequately water and maintain plants where water is not available or inadequate.

3.5 PESTS: WEED, INSECT AND DISEASE CONTROL

.1 Insect and Disease Control:

.1 Make weekly inspection of lawns and plants for insect and disease infestations. Apply chemicals based on development stage of insects' life cycles.

.2 Repair and pay for damages caused by application of chemicals.

.3 Effectiveness of treatment program to be determined by inspection by the *Consultant*. Repeat as required.

3.6 WINTER PREPARATION

.1 Rake leaves as they shed and remove from site. Continue to perform this service until leaves cease to fall.

.2 Protect plants from rodent, animal and sun damages by use of appropriate materials. Use chemical repellent, rodent wire mesh, plastic perforated spiral strip, burlap, or other approved material.

.3 Winterize irrigation system and contollers.

END OF SECTION