Lac La Biche County

McArthur Park Phase 2 Redevelopment

Request for Tenders (RFT): Construction

PS-72-2024-02

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: Thursday, March 28th - 12:00:00 noon local time

Consultant Project No. 32233

CCDC 4 - UNIT PRICE CONTRACT

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INVITATION TO BID

INVITATION TO BID

Owner: **Lac La Biche County**

Project: **McArthur Park Phase 2 Redevelopment**

Reference No. 32233

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 small paved parking lot area, concrete sidewalk and curbing;
- electrical works including overhead lighting, bollards and conduit / cables;
- asphalt and granular trails; and
- site maintenance to achieve full establishment of all grass/plant materials.

The successful Bidder will be required to enter into a CCDC 4 – unit price contract.

Responses must be submitted by hard copy, delivered to the Lac La Biche County office at the address noted on the cover page (Bold Centre). The closing date and time for this tender is **Thursday March 28th, 2024 at 12:00:00 noon local time**. Proponents must submit their Bids in hard copy format delivered to the Closing Location and be received before the Closing Date and Time.

The close of questions is end of business day on Friday, March 22nd, 2024 to jbuchko@edsgroup.ca and responses will be provided no later than end of business day on Monday, March 25th, 2024.

Bid Documents and reference material for this contract will only be distributed electronically in digital format (.pdf format) through the tendering website at:

www.purchasingconnection.ca

Electronic documents may include:

- Contract Front End, Specifications and Appendices
- Issued for Tender Drawings
- Non-Bid Information
- Any Addenda

Documents will be available for downloading on or after March 12th, 2024.

CCDC 4 – UNIT PRICE CONTRACT
LAC LA BICHE COUNTY
MCARTHUR PARK PHASE 2 REDEVELOPMENT

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CCDC 4 – UNIT PRICE CONTRACT
LAC LA BICHE COUNTY
MCARTHUR PARK PHASE 2 REDEVELOPMENT

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INSTRUCTIONS TO BIDDERS

INSTRUCTIONS TO BIDDERS

Contract: **McArthur Park Phase 2 Redevelopment**
Reference No. **32195**

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 small paved parking lot area, concrete sidewalk and curbing;
- electrical works including overhead lighting, bollards and conduit / cables;
- asphalt and granular trails; and
- site maintenance to achieve full establishment of all grass/plant materials.

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 Friday, March 22nd, 2024.

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

1.4 This Bid is being issued electronically through Alberta Purchasing Connection. Any interested party may download the *Bid Documents* directly from the aforementioned website. 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 or by email. 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, Thursday, March 28th, 2024
(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 Unit 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 Unit Price Bid Form and a post Bid Closing submission required by the Bid Documents shall be resolved in favor of the Unit Price Bid Form.

4.3 A schedule of units is available within the Supplementary Tender Forms and must be submitted as part of a *Bid.*

4.3 Bids shall be written in English.

4.4 A *Bid* must include the following:

.1 Unit Price Bid Form;
.2 Attached resumes of key staff included in Stipulated Price Bid Form;
.3 Completed Supplementary Tender Forms; and
.5 Bid Deposit as required by Article 8.0 of the Instructions to Bidders.

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 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*;
10.1.4 all environmental risks, conditions, laws and restrictions applicable to the *Work* that might affect the *Work*; and
10.1.5 the magnitude of the construction work required to execute and complete 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*;
13.2.6 is accompanied by insufficient *Bid Deposit*,

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 *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 If the *Successful Bidder* fails to comply with any of the requirements of Articles 14.2 and 14.5 of the Instructions to Bidders, the *Bid Deposit* shall be forfeited to the *Owner* as compensation for damages the *Owner* may suffer. The forfeiture of a *Successful Bidder's Bid Deposit* shall not be construed as a waiver of any rights or remedies which the *Owner* may have against such *Bidder* for loss or damages incurred or suffered in excess of the amount of such *Bid Deposit*.

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

14.6 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

UNIT PRICE BID FORM

UNIT PRICE BID FORM

Contract: **McArthur Park Redevelopment**

Reference No. 32195

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, 2024.

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*.

UNIT 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;

(d) such bond(s) as set out in Article 9.0 of the Instructions to Bidders; and

(e) 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 Unit 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, both as against the *Bid Deposit*, and as available at law to the fullest extent.

4.3 that, if we receive written *Notice of Award* of this Contract:

4.3.1 we shall be required to furnish at our 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";

4.3.2 the *Performance Bond* shall guarantee the faithful performance of the Contract, and in default thereof, shall protect the *Owner* against any losses or damage arising by reason of our failure to faithfully perform the *Contract*;

4.3.3 the Bonds are to be issued by a Surety Company licensed in the Province Alberta and satisfactory to the *Owner* – each in the amount of 50% of the *Contract Price*; and

4.3.4 the *Performance Bond* shall remain in force as a maintenance Bond for the Warranty Period as defined in the General Conditions to the *Contract*.

5.0 OUR ADDRESS AND CONTACT INFORMATION is as follows:

Address: _____

_____

_____

Phone: _____

Email: _____

Attention: _____

This Bid is executed this _____ day of _____, 202_.

Contractor:

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

_____
(AUTHORIZED SIGNATORY)

_____
(AUTHORIZED SIGNATORY)

Corporate Seal Affixed Hereto

UNIT PRICE BID FORM

Appendix 'A' – LIST OF SUBCONTRACTORS

Contract: McArthur Park Phase 2 Redevelopment

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***
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____

UNIT PRICE BID FORM

Contract: **McArthur Park Phase 2 Redevelopment**

Reference No. 32195

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: _____

UNIT 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: McArthur Park Redevelopment

Reference No. 32195

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.**
Asphalt	
Imported Topsoil	
Seed	
Landscape Materials (Trees)	
Site Furniture	
Concrete	
Aggregate Material	
Sod	
Electrical Hardware	
Electrical Cables	

SUPPLEMENTARY TENDER FORMS

Contract: McArthur Park Phase 2 Redevelopment

Reference No. 32195

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

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 Rates

Category	Item	Description	Qty	Unit	Unit Price	Total
PHASE 2						
1.0 GENERAL	1.1	materials testing for subgrade compaction, soil, gravel, concrete, asphalt work	1	l.s.	$ _____	$ _____
1.0 GENERAL	1.2	survey layout throughout construction, as-built surveying and AutoCAD as-built drawing at Substantial Perofrmance	1	l.s.	$ _____	$ _____
1.0 GENERAL	1.3	contractor mobilization / demobilization	1	l.s.	$ _____	$ _____
1.0 GENERAL	1.4	contractor insurance & bonding	1	l.s.	$ _____	$ _____
2.0 SITE WORK	2.1	removal and disposal of existing garden plot including bed edger, plants, mulch. Bench to be removed and relocated by Owner	1	l.s.	$ _____	$ _____
2.0 SITE WORK	2.2	install 500mm depth topsoil from existing sod-topsoil stockpile on site, prepare soil surface for plant bed areas including Devrinol pre-emergent herbicide treatment	1623	sq.m.	$ _____	$ _____
2.0 SITE WORK	2.3	install 150mm depth topsoil from existing sod-topsoil stockpile on site, prepare soil surface for naturalization seed areas including Devrinol pre-emergent herbicide treatment	215	sq.m.	$ _____	$ _____
2.0 SITE WORK	2.4	install 150mm depth topsoil from existing sod-topsoil stockpile on site, prepare soil surface for sod areas including Devrinol pre-emergent herbicide treatment	4375	sq.m.	$ _____	$ _____
2.0 SITE WORK	2.5	install 150mm imported topsoil from existing topsoil stockpile on site, prepare soil surface for sod areas	5813	sq.m.	$ _____	$ _____
2.0 SITE WORK	2.6	supply and install 150mm depth imported topsoil, prepare soil surface for sod areas	10765	sq.m.	$ _____	$ _____
3.0 CIVIL WORKS	3.1	supply and install 2.0m wide gravel trail including subgrade structure, preparation, and granular base course. (home plate monument trail)	42	l.m.	$ _____	$ _____
3.0 CIVIL WORKS	3.2	supply and install unit paver plaza, unit pavers provided by Owner. Including subgrade structure, preparation and granular base course and unit paver placement, and jointing sand	45	sq.m.	$ _____	$ _____
3.0 CIVIL WORKS	3.3	supply and install 2.50 x 3.00m concrete pad for picnic tables incl. subgrade structure, preparation, and granular base course	2	ea.	$ _____	$ _____
3.0 CIVIL WORKS	3.4	supply and install 2.50 x 2.40 concrete pad for picnic tables incl. subgrade structure, preparation, and granular base course	6	ea.	$ _____	$ _____
3.0 CIVIL WORKS	3.5	prepare subgrade for waste receptacle installation	3	ea.	$ _____	$ _____
4.0 ELECTRICAL	4.1	supply and install bollard lighting type F1 including all fixtures, cables, conduit, and connections to existing panels per electrical drawings	22	ea.	$ _____	$ _____
	4.2	supply and install pole lighting type F2 including all fixtures, cables, conduit, and connections to existing panels per electrical drawings	1	ea.	$ _____	$ _____
4.0 ELECTRICAL	4.3	supply and install pole lighting type F6 including all fixtures, cables, conduit, and connections to existing panels per electrical drawings and including mockup	4	ea.	$ _____	$ _____
4.0 ELECTRICAL	4.4	supply and install pole lighting type F7 including all fixtures, cables, conduit, and connections to existing panels per electrical drawings	6	ea.	$ _____	$ _____
4.0 ELECTRICAL	4.5	supply and install contactor and photocell for exterior lighting control	1	ea.	$ _____	$ _____
4.0 ELECTRICAL	4.6	supply and install DMX 512 lighting control panel for control of the F6 lights	1	ea.	$ _____	$ _____
4.0 ELECTRICAL	4.7	supply and install tree power receptacles including devices, cables, conduit, and connections to existing panels per electrical drawings	16	ea.	$ _____	$ _____
4.0 ELECTRICAL	4.8	supply and install pier power pedestal and receptacles including devices, cables, conduit, and connections to existing panels per electrical drawings	1	ea.	$ _____	$ _____
4.0 ELECTRICAL	4.9	supply and install future conduit feed to the phase 3 plaza	1	ea.	$ _____	$ _____

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

Category	Item	Description	Qty	Unit	Unit Price	Total
5.0 LANDSCAPE	5.1	supply and install naturalization seed mix, including maintenance for full two year maintenance and warranty period to ensure vigorous growth, weed free	215	sq.m.	$ _____	$ _____
5.0 LANDSCAPE	5.2	supply and install sod, including maintenance until full establishment	20953	sq.m.	$ _____	$ _____
5.0 LANDSCAPE	5.3	supply and install 100mm depth woodchip mulch in shrub beds	1623	sq.m.	$ _____	$ _____
5.0 LANDSCAPE	5.4	supply and install shredded wood chip mulch 1.0m ring around trees not in a shrub bed	73	sq.m.	$ _____	$ _____
5.0 LANDSCAPE	5.5	supply and install picnic tables - surface mount on concrete pad	8	ea.	$ _____	$ _____
5.0 LANDSCAPE	5.6	supply and install combination recycling/waste All-Haul receptacle	3	ea.	$ _____	$ _____
5.0 LANDSCAPE	5.7	supply and install interpretive sign (home plate tribute) including stand, subgrade preperation and concrete base materials. Sign not included in contract, to be supplied and installed by others	1	l.s.	$ _____	$ _____
5.0 LANDSCAPE	5.8	supply and install T-bollard swing gate pairs including pile, all steel components powder coated. Lock supplied by Owner	4	ea.	$ _____	$ _____
5.0 LANDSCAPE	5.9	supply and install large fieldstone boulders for planting beds - 1' - 2' dia	34	ea.	$ _____	$ _____
5.0 LANDSCAPE	5.10	supply and install small fieldstone boulders for planting beds - 3' - 4' dia	32	ea.	$ _____	$ _____
5.0 LANDSCAPE	5.11	supply and install post and rail fencing	119	l.m.	$ _____	$ _____
5.0 LANDSCAPE	5.12	landscape maintenance for all plant material including watering, pruning, pesticide treatments, etc. during warranty period. Not including mowing of sod area after its establishment	2	year	$ _____	$ _____
5.0 LANDSCAPE	5.13	supply and install 15-20mm cal. PAPER BIRCH	3	ea.	$ _____	$ _____
5.0 LANDSCAPE	5.14	supply and install 60mm cal. GREEN ASH	7	ea.	$ _____	$ _____
5.0 LANDSCAPE	5.15	supply and install 60mm cal. THUNDERCHILD FLOWERING CRAB	12	ea.	$ _____	$ _____
5.0 LANDSCAPE	5.16	supply and install 60mm cal. NORTHWEST POPLAR	7	ea.	$ _____	$ _____
5.0 LANDSCAPE	5.17	supply and install 15-20mm cal. TREMBLING ASPEN	15	ea.	$ _____	$ _____
5.0 LANDSCAPE	5.18	supply and install 5 gallon pot TREMBLING ASPEN	5	ea.	$ _____	$ _____
5.0 LANDSCAPE	5.19	supply and install 60mm cal. BUR OAK	6	ea.	$ _____	$ _____
5.0 LANDSCAPE	5.20	supply and install 15-20mm LAUREL LEAF WILLOW	7	ea.	$ _____	$ _____
5.0 LANDSCAPE	5.21	supply and install 60mm cal. BRANDON ELM	16	ea.	$ _____	$ _____
5.0 LANDSCAPE	5.22	supply and install 2000mm ht. SIBERIAN LARCH	13	ea.	$ _____	$ _____
5.0 LANDSCAPE	5.23	supply and install 2000mm ht. WHITE SPRUCE	35	ea.	$ _____	$ _____
5.0 LANDSCAPE	5.24	supply and install 2000mm ht. SWISS STONE PINE	15	ea.	$ _____	$ _____
5.0 LANDSCAPE	5.25	supply and install 500mm ht. NATIVE SASKATOON	30	ea.	$ _____	$ _____
5.0 LANDSCAPE	5.26	supply and install 500mm ht. IVORY HALO DOGWOOD	69	ea.	$ _____	$ _____
5.0 LANDSCAPE	5.27	supply and install 500mm ht. SIBERIAN PERALS DOGWOOD	7	ea.	$ _____	$ _____
5.0 LANDSCAPE	5.28	supply and install 500mm ht. PUSSY WILLOW	12	ea.	$ _____	$ _____
5.0 LANDSCAPE	5.29	supply and install 600mm spr. CALGARY CARPET JUNIPER	94	ea.	$ _____	$ _____
5.0 LANDSCAPE	5.30	supply and install 6" pot KARL FOERSTER FEATHER REED GRASS	42	ea.	$ _____	$ _____
5.0 LANDSCAPE	5.31	removal of existing mature Manitoba Maple on site, including disposal of all materials and stump grinding	1	l.s.	$ _____	$ _____
6.0 PROVISIONAL	6.1	removal and disposal of existing concrete (depth varies) incl. sawcutting, excavation, and hauling to Christy Creek Stockpile	125	sq.m.	$ _____	$ _____
6.0 PROVISIONAL	6.2	site excavation - site cuts to site fill incl. excavation, hauling, placement, and compaction	2860	cu.m.	$ _____	$ _____
6.0 PROVISIONAL	6.3	site excavation - site stockpile to site fill incl. excavation, hauling, placement, and compaction	1750	cu.m.	$ _____	$ _____
6.0 PROVISIONAL	6.4	site excavation - strip topsoil and stockpile in laydown area for replacement on site by others	390	cu.m.	$ _____	$ _____
6.0 PROVISIONAL	6.5	supply and install concrete barrier curb, incl. subgrade preparation and granular base course	15	l.m.	$ _____	$ _____

SUPPLEMENTARY TENDER FORMS

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

Category	Item	Description	Qty	Unit	Unit Price	Total
6.0 PROVISIONAL	6.6	supply and install straight faced curb and gutter incl. subgrade preparation and granular base course	25	l.m.	$ _____	$ _____
6.0 PROVISIONAL	6.7	supply and install heavy duty apshalt structure incl. 150mm depth subgrade preparation, 300mm depth granular base course, and 100mm asphalt surfacing	140	sq.m.	$ _____	$ _____
6.0 PROVISIONAL	6.8	line painting on new parking lot area	1	l.s.	$ _____	$ _____
6.0 PROVISIONAL	6.9	supply and install 1.5m separate walk incl. granular base, subgrade prep, reinforcement and all other	13	l.m.	$ _____	$ _____
6.0 PROVISIONAL	6.10	supply and install 1.5m monowalk incl. granular base, subgrade preparation, reinforcement and all other	13	l.m.	$ _____	$ _____
6.0 PROVISIONAL	6.11	supply and install 3.0m wide apshalt trail including 150mm depth subgrade preparation, 250mm depth granular base course, and 75mm asphalt surfacing	672	l.m.	$ _____	$ _____
6.0 PROVISIONAL	6.12	supply and install concrete plazas including subgrade structure, preparation, and granular base course including saw cutting	279	sq.m.	$ _____	$ _____
6.0 PROVISIONAL	6.13	supply and install structural piling and reinforcement for overhead structures. To be poured concurrently with plaza surfacing	16	ea.	$ _____	$ _____
6.0 PROVISIONAL	6.14	supply and install structural piling and reinforcement for "tipi pole" structures (poles and lighting in future by others)	4	ea.	$ _____	$ _____
6.0 PROVISIONAL	6.15	remove and dispose of existing chain link fence & gate on site	337	l.m.	$ _____	$ _____

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

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.

.2 McArthur Park is an active public open space, and the Contractor must make every effort to keep park operations open as much as practicably possible. The public shall have safe and clear access to the existing spray park, washroom building and nearby site furniture at all times. The County must also have unrestricted access to the existing water intake facility at all times without impediments.

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 a copy of the *Contractor's* training matrix that supports the *Contractor's* employees qualifications to conduct the work; and
.5 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."

GC 11.2 CONTRACT SECURITY

11.2.3 Add:

"The *Contractor* shall give the *Owner Notice in Writing* of any material change in the sureties within fifteen (15) days of occurrence of such changes."

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 – 101 Avenue, Lac La Biche Alberta

.2 Project Owner: Lac La Biche County
- .1 Address: 13422 Hwy 881, McArthur Place, Lac La Biche, AB T0A 2C0
- .2 Primary Contact: Darrell Lessmeister - Associate CAO, Recreation & Community Services
- .3 Tel: 780.623.6816
- .4 Email: darrell.lessmeister@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

.4 Civil Engineer: V3 Companies of Canada
- .1 Address: Suite 130, 2899 Broadmoor Boulevard, Sherwood Park AB. T8H 1B5
- .2 Primary Contact: Braeden Veeneman, Engineer
- .3 Tel: 780.482.3700
- .4 Email: bveeneman@v3co.ca

.5 Electrical Engineer: Williams Engineering Ltd.
- .1 Address: Suite 1700, 10065 Jasper Ave., Edmonton AB. T5J 3B1
- .2 Primary Contact: Ben Rajewski, Engineer
- .3 Tel: 780.409.3147
- .4 Email: brajewski@williamsengineering.com

.6 Structural Engineer: Williams Engineering Ltd.
- .1 Address: Suite 1500, 500 – 4th Ave., Calgary, AB. T2P 2V6
- .2 Primary Contact: Alexandra Adolph, Engineer
- .3 Tel: 403.410.3732
- .4 Email: aadolph@williamsengineering.com

.6 Geotechnical Engineer: Shelby Engineering
- .1 Address: #172, 2693 Broadmoor Blvd., Sherwood Park AB. T8H 0G1
- .2 Primary Contact: Haron Cherogony, Engineer
- .3 Tel: 780.438.2540
- .4 Email: hcherogony@shelbyeng.ca

SUMMARY OF WORK

1.2 WORK COVERED BY CONTRACT DOCUMENTS

.1 Work of this *Contract* consists of the construction of paved roadways and parking areas, shoreline improvements, landscaping and other park-related improvements.

1.3 CONTRACT METHOD

.1 Construct all work under a CCDC 4 - unit 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* with exception of providing access for the public to the existing spray park structure and washroom building, along with County staff access to all existing buildings and infrastructure for maintenance and emergency purposes. The Contractor is required to allow full use of the remainder of the site for day to day scheduled and non-scheduled public use of other park areas, including access roads and parking areas. Full public access of the remainder of the site must be maintained at all times. 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 *Owner* will occupy nearby premises during entire construction period for execution of normal operations. Operations of the adjacent streets as well as other park activities outside the project limits and parking lots must not be impeded without special agreement with the *Owner*.

.2 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 Provide adequate bridging over trenches which cross sidewalks or roads to permit normal traffic.

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

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

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

.10 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 three pages for plain language summary of unit items.

END OF SECTION (after next three pages)

Item	Description	Summary
1.1	materials testing for subgrade compaction, soil, gravel, concrete, asphalt work	Retain a qualified geotechnical testing consultant to provide proof of compliance with all specifications. Eligible for payment at Substantial Performance and receipt of all test records by Consultant
1.2	survey layout throughout construction, as-built surveying and AutoCAD as-built drawing at Substantial Perofrmance	Retain a qualified geomatics consultant to provide survey services including all field layout, and a final as-built survey of completed works showing any deviation from the original design drawings
1.3	contractor mobilization / demobilization	50% eligible for payment once Work has substantially began, 50% eligible for payment at substantial performance and completion of construction in fall 2024
1.4	contractor insurance & bonding	50% eligible for payment once Work has substantially began, 50% eligible for payment at Final Acceptance after two-year maintenance period
2.1	removal and disposal of existing garden plot including bed edger, plants, mulch. Bench to be removed and relocated by Owner	Three existing benches will be relocated by the Owner, remaining items to be removed and disposed of. Eligible for payment as lump sum once completed
2.2	install 500mm depth topsoil from existing sod-topsoil stockpile on site, prepare soil surface for plant bed areas including Devrinol pre-emergent herbicide treatment	In 2023 a large area of freshly laid sod was rejected, and replaced with new sod. The old sod and some topsoil was stockpiled, currently in a uniform 1,500 cu.m. pile which has been breaking down the organics since piled in summer 2023. Eligible for payment as beds are constructed. Price includes all required excavation, excavated material can be blended into rough graded area on site
2.3	install 150mm depth topsoil from existing sod-topsoil stockpile on site, prepare soil surface for naturalization seed areas including Devrinol pre-emergent herbicide treatment	Eligible for payment as beds are constructed. Price includes all required excavation
2.4	install 150mm depth topsoil from existing sod-topsoil stockpile on site, prepare soil surface for sod areas including Devrinol pre-emergent herbicide treatment	Eligible for payment as beds are constructed. Price includes all required excavation
2.5	install 150mm imported topsoil from existing topsoil stockpile on site, prepare soil surface for sod areas	In 2023 topsoil from the existing park site was stripped, primarily from baseball diamond outfields. This soil was placed in a uniform pile that is approx. 872 cu.m. Eligible for payment once placed and ready for sod
2.6	supply and install 150mm depth imported topsoil, prepare soil surface for sod areas	Supply new topsoil from off-site, quality to conform to specifications as noted on the drawings. Provide topsoil test results prior to delivery
3.1	supply and install 2.0m wide gravel trail including subgrade structure, preparation, and granular base course. (home plate monument trail)	Provide gravel sieve results for review prior to construction. Eligible for payment once constructed and compaction test results have been provided to the Consultant
3.2	supply and install unit paver plaza, unit pavers provided by Owner. Including subgrade structure, preparation and granular base course and unit paver placement, and jointing sand	Unit pavers from the Main Street Redevelopment project were palletized in 2023 in lifts not to exceed 3,000lb. and uniformly stacked. Contractor is responsible for picking these up from a lot in Lac La Biche for use in McArthur Park. Eligible for payment once constructed. Rate includes all required subgrade work, placing pavers, and jointing sand
3.3	supply and install 2.50 x 3.00m concrete pad for picnic tables incl. subgrade structure, preparation, and granular base course	Includes all required excavation and disposal of excavated material over a rough graded area on site. Price to include removing forms, and backfilling pad to be level with adjacent ground. Eligible for payment once completed
3.4	supply and install 2.50 x 2.40 concrete pad for picnic tables incl. subgrade structure, preparation, and granular base course	Includes all required excavation and disposal of excavated material over a rough graded area on site. Price to include removing forms, and backfilling pad to be level with adjacent surface. Eligible for payment once completed
3.5	prepare subgrade for waste receptacle installation	excavate ground to accept depth of precast concrete pad supplied with receptacle, and compact ground to ensure stability
4.1	supply and install bollard lighting type F1 including all fixtures, cables, conduit, and connections to existing panels per electrical drawings	unit rate includes all necessary ducts, cable, concrete pile, hardware and installation. 25% eligible for payment upon order of materials, with proof of order provided to Consultant. Remainder eligible for payment once energized
4.2	supply and install pole lighting type F2 including all fixtures, cables, conduit, and connections to existing panels per electrical drawings	unit rate includes all necessary ducts, cable, concrete pile, hardware and installation. 25% eligible for payment upon order of materials, with proof of order provided to Consultant. Remainder eligible for payment once energized
4.3	supply and install pole lighting type F5 including all fixtures, cables, conduit, and connections to existing panels per electrical drawings	unit rate includes all necessary ducts, cable, concrete pile, hardware and installation. 25% eligible for payment upon order of materials, with proof of order provided to Consultant. Remainder eligible for payment once energized

4.4	supply and install pole lighting type F6 including all fixtures, cables, conduit, and connections to existing panels per electrical drawings and including mockup	unit rate includes all necessary ducts, cable, concrete pile, hardware and installation. 25% eligible for payment upon approval of mockup and order of materials, with proof of order provided to Consultant. Remainder eligible for payment once energized
4.5	supply and install pole lighting type F7 including all fixtures, cables, conduit, and connections to existing panels per electrical drawings	unit rate includes all necessary ducts, cable, concrete pile, hardware and installation. 25% eligible for payment upon order of materials, with proof of order provided to Consultant. Remainder eligible for payment once energized
4.6	supply and install contactor and photocell for exterior lighting control	25% eligible for payment upon order of materials, with proof of order provided to Consultant. Remainder eligible for payment once energized
4.7	supply and install DMX 512 lighting control panel for control of the F6 lights	25% eligible for payment upon order of materials, with proof of order provided to Consultant. Remainder eligible for payment once energized
4.8	supply and install tree power receptacles including devices, cables, conduit, and connections to existing panels per electrical drawings	unit rate includes all necessary ducts, cable, hardware and installation. 25% eligible for payment upon order of materials, with proof of order provided to Consultant. Remainder eligible for payment once energized
4.9	supply and install pier power pedestal and receptacles including devices, cables, conduit, and connections to existing panels per electrical drawings	unit rate includes all necessary ducts, cable, hardware and installation. 25% eligible for payment upon order of materials, with proof of order provided to Consultant. Remainder eligible for payment once energized
4.10	supply and install future conduit feed to the phase 3 plaza	25% eligible for payment upon order of materials, with proof of order provided to Consultant. Remainder eligible for payment once energized
5.1	supply and install naturalization seed mix, including maintenance for full two year maintenance and warranty period to ensure vigorous growth, weed free	eligible for payment once 90% germination is achieved and turf area is weed-free
5.2	supply and install sod, including maintenance until full establishment	eligible for payment once sod has been laid, is knit in and has received three mowings. Area will then be maintained by Owner
5.3	supply and install 100mm depth woodchip mulch in shrub beds	Provide a sample phograph if mulch material prior to delivery to site. Eligible for payment once completed
5.4	supply and install shredded wood chip mulch 1.0m ring around trees not in a shrub bed	Provide a sample phograph of mulch material prior to delivery to site. Eligible for payment once completed
5.5	supply and install picnic tables - surface mount on concrete pad	Provide shop drawing for approval prior to ordering. 50% eligible for payment once proof of order is provided to the Consultant, remainder eligible for payment once completed
5.6	supply and install combination recycling/waste All-Haul receptacle	Provide shop drawing for approval prior to ordering. 50% eligible for payment once proof of order is provided to the Consultant, remainder eligible for payment once completed
5.7	supply and install interpretive sign (home plate tribute) including stand, subgrade preperation and concrete base materials. Sign not included in contract, to be supplied and installed by others	Provide shop drawing for approval prior to ordering. Eligible for payment once completed
5.8	supply and install T-bollard swing gate pairs including pile, all steel components powder coated. Lock supplied by Owner	Provide shop drawing for approval prior to ordering. 50% eligible for payment once proof of order is provided to the Consultant, remainder eligible for payment once completed
5.9	supply and install large fieldstone boulders for planting beds - 1' - 2' dia	Provide a sample phograph of stone material prior to delivery to site. Eligible for payment once completed
5.10	supply and install small fieldstone boulders for planting beds - 3' - 4' dia	Provide a sample phograph of stone material prior to delivery to site. Eligible for payment once completed
5.11	supply and install post and rail fencing	Eligible for payment once completed
5.12	landscape maintenance for all plant material including watering, pruning, pesticide treatments, etc. during warranty period. Not including mowing of sod area after its establishment	With construction completion in fall 2024, 25% eligible for payment in August 2025, 25% November 2025, 50% at final acceptance. Any work completed by Owner due to poor care by Contractor will be deducted from maintenance payments
5.13	supply and install 15-20mm cal. PAPER BIRCH	Plant material to be inspected by the Consultant at tree nursery prior to delivery to site. Eligible for payment once completed
5.14	supply and install 60mm cal. GREEN ASH	Plant material to be inspected by the Consultant at tree nursery prior to delivery to site. Eligible for payment once completed
5.15	supply and install 60mm cal. THUNDERCHILD FLOWERING CRAB	Plant material to be inspected by the Consultant at tree nursery prior to delivery to site. Eligible for payment once completed
5.16	supply and install 60mm cal. NORTHWEST POPLAR	Plant material to be inspected by the Consultant at tree nursery prior to delivery to site. Eligible for payment once completed
5.17	supply and install 15-20mm cal. TREMBLING ASPEN	Plant material to be inspected by the Consultant at tree nursery prior to delivery to site. Eligible for payment once completed
5.18	supply and install 5 gallon pot TREMBLING ASPEN	Plant material to be inspected by the Consultant at tree nursery prior to delivery to site. Eligible for payment once completed
5.19	supply and install 60mm cal. BUR OAK	Plant material to be inspected by the Consultant at tree nursery prior to delivery to site. Eligible for payment once completed
5.20	supply and install 15-20mm LAUREL LEAF WILLOW	Plant material to be inspected by the Consultant at tree nursery prior to delivery to site. Eligible for payment once completed

5.21	supply and install 60mm cal. BRANDON ELM	Plant material to be inspected by the Consultant at tree nursery prior to delivery to site. Eligible for payment once completed
5.22	supply and install 2000mm ht. SIBERIAN LARCH	Plant material to be inspected by the Consultant at tree nursery prior to delivery to site. Eligible for payment once completed
5.23	supply and install 2000mm ht. WHITE SPRUCE	Plant material to be inspected by the Consultant at tree nursery prior to delivery to site. Eligible for payment once completed
5.24	supply and install 2000mm ht. SWISS STONE PINE	Plant material to be inspected by the Consultant at tree nursery prior to delivery to site. Eligible for payment once completed
5.25	supply and install 500mm ht. NATIVE SASKATOON	Eligible for payment once completed
5.26	supply and install 500mm ht. IVORY HALO DOGWOOD	Eligible for payment once completed
5.27	supply and install 500mm ht. SIBERIAN PERALS DOGWOOD	Eligible for payment once completed
5.28	supply and install 500mm ht. PUSSY WILLOW	Eligible for payment once completed
5.29	supply and install 600mm spr. CALGARY CARPET JUNIPER	Eligible for payment once completed
5.30	supply and install 6" pot KARL FOERSTER FEATHER REED GRASS	Eligible for payment once completed
5.31	removal of existing mature Manitoba Maple on site, including disposal of all materials and stump grinding	Eligible for payment once completed
6.1	removal and disposal of existing concrete (depth varies) incl. sawcutting, excavation, and hauling to Christy Creek Stockpile	Eligible for payment once completed, based on as-built survey data provided by Contractor and approved by Consultant
6.2	site excavation - site cuts to site fill incl. excavation, hauling, placement, and compaction	Eligible for payment once completed, based on as-built survey data provided by Contractor and approved by Consultant
6.3	site excavation - site stockpile to site fill incl. excavation, hauling, placement, and compaction	Eligible for payment once completed, based on as-built survey data provided by Contractor and approved by Consultant
6.4	site excavation - strip topsoil and stockpile in laydown area for replacement on site by others	Eligible for payment once completed, based on as-built survey data provided by Contractor and approved by Consultant
6.5	supply and install concrete barrier curb, incl. subgrade preparation and granular base course	Eligible for payment once complete and Consultant receiving all required test results. Measured based on as-built survey data provided by Contractor and approved by Consultant
6.6	supply and install straight faced curb and gutter incl. subgrade preparation and granular base course	Eligible for payment once complete and Consultant receiving all required test results. Measured based on as-built survey data provided by Contractor and approved by Consultant
6.7	supply and install heavy duty apshalt structure incl. 150mm depth subgrade preparation, 300mm depth granular base course, and 100mm asphalt surfacing	Eligible for payment once complete and Consultant receiving all required test results. Measured based on as-built survey data provided by Contractor and approved by Consultant
6.8	line painting on new parking lot area	Eligible for payment once completed
6.9	supply and install 1.5m separate walk incl. granular base, subgrade prep, reinforcement and all other	Eligible for payment once complete and Consultant receiving all required test results. Measured based on as-built survey data provided by Contractor and approved by Consultant
6.10	supply and install 1.5m monowalk incl. granular base, subgrade preparation, reinforcement and all other	Eligible for payment once complete and Consultant receiving all required test results. Measured based on as-built survey data provided by Contractor and approved by Consultant
6.11	supply and install 3.0m wide apshalt trail including 150mm depth subgrade preparation, 250mm depth granular base course, and 75mm asphalt surfacing	Eligible for payment once complete and Consultant receiving all required test results. Measured based on as-built survey data provided by Contractor and approved by Consultant
6.12	supply and install concrete plazas including subgrade structure, preparation, and granular base course including saw cutting	Eligible for payment once complete and Consultant receiving all required test results. Measured based on as-built survey data provided by Contractor and approved by Consultant
6.13	supply and install structural piling and reinforcement for overhead structures. To be poured concurrently with plaza surfacing	Eligible for payment once complete and Consultant receiving all required test results. Measured based on as-built survey data provided by Contractor and approved by Consultant
6.14	supply and install structural piling and reinforcement for "tipi pole" structures (poles and lighting in future by others)	Eligible for payment once complete and Consultant receiving all required test results. Measured based on as-built survey data provided by Contractor and approved by Consultant
6.15	remove and dispose of existing chain link fence on site	Eligible for payment once completed

MEASUREMENT AND PAYMENT

MEASUREMENT AND PAYMENT

PART 1 GENERAL

.1 Payments shall be made on the basis of the lump sum prices and the unit prices bid in the *Unit Price Schedules* 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 *Unit Price Schedules* in 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 *Unit Price Schedules* 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 *Unit 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*. Unit rates for all grading will be based on field measurement conducted by survey conducted by a qualified professional as provided by the *Contractor* and verified by the *Consultant*. The *Consultant* will have final say on quantities.

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 LOAM PILE

.1 Provide a daily review of any loam pile on site for potential safety hazards and bird nesting. Should bird nests be found, report findings to the *Owner's Representative*.

.2 Level off excavated face of loam pile to remove any vertical/cliff faces or slopes greater than 1:1.

.3 Hydomulch to be sprayed on excavated face of loam pile after continuous topsoil hauling is complete. (if required)

3.3 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.

3.4 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.

3.5 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.

CONSTRUCTION FACILITIES

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 Town of Edson).

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

TEMPORARY BARRIERS AND ENCLOSURES

TEMPORARY BARRIERS AND ENCLOSURES

1.0 GENERAL

1.1 INSTALLATION, MAINTENANCE AND REMOVAL

.1 Provide temporary controls in order to execute *Work* expeditiously.

.2 Repair any fallen or damaged barriers/enclosures due to weather events (high winds), revised work area, or as instructed from the *Owner* or *Consultant*.

.3 Remove from site all such work after use.

1.2 CONSTRUCTION FENCING

.1 Erect temporary site construction fencing along property line of park or within road-right-of-way as required to protect any public access routes. The *Contractor* is to supply construction fencing.

.2 Provide barriers around trees and plants designated to remain. Protect from damage by equipment and construction procedures.

1.3 GUARD RAILS AND BARRICADES

.1 Provide secure, rigid guard rails and barricades around deep excavations, open shafts, open stair wells, open edges of floors and roofs, etc. (as required)

.2 Provide as required by governing authorities.

1.4 ACCESS TO SITE

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

1.5 PUBLIC TRAFFIC FLOW

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

1.6 EMERGENCY ROUTES

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

1.7 PROTECTION FOR OFF-SITE AND PUBLIC PROPERTY

.1 Protect surrounding private and public property from damage during performance of *Work*.

.2 Be responsible for damage incurred.

1.8 MEASUREMENT AND PAYMENT

.1 All temporary barriers, enclosures, routes, access and protection measurement and payment shall be lump sum within the mobilization unit rate as per the per the schedule of quantities and the areas confirmed on site.

.2 Payment for the construction fencing, supplied by the *Contractor*, shall be full compensation for install, maintenance, and removal of construction fencing, bracing, sandbags or any other related work not paid for elsewhere.

.3 Payment for the remaining items shall be full compensation for install or any other related work not paid for elsewhere.

2. PRODUCTS

2.1 NOT USED

.1 Not Used.

3. EXECUTION

2.1 NOT USED

.1 Not Used.

END OF SECTION

EXAMINATION AND PREPARATION

EXAMINATION AND PREPARATION

1.0 GENERAL

1.1 REFERENCES

.1 *Owner's* identification of existing survey control points and property limits.

.2 *Contractor* shall be responsible for all survey layout during the course of work, with all survey work conducted by a qualified surveyor.

1.2 QUALIFICATIONS OF SURVEYOR

.1 Qualified registered land surveyor, licensed to practice in *Place of Work*, acceptable to *Consultant*.

1.3 SURVEY REFERENCE POINTS

.1 Existing base horizontal and vertical control points will be provided to the *Contractor* at the onset of the *Work*.

.2 The *Client* will locate, confirm and protect control points prior to starting site work. *Contractor* to preserve permanent reference points during construction.

.3 Make no changes or relocations without prior written notice to *Consultant*.

.4 Report to *Consultant* when reference point is lost or destroyed, or requires relocation because of necessary changes in grades or locations.

.5 Require surveyor to replace control points in accordance with original survey control.

1.4 SURVEY REQUIREMENTS

.1 Establish permanent bench marks on site, referenced to established bench marks by survey control points. Record locations, with horizontal and vertical data in *Project Record Documents*.

.2 *Contractor* shall be responsible to stablish lines and levels, locate and lay out, by instrumentation. All proposed features shall be approved by the *Owner* and/or *Consultant* prior to excavation and construction.

1.5 EXISTING SERVICES

.1 Before commencing work, establish location and extent of service lines in area of *Work* and notify *Consultant* of findings.

.2 Remove abandoned service lines as required by Authority having Jurisdiction.

1.6 LOCATION OF EQUIPMENT AND FIXTURES

.1 Location of equipment, fixtures and outlets indicated or specified are to be considered as approximate.

.2 Locate equipment, fixtures and distribution systems to provide minimum interference and maximum usable space and in accordance with manufacturer's recommendations for safety, access and maintenance.

.3 Inform *Consultant* of impending installation and obtain approval for actual location.

.4 Submit field drawings to indicate relative position of various services and equipment when required by *Consultant*.

1.7 RECORDS

.1 Maintain a complete, accurate log of control and survey work as it progresses.

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

1.8 SUBSURFACE CONDITIONS

.1 Promptly notify *Consultant* in writing if subsurface conditions at *Place of Work* differ materially from those indicated in *Contract Documents*, or a reasonable assumption of probable conditions based thereon.

.2 After prompt investigation, should *Consultant* determine that conditions do differ materially, instructions will be issued for changes in *Work* as provided in *Changes* and *Change Orders*.

2.0 PRODUCTS

2.1 NOT USED

.1 Not Used.

3.0 Execution

3.1 NOT USED

.1 Not Used.

END OF SECTION

CLOSEOUT SUBMITTALS

CLOSEOUT SUBMITTALS

1.0 GENERAL

1.1 ACTION AND INFORMATIONAL SUBMITTALS

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

.2 Two weeks prior to *Substantial Performance* of the *Work*, submit to the *Consultant*, two final copies of operating and maintenance manuals.

.3 Provide evidence, if requested, for type, source and quality of products supplied.

1.2 FORMAT

.1 Organize data as instructional manual.

.2 Binders: vinyl, hard covered, 3 'D' ring, loose leaf with spine and face pockets. All information to also be provided in digital format on a USB drive.

1.3 CONTENTS - PROJECT RECORD DOCUMENTS

.1 Table of contents for each volume: provide title of project;

.1 Date of submission; names.

.2 Addresses, and telephone numbers of *Consultant* and *Contractor* with name of responsible parties.

.3 Schedule of products and systems, indexed to content of volume.

.2 For each product or system:

.1 List names, addresses and telephone numbers of subcontractors and suppliers, including local source of supplies and replacement parts.

.3 Product Data: mark each sheet to identify specific products and component parts, and data applicable to installation; delete inapplicable information.

.4 Typewritten Text: as required to supplement product data.

.1 Provide logical sequence of instructions for each procedure, incorporating manufacturer's instructions specified in Section 01 45 00 - Quality Control.

1.4 AS -BUILT DOCUMENTS AND SAMPLES

.1 Maintain, in addition to requirements in General Conditions, at site for Consultant or Owner one record copy of:

.1 Contract Drawings.

.2 Specifications.

.3 Addenda.

.4 Change Orders and other modifications to Contract. Reviewed shop drawings, product data, and samples.

.5 Field test records.

.6 Inspection certificates.

.7 Manufacturer's certificates.

.2 Store record documents and samples in field office apart from documents used for construction.

.3 Label record documents and file in accordance with Section number listings in List of Contents of this Project Manual.

.4 Maintain record documents in clean, dry and legible condition.

.1 Do not use record documents for construction purposes.

.5 Keep record documents and samples available for inspection by Consultant.

1.5 RECORDING INFORMATION ON PROJECT RECORD DOCUMENTS

.1 Record information on set of opaque drawings, and in copy of Project Manual.

.2 Use felt tip marking pens, maintaining separate colours for each major system, for recording information.

.3 Record information concurrently with construction progress.

.4 Contract Drawings and shop drawings: mark each item to record actual construction, including:

.1 Measured depths of elements of foundation in relation to finish first floor datum.

.2 Measured horizontal and vertical locations of underground utilities and appurtenances, referenced to permanent surface improvements.

.3 Measured locations of internal utilities and appurtenances, referenced to visible and accessible features of construction.

.4 Field changes of dimension and detail.

.5 Changes made by change orders.

.6 Details not on original Contract Drawings.

.7 References to related shop drawings and modifications.

.5 Specifications: mark each item to record actual construction, including:

.1 Manufacturer, trade name, and catalogue number of each product actually installed, particularly optional items and substitute items.

.2 Changes made by Addenda and change orders.

.6 Other Documents: maintain manufacturer's certifications, inspection certifications, field test records, required by individual specifications sections.

.7 Provide digital photos, if requested, for site records.

1.6 MATERIALS AND FINISHES

.1 Building products, applied materials, and finishes: include product data, with catalogue number, size, composition, and colour and texture designations.

.2 Instructions for cleaning agents and methods, precautions against detrimental agents and methods, and recommended schedule for cleaning and maintenance.

.3 Moisture-protection and weather-exposed products: include manufacturer's recommendations for cleaning agents and methods, precautions against detrimental agents and methods, and recommended schedule for cleaning and maintenance.

.4 Additional requirements: as specified in individual specifications sections.

1.7 MAINTENANCE MATERIALS

.1 Spare Parts:

.1 Provide spare parts, in quantities specified in individual specification sections.

.2 Provide items of same manufacture and quality as items in *Work*. Deliver to site; place and store.

.3 Obtain receipt for delivered products and submit prior to final payment.

.2 Extra Stock Materials:

.1 Provide maintenance and extra materials, in quantities specified in individual specification sections.

.2 Provide items of same manufacture and quality as items in *Work*. Deliver to site; place and store.

.3 Obtain receipt for delivered products and submit prior to final payment.

.3 Special Tools:

.1 Provide special tools, in quantities specified in individual specification section.

.2 Provide items with tags identifying their associated function and equipment.

.3 Deliver to site; place and store.

1.8 DELIVERY, STORAGE AND HANDLING

.1 Store spare parts, maintenance materials, and special tools in manner to prevent damage or deterioration.

.2 Store in original and undamaged condition with manufacturer's seal and labels intact.

.3 Store components subject to damage from weather in weatherproof enclosures.

.4 Store paints and freezable materials in a heated and ventilated room.

.5 Remove and replace damaged products at own expense.

1.9 WARRANTIES AND BONDS

.1 Develop warranty management plan to contain information relevant to Warranties.

.2 Warranty management plan to include required actions and documents to assure that Consultant receives warranties to which it is entitled.

.3 Provide plan in narrative form and contain sufficient detail to make it suitable for use by future maintenance and repair personnel.

.4 Submit, warranty information made available during construction phase, to *Consultant* for approval prior to each monthly pay estimate.

.5 Assemble approved information in binder, submit upon acceptance of work and organize binder as follows:

.1 Separate each warranty or bond with index tab sheets keyed to Table of Contents listing.

.2 List subcontractor, supplier, and manufacturer, with name, address, and telephone number of responsible principal.

.3 Obtain warranties and bonds, executed in duplicate by subcontractors, suppliers, and manufacturers, within ten days after completion of applicable item of work.

.4 Verify that documents are in proper form, contain full information, and are notarized.

.5 Co-execute submittals when required.

.6 Retain warranties and bonds until time specified for submittal.

.6 Except for items put into use with *Owner's* permission, leave date of beginning of time of warranty until *Date of Substantial Performance* is determined.

.7 Respond in timely manner to oral or written notification of required construction warranty repair work.

END OF SECTION

UNIT PRICE CONTRACT – CCDC 4e

CCDC 4

CCDC 4

Unit Price Contract

2011

[Name of Project]

Apply a CCDC 4 copyright seal here. The application of the seal demonstrates the intention of the party proposing the use of this document that it be an accurate and unamended form of CCDC 4 – 2011 except to the extent that any alterations, additions or modifications are set forth in supplementary conditions.

CANADIAN CONSTRUCTION DOCUMENTS COMMITTEE
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CANADIAN CONSTRUCTION DOCUMENTS COMMITTEE

TABLE OF CONTENTS

AGREEMENT BETWEEN OWNER AND CONTRACTOR
For use when unit prices are the primary basis of payment.

This Agreement made on the day of in the year .

by and between the parties

hereinafter called the *Owner*

and

hereinafter called the *Contractor*

The *Owner* and the *Contractor* agree as follows:

ARTICLE A-1 THE WORK

The *Contractor* shall:

1.1 perform the *Work* required by the *Contract Documents* for

insert above the name of the Work

located at

insert above the Place of the Work

for which the Agreement has been signed by the parties, and for which

insert above the name of the Consultant

is acting as and is hereinafter called the "*Consultant*" and

1.2 do and fulfill everything indicated by the *Contract Documents*, and

1.3 commence the *Work* by the day of in the year and, subject to adjustment in *Contract Time* as provided for in the *Contract Documents*, attain *Substantial Performance of the Work*, by the day of in the year .

ARTICLE A-2 AGREEMENTS AND AMENDMENTS

2.1 The *Contract* supersedes all prior negotiations, representations or agreements, either written or oral, relating in any manner to the *Work*, including the bidding documents that are not expressly listed in Article A-3 of the Agreement - CONTRACT DOCUMENTS.

2.2 The *Contract* may be amended only as provided in the *Contract Documents*.

ARTICLE A-3 CONTRACT DOCUMENTS

3.1 The following are the *Contract Documents* referred to in Article A-1 of the Agreement - THE WORK:

- Agreement between *Owner* and *Contractor*
- Definitions
- The General Conditions of the Unit Price Contract
- *

* *(Insert here, attaching additional pages if required, a list identifying all other Contract Documents e.g. supplementary conditions; information documents; specifications, giving a list of contents with section numbers and titles, number of pages and date; material finishing schedules; drawings, giving drawing number, title, date, revision date or mark; addenda, giving title, number, date)*

ARTICLE A-4 CONTRACT PRICE

4.1 The *Schedule of Prices* forms the basis for determining the *Contract Price*. Quantities for *Unit Price* items in the *Schedule of Prices* are estimated.

Schedule of Prices

Item No.	Description of Work	* Unit of Measure	* Estimated Quantity (EQ)	Unit Price (UP)	Amount (EQ x UP)
Page Subtotal Carried Forward from Page					$
				$	$ 0.00
				$	$ 0.00
				$	$ 0.00
				$	$ 0.00
				$	$ 0.00
				$	$ 0.00
				$	$ 0.00
				$	$ 0.00
				$	$ 0.00
				$	$ 0.00
				$	$ 0.00
				Page Sub-total	$

** Lump sum items are denoted as lump sum (LS) as the unit of measure and have a quantity of one (1).*

Schedule of Prices

Item No.	Description of Work	* Unit of Measure	* Estimated Quantity (EQ)	Unit Price (UP)	Amount (EQ x UP)
		Page Subtotal Carried Forward from Page			$
				$	$ 0.00
				$	$ 0.00
				$	$ 0.00
				$	$ 0.00
				$	$ 0.00
				$	$ 0.00
				$	$ 0.00
				$	$ 0.00
				$	$ 0.00
				$	$ 0.00
				$	$ 0.00
				Total Amount	$

** Lump sum items are denoted as lump sum (LS) as the unit of measure and have a quantity of one (1).*

4.2 The estimated *Contract Price*, which is the total amount indicated in the *Schedule of Prices*, and which excludes *Value Added Taxes*, is:

/100 dollars $

4.3 *Value Added Taxes* (of %) payable by the *Owner* to the Contractor, based on the estimated *Contract Price*, are:

/100 dollars $

4.4 Total estimated amount payable by the *Owner* to the *Contractor* for the construction of the *Work* is:

/100 dollars $

4.5 These amounts shall be subject to adjustments as provided in the *Contract Documents*.

4.6 All amounts are in Canadian funds.

ARTICLE A-5 PAYMENT

5.1 Subject to the provisions of the *Contract Documents*, and in accordance with legislation and statutory regulations respecting holdback percentages and, where such legislation or regulations do not exist or apply, subject to a holdback of percent (%), the *Owner* shall:

.1 make progress payments to the *Contractor* on account of the *Contract Price* when due in the amount certified by the *Consultant* together with such *Value Added Taxes* as may be applicable to such payments, and

.2 upon *Substantial Performance of the Work*, pay to the *Contractor* the unpaid balance of the holdback amount when due together with such *Value Added Taxes* as may be applicable to such payment, and

.3 upon the issuance of the final certificate for payment, pay to the *Contractor* the unpaid balance of the *Contract Price* when due together with such *Value Added Taxes* as may be applicable to such payment.

5.2 In the event of loss or damage occurring where payment becomes due under the property and boiler insurance policies, payments shall be made to the *Contractor* in accordance with the provisions of GC 11.1 – INSURANCE.

5.3 Interest

.1 Should either party fail to make payments as they become due under the terms of the *Contract* or in an award by arbitration or court, interest at the following rates on such unpaid amounts shall also become due and payable until payment:

(1) 2% per annum above the prime rate for the first 60 days.

(2) 4% per annum above the prime rate after the first 60 days.

Such interest shall be compounded on a monthly basis. The prime rate shall be the rate of interest quoted by

(Insert name of chartered lending institution whose prime rate is to be used)

for prime business loans as it may change from time to time.

.2 Interest shall apply at the rate and in the manner prescribed by paragraph 5.3.1 of this Article on the settlement amount of any claim in dispute that is resolved either pursuant to Part 8 of the General Conditions – DISPUTE RESOLUTION or otherwise, from the date the amount would have been due and payable under the *Contract*, had it not been in dispute, until the date it is paid.

ARTICLE A-6 RECEIPT OF AND ADDRESSES FOR NOTICES IN WRITING

6.1 *Notices in Writing* will be addressed to the recipient at the address set out below. The delivery of a *Notice in Writing* will be by hand, by courier, by prepaid first class mail, or by facsimile or other form of electronic communication during the transmission of which no indication of failure of receipt is communicated to the sender. A *Notice in Writing* delivered by one party in accordance with this *Contract* will be deemed to have been received by the other party on the date of delivery if delivered by hand or courier, or if sent by mail it shall be deemed to have been received five calendar days after the date on which it was mailed, provided that if either such day is not a *Working Day*, then the *Notice in Writing* shall be deemed to have been received on the *Working Day* next following such day. A *Notice in Writing* sent by facsimile or other form of electronic communication shall be deemed to have been received on the date of its transmission provided that if such day is not a *Working Day* or if it is received after the end of normal business hours on the date of its transmission at the place of receipt, then it shall be deemed to have been received at the opening of business at the place of receipt on the first *Working Day* next following the transmission thereof. An address for a party may be changed by *Notice in Writing* to the other party setting out the new address in accordance with this Article.

Owner

*name of Owner**

address

Facsimile number *e-mail address*

Contractor

*name of Contractor**

address

Facsimile number *e-mail address*

Consultant

*name of Consultant**

address

Facsimile number *e-mail address*

** If it is intended that the notice must be received by a specific individual, that individual's name shall be indicated.*

ARTICLE A-7 LANGUAGE OF THE CONTRACT

7.1 When the *Contract Documents* are prepared in both the English and French languages, it is agreed that in the event of any apparent discrepancy between the English and French versions, the English/French* language shall prevail.
* *Complete this statement by striking out inapplicable term.*

7.2 This Agreement is drawn in English at the request of the parties hereto. La présente convention est rédigée en anglais à la demande des parties.

ARTICLE A-8 SUCCESSION

8.1 The *Contract* shall enure to the benefit of and be binding upon the parties hereto, their respective heirs, legal representatives, successors, and assigns.

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

SIGNED AND DELIVERED
in the presence of:

WITNESS	**OWNER**
	name of owner
signature	*signature*
name of person signing	*name and title of person signing*
signature	*signature*
name of person signing	*name and title of person signing*
WITNESS	**CONTRACTOR**
	name of Contractor
signature	*signature*
name of person signing	*name and title of person signing*
signature	*signature*
name of person signing	*name and title of person signing*

N.B. Where legal jurisdiction, local practice or Owner or Contractor requirement calls for:
(a) proof of authority to execute this document, attach such proof of authority in the form of a certified copy of a resolution naming the representative(s) authorized to sign the Agreement for and on behalf of the corporation or partnership; or
(b) the affixing of a corporate seal, this Agreement should be properly sealed.

DEFINITIONS

The following Definitions shall apply to all *Contract Documents*.

Change Directive
A *Change Directive* is a written instruction prepared by the *Consultant* and signed by the *Owner* directing the *Contractor* to proceed with a change in the *Work* within the general scope of the *Contract Documents* prior to the *Owner* and the *Contractor* agreeing upon an adjustment in *Contract Price* and *Contract Time*.

Change Order
A *Change Order* is a written amendment to the *Contract* prepared by the *Consultant* and signed by the *Owner* and the *Contractor* stating their agreement upon:
- a change in the *Work*;
- the method of adjustment or the amount of the adjustment in the *Contract Price*, if any; and
- the extent of the adjustment in the *Contract Time*, if any.

Construction Equipment
Construction Equipment means all machinery and equipment, either operated or not operated, that is required for preparing, fabricating, conveying, erecting, or otherwise performing the *Work* but is not incorporated into the *Work*.

Consultant
The *Consultant* is the person or entity engaged by the *Owner* and identified as such in the Agreement. The *Consultant* is the Architect, the Engineer or entity licensed to practise in the province or territory of the *Place of the Work*. The term *Consultant* means the *Consultant* or the *Consultant*'s authorized representative.

Contract
The *Contract* is the undertaking by the parties to perform their respective duties, responsibilities and obligations as prescribed in the *Contract Documents* and represents the entire agreement between the parties.

Contract Documents
The *Contract Documents* consist of those documents listed in Article A-3 of the Agreement - CONTRACT DOCUMENTS and amendments agreed upon between the parties.

Contract Price
The *Contract Price* is the sum of the products of each *Unit Price* stated in the *Schedule of Prices* multiplied by the appropriate actual quantity of each *Unit Price* item that is incorporated in or made necessary by the *Work*, plus lump sums, if any, and allowances, if any, stated in the *Schedule of Prices.* .

Contract Time
The *Contract Time* is the time stipulated in paragraph 1.3 of Article A-1 of the Agreement - THE WORK from commencement of the *Work* to *Substantial Performance of the Work.*

Contractor
The *Contractor* is the person or entity identified as such in the Agreement. The term *Contractor* means the *Contractor* or the *Contractor*'s authorized representative as designated to the *Owner* in writing.

Drawings
The *Drawings* are the graphic and pictorial portions of the *Contract Documents*, wherever located and whenever issued, showing the design, location and dimensions of the *Work*, generally including plans, elevations, sections, details, and diagrams.

Notice in Writing
A *Notice in Writing*, where identified in the *Contract Documents*, is a written communication between the parties or between them and the *Consultant* that is transmitted in accordance with the provisions of Article A-6 of the Agreement – RECEIPT OF AND ADDRESSES FOR NOTICES IN WRITING.

Owner
The *Owner* is the person or entity identified as such in the Agreement. The term *Owner* means the *Owner* or the *Owner*'s authorized agent or representative as designated to the *Contractor* in writing, but does not include the *Consultant*.

Place of the Work
The *Place of the Work* is the designated site or location of the *Work* identified in the *Contract Documents*.

Product
Product or Products means material, machinery, equipment, and fixtures forming the *Work*, but does not include *Construction Equipment.*

Project
The *Project* means the total construction contemplated of which the *Work* may be the whole or a part.

Provide
Provide means to supply and install.

Schedule of Prices
The *Schedule of Prices* is the schedule included in Article A-4 - CONTRACT PRICE and, subject to adjustments as provided in the *Contract Documents*, identifies:
- the items of work;
- the units of measure, estimated quantity, and *Unit Price* for each *Unit Price* item;
- the price for each lump sum item, if any; and
- allowances, if any.

Shop Drawings
Shop Drawings are drawings, diagrams, illustrations, schedules, performance charts, brochures, *Product* data, and other data which the *Contractor* provides to illustrate details of portions of the Work.

Specifications
The *Specifications* are that portion of the *Contract Documents*, wherever located and whenever issued, consisting of the written requirements and standards for *Products*, systems, workmanship, quality, and the services necessary for the performance of the *Work*.

Subcontractor
A *Subcontractor* is a person or entity having a direct contract with the *Contractor* to perform a part or parts of the *Work* at the *Place of the Work*.

Substantial Performance of the Work
Substantial Performance of the Work is as defined in the lien legislation applicable to the *Place of the Work*. If such legislation is not in force or does not contain such definition, or if the *Work* is governed by the Civil Code of Quebec, *Substantial Performance of the Work* shall have been reached when the *Work* is ready for use or is being used for the purpose intended and is so certified by the *Consultant*.

Supplemental Instruction
A *Supplemental Instruction* is an instruction, not involving adjustment in the *Contract Price* or *Contract Time*, in the form of *Specifications*, *Drawings*, schedules, samples, models or written instructions, consistent with the intent of the *Contract Documents*. It is to be issued by the *Consultant* to supplement the *Contract Documents* as required for the performance of the *Work*.

Supplier
A *Supplier* is a person or entity having a direct contract with the *Contractor* to supply *Products*.

Temporary Work
Temporary Work means temporary supports, structures, facilities, services, and other temporary items, excluding *Construction Equipment*, required for the execution of the *Work* but not incorporated into the *Work*.

Unit Price
A *Unit Price* is the amount payable for a single *Unit Price* item as stated in the *Schedule of Prices*.

Value Added Taxes
Value Added Taxes means such sum as shall be levied upon the *Contract Price* by the Federal or any Provincial or Territorial Government and is computed as a percentage of the *Contract Price* and includes the Goods and Services Tax, the Quebec Sales Tax, the Harmonized Sales Tax, and any similar tax, the collection and payment of which, have been imposed on the *Contractor* by the tax legislation.

Work
The *Work* means the total construction and related services required by the *Contract Documents*.

Working Day
Working Day means a day other than a Saturday, Sunday, statutory holiday or statutory vacation day that is observed by the construction industry in the area of the *Place of the Work*.

GENERAL CONDITIONS OF THE UNIT PRICE CONTRACT

PART 1 GENERAL PROVISIONS

GC 1.1 CONTRACT DOCUMENTS

1.1.1 The intent of the *Contract Documents* is to include the labour, *Products* and services necessary for the performance of the *Work* by the *Contractor* in accordance with these documents. It is not intended, however, that the *Contractor* shall supply products or perform work not consistent with, not covered by, or not properly inferable from the *Contract Documents*.

1.1.2 Nothing contained in the *Contract Documents* shall create any contractual relationship between:
- .1 the *Owner* and a *Subcontractor*, a *Supplier*, or their agent, employee, or other person performing any portion of the *Work*.
- .2 the *Consultant* and the *Contractor*, a *Subcontractor*, a *Supplier*, or their agent, employee, or other person performing any portion of the *Work*.

1.1.3 The *Contract Documents* are complementary, and what is required by any one shall be as binding as if required by all.

1.1.4 Words and abbreviations which have well known technical or trade meanings are used in the *Contract Documents* in accordance with such recognized meanings.

1.1.5 References in the *Contract Documents* to the singular shall be considered to include the plural as the context requires.

1.1.6 Neither the organization of the *Specifications* nor the arrangement of *Drawings* shall control the *Contractor* in dividing the work among *Subcontractors* and *Suppliers*.

1.1.7 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 Definitions,
  - Supplementary Conditions,
  - the General Conditions,
  - Division 1 of the *Specifications*,
  - technical *Specifications*,
  - material and finishing schedules,
  - the *Drawings*.
- .2 *Drawings* of larger scale shall govern over those of smaller scale of the same date.
- .3 dimensions shown on *Drawings* shall govern over dimensions scaled from *Drawings*.
- .4 later dated documents shall govern over earlier documents of the same type.

1.1.8 The *Owner* shall provide the *Contractor*, without charge, sufficient copies of the *Contract Documents* to perform the *Work*.

1.1.9 *Specifications*, *Drawings*, models, and copies thereof furnished by the *Consultant* are and shall remain the *Consultant*'s property, with the exception of the signed *Contract* sets, which shall belong to each party to the *Contract*. All *Specifications*, *Drawings* and models furnished by the *Consultant* are to be used only with respect to the *Work* and are not to be used on other work. These *Specifications*, *Drawings* and models are not to be copied or altered in any manner without the written authorization of the *Consultant*.

1.1.10 Models furnished by the *Contractor* at the *Owner*'s expense are the property of the *Owner*.

GC 1.2 LAW OF THE CONTRACT

1.2.1 The law of the *Place of the Work* shall govern the interpretation of the *Contract*.

GC 1.3 RIGHTS AND REMEDIES

1.3.1 Except as expressly provided in the *Contract Documents*, the duties and obligations imposed by the *Contract Documents* and the rights and remedies available thereunder shall be in addition to and not a limitation of any duties, obligations, rights, and remedies otherwise imposed or available by law.

1.3.2 No action or failure to act by the *Owner*, *Consultant* or *Contractor* shall constitute a waiver of any right or duty afforded any of them under the *Contract*, nor shall any such action or failure to act constitute an approval of or acquiescence in any breach thereunder, except as may be specifically agreed in writing.

GC 1.4 ASSIGNMENT

1.4.1 Neither party to the *Contract* shall assign the *Contract* or a portion thereof without the written consent of the other, which consent shall not be unreasonably withheld.

PART 2 ADMINISTRATION OF THE CONTRACT

GC 2.1 AUTHORITY OF THE CONSULTANT

2.1.1 The *Consultant* will have authority to act on behalf of the *Owner* only to the extent provided in the *Contract Documents*, unless otherwise modified by written agreement as provided in paragraph 2.1.2.

2.1.2 The duties, responsibilities and limitations of authority of the *Consultant* as set forth in the *Contract Documents* shall be modified or extended only with the written consent of the *Owner*, the *Contractor* and the *Consultant*.

2.1.3 If the *Consultant*'s employment is terminated, the *Owner* shall immediately appoint or reappoint a *Consultant* against whom the *Contractor* makes no reasonable objection and whose status under the *Contract Documents* shall be that of the former *Consultant*.

GC 2.2 ROLE OF THE CONSULTANT

2.2.1 The *Consultant* will provide administration of the *Contract* as described in the *Contract Documents*.

2.2.2 The *Consultant* will visit the *Place of the Work* at intervals appropriate to the progress of construction to become familiar with the progress and quality of the work and to determine if the *Work* is proceeding in general conformity with the *Contract Documents*.

2.2.3 If the *Owner* and the *Consultant* agree, the *Consultant* will provide at the *Place of the Work*, one or more project representatives to assist in carrying out the *Consultant*'s responsibilities. The duties, responsibilities and limitations of authority of such project representatives shall be as set forth in writing to the *Contractor*.

2.2.4 The *Consultant* will promptly inform the *Owner* of the date of receipt of the *Contractor*'s applications for payment as provided in paragraph 5.3.1.1 of GC 5.3 – PROGRESS PAYMENT.

2.2.5 Based on the *Consultant*'s observations and review of the *Contractor*'s applications for payment, the *Consultant* will determine the amounts owing to the *Contractor* under the *Contract* and will issue certificates for payment as provided in Article A-5 of the Agreement - PAYMENT, GC 5.3 - PROGRESS PAYMENT and GC 5.7 - FINAL PAYMENT.

2.2.6 The *Consultant* will not be responsible for and will not have control, charge or supervision of construction means, methods, techniques, sequences, or procedures, or for safety precautions and programs required in connection with the *Work* in accordance with the applicable construction safety legislation, other regulations or general construction practice. The *Consultant* will not be responsible for the *Contractor*'s failure to carry out the *Work* in accordance with the *Contract Documents*. The *Consultant* will not have control over, charge of or be responsible for the acts or omissions of the *Contractor*, *Subcontractors*, *Suppliers*, or their agents, employees or any other persons performing portions of the *Work*.

2.2.7 Except with respect to GC 5.1 - FINANCING INFORMATION REQUIRED OF THE OWNER, the *Consultant* will be, in the first instance, the interpreter of the requirements of the *Contract Documents*.

2.2.8 Matters in question relating to the performance of the *Work* or the interpretation of the *Contract Documents* shall be initially referred in writing to the *Consultant* by the party raising the question for interpretations and findings and copied to the other party.

2.2.9 Interpretations and findings of the *Consultant* shall be consistent with the intent of the *Contract Documents*. In making such interpretations and findings the *Consultant* will not show partiality to either the *Owner* or the *Contractor*.

2.2.10 The *Consultant*'s interpretations and findings will be given in writing to the parties within a reasonable time.

2.2.11 With respect to claims for a change in *Contract Price*, the *Consultant* will make findings as set out in GC 6.6 – CLAIMS FOR A CHANGE IN CONTRACT PRICE.

2.2.12 The *Consultant* will have authority to reject work which in the *Consultant*'s opinion does not conform to the requirements of the *Contract Documents*. Whenever the *Consultant* considers it necessary or advisable, the *Consultant* will have authority to require inspection or testing of work, whether or not such work is fabricated, installed or completed. However, neither the authority of the *Consultant* to act nor any decision either to exercise or not to exercise such authority shall give rise to any duty or responsibility of the *Consultant* to the *Contractor*, *Subcontractors*, *Suppliers,* or their agents, employees or other persons performing any of the *Work*.

2.2.13 During the progress of the *Work* the *Consultant* will furnish *Supplemental Instructions* to the *Contractor* with reasonable promptness or in accordance with a schedule for such instructions agreed to by the *Consultant* and the *Contractor.*

2.2.14 The *Consultant* will review and take appropriate action upon *Shop Drawings*, samples and other *Contractor*'s submittals, in accordance with the *Contract Documents*.

2.2.15 The *Consultant* will prepare *Change Orders* and *Change Directives* as provided in GC 6.2 - CHANGE ORDER and GC 6.3 - CHANGE DIRECTIVE.

2.2.16 The *Consultant* will conduct reviews of the *Work* to determine the date of *Substantial Performance of the Work* as provided in GC 5.4 - SUBSTANTIAL PERFORMANCE OF THE WORK.

2.2.17 All certificates issued by the *Consultant* will be to the best of the *Consultant*'s knowledge, information and belief. By issuing any certificate, the *Consultant* does not guarantee the *Work* is correct or complete.

2.2.18 The *Consultant* will receive and review written warranties and related documents required by the *Contract* and provided by the *Contractor* and will forward such warranties and documents to the *Owner* for the *Owner*'s acceptance.

GC 2.3 REVIEW AND INSPECTION OF THE WORK

2.3.1 The *Owner* and the *Consultant* shall have access to the *Work* at all times. The *Contractor* shall provide sufficient, safe and proper facilities at all times for the review of the *Work* by the *Consultant* and the inspection of the *Work* by authorized agencies. If parts of the *Work* are in preparation at locations other than the *Place of the Work*, the *Owner* and the *Consultant* shall be given access to such work whenever it is in progress.

2.3.2 If work is designated for measurement for payment, tests, inspections or approvals in the *Contract Documents*, or by the *Consultant*'s instructions, or by the laws or ordinances of the *Place of the Work*, the *Contractor* shall give the *Consultant* reasonable notification of when the work will be ready for measurements, tests, inspections and approvals. The *Contractor* shall arrange for and shall give the *Consultant* reasonable notification of the date and time of inspections by other authorities.

2.3.3 The *Contractor* shall furnish promptly to the *Consultant* two copies of certificates and inspection reports relating to the *Work*.

2.3.4 If the *Contractor* covers, or permits to be covered, work that has been designated for measurement for payment, tests, inspections or approvals before such measurements, tests, inspections or approvals are made, given or completed, the *Contractor* shall, if so directed, uncover such work, have the measurements, tests, inspections, or approvals satisfactorily completed, and make good covering work at the *Contractor*'s expense.

2.3.5 The *Consultant* may order any portion or portions of the *Work* to be examined to confirm that such work is in accordance with the requirements of the *Contract Documents*. If the work is not in accordance with the requirements of the *Contract Documents*, the *Contractor* shall correct the work and pay the cost of examination and correction. If the work is in accordance with the requirements of the *Contract Documents*, the *Owner* shall pay the cost of examination and restoration.

2.3.6 The *Contractor* shall pay the cost of making any test or inspection, including the cost of samples required for such test or inspection, if such test or inspection is designated in the *Contract Documents* to be performed by the *Contractor* or is designated by the laws or ordinances applicable to the *Place of the Work*.

2.3.7 The *Contractor* shall pay the cost of samples required for any test or inspection to be performed by the *Consultant* or the *Owner* if such test or inspection is designated in the *Contract Documents*.

GC 2.4 DEFECTIVE WORK

2.4.1 The *Contractor* shall promptly correct defective work that has been rejected by the *Consultant* as failing to conform to the *Contract Documents* whether or not the defective work has been incorporated in the *Work* and whether or not the defect is the result of poor workmanship, use of defective products or damage through carelessness or other act or omission of the *Contractor*.

2.4.2 The *Contractor* shall make good promptly other contractors' work destroyed or damaged by such removals or replacements at the *Contractor*'s expense.

2.4.3 If, in the opinion of the *Consultant,* it is not expedient to correct defective work or work not performed as provided in the *Contract Documents*, the *Owner* may deduct from the amount otherwise due to the *Contractor* the difference in value between the work as performed and that called for by the *Contract Documents*. If the *Owner* and the *Contractor* do not agree on the difference in value, they shall refer the matter to the *Consultant* for a determination.

PART 3 EXECUTION OF THE WORK

GC 3.1 CONTROL OF THE WORK

3.1.1 The *Contractor* shall have total control of the *Work* and shall effectively direct and supervise the *Work* so as to ensure conformity with the *Contract Documents*.

3.1.2 The *Contractor* shall be solely responsible for construction means, methods, techniques, sequences, and procedures and for co-ordinating the various parts of the *Work* under the *Contract*.

GC 3.2 CONSTRUCTION BY OWNER OR OTHER CONTRACTORS

3.2.1 The *Owner* reserves the right to award separate contracts in connection with other parts of the *Project* to other contractors and to perform work with own forces.

3.2.2 When separate contracts are awarded for other parts of the *Project*, or when work is performed by the *Owner*'s own forces, the *Owner* shall:

.1 provide for the co-ordination of the activities and work of other contractors and *Owner*'s own forces with the *Work* of the *Contract*;

.2 assume overall responsibility for compliance with the applicable health and construction safety legislation at the *Place of the Work*;

.3 enter into separate contracts with other contractors under conditions of contract which are compatible with the conditions of the *Contract*;

.4 ensure that insurance coverage is provided to the same requirements as are called for in GC 11.1 - INSURANCE and co-ordinate such insurance with the insurance coverage of the *Contractor* as it affects the *Work*; and

.5 take all reasonable precautions to avoid labour disputes or other disputes on the *Project* arising from the work of other contractors or the *Owner*'s own forces.

3.2.3 When separate contracts are awarded for other parts of the *Project*, or when work is performed by the *Owner*'s own forces, the *Contractor* shall:

.1 afford the *Owner* and other contractors reasonable opportunity to store their products and execute their work;

.2 cooperate with other contractors and the *Owner* in reviewing their construction schedules; and

.3 promptly report to the *Consultant* in writing any apparent deficiencies in the work of other contractors or of the *Owner*'s own forces, where such work affects the proper execution of any portion of the *Work*, prior to proceeding with that portion of the *Work*.

3.2.4 Where the *Contract Documents* identify work to be performed by other contractors or the *Owner*'s own forces, the *Contractor* shall co-ordinate and schedule the *Work* with the work of other contractors and the *Owner*'s own forces as specified in the *Contract Documents*.

3.2.5 Where a change in the *Work* is required as a result of the co-ordination and integration of the work of other contractors or *Owner*'s own forces with the *Work*, the changes shall be authorized and valued as provided in GC 6.1 – OWNER'S RIGHT TO MAKE CHANGES, GC 6.2 - CHANGE ORDER and GC 6.3 - CHANGE DIRECTIVE.

3.2.6 Disputes and other matters in question between the *Contractor* and other contractors shall be dealt with as provided in Part 8 of the General Conditions - DISPUTE RESOLUTION provided the other contractors have reciprocal obligations. The *Contractor* shall be deemed to have consented to arbitration of any dispute with any other contractor whose contract with the *Owner* contains a similar agreement to arbitrate.

GC 3.3 TEMPORARY WORK

3.3.1 The *Contractor* shall have the sole responsibility for the design, erection, operation, maintenance, and removal of *Temporary Work*.

3.3.2 The *Contractor* shall engage and pay for registered professional engineering personnel skilled in the appropriate disciplines to perform those functions referred to in paragraph 3.3.1 where required by law or by the *Contract Documents* and in all cases where such *Temporary Work* is of such a nature that professional engineering skill is required to produce safe and satisfactory results.

3.3.3 Notwithstanding the provisions of GC 3.1 - CONTROL OF THE WORK, paragraph 3.3.1 and paragraph 3.3.2 or provisions to the contrary elsewhere in the *Contract Documents* where such *Contract Documents* include designs for *Temporary Work* or specify a method of construction in whole or in part, such designs or methods of construction shall be considered to be part of the design of the *Work* and the *Contractor* shall not be held responsible for that part of the design or the specified method of construction. The *Contractor* shall, however, be responsible for the execution of such design or specified method of construction in the same manner as for the execution of the *Work*.

GC 3.4 DOCUMENT REVIEW

3.4.1 The *Contractor* shall review the *Contract Documents* and shall report promptly to the *Consultant* any error, inconsistency or omission the *Contractor* may discover. Such review by the *Contractor* shall be to the best of the *Contractor*'s knowledge, information and belief and in making such review the *Contractor* does not assume any responsibility to the *Owner* or the *Consultant* for the accuracy of the review. The *Contractor* shall not be liable for damage or costs resulting from such errors, inconsistencies or omissions in the *Contract Documents,* which the *Contractor* did not discover. If the *Contractor* does discover any error, inconsistency or omission in the *Contract Documents*, the *Contractor* shall not proceed with the work affected until the *Contractor* has received corrected or missing information from the *Consultant*.

GC 3.5 CONSTRUCTION SCHEDULE

3.5.1 The *Contractor* shall:

.1 prepare and submit to the *Owner* and the *Consultant* prior to the first application for payment, 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 in conformity with the *Contract Time*;

.2 monitor the progress of the *Work* relative to the construction schedule and update the schedule on a monthly basis or as stipulated by the *Contract Documents*; and

.3 advise the *Consultant* of any revisions required to the schedule as the result of extensions of the *Contract Time* as provided in Part 6 of the General Conditions - CHANGES IN THE WORK.

GC 3.6 SUPERVISION

3.6.1 The *Contractor* shall provide all necessary supervision and appoint a competent representative who shall be in attendance at the *Place of the Work* while work is being performed. The appointed representative shall not be changed except for valid reason.

3.6.2 The appointed representative shall represent the *Contractor* at the *Place of the Work*. Information and instructions provided by the *Consultant* to the *Contractor*'s appointed representative shall be deemed to have been received by the *Contractor*, except with respect to Article A-6 of the Agreement – RECEIPT OF AND ADDRESSES FOR NOTICES IN WRITING.

GC 3.7 SUBCONTRACTORS AND SUPPLIERS

3.7.1 The *Contractor* shall preserve and protect the rights of the parties under the *Contract* with respect to work to be performed under subcontract, and shall:

.1 enter into contracts or written agreements with *Subcontractors* and *Suppliers* to require them to perform their work as provided in the *Contract Documents*;

.2 incorporate the terms and conditions of the *Contract Documents* into all contracts or written agreements with *Subcontractors* and *Suppliers*; and

.3 be as fully responsible to the *Owner* for acts and omissions of *Subcontractors*, *Suppliers* and of persons directly or indirectly employed by them as for acts and omissions of persons directly employed by the *Contractor*.

3.7.2 The *Contractor* shall indicate in writing, if requested by the *Owner*, those *Subcontractors* or *Suppliers* whose bids have been received by the *Contractor* which the *Contractor* would be prepared to accept for the performance of a portion of the *Work*. Should the *Owner* not object before signing the *Contract*, the *Contractor* shall employ those *Subcontractors* or *Suppliers* so identified by the *Contractor* in writing for the performance of that portion of the *Work* to which their bid applies.

3.7.3 The *Owner* may, for reasonable cause, at any time before the *Owner* has signed the *Contract*, object to the use of a proposed *Subcontractor* or *Supplier* and require the *Contractor* to employ one of the other subcontract bidders.

3.7.4 If the *Owner* requires the *Contractor* to change a proposed *Subcontractor* or *Supplier*, the *Contract Price* and *Contract Time* shall be adjusted by the differences occasioned by such required change.

3.7.5 The *Contractor* shall not be required to employ as a *Subcontractor* or *Supplier*, a person or firm to which the *Contractor* may reasonably object.

3.7.6 The *Owner*, through the *Consultant*, may provide to a *Subcontractor* or *Supplier* information as to the percentage of the *Subcontractor*'s or *Supplier*'s work which has been certified for payment.

GC 3.8 LABOUR AND PRODUCTS

3.8.1 The *Contractor* shall provide and pay for labour, *Products*, tools, *Construction Equipment*, water, heat, light, power, transportation, and other facilities and services necessary for the performance of the *Work* in accordance with the *Contract*.

3.8.2 Unless otherwise specified in the *Contract Documents*, *Products* provided shall be new. *Products* which are not specified shall be of a quality consistent with those specified and their use acceptable to the *Consultant*.

3.8.3 The *Contractor* shall maintain good order and discipline among the *Contractor*'s employees engaged on the *Work* and shall not employ on the *Work* anyone not skilled in the tasks assigned.

GC 3.9 DOCUMENTS AT THE SITE

3.9.1 The *Contractor* shall keep one copy of current *Contract Documents*, submittals, reports, and records of meetings at the *Place of the Work*, in good order and available to the *Owner* and the *Consultant*.

GC 3.10 SHOP DRAWINGS

3.10.1 The *Contractor* shall provide *Shop Drawings* as required in the *Contract Documents*.

3.10.2 The *Contractor* shall provide *Shop Drawings* to the *Consultant* to review in orderly sequence and sufficiently in advance so as to cause no delay in the *Work* or in the work of other contractors.

3.10.3 Upon request of the *Contractor* or the Consultant, they shall jointly prepare a schedule of the dates for provision, review and return of *Shop Drawings*.

3.10.4 The *Contractor* shall provide *Shop Drawings* in the form specified, or if not specified, as directed by the *Consultant*.

3.10.5 *Shop Drawings* provided by the *Contractor* to the *Consultant* shall indicate by stamp, date and signature of the person responsible for the review that the *Contractor* has reviewed each one of them.

3.10.6 The *Consultant*'s review is for conformity to the design concept and for general arrangement only.

3.10.7 *Shop Drawings* which require approval of any legally constituted authority having jurisdiction shall be provided to such authority by the *Contractor* for approval.

3.10.8 The *Contractor* shall review all *Shop Drawings* before providing them to the *Consultant*. The *Contractor* represents by this review that:

.1 the *Contractor* has determined and verified all applicable field measurements, field construction conditions, *Product* requirements, catalogue numbers and similar data, or will do so, and

.2 the *Contractor* has checked and co-ordinated each *Shop Drawing* with the requirements of the *Work* and of the *Contract Documents*.

3.10.9 At the time of providing *Shop Drawings*, the *Contractor* shall expressly advise the *Consultant* in writing of any deviations in a *Shop Drawing* from the requirements of the *Contract Documents*. The *Consultant* shall indicate the acceptance or rejection of such deviation expressly in writing.

3.10.10 The *Consultant*'s review shall not relieve the *Contractor* of responsibility for errors or omissions in the *Shop Drawings* or for meeting all requirements of the *Contract Documents*.

3.10.11 The *Contractor* shall provide revised *Shop Drawings* to correct those which the *Consultant* rejects as inconsistent with the *Contract Documents,* unless otherwise directed by the *Consultant*. The *Contractor* shall notify the *Consultant* in writing of any revisions to the *Shop Drawings* other than those requested by the *Consultant*.

3.10.12 The *Consultant* will review and return *Shop Drawings* in accordance with the schedule agreed upon, or, in the absence of such schedule, with reasonable promptness so as to cause no delay in the performance of the *Work*.

GC 3.11 USE OF THE WORK

3.11.1 The *Contractor* shall confine *Construction Equipment*, *Temporary Work*, storage of *Products*, waste products and debris, and operations of employees and *Subcontractors* to limits indicated by laws, ordinances, permits, or the *Contract Documents* and shall not unreasonably encumber the *Place of the Work*.

3.11.2 The *Contractor* shall not load or permit to be loaded any part of the *Work* with a weight or force that will endanger the safety of the *Work*.

GC 3.12 CUTTING AND REMEDIAL WORK

3.12.1 The *Contractor* shall perform the cutting and remedial work required to make the affected parts of the *Work* come together properly.

3.12.2 The *Contractor* shall co-ordinate the *Work* to ensure that the cutting and remedial work is kept to a minimum.

3.12.3 Should the *Owner*, the *Consultant*, other contractors or anyone employed by them be responsible for ill-timed work necessitating cutting or remedial work to be performed, the cost of such cutting or remedial work shall be valued as provided in GC 6.1 – OWNER'S RIGHT TO MAKE CHANGES, GC 6.2 - CHANGE ORDER and GC 6.3 - CHANGE DIRECTIVE.

3.12.4 Cutting and remedial work shall be performed by specialists familiar with the *Products* affected and shall be performed in a manner to neither damage nor endanger the *Work*.

GC 3.13 CLEANUP

3.13.1 The *Contractor* shall maintain the *Work* in a safe and tidy condition and free from the accumulation of waste products and debris, other than that caused by the *Owner*, other contractors or their employees.

3.13.2 Before applying for *Substantial Performance of the Work* as provided in GC 5.4 – SUBSTANTIAL PERFORMANCE OF THE WORK, the *Contractor* shall remove waste products and debris, other than that resulting from the work of the *Owner*, other contractors or their employees, and shall leave the *Place of the Work* clean and suitable for use or occupancy by the *Owner*. The *Contractor* shall remove products, tools, *Construction Equipment*, and *Temporary Work* not required for the performance of the remaining work.

3.13.3 Prior to application for the final payment, the *Contractor* shall remove any remaining products, tools, *Construction Equipment*, *Temporary Work*, and waste products and debris, other than those resulting from the work of the *Owner*, other contractors or their employees.

PART 4 ALLOWANCES

GC 4.1 CASH ALLOWANCES

4.1.1 The *Contract Price* includes the cash allowances, if any, stated in the *Contract Documents*. The scope of work or costs included in such cash allowances shall be as described in the *Contract Documents*.

4.1.2 The *Contract Price*, and not the cash allowances, includes the *Contractor*'s overhead and profit in connection with such cash allowances.

4.1.3 Expenditures under cash allowances shall be authorized by the *Owner* through the *Consultant*.

4.1.4 Where the actual cost of the Work under any cash allowance exceeds the amount of the allowance, the *Contractor* shall be compensated for the excess incurred and substantiated plus an amount for overhead and profit on the excess as set out in the *Contract Documents*. Where the actual cost of the Work under any cash allowance is less than the amount of the allowance, the *Owner* shall be credited for the unexpended portion of the cash allowance, but not for the *Contractor*'s overhead and profit on such amount. Multiple cash allowances shall not be combined for the purpose of calculating the foregoing.

4.1.5 The *Contract Price* shall be adjusted by *Change Order* to provide for any difference between the amount of each cash allowance and the actual cost of the work under that cash allowance.

4.1.6 The value of the work performed under a cash allowance is eligible to be included in progress payments.

4.1.7 The *Contractor* and the *Consultant* shall jointly prepare a schedule that shows when the *Consultant* and *Owner* must authorize ordering of items called for under cash allowances to avoid delaying the progress of the *Work*.

GC 4.2 CONTINGENCY ALLOWANCE

4.2.1 The *Contract Price* includes the contingency allowance, if any, stated in the *Contract Documents*.

4.2.2 The contingency allowance includes the *Contractor*'s overhead and profit in connection with such contingency allowance.

4.2.3 Expenditures under the contingency allowance shall be authorized and valued as provided in GC 6.1 – OWNER'S RIGHT TO MAKE CHANGES, GC 6.2 - CHANGE ORDER and GC 6.3 - CHANGE DIRECTIVE.

4.2.4 The *Contract Price* shall be adjusted by *Change Order* to provide for any difference between the expenditures authorized under paragraph 4.2.3 and the contingency allowance.

PART 5 PAYMENT

GC 5.1 FINANCING INFORMATION REQUIRED OF THE OWNER

5.1.1 The *Owner* shall, at the request of the *Contractor*, before signing the *Contract*, and promptly from time to time thereafter, furnish to the *Contractor* reasonable evidence that financial arrangements have been made to fulfill the *Owner*'s obligations under the *Contract*.

5.1.2 The *Owner* shall give the *Contractor Notice in Writing* of any material change in the *Owner*'s financial arrangements to fulfill the *Owner*'s obligations under the *Contract* during the performance of the *Contract*.

GC 5.2 APPLICATIONS FOR PROGRESS PAYMENT

5.2.1 Applications for payment on account as provided in Article A-5 of the Agreement - PAYMENT may be made monthly as the *Work* progresses.

5.2.2 Applications for payment shall be dated the last day of each payment period, which is the last day of the month or an alternative day of the month agreed in writing by the parties.

5.2.3 As of the last day of the payment period, the amount claimed shall be:

1. the value of *Unit Price* work performed, being the sum of the products of each *Unit Price* stated in the *Schedule of Prices* multiplied by the appropriate actual quantity of each *Unit Price* item that is incorporated in or made necessary by the *Work*; plus
2. the value of lump sum work performed, proportionate to the amount of the lump sum item, plus
3. the value of *Products* delivered to the *Place of the Work* .

5.2.4 The *Contractor* shall submit to the *Consultant*, at least 15 calendar days before the first application for payment, a schedule of values for the lump sum items of work, aggregating the total amount of each lump sum item, so as to facilitate evaluation of applications for payment.

5.2.5 The schedule of values for lump sum items of work shall be made out in such form and supported by such evidence as the *Consultant* may reasonably direct and when accepted by the *Consultant*, shall be used as the basis for applications for payment for lump sum items, unless it is found to be in error.

5.2.6 The *Contractor* shall include with each application for payment:

1. a statement based on the schedule of values for the lump sum items of work; and
2. quantity measurements and other evidence as requested by the *Consultant* for each *Unit Price* item.

5.2.7 Applications for payment for *Products* delivered to the *Place of the Work* but not yet incorporated into the *Work* shall be supported by such evidence as the *Consultant* may reasonably require to establish the value and delivery of the *Products*.

GC 5.3 PROGRESS PAYMENT

5.3.1 After receipt by the *Consultant* of an application for payment submitted by the *Contractor* in accordance with GC 5.2 - APPLICATIONS FOR PROGRESS PAYMENT:

.1 the *Consultant* will promptly inform the *Owner* of the date of receipt of the *Contractor*'s application for payment,

.2 the *Consultant* will issue to the *Owner* and copy to the *Contractor*, no later than 10 calendar days after the receipt of the application for payment, a certificate for payment in the amount applied for, or in such other amount as the *Consultant* determines to be properly due. If the *Consultant* amends the application, the *Consultant* will promptly advise the *Contractor* in writing giving reasons for the amendment,

.3 the *Owner* shall make payment to the *Contractor* on account as provided in Article A-5 of the Agreement - PAYMENT on or before 20 calendar days after the later of:

- receipt by the *Consultant* of the application for payment, or
- the last day of the monthly payment period for which the application for payment is made.

5.3.2 Where the basis of payment for an item is by *Unit Price*, quantities in progress payments shall be considered approximate until all work required by that *Unit Price* item is complete.

GC 5.4 SUBSTANTIAL PERFORMANCE OF THE WORK

5.4.1 When the *Contractor* considers that the *Work* is substantially performed, or if permitted by the lien legislation applicable to the *Place of the Work* a designated portion thereof which the *Owner* agrees to accept separately is substantially performed, the *Contractor* shall, within one Working Day, deliver to the *Consultant* and to the Owner a comprehensive list of items to be completed or corrected, together with a written application for a review by the *Consultant* to establish *Substantial Performance of the Work* or substantial performance of the designated portion of the *Work*. Failure to include an item on the list does not alter the responsibility of the *Contractor* to complete the *Contract*.

5.4.2 The *Consultant* will review the *Work* to verify the validity of the application and shall promptly, and in any event, no later than 20 calendar days after receipt of the *Contractor*'s list and application:

.1 advise the *Contractor* in writing that the *Work* or the designated portion of the *Work* is not substantially performed and give reasons why, or

.2 state the date of *Substantial Performance of the Work* or a designated portion of the *Work* in a certificate and issue a copy of that certificate to each of the *Owner* and the *Contractor*.

5.4.3 Immediately following the issuance of the certificate of *Substantial Performance of the Work*, the *Contractor*, in consultation with the *Consultant*, shall establish a reasonable date for finishing the *Work*.

GC 5.5 PAYMENT OF HOLDBACK UPON SUBSTANTIAL PERFORMANCE OF THE WORK

5.5.1 After the issuance of the certificate of *Substantial Performance of the Work*, the *Contractor* shall:

.1 submit an application for payment of the holdback amount,

.2 submit CCDC 9A 'Statutory Declaration' to state that all accounts for labour, subcontracts, *Products*, *Construction Equipment*, and other indebtedness which may have been incurred by the *Contractor* in the *Substantial Performance of the Work* and for which the *Owner* might in any way be held responsible have been paid in full, except for amounts properly retained as a holdback or as an identified amount in dispute.

5.5.2 After the receipt of an application for payment from the *Contractor* and the statement as provided in paragraph 5.5.1, the *Consultant* will issue a certificate for payment of the holdback amount.

5.5.3 Where the holdback amount required by the applicable lien legislation has not been placed in a separate holdback account, the *Owner* shall, 10 calendar days prior to the expiry of the holdback period stipulated in the lien legislation applicable to the *Place of the Work*, place the holdback amount in a bank account in the joint names of the *Owner* and the *Contractor*.

5.5.4 In the common law jurisdictions, the holdback amount authorized by the certificate for payment of the holdback amount is due and payable on the calendar day following the expiration of the holdback period stipulated in the lien legislation applicable to the *Place of the Work*. Where lien legislation does not exist or apply, the holdback amount shall be due and payable in accordance with other legislation, industry practice or provisions which may be agreed to between the parties. The *Owner* may retain out of the holdback amount any sums required by law to satisfy any liens against the *Work* or, if permitted by the lien legislation applicable to the *Place of the Work*, other third party monetary claims against the *Contractor* which are enforceable against the *Owner*.

5.5.5 In the Province of Quebec, the holdback amount authorized by the certificate for payment of the holdback amount is due and payable 30 calendar days after the issuance of the certificate. The *Owner* may retain out of the holdback amount any sums required to satisfy any legal hypothecs that have been taken, or could be taken, against the *Work* or other third party monetary claims against the *Contractor* which are enforceable against the *Owner*.

GC 5.6 PROGRESSIVE RELEASE OF HOLDBACK

5.6.1 In the common law jurisdictions, where legislation permits and where, upon application by the *Contractor*, the *Consultant* has certified that the work of a *Subcontractor* or *Supplier* has been performed prior to *Substantial Performance of the Work*, the *Owner* shall pay the *Contractor* the holdback amount retained for such subcontract work, or the *Products* supplied by such *Supplier*, on the first calendar day following the expiration of the holdback period for such work stipulated in the lien legislation applicable to the *Place of the Work*. The *Owner* may retain out of the holdback amount any sums required by law to satisfy any liens against the *Work* or, if permitted by the lien legislation applicable to the *Place of the Work*, other third party monetary claims against the *Contractor* which are enforceable against the *Owner*.

5.6.2 In the Province of Quebec, where, upon application by the *Contractor*, the *Consultant* has certified that the work of a *Subcontractor* or *Supplier* has been performed prior to *Substantial Performance of the Work*, the *Owner* shall pay the *Contractor* the holdback amount retained for such subcontract work, or the *Products* supplied by such *Supplier*, no later than 30 calendar days after such certification by the *Consultant*. The *Owner* may retain out of the holdback amount any sums required to satisfy any legal hypothecs that have been taken, or could be taken, against the *Work* or other third party monetary claims against the *Contractor* which are enforceable against the *Owner*.

5.6.3 Notwithstanding the provisions of the preceding paragraphs, and notwithstanding the wording of such certificates, the *Contractor* shall ensure that such subcontract work or *Products* are protected pending the issuance of a final certificate for payment and be responsible for the correction of defects or work not performed regardless of whether or not such was apparent when such certificates were issued.

GC 5.7 FINAL PAYMENT

5.7.1 When the *Contractor* considers that the *Work* is completed, the *Contractor* shall submit an application for final payment.

5.7.2 The *Consultant* will, no later than 10 calendar days after the receipt of an application from the *Contractor* for final payment, review the *Work* to verify the validity of the application and advise the *Contractor* in writing that the application is valid or give reasons why it is not valid.

5.7.3 When the *Consultant* finds the *Contractor*'s application for final payment valid, the *Consultant* will promptly issue a final certificate for payment.

5.7.4 Subject to the provision of paragraph 10.4.1 of GC 10.4 - WORKERS' COMPENSATION, and any lien legislation applicable to the *Place of the Work*, the *Owner* shall, no later than 5 calendar days after the issuance of a final certificate for payment, pay the *Contractor* as provided in Article A-5 of the Agreement - PAYMENT.

GC 5.8 WITHHOLDING OF PAYMENT

5.8.1 If because of climatic or other conditions reasonably beyond the control of the *Contractor*, there are items of work that cannot be performed, payment in full for that portion of the *Work* which has been performed as certified by the *Consultant* shall not be withheld or delayed by the *Owner* on account thereof, but the *Owner* may withhold, until the remaining portion of the *Work* is finished, only such an amount that the *Consultant* determines is sufficient and reasonable to cover the cost of performing such remaining work.

GC 5.9 NON-CONFORMING WORK

5.9.1 No payment by the *Owner* under the *Contract* nor partial or entire use or occupancy of the *Work* by the *Owner* shall constitute an acceptance of any portion of the *Work* or *Products* which are not in accordance with the requirements of the *Contract Documents*.

PART 6 CHANGES IN THE WORK

GC 6.1 OWNER'S RIGHT TO MAKE CHANGES

6.1.1 The *Owner*, through the *Consultant*, without invalidating the *Contract*, may make:
- .1 changes in the *Work* consisting of additions, deletions or other revisions to the *Work* by *Change Order* or *Change Directive*, and
- .2 changes to the *Contract Time* for the *Work*, or any part thereof, by *Change Order*.

6.1.2 The *Contractor* shall not perform a change in the *Work* without a *Change Order* or a *Change Directive*.

GC 6.2 CHANGE ORDER

6.2.1 When a change in the *Work* is proposed or required, the *Consultant* will provide the *Contractor* with a written description of the proposed change in the *Work*. 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*.

6.2.2 The method of adjustment or the amount of adjustment to the *Contract Price* presented by the *Contractor* may be one of or a combination of the following:

.1 Change to the estimated quantities for *Unit Price* items listed in the *Schedule of Prices* that are applicable to the change in the *Work*;

.2 Lump sum quotation for the change in the *Work*;

.3 *Unit Price* quotation for the change in the *Work*;

.4 Cost of the *Contractor's* actual expenditures attributable to the change plus a fee for the Contractor's overhead and profit as agreed by the parties;

.5 Cost of the *Contractor's* actual savings attributable to the change.

6.2.3 When the *Owner* and *Contractor* agree to the adjustments in the *Contract Price* and *Contract Time* or to the method to be used to determine the adjustments, such agreement shall be effective immediately and shall be recorded in a *Change Order*. The value of the work performed as the result of a *Change Order* shall be included in the application for progress payment.

GC 6.3 CHANGE DIRECTIVE

6.3.1 If the *Owner* requires the *Contractor* to proceed with a change in the *Work* prior to the *Owner* and the *Contractor* agreeing upon the corresponding adjustment in *Contract Price* and *Contract Time*, the *Owner*, through the *Consultant*, shall issue a *Change Directive*.

6.3.2 A *Change Directive* shall only be used to direct a change in the *Work* which is within the general scope of the *Contract Documents*.

6.3.3 A *Change Directive* shall not be used to direct a change in the *Contract Time* only.

6.3.4 Upon receipt of a *Change Directive*, the *Contractor* shall proceed promptly with the change in the *Work*.

6.3.5 For the purpose of valuing *Change Directives*, changes in the *Work* that are not substitutions or otherwise related to each other shall not be grouped together in the same *Change Directive*.

6.3.6 The adjustment in the *Contract Price* for a change carried out by way of a *Change Directive* shall be determined on the basis of the cost of the *Contractor*'s actual expenditures and savings attributable to the *Change Directive*, valued in accordance with paragraph 6.3.7 and as follows:

.1 If the change results in a net increase in the *Contractor*'s cost, the *Contract Price* shall be increased by the amount of the net increase in the *Contractor*'s cost, plus the *Contractor*'s percentage fee on such net increase.

.2 If the change results in a net decrease in the *Contractor*'s cost, the *Contract Price* shall be decreased by the amount of the net decrease in the *Contractor*'s cost, without adjustment for the *Contractor*'s percentage fee.

.3 The *Contractor*'s fee shall be as specified in the *Contract Documents* or as otherwise agreed by the parties.

6.3.7 The cost of performing the work attributable to the *Change Directive* shall be limited to the actual cost of the following:

.1 salaries, wages and benefits paid to personnel in the direct employ of the *Contractor* under a salary or wage schedule agreed upon by the *Owner* and the *Contractor*, or in the absence of such a schedule, actual salaries, wages and benefits paid under applicable bargaining agreement, and in the absence of a salary or wage schedule and bargaining agreement, actual salaries, wages and benefits paid by the *Contractor*, for personnel

(1) stationed at the *Contractor*'s field office, in whatever capacity employed;

(2) engaged in expediting the production or transportation of material or equipment, at shops or on the road;

(3) engaged in the preparation or review of *Shop Drawings*, fabrication drawings, and coordination drawings; or

(4) engaged in the processing of changes in the *Work*.

.2 contributions, assessments or taxes incurred for such items as employment insurance, provincial or territorial health insurance, workers' compensation, and Canada or Quebec Pension Plan, insofar as such cost is based on wages, salaries or other remuneration paid to employees of the *Contractor* and included in the cost of the work as provided in paragraphs 6.3.7.1;

.3 travel and subsistence expenses of the *Contractor*'s personnel described in paragraphs 6.3.7.1;

.4 all *Products* including cost of transportation thereof;

.5 materials, supplies, *Construction Equipment*, *Temporary Work*, and hand tools not owned by the workers, including transportation and maintenance thereof, which are consumed in the performance of the *Work*; and cost less salvage value on such items used but not consumed, which remain the property of the *Contractor*;

.6 all tools and *Construction Equipment*, exclusive of hand tools used in the performance of the *Work*, whether rented from or provided by the *Contractor* or others, including installation, minor repairs and replacements, dismantling, removal, transportation, and delivery cost thereof;

.7 all equipment and services required for the *Contractor*'s field office;

.8 deposits lost;

.9 the amounts of all subcontracts;
.10 quality assurance such as independent inspection and testing services;
.11 charges levied by authorities having jurisdiction at the *Place of the Work*;
.12 royalties, patent licence fees and damages for infringement of patents and cost of defending suits therefor subject always to the *Contractor*'s obligations to indemnify the *Owner* as provided in paragraph 10.3.1 of GC 10.3 - PATENT FEES;
.13 any adjustment in premiums for all bonds and insurance which the *Contractor* is required, by the *Contract Documents*, to purchase and maintain;
.14 any adjustment in taxes, other than *Value Added Taxes*, and duties for which the *Contractor* is liable;
.15 charges for long distance telephone and facsimile communications, courier services, expressage, and petty cash items incurred in relation to the performance of the *Work*;
.16 removal and disposal of waste products and debris; and
.17 safety measures and requirements.

6.3.8 Notwithstanding any other provisions contained in the General Conditions of the *Contract*, it is the intention of the parties that the cost of any item under any cost element referred to in paragraph 6.3.7 shall cover and include any and all costs or liabilities attributable to the *Change Directive* other than those which are the result of or occasioned by any failure on the part of the *Contractor* to exercise reasonable care and diligence in the *Contractor*'s attention to the *Work*. Any cost due to failure on the part of the *Contractor* to exercise reasonable care and diligence in the *Contractor*'s attention to the *Work* shall be borne by the *Contractor*.

6.3.9 The *Contractor* shall 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 when requested.

6.3.10 For the purpose of valuing *Change Directives*, the *Owner* shall be afforded reasonable access to all of the *Contractor*'s pertinent documents related to the cost of performing the work attributable to the *Change Directive*.

6.3.11 Pending determination of the final amount of a *Change Directive*, the undisputed value of the work performed as the result of a *Change Directive* is eligible to be included in progress payments.

6.3.12 If the *Owner* and *Contractor* do not agree on the proposed adjustment in the *Contract Time* attributable to the change in the *Work*, or the method of determining it, the adjustment shall be referred to the *Consultant* for determination.

6.3.13 When the *Owner* and the *Contractor* reach agreement on the adjustment to the *Contract Price* and to the *Contract Time*, this agreement shall be recorded in a *Change Order*.

GC 6.4 CONCEALED OR UNKNOWN CONDITIONS

6.4.1 If the *Owner* or the *Contractor* discover conditions at the *Place of the Work* which are:
.1 subsurface or otherwise concealed physical conditions which existed before the commencement of the *Work* which differ materially from those indicated in the *Contract Documents*; or
.2 physical conditions, other than conditions due to weather, that are of a nature which differ materially from those ordinarily found to exist and generally recognized as inherent in construction activities of the character provided for in the *Contract Documents*,
then the observing party shall give *Notice in Writing* to the other party of such conditions before they are disturbed and in no event later than 5 *Working Days* after first observance of the conditions.

6.4.2 The *Consultant* will promptly investigate such conditions and make a finding. If the finding is that the conditions differ materially and this would cause an increase or decrease in the *Contractor*'s cost or time to perform the *Work*, the *Consultant*, with the *Owner*'s approval, will issue appropriate instructions for a change in the *Work* as provided in GC 6.2 - CHANGE ORDER or GC 6.3 - CHANGE DIRECTIVE.

6.4.3 If the *Consultant* finds that the conditions at the *Place of the Work* are not materially different or that no change in the *Contract Price* or the *Contract Time* is justified, the *Consultant* will report the reasons for this finding to the *Owner* and the *Contractor* in writing.

6.4.4 If such concealed or unknown conditions relate to toxic and hazardous substances and materials, artifacts and fossils, or mould, the parties will be governed by the provisions of GC 9.2 - TOXIC AND HAZARDOUS SUBSTANCES AND MATERIALS, GC 9.3 - ARTIFACTS AND FOSSILS and GC 9.5 – MOULD.

GC 6.5 DELAYS

6.5.1 If the *Contractor* is delayed in the performance of the *Work* by an action or omission of the *Owner*, *Consultant* or anyone employed or engaged by them directly or indirectly, contrary to the provisions of the *Contract Documents*, then the *Contract Time* shall be extended for such reasonable time as the *Consultant* may recommend in consultation with the *Contractor*. The *Contractor* shall be reimbursed by the *Owner* for reasonable costs incurred by the *Contractor* as the result of such delay.

6.5.2 If the *Contractor* is delayed in the performance of the *Work* by a stop work order issued by a court or other public authority and providing that such order was not issued as the result of an act or fault of the *Contractor* or any person employed or engaged by the *Contractor* directly or indirectly, then the *Contract Time* shall be extended for such reasonable time as the *Consultant* may recommend in consultation with the *Contractor*. The *Contractor* shall be reimbursed by the *Owner* for reasonable costs incurred by the *Contractor* as the result of such delay.

6.5.3 If the *Contractor* is delayed in the performance of the *Work* by:

.1 labour disputes, strikes, lock-outs (including lock-outs decreed or recommended for its members by a recognized contractors' association, of which the *Contractor* is a member or to which the *Contractor* is otherwise bound),

.2 fire, unusual delay by common carriers or unavoidable casualties,

.3 abnormally adverse weather conditions, or

.4 any cause beyond the *Contractor*'s control other than one resulting from a default or breach of *Contract* by the *Contractor*,

then the *Contract Time* shall be extended for such reasonable time as the *Consultant* may recommend in consultation with the *Contractor*. The extension of time shall not be less than the time lost as the result of the event causing the delay, unless the *Contractor* agrees to a shorter extension. The *Contractor* shall not be entitled to payment for costs incurred by such delays unless such delays result from actions by the *Owner*, *Consultant* or anyone employed or engaged by them directly or indirectly.

6.5.4 No extension shall be made for delay unless *Notice in Writing* of the cause of delay is given to the *Consultant* not later than 10 *Working Days* after the commencement of the delay. In the case of a continuing cause of delay only one *Notice in Writing* shall be necessary.

6.5.5 If no schedule is made under paragraph 2.2.13 of GC 2.2 - ROLE OF THE CONSULTANT, then no request for extension shall be made because of failure of the *Consultant* to furnish instructions until 10 *Working Days* after demand for such instructions has been made.

GC 6.6 CLAIMS FOR A CHANGE IN CONTRACT PRICE

6.6.1 If the *Contractor* intends to make a claim for an increase to the *Contract Price*, or if the *Owner* intends to make a claim against the *Contractor* for a credit to the *Contract Price*, the party that intends to make the claim shall give timely *Notice in Writing* of intent to claim to the other party and to the *Consultant*.

6.6.2 Upon commencement of the event or series of events giving rise to a claim, the party intending to make the claim shall:

.1 take all reasonable measures to mitigate any loss or expense which may be incurred as a result of such event or series of events, and

.2 keep such records as may be necessary to support the claim.

6.6.3 The party making the claim shall submit within a reasonable time to the *Consultant* a detailed account of the amount claimed and the grounds upon which the claim is based.

6.6.4 Where the event or series of events giving rise to the claim has a continuing effect, the detailed account submitted under paragraph 6.6.3 shall be considered to be an interim account and the party making the claim shall, at such intervals as the *Consultant* may reasonably require, submit further interim accounts giving the accumulated amount of the claim and any further grounds upon which it is based. The party making the claim shall submit a final account after the end of the effects resulting from the event or series of events.

6.6.5 The *Consultant's* findings, with respect to a claim made by either party, will be given by *Notice in Writing* to both parties within 30 *Working Days* after receipt of the claim by the *Consultant*, or within such other time period as may be agreed by the parties.

6.6.6 If such finding is not acceptable to either party, the claim shall be settled in accordance with Part 8 of the General Conditions - DISPUTE RESOLUTION.

GC 6.7 QUANTITY VARIATIONS

6.7.1 The provisions of GC 6.7 - QUANTITY VARIATIONS apply to the estimated quantities identified in the *Schedule of Prices*, or where the estimated quantities have been amended by *Change Order*, the provisions apply to the amended estimated quantities.

6.7.2 The *Owner* or the *Contractor* may request an adjustment to a *Unit Price* contained in the *Schedule of Prices* provided the actual quantity of the *Unit Price* item in the *Schedule of Prices* exceeds or falls short of the estimated quantity by more that 15%.

6.7.3 Where the actual quantity exceeds the estimated quantity by more than 15%, a *Unit Price* adjusted pursuant to paragraph 6.7.2 shall apply only to the quantity that exceeds 115% of the estimated quantity.

6.7.4 Where the actual quantity falls short of the estimated quantity by more than 15%, a *Unit Price* adjusted pursuant to paragraph 6.7.2 shall apply to the actual quantity of the *Unit Price* item. The adjusted *Unit Price* shall not exceed a *Unit Price* that would cause the payment amount to exceed that derived from the original *Unit Price* and estimated quantity.

6.7.5 The party that intends to request for an adjustment to a *Unit Price* shall give timely *Notice in Writing* to the other party and to the *Consultant*.

6.7.6 The *Consultant's* findings, with respect to a claim made by either party, will be given by *Notice in Writing* to both parties within 30 *Working Days* after receipt of the claim by the *Consultant*, or within such other time period as may be agreed by the parties.

6.7.7 If such finding is not acceptable to either party, the claim shall be settled in accordance with Part 8 of the General Conditions - DISPUTE RESOLUTION.

PART 7 DEFAULT NOTICE

GC 7.1 OWNER'S RIGHT TO PERFORM THE WORK, TERMINATE THE CONTRACTOR'S RIGHT TO CONTINUE WITH THE WORK OR TERMINATE THE CONTRACT

7.1.1 If the *Contractor* is adjudged bankrupt, or makes a general assignment for the benefit of creditors because of the *Contractor*'s insolvency, or if a receiver is appointed because of the *Contractor*'s insolvency, the *Owner* may, without prejudice to any other right or remedy the *Owner* may have, terminate the *Contractor*'s right to continue with the *Work*, by giving the *Contractor* or receiver or trustee in bankruptcy *Notice in Writing* to that effect.

7.1.2 If the *Contractor* neglects to prosecute the *Work* properly or otherwise fails to comply with the requirements of the *Contract* to a substantial degree and if the *Consultant* has given a written statement to the *Owner* and *Contractor* that sufficient cause exists to justify such action, the *Owner* may, without prejudice to any other right or remedy the *Owner* may have, give the *Contractor Notice in Writing* that the *Contractor* is in default of the *Contractor*'s contractual obligations and instruct the *Contractor* to correct the default in the 5 *Working Days* immediately following the receipt of such *Notice in Writing*.

7.1.3 If the default cannot be corrected in the 5 *Working Days* specified or in such other time period as may be subsequently agreed in writing by the parties, the *Contractor* shall be in compliance with the *Owner*'s instructions if the *Contractor*:

.1 commences the correction of the default within the specified time, and
.2 provides the *Owner* with an acceptable schedule for such correction, and
.3 corrects the default in accordance with the *Contract* terms and with such schedule.

7.1.4 If the *Contractor* fails to correct the default in the time specified or in such other time period as may be subsequently agreed in writing by the parties, without prejudice to any other right or remedy the *Owner* may have, the *Owner* may:

.1 correct such default and deduct the cost thereof from any payment then or thereafter due the *Contractor* provided the *Consultant* has certified such cost to the *Owner* and the *Contractor*, or
.2 terminate the *Contractor*'s right to continue with the *Work* in whole or in part or terminate the *Contract*.

7.1.5 If the *Owner* terminates the *Contractor*'s right to continue with the *Work* as provided in paragraphs 7.1.1 and 7.1.4, the *Owner* shall be entitled to:

.1 take possession of the *Work* and *Products* at the *Place of the Work*; subject to the rights of third parties, utilize the *Construction Equipment* at the *Place of the Work*; finish the *Work* by whatever method the *Owner* may consider expedient, but without undue delay or expense, and

.2 withhold further payment to the *Contractor* until a final certificate for payment is issued, and

.3 charge the *Contractor* the amount by which the full cost of finishing the *Work* as certified by the *Consultant*, including compensation to the *Consultant* for the *Consultant*'s additional services and a reasonable allowance as determined by the *Consultant* to cover the cost of corrections to work performed by the *Contractor* that may be required under GC 12.3 - WARRANTY, exceeds the unpaid balance of the *Contract Price*; however, if such cost of finishing the *Work* is less than the unpaid balance of the *Contract Price*, the *Owner* shall pay the *Contractor* the difference, and

.4 on expiry of the warranty period, charge the *Contractor* the amount by which the cost of corrections to the *Contractor*'s work under GC 12.3 - WARRANTY exceeds the allowance provided for such corrections, or if the cost of such corrections is less than the allowance, pay the *Contractor* the difference.

7.1.6 The *Contractor*'s obligation under the *Contract* as to quality, correction and warranty of the work performed by the *Contractor* up to the time of termination shall continue after such termination of the *Contract*.

GC 7.2 CONTRACTOR'S RIGHT TO SUSPEND THE WORK OR TERMINATE THE CONTRACT

7.2.1 If the *Owner* is adjudged bankrupt, or makes a general assignment for the benefit of creditors because of the *Owner*'s insolvency, or if a receiver is appointed because of the *Owner*'s insolvency, the *Contractor* may, without prejudice to any other right or remedy the *Contractor* may have, terminate the *Contract* by giving the *Owner* or receiver or trustee in bankruptcy *Notice in Writing* to that effect.

7.2.2 If the *Work* should be suspended or otherwise delayed for a period of 20 *Working Days* or more under an order of a court or other public authority and providing that such order was not issued as the result of an act or fault of the *Contractor* or of anyone directly or indirectly employed or engaged by the *Contractor*, the *Contractor* may, without prejudice to any other right or remedy the *Contractor* may have, terminate the *Contract* by giving the *Owner Notice in Writing* to that effect.

7.2.3 The *Contractor* may give *Notice in Writing* to the *Owner*, with a copy to the *Consultant*, that the *Owner* is in default of the *Owner*'s contractual obligations if:

.1 the *Owner* fails to furnish, when so requested by the *Contractor*, reasonable evidence that financial arrangements have been made to fulfill the *Owner*'s obligations under the *Contract*, or

.2 the *Consultant* fails to issue a certificate as provided in GC 5.3 - PROGRESS PAYMENT, or

.3 the *Owner* fails to pay the *Contractor* when due the amounts certified by the *Consultant* or awarded by arbitration or court, or

.4 the *Owner* violates the requirements of the *Contract* to a substantial degree and the *Consultant*, except for GC 5.1 - FINANCING INFORMATION REQUIRED OF THE OWNER, confirms by written statement to the *Contractor* that sufficient cause exists.

7.2.4 The *Contractor*'s *Notice in Writing* to the *Owner* provided under paragraph 7.2.3 shall advise that if the default is not corrected within 5 *Working Days* following the receipt of the *Notice in Writing*, the *Contractor* may, without prejudice to any other right or remedy the *Contractor* may have, suspend the *Work* or terminate the *Contract*.

7.2.5 If the *Contractor* terminates the *Contract* under the conditions set out above, the *Contractor* shall be entitled to be paid for all work performed including reasonable profit, for loss sustained upon *Products* and *Construction Equipment*, and such other damages as the *Contractor* may have sustained as a result of the termination of the *Contract*.

PART 8 DISPUTE RESOLUTION

GC 8.1 AUTHORITY OF THE CONSULTANT

8.1.1 Differences between the parties to the *Contract* as to the interpretation, application or administration of the *Contract* or any failure to agree where agreement between the parties is called for, herein collectively called disputes, which are not resolved in the first instance by findings of the *Consultant* as provided in GC 2.2 - ROLE OF THE CONSULTANT, shall be settled in accordance with the requirements of Part 8 of the General Conditions - DISPUTE RESOLUTION.

8.1.2 If a dispute arises under the *Contract* in respect of a matter in which the *Consultant* has no authority under the *Contract* to make a finding, the procedures set out in paragraph 8.1.3 and paragraphs 8.2.3 to 8.2.8 of GC 8.2 - NEGOTIATION, MEDIATION AND ARBITRATION, and in GC 8.3 - RETENTION OF RIGHTS apply to that dispute with the necessary changes to detail as may be required.

8.1.3 If a dispute is not resolved promptly, the *Consultant* will give such instructions as in the *Consultant*'s opinion are necessary for the proper performance of the *Work* and to prevent delays pending settlement of the dispute. The parties shall act immediately according to such instructions, it being understood that by so doing neither party will jeopardize any claim the party may have. If it is subsequently determined that such instructions were in error or at variance with the *Contract Documents*, the *Owner* shall pay the *Contractor* costs incurred by the *Contractor* in carrying out such instructions which the *Contractor* was required to do beyond what the *Contract Documents* correctly understood and interpreted would have required, including costs resulting from interruption of the *Work*.

GC 8.2 NEGOTIATION, MEDIATION AND ARBITRATION

8.2.1 In accordance with the Rules for Mediation of Construction Disputes as provided in CCDC 40 in effect at the time of bid closing, the parties shall appoint a Project Mediator

.1 within 20 *Working Days* after the *Contract* was awarded, or

.2 if the parties neglected to make an appointment within the 20 *Working Days*, within 10 *Working Days* after either party by *Notice in Writing* requests that the Project Mediator be appointed.

8.2.2 A party shall be conclusively deemed to have accepted a finding of the *Consultant* under GC 2.2 - ROLE OF THE CONSULTANT and to have expressly waived and released the other party from any claims in respect of the particular matter dealt with in that finding unless, within 15 *Working Days* after receipt of that finding, the party sends a *Notice in Writing* of dispute to the other party and to the *Consultant*, which contains the particulars of the matter in dispute and the relevant provisions of the *Contract Documents*. The responding party shall send a *Notice in Writing* of reply to the dispute within 10 *Working Days* after receipt of such *Notice in Writing* setting out particulars of this response and any relevant provisions of the *Contract Documents*.

8.2.3 The parties shall make all reasonable efforts to resolve their dispute by amicable negotiations and agree to provide, without prejudice, frank, candid and timely disclosure of relevant facts, information and documents to facilitate these negotiations.

8.2.4 After a period of 10 *Working Days* following receipt of a responding party's *Notice in Writing* of reply under paragraph 8.2.2, the parties shall request the Project Mediator to assist the parties to reach agreement on any unresolved dispute. The mediated negotiations shall be conducted in accordance with the Rules for Mediation of Construction Disputes as provided in CCDC 40 in effect at the time of bid closing.

8.2.5 If the dispute has not been resolved within 10 *Working Days* after the Project Mediator was requested under paragraph 8.2.4 or within such further period agreed by the parties, the Project Mediator shall terminate the mediated negotiations by giving *Notice in Writing* to the *Owner*, the *Contractor* and the *Consultant*.

8.2.6 By giving a *Notice in Writing* to the other party and the *Consultant*, not later than 10 *Working Days* after the date of termination of the mediated negotiations under paragraph 8.2.5, either party may refer the dispute to be finally resolved by arbitration under the Rules for Arbitration of Construction Disputes as provided in CCDC 40 in effect at the time of bid closing. The arbitration shall be conducted in the jurisdiction of the *Place of the Work*.

8.2.7 On expiration of the 10 *Working Days*, the arbitration agreement under paragraph 8.2.6 is not binding on the parties and, if a *Notice in Writing* is not given under paragraph 8.2.6 within the required time, the parties may refer the unresolved dispute to the courts or to any other form of dispute resolution, including arbitration, which they have agreed to use.

8.2.8 If neither party, by *Notice in Writing*, given within 10 *Working Days* of the date of *Notice in Writing* requesting arbitration in paragraph 8.2.6, requires that a dispute be arbitrated immediately, all disputes referred to arbitration as provided in paragraph 8.2.6 shall be

.1 held in abeyance until

(1) *Substantial Performance of the Work*,

(2) the *Contract* has been terminated, or

(3) the *Contractor* has abandoned the *Work*,

whichever is earlier; and

.2 consolidated into a single arbitration under the rules governing the arbitration under paragraph 8.2.6.

GC 8.3 RETENTION OF RIGHTS

8.3.1 It is agreed that no act by either party shall be construed as a renunciation or waiver of any rights or recourses, provided the party has given the *Notice in Writing* required under Part 8 of the General Conditions - DISPUTE RESOLUTION and has carried out the instructions as provided in paragraph 8.1.3 of GC 8.1 – AUTHORITY OF THE CONSULTANT.

8.3.2 Nothing in Part 8 of the General Conditions - DISPUTE RESOLUTION shall be construed in any way to limit a party from asserting any statutory right to a lien under applicable lien legislation of the jurisdiction of the *Place of the Work* and the assertion of such right by initiating judicial proceedings is not to be construed as a waiver of any right that party may have under paragraph 8.2.6 of GC 8.2 – NEGOTIATION, MEDIATION AND ARBITRATION to proceed by way of arbitration to adjudicate the merits of the claim upon which such a lien is based.

PART 9 PROTECTION OF PERSONS AND PROPERTY

GC 9.1 PROTECTION OF WORK AND PROPERTY

9.1.1 The *Contractor* shall protect the *Work* and the *Owner*'s property and property adjacent to the *Place of the Work* from damage which may arise as the result of the *Contractor*'s operations under the *Contract*, and shall be responsible for such damage, except damage which occurs as the result of:
.1 errors in the *Contract Documents*;
.2 acts or omissions by the *Owner*, the *Consultant*, other contractors, their agents and employees.

9.1.2 Before commencing any work, the *Contractor* shall determine the location of all underground utilities and structures indicated in the *Contract Documents* or that are reasonably apparent in an inspection of the *Place of the Work*.

9.1.3 Should the *Contractor* in the performance of the *Contract* damage the *Work*, the *Owner*'s property, or property adjacent to the *Place of the Work*, the *Contractor* shall be responsible for making good such damage at the *Contractor*'s expense.

9.1.4 Should damage occur to the *Work* or *Owner*'s property for which the *Contractor* is not responsible, as provided in paragraph 9.1.1, the *Contractor* shall make good such damage to the *Work* and, if the *Owner* so directs, to the *Owner*'s property. The *Contract Price* and *Contract Time* shall be adjusted as provided in GC 6.1 – OWNER'S RIGHT TO MAKE CHANGES, GC 6.2 - CHANGE ORDER and GC 6.3 - CHANGE DIRECTIVE.

GC 9.2 TOXIC AND HAZARDOUS SUBSTANCES

9.2.1 For the purposes of applicable legislation related to toxic and hazardous substances, the *Owner* shall be deemed to have control and management of the *Place of the Work* with respect to existing conditions.

9.2.2 Prior to the *Contractor* commencing the *Work*, the *Owner* shall,
.1 take all reasonable steps to determine whether any toxic or hazardous substances are present at the *Place of the Work*, and
.2 provide the *Consultant* and the *Contractor* with a written list of any such substances that are known to exist and their locations.

9.2.3 The *Owner* shall take all reasonable steps to ensure that no person's exposure to any toxic or hazardous substances exceeds the time weighted levels prescribed by applicable legislation at the *Place of the Work* and that no property is damaged or destroyed as a result of exposure to, or the presence of, toxic or hazardous substances which were at the *Place of the Work* prior to the *Contractor* commencing the *Work*.

9.2.4 Unless the *Contract* expressly provides otherwise, the *Owner* shall be responsible for taking all necessary steps, in accordance with applicable legislation in force at the *Place of the Work*, to dispose of, store or otherwise render harmless toxic or hazardous substances which were present at the *Place of the Work* prior to the *Contractor* commencing the *Work*.

9.2.5 If the *Contractor*
.1 encounters toxic or hazardous substances at the *Place of the Work*, or
.2 has reasonable grounds to believe that toxic or hazardous substances are present at the *Place of the Work*,
which were not brought to the *Place of the Work* by the *Contractor* or anyone for whom the *Contractor* is responsible and which were not disclosed by the *Owner* or which were disclosed but have not been dealt with as required under paragraph 9.2.4, the *Contractor* shall
.3 take all reasonable steps, including stopping the *Work*, to ensure that no person's exposure to any toxic or hazardous substances exceeds any applicable time weighted levels prescribed by applicable legislation at the *Place of the Work*, and
.4 immediately report the circumstances to the *Consultant* and the *Owner* in writing.

9.2.6 If the *Owner* and *Contractor* do not agree on the existence, significance of, or whether the toxic or hazardous substances were brought onto the *Place of the Work* by the *Contractor* or anyone for whom the *Contractor* is responsible, the *Owner* shall retain and pay for an independent qualified expert to investigate and determine such matters. The expert's report shall be delivered to the *Owner* and the *Contractor*.

9.2.7 If the *Owner* and *Contractor* agree or if the expert referred to in paragraph 9.2.6 determines that the toxic or hazardous substances were not brought onto the place of the *Work* by the *Contractor* or anyone for whom the *Contractor* is responsible, the *Owner* shall promptly at the *Owner's* own expense:

.1 take all steps as required under paragraph 9.2.4;

.2 reimburse the *Contractor* for the costs of all steps taken pursuant to paragraph 9.2.5;

.3 extend the *Contract* time for such reasonable time as the *Consultant* may recommend in consultation with the *Contractor* and the expert referred to in 9.2.6 and reimburse the *Contractor* for reasonable costs incurred as a result of the delay; and

.4 indemnify the *Contractor* as required by GC 12.1 - INDEMNIFICATION.

9.2.8 If the *Owner* and *Contractor* agree or if the expert referred to in paragraph 9.2.6 determines that the toxic or hazardous substances were brought onto the place of the *Work* by the *Contractor* or anyone for whom the *Contractor* is responsible, the *Contractor* shall promptly at the *Contractor's* own expense:

.1 take all necessary steps, in accordance with applicable legislation in force at the *Place of the Work*, to safely remove and dispose the toxic or hazardous substances;

.2 make good any damage to the *Work*, the *Owner*'s property or property adjacent to the place of the *Work* as provided in paragraph 9.1.3 of GC 9.1 – PROTECTION OF WORK AND PROPERTY;

.3 reimburse the *Owner* for reasonable costs incurred under paragraph 9.2.6; and

.4 indemnify the Owner as required by GC 12.1 - INDEMNIFICATION.

9.2.9 If either party does not accept the expert's findings under paragraph 9.2.6, the disagreement shall be settled in accordance with Part 8 of the General Conditions - Dispute Resolution. If such disagreement is not resolved promptly, the parties shall act immediately in accordance with the expert's determination and take the steps required by paragraph 9.2.7 or 9.2.8 it being understood that by so doing, neither party will jeopardize any claim that party may have to be reimbursed as provided by GC 9.2 – TOXIC AND HAZARDOUS SUBSTANCES.

GC 9.3 ARTIFACTS AND FOSSILS

9.3.1 Fossils, coins, articles of value or antiquity, structures and other remains or things of scientific or historic interest discovered at the *Place or Work* shall, as between the *Owner* and the *Contractor*, be deemed to be the absolute property of the *Owner*.

9.3.2 The *Contractor* shall take all reasonable precautions to prevent removal or damage to discoveries as identified in paragraph 9.3.1, and shall advise the *Consultant* upon discovery of such items.

9.3.3 The *Consultant* will investigate the impact on the *Work* of the discoveries identified in paragraph 9.3.1. If conditions are found that would cause an increase or decrease in the *Contractor's* cost or time to perform the *Work*, the *Consultant*, with the *Owner's* approval, will issue appropriate instructions for a change in the *Work* as provided in GC 6.2 - CHANGE ORDER or GC 6.3 CHANGE DIRECTIVE.

GC 9.4 CONSTRUCTION SAFETY

9.4.1 Subject to paragraph 3.2.2.2 of GC 3.2 - CONSTRUCTION BY OWNER OR OTHER CONTRACTORS, the *Contractor* shall be solely responsible for construction safety at the *Place of the Work* and for compliance with the rules, regulations and practices required by the applicable construction health and safety legislation and shall be responsible for initiating, maintaining and supervising all safety precautions and programs in connection with the performance of the *Work*.

GC 9.5 MOULD

9.5.1 If the *Contractor* or *Owner* observes or reasonably suspects the presence of mould at the *Place of the Work*, the remediation of which is not expressly part of the *Work*,

.1 the observing party shall promptly report the circumstances to the other party in writing, and

.2 the *Contractor* shall promptly take all reasonable steps, including stopping the *Work* if necessary, to ensure that no person suffers injury, sickness or death and that no property is damaged as a result of exposure to or the presence of the mould, and

.3 if the *Owner* and *Contractor* do not agree on the existence, significance or cause of the mould or as to what steps need be taken to deal with it, the *Owner* shall retain and pay for an independent qualified expert to investigate and determine such matters. The expert's report shall be delivered to the *Owner* and *Contractor*.

9.5.2 If the *Owner* and *Contractor* agree, or if the expert referred to in paragraph 9.5.1.3 determines that the presence of mould was caused by the *Contractor*'s operations under the *Contract*, the *Contractor* shall promptly, at the *Contractor*'s own expense:

.1 take all reasonable and necessary steps to safely remediate or dispose of the mould, and

.2 make good any damage to the *Work*, the *Owner*'s property or property adjacent to the *Place of the Work* as provided in paragraph 9.1.3 of GC 9.1 - PROTECTION OF WORK AND PROPERTY, and

.3 reimburse the *Owner* for reasonable costs incurred under paragraph 9.5.1.3, and

.4 indemnify the *Owner* as required by paragraph 12.1 of GC 21.1 - INDEMNIFICATION.

9.5.3 If the *Owner* and *Contractor* agree, or if the expert referred to in paragraph 9.5.1.3 determines that the presence of mould was not caused by the *Contractor*'s operations under the *Contract*, the *Owner* shall promptly, at the *Owner*'s own expense:

.1 take all reasonable and necessary steps to safely remediate or dispose of the mould, and

.2 reimburse the *Contractor* for the cost of taking the steps under paragraph 9.5.1.2 and making good any damage to the *Work* as provided in paragraph 9.1.4 of GC 9.1 - PROTECTION OF WORK AND PROPERTY, and

.3 extend the *Contract Time* for such reasonable time as the *Consultant* may recommend in consultation with the *Contractor* and the expert referred to in paragraph 9.5.1.3 and reimburse the *Contractor* for reasonable costs incurred as a result of the delay, and

.4 indemnify the *Contractor* as required by paragraph 12.1.

9.5.4 If either party does not accept the expert's finding under paragraph 9.5.1.3, the disagreement shall be settled in accordance with Part 8 of the General Conditions - DISPUTE RESOLUTION. If such desagreement is not resolved promptly, the parties shall act immediately in accordance with the expert's determination and take the steps required by paragraphs 9.5.2 or 9.5.3, it being understood that by so doing neither party will jeopardize any claim the party may have.

PART 10 GOVERNING REGULATIONS

GC 10.1 TAXES AND DUTIES

10.1.1 The *Contract Price* shall include all taxes and customs duties in effect at the time of the bid closing except for *Value Added Taxes* payable by the *Owner* to the *Contractor* as stipulated in Article A-4 of the Agreement - CONTRACT PRICE.

10.1.2 Any increase or decrease in costs to the *Contractor* due to changes in such included taxes and duties after the time of the bid closing shall increase or decrease the *Contract Price* accordingly.

GC 10.2 LAWS, NOTICES, PERMITS, AND FEES

10.2.1 The laws of the *Place of the Work* shall govern the *Work*.

10.2.2 The *Owner* shall obtain and pay for development approvals, building permit, permanent easements, rights of servitude, and all other necessary approvals and permits, except for the permits and fees referred to in paragraph 10.2.3 or for which the *Contract Documents* specify as the responsibility of the *Contractor*.

10.2.3 The *Contractor* shall be responsible for the procurement of permits, licences, inspections, and certificates, which are necessary for the performance of the *Work* and customarily obtained by contractors in the jurisdiction of the *Place of the Work* after the issuance of the building permit. The *Contract Price* includes the cost of these permits, licences, inspections, and certificates, and their procurement.

10.2.4 The *Contractor* shall give the required notices and comply with the laws, ordinances, rules, regulations, or codes which are or become in force during the performance of the *Work* and which relate to the *Work*, to the preservation of the public health, and to construction safety.

10.2.5 The *Contractor* shall not be responsible for verifying that the *Contract Documents* are in compliance with the applicable laws, ordinances, rules, regulations, or codes relating to the *Work*. If the *Contract Documents* are at variance therewith, or if, subsequent to the time of bid closing, changes are made to the applicable laws, ordinances, rules, regulations, or codes which require modification to the *Contract Documents*, the *Contractor* shall advise the *Consultant* in writing requesting direction immediately upon such variance or change becoming known. The *Consultant* will make the changes required to the *Contract Documents* as provided in GC 6.1 - OWNER'S RIGHT TO MAKE CHANGES, GC 6.2 - CHANGE ORDER and GC 6.3 - CHANGE DIRECTIVE.

10.2.6 If the *Contractor* fails to advise the *Consultant* in writing; and fails to obtain direction as required in paragraph 10.2.5; and performs work knowing it to be contrary to any laws, ordinances, rules, regulations, or codes; the *Contractor* shall be responsible for and shall correct the violations thereof; and shall bear the costs, expenses and damages attributable to the failure to comply with the provisions of such laws, ordinances, rules, regulations, or codes.

10.2.7 If, subsequent to the time of bid closing, changes are made to applicable laws, ordinances, rules, regulations, or codes of authorities having jurisdiction which affect the cost of the *Work*, either party may submit a claim in accordance with the requirements of GC 6.6 – CLAIMS FOR A CHANGE IN CONTRACT PRICE.

GC 10.3 PATENT FEES

10.3.1 The *Contractor* shall pay the royalties and patent licence fees required for the performance of the *Contract*. The *Contractor* shall hold the *Owner* harmless from and against claims, demands, losses, costs, damages, actions, suits, or proceedings arising out of the *Contractor*'s performance of the *Contract* which are attributable to an infringement or an alleged infringement of a patent of invention by the *Contractor* or anyone for whose acts the *Contractor* may be liable.

10.3.2 The *Owner* shall hold the *Contractor* harmless against claims, demands, losses, costs, damages, actions, suits, or proceedings arising out of the *Contractor*'s performance of the *Contract* which are attributable to an infringement or an alleged infringement of a patent of invention in executing anything for the purpose of the *Contract*, the model, plan or design of which was supplied to the *Contractor* as part of the *Contract Documents*.

GC 10.4 WORKERS' COMPENSATION

10.4.1 Prior to commencing the *Work*, *Substantial Performance of the Work* and the issuance of the final certificate for payment, the *Contractor* shall provide evidence of compliance with workers' compensation legislation at the *Place of the Work*, including payments due thereunder.

10.4.2 At any time during the term of the *Contract*, when requested by the *Owner*, the *Contractor* shall provide such evidence of compliance by the *Contractor* and *Subcontractors*.

PART 11 INSURANCE AND CONTRACT SECURITY

GC 11.1 INSURANCE

11.1.1 Without restricting the generality of GC 12.1 - INDEMNIFICATION, the *Contractor* shall provide, maintain and pay for the following insurance coverages, the minimum requirements of which are specified in CCDC 41 – CCDC Insurance Requirements in effect at the time of bid closing except as hereinafter provided:

.1 General liability insurance in the name of the *Contractor* and include, or in the case of a single, blanket policy, be endorsed to name, the *Owner* and the *Consultant* as insureds but only with respect to liability, other than legal liability arising out of their sole negligence, arising out of the operations of the *Contractor* with regard to the *Work*. General liability insurance shall be maintained from the date of commencement of the *Work* until one year from the date of *Substantial Performance of the Work*. Liability coverage shall be provided for completed operations hazards from the date of *Substantial Performance of the Work*, as set out in the certificate of *Substantial Performance of the Work*, on an ongoing basis for a period of 6 years following *Substantial Performance of the Work*.

.2 Automobile Liability Insurance from the date of commencement of the *Work* until one year after the date of *Substantial Performance of the Work*.

.3 Aircraft or Watercraft Liability Insurance when owned or non-owned aircraft or watercraft are used directly or indirectly in the performance of the *Work*

.4 "Broad form" property insurance in the joint names of the *Contractor*, the *Owner* and the *Consultant*. The policy shall include as Insureds all *Subcontractors*. The "Broad form" property insurance shall be provided from the date of commencement of the *Work* until the earliest of:

(1) 10 calendar days after the date of *Substantial Performance of the Work*;

(2) on the commencement of use or occupancy of any part or section of *Work* unless such use or occupancy is for construction purposes, habitational, office, banking, convenience store under 465 square metres in area, or parking purposes, or for the installation, testing and commissioning of equipment forming part of the *Work*;

(3) when left unattended for more than 30 consecutive calendar days or when construction activity has ceased for more than 30 consecutive calendar days.

.5 Boiler and machinery insurance in the joint names of the *Contractor*, the *Owner* and the *Consultant*. The policy shall include as Insureds all *Subcontractors*. The coverage shall be maintained continuously from commencement of use or operation of the boiler and machinery objects insured by the policy and until 10 calendar days after the date of *Substantial Performance of the Work*.

.6 The "Broad form" property and boiler and machinery policies shall provide that, in the case of a loss or damage, payment shall be made to the *Owner* and the *Contractor* as their respective interests may appear. In the event of loss or damage:

(1) the *Contractor* shall act on behalf of the *Owner* for the purpose of adjusting the amount of such loss or damage payment with the insurers. When the extent of the loss or damage is determined, the *Contractor* shall proceed to restore the *Work*. Loss or damage shall not affect the rights and obligations of either party under the *Contract* except that the *Contractor* shall be entitled to such reasonable extension of *Contract Time* relative to the extent of the loss or damage as the *Consultant* may recommend in consultation with the *Contractor*;

(2) the *Contractor* shall be entitled to receive from the *Owner*, in addition to the amount due under the *Contract*, the amount which the *Owner*'s interest in restoration of the *Work* has been appraised, such amount to be paid as the restoration of the *Work* proceeds in accordance with the progress payment provisions. In addition the *Contractor* shall be entitled to receive from the payments made by the insurer the amount of the *Contractor*'s interest in the restoration of the *Work*; and

(3) to the *Work* arising from the work of the *Owner*, the *Owner*'s own forces, or another contractor, in accordance with the *Owner*'s obligations under the provisions relating to construction by *Owner* or other contractors, shall pay the *Contractor* the cost of restoring the *Work* as the restoration of the *Work* proceeds and as in accordance with the progress payment provisions.

.7 Contractors' Equipment Insurance from the date of commencement of the *Work* until one year after the date of *Substantial Performance of the Work*.

11.1.2 Prior to commencement of the *Work* and upon the placement, renewal, amendment, or extension of all or any part of the insurance, the *Contractor* shall promptly provide the *Owner* with confirmation of coverage and, if required, a certified true copy of the policies certified by an authorized representative of the insurer together with copies of any amending endorsements applicable to the *Work*.

11.1.3 The parties shall pay their share of the deductible amounts in direct proportion to their responsibility in regards to any loss for which the above policies are required to pay, except where such amounts may be excluded by the terms of the *Contract*.

11.1.4 If the *Contractor* fails to provide or maintain insurance as required by the *Contract* Documents, then the *Owner* shall have the right to provide and maintain such insurance and give evidence to the *Contractor* and the *Consultant*. The *Contractor* shall pay the cost thereof to the *Owner* on demand or the *Owner* may deduct the cost from the amount which is due or may become due to the *Contractor*.

11.1.5 All required insurance policies shall be with insurers licensed to underwrite insurance in the jurisdiction of the *Place of the Work*.

11.1.6 If a revised version of CCDC 41 – INSURANCE REQUIREMENTS is published, which specifies reduced insurance requirements, the parties shall address such reduction, prior to the *Contractor*'s insurance policy becoming due for renewal, and record any agreement in a *Change Order*.

11.1.7 If a revised version of CCDC 41 – INSURANCE REQUIREMENTS is published, which specifies increased insurance requirements, the *Owner* may request the increased coverage from the Contractor by way of a *Change Order*.

11.1.8 A *Change Directive* shall not be used to direct a change in the insurance requirements in response to the revision of CCDC 41 – INSURANCE REQUIREMENTS.

GC 11.2 CONTRACT SECURITY

11.2.1 The *Contractor* shall, prior to commencement of the *Work* or within the specified time, provide to the *Owner* any *Contract* security specified in the *Contract Documents.*

11.2.2 If the *Contract Documents* require surety bonds to be provided, such bonds shall be issued by a duly licensed surety company authorized to transact the business of suretyship in the province or territory of the *Place of the Work* and shall be maintained in good standing until the fulfillment of the *Contract*. The form of such bonds shall be in accordance with the latest edition of the CCDC approved bond forms.

PART 12 INDEMNIFICATION, WAIVER OF CLAIMS AND WARRANTY

GC 12.1 INDEMNIFICATION

12.1.1 Without restricting the *Owner*'s obligation to indemnify as described in paragraphs 12.1.4 and 12.1.5, the *Owner* and the *Contractor* shall each indemnify and hold harmless the other from and against all claims, demands, losses, costs, damages, actions, suits, or proceedings whether in respect to losses suffered by them or in respect to claims by third parties that arise out of, or are attributable in any respect to their involvement as parties to this *Contract*, provided such claims are:

.1 caused by:

(1) the negligent acts or omissions of the party from whom indemnification is sought or anyone for whose acts or omissions that party is liable, or

(2) a failure of the party to the *Contract* from whom indemnification is sought to fulfill its terms or conditions; and

.2 made by *Notice in Writing* within a period of 6 years from the date of *Substantial Performance of the Work* as set out in the certificate of *Substantial Performance of the Work* issued pursuant to paragraph 5.4.2.2 of GC 5.4 – SUBSTANTIAL PERFORMANCE OF THE WORK or within such shorter period as may be prescribed by any limitation statute of the province or territory of the *Place of the Work*.

The parties expressly waive the right to indemnity for claims other than those provided for in this *Contract*.

12.1.2 The obligation of either party to indemnify as set forth in paragraph 12.1.1 shall be limited as follows:

.1 In respect to losses suffered by the *Owner* and the *Contractor* for which insurance is to be provided by either party pursuant to GC 11.1 – INSURANCE, the general liability insurance limit for one occurrence as referred to in CCDC 41 in effect at the time of bid closing.

.2 In respect to losses suffered by the *Owner* and the *Contractor* for which insurance is not required to be provided by either party in accordance with GC 11.1 – INSURANCE, the greater of the *Contract Price* as recorded in Article A-4 – CONTRACT PRICE or $2,000,000, but in no event shall the sum be greater than $20,000,000.

.3 In respect to claims by third parties for direct loss resulting from bodily injury, sickness, disease or death, or to injury to or destruction of tangible property, the obligation to indemnify is without limit. In respect to all other claims for indemnity as a result of claims advanced by third parties, the limits of indemnity set forth in paragraphs 12.1.2.1 and 12.1.2.2 shall apply.

12.1.3 The obligation of either party to indemnify the other as set forth in paragraphs 12.1.1 and 12.1.2 shall be inclusive of interest and all legal costs.

12.1.4 The *Owner* and the *Contractor* shall indemnify and hold harmless the other from and against all claims, demands, losses, costs, damages, actions, suits, or proceedings arising out of their obligations described in GC 9.2 – TOXIC AND HAZARDOUS SUBSTANCES.

12.1.5 The *Owner* shall indemnify and hold harmless the *Contractor* from and against all claims, demands, losses, costs, damages, actions, suits, or proceedings:

.1 as described in paragraph 10.3.2 of GC 10.3 – PATENT FEES, and

.2 arising out of the *Contractor*'s performance of the *Contract* which are attributable to a lack of or defect in title or an alleged lack of or defect in title to the *Place of the Work*.

12.1.6 In respect to any claim for indemnity or to be held harmless by the *Owner* or the *Contractor*:

.1 *Notice in Writing* of such claim shall be given within a reasonable time after the facts upon which such claim is based became known;

.2 should any party be required as a result of its obligation to indemnify another to pay or satisfy a final order, judgment or award made against the party entitled by this contract to be indemnified, then the indemnifying party upon assuming all liability for any costs that might result shall have the right to appeal in the name of the party against whom such final order or judgment has been made until such rights of appeal have been exhausted.

GC 12.2 WAIVER OF CLAIMS

12.2.1 Subject to any lien legislation applicable to the *Place of the Work*, as of the fifth calendar day before the expiry of the lien period provided by the lien legislation applicable at the *Place of the Work*, the *Contractor* waives and releases the *Owner* from all claims which the *Contractor* has or reasonably ought to have knowledge of that could be advanced by the *Contractor* against the *Owner* arising from the *Contractor*'s involvement in the *Work*, including, without limitation, those arising from negligence or breach of contract in respect to which the cause of action is based upon acts or omissions which occurred prior to or on the date of *Substantial Performance of the Work*, except as follows:

.1 claims arising prior to or on the date of *Substantial Performance of the Work* for which *Notice in Writing* of claim has been received by the *Owner* from the *Contractor* no later than the sixth calendar day before the expiry of the lien period provided by the lien legislation applicable at the *Place of the Work*;

.2 indemnification for claims advanced against the *Contractor* by third parties for which a right of indemnification may be asserted by the *Contractor* against the *Owner* pursuant to the provisions of this *Contract*;

.3 claims for which a right of indemnity could be asserted by the *Contractor* pursuant to the provisions of paragraphs 12.1.4 or 12.1.5 of GC 12.1 – INDEMNIFICATION; and

.4 claims resulting from acts or omissions which occur after the date of *Substantial Performance of the Work*.

12.2.2 The *Contractor* waives and releases the *Owner* from all claims referenced in paragraph 12.2.1.4 except for those referred in paragraphs 12.2.1.2 and 12.2.1.3 of GC 12.1 – INDEMNIFICATION and claims for which *Notice in Writing* of claim has been received by the *Owner* from the *Contractor* within 395 calendar days following the date of *Substantial Performance of the Work*.

12.2.3 Subject to any lien legislation applicable to the *Place of the Work*, as of the fifth calendar day before the expiry of the lien period provided by the lien legislation applicable at the *Place of the Work*, the *Owner* waives and releases the *Contractor* from all claims which the *Owner* has or reasonably ought to have knowledge of that could be advanced by the *Owner* against the *Contractor* arising from the *Owner*'s involvement in the *Work*, including, without limitation, those arising from negligence or breach of contract in respect to which the cause of action is based upon acts or omissions which occurred prior to or on the date of *Substantial Performance of the Work*, except as follows:

.1 claims arising prior to or on the date of *Substantial Performance of the Work* for which *Notice in Writing* of claim has been received by the *Contractor* from the *Owner* no later than the sixth calendar day before the expiry of the lien period provided by the lien legislation applicable at the *Place of the Work*;

.2 indemnification for claims advanced against the *Owner* by third parties for which a right of indemnification may be asserted by the *Owner* against the *Contractor* pursuant to the provisions of this *Contract*;

.3 claims for which a right of indemnity could be asserted by the *Owner* against the *Contractor* pursuant to the provisions of paragraph 12.1.4 of GC 12.1 - INDEMNIFICATION;

.4 damages arising from the *Contractor*'s actions which result in substantial defects or deficiencies in the *Work*. "Substantial defects or deficiencies" mean those defects or deficiencies in the *Work* which affect the *Work* to such an extent or in such a manner that a significant part or the whole of the *Work* is unfit for the purpose intended by the *Contract Documents*;

.5 claims arising pursuant to GC 12.3 - WARRANTY; and

.6 claims arising from acts or omissions which occur after the date of *Substantial Performance of the Work*.

12.2.4 The *Owner* waives and releases the *Contractor* from all claims referred to in paragraph 12.2.3.4 except claims for which *Notice in Writing* of claim has been received by the *Contractor* from the *Owner* within a period of six years from the date of *Substantial Performance of the Work* should any limitation statute of the Province or Territory of the *Place of the Work* permit such agreement. If the applicable limitation statute does not permit such agreement, within such shorter period as may be prescribed by:

.1 any limitation statute of the Province or Territory of the *Place of the Work*; or

.2 if the *Place of the Work* is the Province of Quebec, then Article 2118 of the Civil Code of Quebec.

12.2.5 The *Owner* waives and releases the *Contractor* from all claims referenced in paragraph 12.2.3.6 except for those referred in paragraph 12.2.3.2, 12.2.3.3 and those arising under GC 12.3 – WARRANTY and claims for which *Notice in Writing* has been received by the *Contractor* from the *Owner* within 395 calendar days following the date of *Substantial Performance of the Work*.

12.2.6 "*Notice in Writing* of claim" as provided for in GC 12.2 – WAIVER OF CLAIMS to preserve a claim or right of action which would otherwise, by the provisions of GC 12.2 – WAIVER OF CLAIMS, be deemed to be waived, must include the following:

.1 a clear and unequivocal statement of the intention to claim;

.2 a statement as to the nature of the claim and the grounds upon which the claim is based; and

.3 a statement of the estimated quantum of the claim.

12.2.7 The party giving "*Notice in Writing* of claim" as provided for in GC 12.2 – WAIVER OF CLAIMS shall submit within a reasonable time a detailed account of the amount claimed.

12.2.8 Where the event or series of events giving rise to a claim made under paragraphs 12.2.1 or 12.2.3 has a continuing effect, the detailed account submitted under paragraph 12.2.7 shall be considered to be an interim account and the party making the claim shall submit further interim accounts, at reasonable intervals, giving the accumulated amount of the claim and any further grounds upon which it is based. The party making the claim shall submit a final account after the end of the effects resulting from the event or series of events.

12.2.9 If a *Notice in Writing* of claim pursuant to paragraph 12.2.1.1 is received on the seventh or sixth calendar day before the expiry of the lien period provided by the lien legislation applicable at the *Place of the Work*, the period within which *Notice in Writing* of claim shall be received pursuant to paragraph 12.2.3.1 shall be extended to two calendar days before the expiry of the lien period provided by the lien legislation applicable at the *Place of the Work*. If a *Notice in Writing* of claim pursuant to paragraph 12.2.3.1 is received on the seventh or sixth calendar day before the expiry of the lien period provided by the lien legislation applicable at the *Place of the Work*, the period within which *Notice in Writing* of claim shall be received pursuant to paragraph12.2.1.1 shall be extended to two calendar days before the expiry of the lien period provided by the lien legislation applicable at the *Place of the Work*.

GC 12.3 WARRANTY

12.3.1 Except for extended warranties as described in paragraph 12.3.6, the warranty period under the *Contract* is one year from the date of *Substantial Performance of the Work*.

12.3.2 The *Contractor* shall be responsible for the proper performance of the *Work* to the extent that the design and *Contract Documents* permit such performance.

12.3.3 The *Owner*, through the *Consultant*, shall promptly give the *Contractor Notice in Writing* of observed defects and deficiencies which occur during the one year warranty period.

12.3.4 Subject to paragraph 12.3.2, the *Contractor* shall correct promptly, at the *Contractor*'s expense, defects or deficiencies in the *Work* which appear prior to and during the one year warranty period.

12.3.5 The *Contractor* shall correct or pay for damage resulting from corrections made under the requirements of paragraph 12.3.4.

12.3.6 Any extended warranties required beyond the one year warranty period as described in paragraph 12.3.1, shall be as specified in the *Contract Documents*. Extended warranties shall be issued by the warrantor to the benefit of the *Owner*. The *Contractor*'s responsibility with respect to extended warranties shall be limited to obtaining any such extended warranties from the warrantor. The obligations under such extended warranties are solely the responsibilities of the warrantor.

CCDC INSURANCE REQUIREMENTS – CCDC 41

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CANADIAN CONSTRUCTION DOCUMENTS COMMITTEE
CANADIAN CONSTRUCTION DOCUMENTS COMMITTEE

CCDC 41
CCDC INSURANCE REQUIREMENTS

PUBLICATION DATE: JANUARY 21, 2008

1. General liability insurance shall be with limits of not less than $5,000,000 per occurrence, an aggregate limit of not less than $5,000,000 within any policy year with respect to completed operations, and a deductible not exceeding $5,000. The insurance coverage shall not be less than the insurance provided by IBC Form 2100 (including an extension for a standard provincial and territorial form of non-owned automobile liability policy) and IBC Form 2320. To achieve the desired limit, umbrella or excess liability insurance may be used. Subject to satisfactory proof of financial capability by the *Contractor*, the *Owner* may agree to increase the deductible amounts.

2. Automobile liability insurance in respect of vehicles that are required by law to be insured under a contract by a Motor Vehicle Liability Policy, shall have limits of not less than $5,000,000 inclusive per occurrence for bodily injury, death and damage to property, covering all vehicles owned or leased by the *Contractor*. Where the policy has been issued pursuant to a government-operated automobile insurance system, the *Contractor* shall provide the *Owner* with confirmation of automobile insurance coverage for all automobiles registered in the name of the *Contractor*.

3. Aircraft and watercraft liability insurance with respect to owned or non-owned aircraft and watercraft (if used directly or indirectly in the performance of the *Work*), including use of additional premises, shall have limits of not less than $5,000,000 inclusive per occurrence for bodily injury, death and damage to property including loss of use thereof and limits of not less than $5,000,000 for aircraft passenger hazard. Such insurance shall be in a form acceptable to the *Owner*.

4. "Broad form" property insurance shall have limits of not less than the sum of 1.1 times *Contract Price* and the full value, as stated in the *Contract*, of *Products* and design services that are specified to be provided by the *Owner* for incorporation into the *Work*, with a deductible not exceeding $5,000. The insurance coverage shall not be less than the insurance provided by IBC Forms 4042 and 4047 (excluding flood and earthquake) or their equivalent replacement. Subject to satisfactory proof of financial capability by the *Contractor*, the *Owner* may agree to increase the deductible amounts.

5. Boiler and machinery insurance shall have limits of not less than the replacement value of the permanent or temporary boilers and pressure vessels, and other insurable objects forming part of the *Work*. The insurance coverage shall not be less than the insurance provided by a comprehensive boiler and machinery policy.

6. "Broad form" contractors' equipment insurance coverage covering *Construction Equipment* used by the *Contractor* for the performance of the *Work*, shall be in a form acceptable to the *Owner* and shall not allow subrogation claims by the insurer against the *Owner*. Subject to satisfactory proof of financial capability by the *Contractor* for self-insurance, the *Owner* may agree to waive the equipment insurance requirement.

7. Standard Exclusions

   7.1 In addition to the broad form property exclusions identified in IBC forms 4042(1995), and 4047(2000), the *Contractor* is not required to provide the following insurance coverage:
   - Asbestos
   - Cyber Risk
   - Mould
   - Terrorism

Association of Canadian Engineering Companies

Canadian Construction Association

Construction Specifications Canada

The Royal Architectural Institute of Canada

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
McArthur Park Upgrading
99 Street and 101 Avenue
Lac La Biche, Alberta

Prepared For:
EDS Group Inc.

File No. 1-23639
January 2023

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Geotechnical *Environmental* *Materials* *Forensic* *Radon* *Materials Testing*

Intent of Use

This report has been prepared for the exclusive use of EDS Group Inc. and their agents. It has been prepared in accordance with generally accepted professional standards at the location and time of preparation, for application as noted by the specific proposed development, location and scope of work described herein.

This report is subject to the attached Terms and General Conditions for Services Provided by Shelby Engineering Ltd., which should be considered to form part of this report.

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Issuance/Revision History

Revision #	*Version Date*	*Description*
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1.0 INTRODUCTION

Shelby Engineering Ltd. (Shelby) has completed a Geotechnical Investigation for the proposed redevelopment of McArthur Park in Lac La Biche, Alberta.

The scope of the investigation detailed herein was provided in our proposal (#20506) dated January 27, 2022. Mr. John Buchko of EDS Group Inc. authorized this investigation on November 1, 2022.

2.0 DESCRIPTION OF SITE AND PROPOSED DEVELOPMENT

McArthur Park is located west of the intersection of 101 Avenue and 99 Street in Lac La Biche, Alberta. It is bounded by 99 Street to the northeast, 100 Street to the southwest, 101 Avenue to the southeast, and Lac La Biche to the northwest as shown on the site location plan enclosed as Figure 1, Appendix II. There are several recreational features within the park, including ball diamonds, a spray park, a museum and a beach.

It is understood that there are several upgrades contemplated for the park's redevelopment. Major aspects of Phase 1 included paving of an existing parking lot, installation of updated utility services, and construction of outdoor play courts. A major aspect of Phase 2 includes a permanent boardwalk extending over the lake.

3.0 INVESTIGATION METHODOLOGY

The field investigation, supervised by Shelby staff, was conducted on December 2, 2022 and entailed drilling five test holes to depths ranging from 5.8 to 6.1 m below existing grade using a truck mounted drill rig equipped with solid stem augers. Four of the test holes were drilled in areas of the proposed parking and play courts, while the remaining test hole was drilled near a proposed boardwalk. The test holes were advanced at the locations shown on the test hole location plan, enclosed as Figure 2, Appendix II.

Disturbed soil samples were obtained at 300mm below existing grade and thereafter at regular depth intervals of 0.75m. Standard Penetration Tests (SPTs) were conducted at selected depth intervals in the test hole near the proposed boardwalk

All samples were returned to our laboratory for visual classification and determination of insitu moisture content. Additional laboratory tests to determine Atterberg limits and concentrations of water soluble sulphate salts were also conducted on select samples.

3.1 SUBSURFACE CONDITIONS

The general stratigraphy encountered at the test hole locations was comprised of surficial fill underlain by clay or clay till. A sand layer was encountered in one test hole.

The consistency and extent of the various soil strata evidenced at test hole locations will vary between the test hole locations and in areas of the site that have not been explored.

All depths indicated below are referenced to surface grades as existed at the time of this investigation.

Test hole logs detailing the subsurface conditions and laboratory test results are enclosed as Figures 3 to 7, Appendix II.

3.1.1 Fill

Surficial fill was encountered in all five test holes which extended to depths ranging from 1.0 m to 1.5 m below grade, except in TH-3, where it extended to a depth of 3.5 m. The fill composition was somewhat variable, and consisted of primarily sand in TH 1 and 5, and clay or clay till in TH 2, 3, and 4. The fill included a thin layer of topsoil in TH-1, 2, and 3. The fill also tended to have traces of organics. In TH-3, where the deeper fill was encountered, traces of wood chips were noted below a depth of 1.8 m. The fill in TH-3 also contained traces of coal.

The distribution and composition of the fill material indicates that it is likely composed of disturbed material native to the area placed during site grading activities. Details pertaining to placement of the fill, including compaction and moisture control, are not known.

Differing thickness of fill/organics may be present in areas of the site between and apart from the test hole locations.

A slight hydrocarbon odor was encountered within the fill in TH 2, 3, and 4. A representative sample was submitted for analytical testing for BTEX and F1-F4 hydrocarbons. The results found no detectable BTEX, F1, F2 or F4 hydrocarbons. The F3 hydrocarbon result was 239 mg/kg, which does not exceed the maximum allowable value of 1,300 mg/kg for park lands.

3.1.2 Clay

Native clay was encountered beneath the fill in TH-3, 4, and 5, and beneath the clay till in TH-2. It was encountered as a distinct 1.0 m thick layer in TH-4, but continued to the termination depth of the test hole in TH-2, 3, and 5. The clay was generally silty and sandy and of medium plasticity. The consistency of the clay was generally soft to firm, while the insitu moisture content is generally above the estimated optimum moisture content.

3.1.3 Sand

A sand layer was encountered beneath the clay in TH-4 at a depth of 2.4 m. and extended to a depth of 3.4 m. The sand was described as silty and fine grained with a trace of gravel and coal. It was saturated at the time of the investigation.

3.1.4 Clay Till

Clay till was encountered beneath the fill in TH-1 and 2 at depths of 1.0 and 1.2 m respectively, and beneath the sand in TH-4 at a depth of 3.4 m. The till layer was 1 m thick in TH 2, but extended to the termination depth of the hole (i.e. deeper than bout 6.1 m) in TH-1 and 4. The clay til was silty, sandy with a firm to stiff consistency. Moisture contents ranged from 15% to 25% and was generally wet of estimated standard Proctor optimum.

Although not visually confirmed, cobbles or boulders are typically randomly present within glacial till deposits and may be present within the clay till matrix on the subject site.

3.2 GROUNDWATER AND SLOUGHING OBSERVATIONS

Seepage and sloughing conditions were encountered during drilling. The table below provides a summary of slough and groundwater measurements taken upon completion of drilling. Slough and groundwater measurements are also recorded on the test hole logs enclosed in Appendix II.

Table 3.1: Slough and Groundwater Accumulations

Test Hole Location	Depth Below Grade (m)	
	On Completion of Drilling	
	Slough	Water
TH-1	5.6	3.0
TH-2	None	5.6
TH-3	None	4.9
TH-4	None	4.4
TH-5	None	Trace @ 6.1

Groundwater levels fluctuate seasonally and in response to precipitation. Variation on the order of 1m or more is possible within any given year, with higher groundwater levels expected in spring and summer months. As such, different groundwater levels may be encountered at the time of construction.

4.0 RECOMMENDATIONS

The following sections contain recommendations related to deep foundations, subsurface utility installation, and the design of asphalt pavements.

Unless otherwise noted, the recommendations assume that the final exterior grades for the proposed development will be coincident with surface grades existing at the time of this investigation. Appropriate adjustments must be made to the referenced depths/elevations with consideration to any difference between the referenced grades and final grades. Shelby must be advised of any grade changes so that we may assess the effect, if any, of grade changes on the recommendations.

4.1 DEEP FOUNDATIONS

The following deep foundation types are believed to be feasible at this site considering the Geotechnical conditions encountered.

4.1.1 Helical Piles

Helical piles are the recommended foundation type for installation of the proposed board walk structure.

4.1.1.1 Commentary on Pile Design and Torque

Shelby recommends that helical piles be designed using recognized geotechnical/soil mechanics procedures, as provided below in the following sections. Notwithstanding this, local helical pile installers frequently design their piles on the basis of an assumed correlation between installation torque and bearing capacity rather than geotechnical parameters.

In our opinion, torque should not form the basis of the pile design as the torque correlation to capacity (i.e., K_t parameter) is not a constant and can vary from 3 to 20 for any given combination of site stratigraphy and individual pile geometry (including shaft diameter, helix thickness and pitch, helix diameter, the number of helices and the spacing between helices).

It is recommended that torque be used only at the time of pile installation, for field verification of bearing capacity, with the torque values being based upon site and pile geometry specific correlations to capacity as determined from suitable pile load testing conducted on site prior to construction. Note that testing of several piles of differing geometry and installation depth may be necessary.

If the piles are to be designed on the basis of torque and not specifically using the geotechnical recommendations provided below, then it would be the responsibility of the individual/firm providing the torque design to take responsibility for the geotechnical aspects of their pile design by preparing and submitting the appropriate National Building Code of Canada - 2019 Alberta Edition [NBC(AE)]

geotechnical A, B and C Schedules for the project (specifically the sections pertaining to deep foundations). Further, if the design is not based on the parameters in the following sections, Shelby will have no obligation to provide A, B or C Schedules related to deep foundations for the proposed pad as our design recommendations would not have been used.

Notwithstanding the above, it is recommended that full time monitoring be carried out by Shelby field staff to witness and document the installation, and to provide an independent third-party verification of the installer's as-built records. Note that this monitoring would not obligate Shelby to provide any building code schedule related to the design or field review, which would remain the responsibility of the pile designer under a torque-based design approach.

The client is urged to confirm, prior to start of construction, that the torque-based designer will fulfill their requirements and provide the relevant geotechnical schedules if required.

4.1.1.2 General Recommendations

The uppermost helix must be founded in native inorganic soil (not fill) at a depth no shallower than 5 times the diameter of the upper helix. Additionally, the uppermost helix should be founded below the depth of expected effects from frost or soil moisture content variations, which may be taken as 2.7 m for piles in unheated areas.

Center-to-center spacing of adjacent helical piles with the same helix diameter should be a minimum of 4 helix diameters (or 2 times the sum of the helix diameters in the case of adjacent helices of different diameter). Closer spacing would require assessment of group effects.

As the helical piles are installed, the rate of rotation and advancement must match the pitch of the helix plate. This will help to avoid disturbance/churning of the foundation soils. It is critical the foundation bearing soil is not excessively disturbed in order to minimize the risk of excessive settlement.

The helical pile shaft, helix plates and welds must be designed by a qualified structural engineer to ensure they can survive the expected installation stresses and working loads. The designer/installer should assess any proposed design for buckling potential.

If winter construction is contemplated, pre-boring through the frost zone will likely be required.

4.1.1.3 Individual Plate Bearing Design Parameters

For helical piles with S/D ratios of 3 or greater, the primary load carrying mechanism will be via individual plate bearing (i.e., end-bearing beneath each helix). Individual plate bearing can also be considered beneath the helix in a single helix pile.

Individual plate bearing resistance parameters are provided in the table below.

Table 4.1: Plate Bearing Resistance Parameters

Minimum Bearing Depth Below Grade (m)	Ultimate Base Resistance (kPa)	Factored ULS Base Resistance (kPa)	SLS Base Resistance (kPa)
Below 5.0	595	240	200

The factored ULS base resistance above includes a geotechnical resistance factor of 0.4 (for resistance to axial compressive load) applied to the ultimate values. Shelby should be contacted to provided additional recommendations if belled piles will be subjected to structural uplift loads.

For piles incorporating plate bearing, the SLS bearing pressures are based on a typical pile settlement of approximately 1.0% of the helix diameter (plus elastic shortening of the pile) at working loads.

The uppermost helix must not be founded within fill. It is expected that an open-ended pile shaft will plug during installation. As such, the entire diameter of the helix plate may be used to calculate the plate bearing under the leading helix. For any other helix in a multi-helix pile, the cross-sectional shaft area should not be included in the determination of the contributing plate bearing (i.e., a ring or 'donut' shaped bearing area should be used). For a pile with multiple helices, the individual plate bearing contribution from each helix may be considered when determining the total pile capacity.

4.1.1.4 Cylindrical Shear Design Parameters

For helical piles with an S/D ratio between 1.0 and 1.5, the primary load carrying mechanism will be via cylindrical shear. Cylindrical shear may be considered between the uppermost and lowermost helices, over a columnar area circumscribed by the outer edges of the helices. Individual plate bearing should be neglected beneath all but the leading (lowermost) helix.

Cylindrical shear design parameters, available within various depths intervals/soil strata, are provided in the table below.

Table 4.2: Cylindrical Shear Design Parameters

Depth Below Grade (m)	Ultimate Skin Friction (kPa)	Factored ULS Skin Friction (kPa)
0.0 to 2.7	0	0
Below 2.7	46	18

The factored ULS skin friction values above include a geotechnical resistance factor of 0.4 (for resistance to axial compressive load) applied to the ultimate skin friction. For assessing resistance to structural uplift loads, a geotechnical resistance factor of 0.3 must be applied to the ultimate skin friction values to calculate the appropriate factored ULS friction values.

For a helical pile designed on the basis of cylindrical shear only (i.e., plate bearing beneath the leading helix is neglected), the serviceability limit state (SLS) would not be applicable as pile head settlements at working loads would be less than 10mm in most cases.

If the pile is designed to incorporate individual plate bearing beneath the leading helix, the values in Section 4.1.1.3 above may be used for pile design. For piles incorporating plate bearing, the SLS bearing pressures are based on a typical pile settlement of approximately 1.0% of the helix diameter (plus elastic shortening of the pile) at working loads.

In unheated areas, the skin friction resistance along the upper 2.7 m of the pile length (or the portion of the pile in contact with fill, if greater) should be ignored.

4.1.1.5 Shaft Adhesion Design Parameters

In both failure cases above (Individual plate bearing and cylindrical shear), friction between the shaft and the soil (i.e., shaft adhesion/resistance) above the uppermost helix may be included in calculating the pile capacity if pile shafts greater than 100mm in diameter are utilized.

Shaft adhesion should be ignored in the zone between the uppermost helix and one helix diameter above that helix, from grade to a depth of 1.5m below grade (2.3m in unheated areas), between helices (in a multi helix pile), and below the leading helix. Shaft adhesion should also be ignored for any portion of the pile encountering fill soil.

Shaft adhesion should be ignored if square shaft helical piles are used or if the helical piles have coupling sleeves/connections with a larger diameter than the shaft, unless the annulus/void created around the shaft is backfilled with grout.

Design values applicable for shaft adhesion, available within various depths intervals/soil strata, are provided in Table 4.2.

4.1.2 Frost Considerations

Piles exposed to frost conditions should be designed to withstand adfreeze uplift forces in order to prevent frost jacking. Adfreeze forces may be determined using an adfreeze stress of 100 kPa applied over the exterior surface area of the pile shaft located within the depth of frost penetration (i.e., within 2.7m from grade), as well as over the sides of pile caps and grade beams (unless a bond breaker is utilized along the sides of these elements).

The sustained unfactored structural dead load on the pile, the self-weight of the pile and skin friction resistance below the frost penetration depth can be considered together to counteract the adfreeze force (although the dead load from the structure should only be included if the structure is fully constructed prior to the onset of frost conditions).

The resistance to uplift should be calculated using a geotechnical resistance factor of 0.3 applied to the ultimate skin friction values provided in Tables 4.1 and 4.2 above.

Uplift loads from adfeeze should be considered separately from uplift loads applied to the structure.

4.2 GRADE BEAMS AND PILE CAPS

A crushable void filler material should be placed beneath all grade beams, and any pile cap that extends beyond the perimeter of an underlying pile, to accommodate soil expansion due to frost action or seasonal soil moisture variations. The void filler should be non-degradable and pest resistant with no pest nutrient value (Beaver Plastics “Frost Cushion”, or equivalent). The appropriate thickness of the void filler should be determined by the manufacturer. The grade beams and pile caps should be designed to withstand upward forces equivalent to the crushing strength of the void filler material.

An adfreeze bond-breaker must be applied to the sides of grade beams and pile caps in areas of the proposed development that will be exposed to frost conditions (i.e. within the depth of frost penetration) at any time during or after construction.

Water ponding within the void filler under grade beams and pile caps could result in frost jacking of the grade beam or pile caps in areas exposed to freezing. Fill placed against the interior face of grade beams and against pile caps should thus be comprised of low to medium plastic inorganic clay or clay till. The clay or clay till should be placed in lifts with compacted thickness of 150mm, at a minimum of 98% of standard proctor maximum dry density at or slightly above optimum moisture content.

4.3 SUBSURFACE UTILITIES

Subsurface utilities referred to in this section include possible upgrading of underground water and/or sewer services. It is assumed that these utilities will be installed at depths ranging from approximately 2m to 5m below final subgrade elevation. Franchise utilities (telephone, cable, natural gas, electricity, etc.) are typically installed in shallow trenches in accordance with the requirements of the individual utility owner.

Installation of subsurface utilities, pipe bedding and backfill should be undertaken in accordance with the requirements of the local municipal authority.

4.3.1 Trench Excavations

Trench excavations must conform to the guidelines in the Alberta Occupational Health and Safety Act. Temporary trench side slopes (open for less than 7 days) of 1 vertical to 1 horizontal may be used to a depth of 1.5m above the base of the excavation. Shallower side slopes may be required if significant groundwater seepage is encountered or if the trench advances through the wet clay/clay till or sand seams. Steeper excavations may be considered if engineered safety cages or shored/braced construction is used. All trenches should be monitored regularly for seepage and sloughing, especially after periods of precipitation.

Surcharges, such as material excavated from the trench, should be placed/stockpiled at least 3.0m (or one trench depth, whichever is greater) away from the top edge of the trench. Vehicle traffic should not be allowed within 1.0m of the top edge of the trench.

Every effort should be made to ensure trenches are excavated and backfilled on the same day (at least to a height sufficient to resist buoyant uplift).

Water accumulation was recorded on completion of drilling at depths ranging from 3.0 to 5.6 m below grade. Seepage was noted at depths as shallow as 2.9 m from grade. The ingress of groundwater into trench excavations may be encountered during trenching, and as such de-watering equipment should be available on site prior to excavation. Groundwater should not be allowed to pond on the base of the excavation. Surface water flow should be directed away from trenches and must not be allowed to pond near the edge of the excavation.

The base of the trench excavations will likely be founded in clay or clay till. If the trench base softens as a result of groundwater infiltration or heavy rainfall, or becomes disturbed during excavation, stabilization may be required before placing the pipe. If required, stabilization of the trench base should consist of over excavating to a depth of 600mm, placing a woven Class 2 geotextile on the subcut base, and backfilling to the original base elevation with washed rock. The washed rock should be wrapped in the geotextile to provide a base for placement of the pipe bedding.

4.3.2 Pipe Bedding

The type and placement requirements for pipe bedding material should adhere to the specifications of the local municipal authority. In the absence of placement requirements, pipe bedding material should be compacted to a minimum of 95% of Standard Proctor maximum dry density at or slightly below (0% to 2%) its optimum moisture content.

4.3.3 Backfill and Compaction

Native inorganic material excavated from a trench may be reused to backfill the trench provided the required degree of compaction can be obtained. The insitu moisture content of the clay or clay till was

frequently higher than its optimum moisture for compaction purposes, and may require drying before it can be reused for backfilling. Topsoil, coal, organic clay and marl are not acceptable as trench backfill material.

Trench backfill placement requirements issued by the local municipal authority should be followed. In the absence of local specifications, utility trench backfill should be comprised of native material placed in 150mm lifts compacted to 95% of Standard Proctor maximum dry density from the pipe zone to within 1.5m of the final subgrade elevation, and 98% of Standard Proctor maximum dry density within the upper 1.5m. The uppermost 150mm of the subgrade (final lift) should be compacted to 100% of Standard Proctor maximum dry density at or slightly above the optimum moisture content. All compaction must be verified by density testing.

4.3.4 Frost Protection of Shallow Utilities

Non-insulated buried water lines, sewer lines containing water or fire water lines must have a minimum frost cover. For trenches backfilled using cohesive fill, including the on-site materials, the depth of frost cover should be at least 2.7m below final grade. Should granular fill be used to backfill the trench, the minimum depth for frost protection should be increased to 3.3m below final grade.

Pipes buried with less than the recommended soil cover must be protected with insulation to prevent frost effects. High strength extruded polystyrene (e.g., Dow Highload 40 or equivalent) could be considered as an insulation option. The local municipal authority's insulation requirements should be followed. In the absence of local specification, the insulation manufacturer's recommendations for placement and thickness of insulating material for protection of shallow utilities should be followed.

For trenches underlying roadways, the insulation should have a minimum depth of cover of 600mm. A 100mm thick sand layer is recommended directly over and underlying the insulation for cushioning. In areas with insulation, the thickness of soil cover overlying the top of pipe zone backfill should be at least 1.0m.

For other buried utilities which are not sensitive to frost-related movement, such as electrical conduits, there are no depth restrictions due to frost. However, such utilities placed within the frost zone must be capable of accommodating seasonal movements on the order of 50mm. If these utilities are not capable of accommodating movements due to frost, they should either be installed below the frost penetration depth or insulated.

As an alternative to extruded polystyrene, cellular concrete may be considered for frost protection. In a trench application, the final design of the cellular concrete should be carried out by the supplier as it is a function of surface cover and other factors.

4.4 CONCRETE

No significant concentrations of soluble sulphates were measured in tested soil samples recovered from this site. Type GU, GUb or equivalent Portland cement may be used for production of concrete in contact with the existing onsite soils.

Concrete having a minimum 28-day compressive strength of 25 MPa is acceptable for foundation concrete. Concrete exposed to freeze-thaw cycles and/or de-icing chemicals may have different strength requirements as well as air entrainment and water-to-cementitious-materials ratio requirements. Shelby may be able to provide further direction upon request.

Any imported fill that will be in contact with concrete should be tested for soluble sulphates before use, and the above recommendations for cement type re-evaluated.

4.5 ASPHALT PAVEMENTS

The following recommendations assume that the final grade of asphalt pavements will be approximately coincident with surface grades as existed at the time of this investigation.

Frozen materials must not be used for fill. Construction of pavement structures (including base support) must not be undertaken over frozen subgrade soils.

The recommendations below are not applicable to areas outside of the site/study area. The authority having jurisdiction should be consulted with respect to offsite access improvements such as crossings or turning lanes.

4.5.1 Subgrade Preparation

Pavement areas should be inspected and stripped of any topsoil, organic or unsuitable material.

After any additional stripping (if required to reach the final subgrade elevation) the exposed subgrade should be inspected by qualified geotechnical personnel and then scarified to a depth of 150mm and compacted to a minimum of 98% of Standard Proctor maximum dry density at or slightly over optimum moisture content.

Fill material used to raise the grade of pavement areas should be comprised of low to medium plastic clay or clay till. In the event that the fill will be placed on top of existing granular materials, such as within the existing gravel parking lot, then the fill should consist of crushed gravel. The material should be compacted in 150mm thick lifts to a minimum of 98% of the Standard Proctor maximum dry density at or slightly above its optimum moisture content. The final lift (upper 150mm) of the subgrade should be compacted to 100% of Standard Proctor maximum dry density at or slightly above the optimum moisture

content. The upper surface of the subgrade should be shaped to parallel the final grade of the overlying asphalt pavement.

Prior to placement of granular base course material, the prepared subgrade should be proof rolled using a heavily loaded gravel truck or equivalent piece of equipment to identify any soft areas. Proof rolling should be completed under the supervision of qualified Geotechnical personnel. Recommendations pertaining to the repair of soft areas can only be made at the time of inspection.

4.5.2 Structure Design

The light-duty traffic design below is for areas subjected to passenger vehicle traffic only, such as parking stalls. The heavy-duty design below is for areas subjected to occasional truck traffic such as entrances and drive aisles (equivalent to 2 typical semi-tractor units with 5 axles per day). Either structure is capable of supporting emergency response traffic (including standard fire-fighting equipment). If traffic volumes and/or vehicle types different than the above assumptions are expected, Shelby should be contacted to provide alternate structure recommendations.

A California Bearing Ratio (CBR) of 2.0 has been estimated for the subgrade if prepared as outlined above. Based on this, the following asphalt pavement structures are recommended:

Table 4.3: Asphalt Pavement Structures

Lift	Light Duty (parking stalls)	Heavy Duty (drive aisles)
Asphalt	75mm	100mm
Granular Base (20mm crushed gravel)	250mm	300mm

The granular base material and asphalt concrete should meet the specifications outlined by the local authority (or Alberta Transportation, if specifications have not been determined by the local authority). The granular material should be compacted to 100% of the Standard Proctor maximum dry density in 150mm lifts.

It is possible that the existing gravel parking lot will be suitable for incorporation into the new pavement structure in whole or in part. Re-use will be dependent on the residual thickness of the existing gravel after grading, and the presence of clay lumps, segregated gravel, or other unsuitable material. The suitability of the existing gravel structure should be evaluated at the time of construction, and should consist of a combination of a visual evaluation, proof roll, and confirmation of gravel thickness by shallow test pit or other means. For discussion purposes only, it can be assumed that the upper 100 mm of

existing gravel structure will need to be replaced with fresh crushed gravel to accommodate the presence of unsuitable material.

4.5.3 Drainage

Water cannot be permitted to pond or pool on the surface of the asphalt pavement. All surface runoff must be conveyed to a perimeter drainage ditch or to catch basins, to prevent water infiltration into the subgrade. Asphalt pavement areas must have a minimum grade of 1%.

Catch basin barrels should be perforated at the interface of the granular base and underlying prepared subgrade. Some method of preventing ingress of soil into the sewer system must be implemented.

4.5.4 Maintenance

A regular scheduled maintenance program will extend the life of the asphalt pavement. Asphalt pavements should be inspected on an annual basis and any cracks sealed to prevent water from infiltrating the subgrade.

5.0 CONSTRUCTION TESTING AND MONITORING

Appropriate laboratory and field testing and monitoring by qualified geotechnical personnel is recommended during any earthworks (i.e., site grading, excavating, backfilling, building/pavement subgrade preparation) and placement of all engineered fill and base or subbase materials, to ensure that suitable site conditions are prepared and that materials consistent with the recommendation herein are used.

The NBC(AE) specifies geotechnical field review by a suitably qualified individual on a full-time continuous basis during installation of all deep foundation elements, and on an as required basis for installation of each shallow foundation unit and during excavating/backfilling.

6.0 CLOSURE

This report has been prepared for the exclusive use of EDS Group Inc. and their agents. It has been prepared in accordance with generally accepted professional standards at the location and time of preparation, for application as noted by the specific proposed development, site location and/or scope of work described herein. No other warranty is made, either expressed or implied. Any use of this report by any third party, or any reliance or decisions made based on it, are the responsibility of any such third party. Shelby will accept no responsibility for any claims, losses, liabilities, damages, expenses and/or costs arising out of claims, howsoever arising, by third parties related to use, reuse, alteration or reliance upon the findings herein.

This report is subject to the attached Terms and General Conditions for Services Provided by Shelby Engineering Ltd., which should be considered to form part of this report.

APPENDIX I

Terms and General Conditions

Terms and General Conditions for Services Provided by Shelby Engineering Ltd.

All professional services provided by Shelby Engineering Ltd. ("**Shelby**") to the client (the "**Client**") with respect to the project ("**Project**") and at the site ("**Site**") identified in the attached report, proposal and/or project set-up form (the **"Purchase Order"**) are subject to the terms and conditions set forth in the Professional Services Agreement ("**PSA**").

1. Scope of Services and Standard of Care. Shelby will provide only those services and scope of work outlined in the Purchase Order (the "**Services**"). If a service, work or activity is not specifically identified, it is expressly excluded from the Services. Shelby will perform the Services in a manner consistent with the level of care and skill ordinarily exercised by other engineers currently practicing in the same or similar locality, under the same or similar conditions, subject to the time limits and financial, physical or any other constraints applicable to the Services. No other warranty, express or implied, is made or intended to be made with respect to the Services and the same are specifically disclaimed.

2. Fees. The fees charged by Shelby are as set out in the Purchase Order and based upon the condition that the Project, works or services that form the subject of the Purchase Order shall be carried out in one continuous phase (without the Project being temporarily suspended by the Client). If the Project is suspended for any amount of time and restarted, additional consulting and field services may be required, which shall be subject to a separate proposal and additional fees.

3. Terms of Payment. Invoices shall be issued by Shelby monthly and shall be payable on receipt. Within 14 days of receipt of an invoice the Client shall notify Shelby of any dispute with the invoice. Invoices not paid within 28 days of invoice date shall be subject to a charge of 1.5% per month or the maximum rate allowed by law, whichever is less. If the Client fails to pay any invoice within 28 days of the invoice date and such failure continues 15 days after Shelby gives the Client notice of such failure, Shelby shall have the right to terminate this PSA immediately and/or suspend performance of the Services. The Client shall have no right of setoff against any billings of Shelby for disputed claims or withholding of Services. The Client expressly acknowledges and agrees that Shelby may file a lien against a Project and/or Site for any and all fees that are due and payable by the Client under this PSA and/or any Purchase Order.

4. Data and Information. Shelby shall be entitled to rely on the accuracy and completeness of all testing, services, reports, data, and other information furnished by the Client or other consultants regarding the Project, the Services or the location of the Project (the "**Site**") and assumes no responsibility or liability with respect to such information. The Client acknowledges that the Services entail an investigation which by its nature involves the risk that certain conditions between points investigated will not be detected, and that certain other conditions may change with time after provision of the written report of the Services. The Client acknowledges and accepts such risk and is aware that the Purchase Order or in any Work Product can only provide for the conditions at the investigated points at the time of investigation. Extrapolation between the investigated points is at the Client's risk. If the Client requires additional or special investigations outside the scope of the Purchase Order or Work Product, the Client must request such additional investigations from Shelby.

5. Differing Conditions. Prior to commencement of the Services, the Client will inform Shelby in writing of all known materials categorized as hazardous or toxic by any federal, provincial or local law, or regulation and of any conditions existing on or near the Site that are relevant to the Services or that may present a danger to health, the environment or Shelby's equipment or personnel. If Shelby believes that any condition encountered at the Site or during the course of the Project is inaccurate or differs materially from the conditions disclosed, indicated, reflected or referred to by the Client at the time of the Purchase Order, Shelby shall notify the Client within a reasonable time. In such a case, Shelby shall not be required to continue performing the Services until such time as a resolution to address the differing condition has been mutually agreed to the Client and Shelby, including any change in compensation, time for performance or both. Shelby shall have no responsibility for the discovery, presence, handling, removal, disposal of, or exposure of persons to, hazardous materials in any form at the Site, except to the extent directly caused by the sole negligence of Shelby. Shelby shall not be liable for any costs or damages resulting from any concealed condition of the Site or other condition of the Site not disclosed to Shelby in writing.

7. Changes and Delays. Shelby shall be entitled to an increase in fees or time, or both, for performance of the Services where any changes are required or made to the scope of Services, to the extent that such changes do not arise from the direct and sole negligence of Shelby. Shelby shall not be required to perform any Services related to a change unless the parties have agreed on the amount of or the basis for calculating the time and fees associated with such change. Shelby shall be entitled to additional time or fees, or both, for any delays caused by or resulting from acts of the Client, consultants, contractors, subcontractors, suppliers or other third parties over whom Shelby has no control, to the extent that such delay is not caused by Shelby's negligence. Should Shelby terminate this PSA in accordance with section 12 herein, Shelby shall not be responsible for any delays or damages resulting from such termination.

8. Ownership of Documents. All plans, designs, drawings, specifications, notes, data, samples, materials, reports, reproducibles and other work developed by Shelby (the "**Work Product**") and all patent, trademark, copyright, industrial or other intellectual property rights therein shall remain the property of Shelby after the Services have been completed or terminated. The Client agrees not to use, reuse, or adapt any of the Purchase Order for any other project or application. The Client shall release, defend, indemnify and hold harmless Shelby from all claims, losses, liabilities, damages, expenses, and costs arising out of the unauthorized use, reuse, alteration or reliance on the Purchase Order. The Work Product has been prepared for a specific purpose the Site. No responsibility for the findings will be accepted by Shelby if they are applied to a different site or for a purpose different from the specific purpose outlined in the Work Product. NO OTHER PARTY MAY USE OR RELY UPON THE REPORT OR ANY PORTION THEREOF WITHOUT THE WRITTEN CONSENT OF SHELBY.

9. Limitation of Liability. Shelby and the Client each waive their rights to recover from the other any consequential, indirect or incidental damages (including, but not limited to, loss of use, income, profits, financing or reputation), arising out of, or related to, this PSA, the Project or the performance of the Services. To the maximum extent permitted by law, Shelby's liability to the Client for any and all causes of action whatsoever, including, without limitation, tort, contract, strict liability, indemnity or otherwise, arising out of, or in connection with this PSA, the Project or Shelby's performance of the Services shall be limited in the aggregate to the total fees paid by the Client to Shelby under this PSA. The Client further agrees that, to the fullest extent permitted by law, no shareholder, officer, director,

partner, principal or employee of Shelby shall have any personal liability under any provision of this PSA, or for any matter in connection with the Services provided. The Client expressly agrees to the limitation of liability.

10. Indemnification. The Client acknowledges that the Purchase Order is based upon testing, services, reports, data, and other information furnished by the Client or other consultants and that the Purchase Order would be impacted by any changes to such data. As such, Shelby makes no representation or warranty regarding the use of or reliance upon the Work Product by third parties and the Client shall release, defend, indemnify and hold harmless Shelby from all claims, losses, liabilities, damages, expenses and costs arising out of claims by third parties related to use, reuse, alteration or reliance upon the Purchase Order. Nothing in this PSA shall be interpreted or construed as giving any rights or benefits to any person or third party other than Shelby and Client. NO OTHER PARTY MAY USE OR RELY UPON THE REPORT OR ANY PORTION THEREOF WITHOUT THE WRITTEN CONSENT OF SHELBY.

11. Performance by Consultants, Contractors, Subcontractors and Suppliers and Construction Means and Safety. Unless Shelby is identified in the Purchase Order as the "prime contractor" (with respect to the Alberta Health and Safety Act), the Client is responsible to retain competent and qualified consultants, contractors, subcontractors and suppliers for the Project. The Services do not include supervision or direction of the means, methods or actual work of other consultants, contractors, subcontractors or suppliers not retained by Shelby. No acceptance or approval by Shelby of the work of consultants, contractors, subcontractors or suppliers not retained by Shelby, whether express or implied, shall relieve such persons of their obligations to the Client for the proper performance of their work and Shelby shall have no liability to the Client or a third party with respect to the work performed by such persons, including any field review of such work performed by Shelby. Shelby shall have no responsibility for, control, right of control or liability with respect to the means, methods, techniques, sequences, procedures and equipment used or not used by such parties in their performance of any phase of the work at the Site or with respect to any safety precautions or programs related to the Project or the Site.

In the event Shelby is appointed as "prime contractor" in the Purchase Order, Shelby shall comply with all applicable laws, including, without limitation, occupational health, workers' compensation, safety and fire regulations of any governmental authority having jurisdiction over the Project or the Services. Shelby shall ensure that all its employees, agents and its subcontractors, their employees and agents, comply with and respect all requirements of this provision.

12. Termination. In the event of a material breach of this PSA by one of the parties, and the failure to remedy such breach within seven days of receiving written notice of the breach, provided that the breach was not caused or contributed to by the party seeking to exercise the right of termination, either party may terminate this PSA upon seven days' written notice to the other party, without further liability. Shelby may terminate this PSA should the Client be adjudged bankrupt, or make a general assignment for the benefit of creditors because of its insolvency or a receiver is appointed because of its insolvency, provided notice of such termination is provided in writing by Shelby. Shelby shall be entitled to terminate this PSA upon seven days' written notice to the Client. Should Shelby terminate this PSA pursuant to the provisions herein, all representations, indemnities and obligations shall survive the termination of this PSA indefinitely. Upon termination, the Client shall pay Shelby for all Services performed to the date of termination.

13. Governing Law and Severability. This PSA shall be governed by the law of the Province of Alberta. If any term, condition or provision of this PSA or the application thereof is determined to be invalid or unenforceable, the remaining provisions of this PSA shall not be affected but shall instead remain valid and fully enforceable. This PSA incorporates and supersedes all prior negotiations, agreements and representations, either written or oral. No cancellation, modification, amendment, deletion, addition, waiver or other change in this PSA shall have effect unless specifically set forth in writing and signed by both parties.

14. Confidentiality and Publication. Both parties shall keep all information designated as "confidential", whether disclosed in writing or orally, strictly confidential and shall not disclose any such information to any other person except (i) as required for performance of the Services, provided that any person to whom such information is disclosed is subject to similar obligations of confidentiality or (ii) where required by law. Shelby shall have the right to include references to the Project in its promotional and professional materials.

15. Changing Conditions. The characteristics of materials tested or assessed throughout the provision of the Services may vary from that reported due to the passage of time, use, environmental conditions, inherent variability, construction effects and other factors beyond Shelby's knowledge or control. The results reported in any Work Product represent only the material characteristics and conditions at the specific location and time that the Services are performed. Shelby provides no assurances that conditions consistent with the reported results existed elsewhere or that the reported conditions will persist for any period of time.

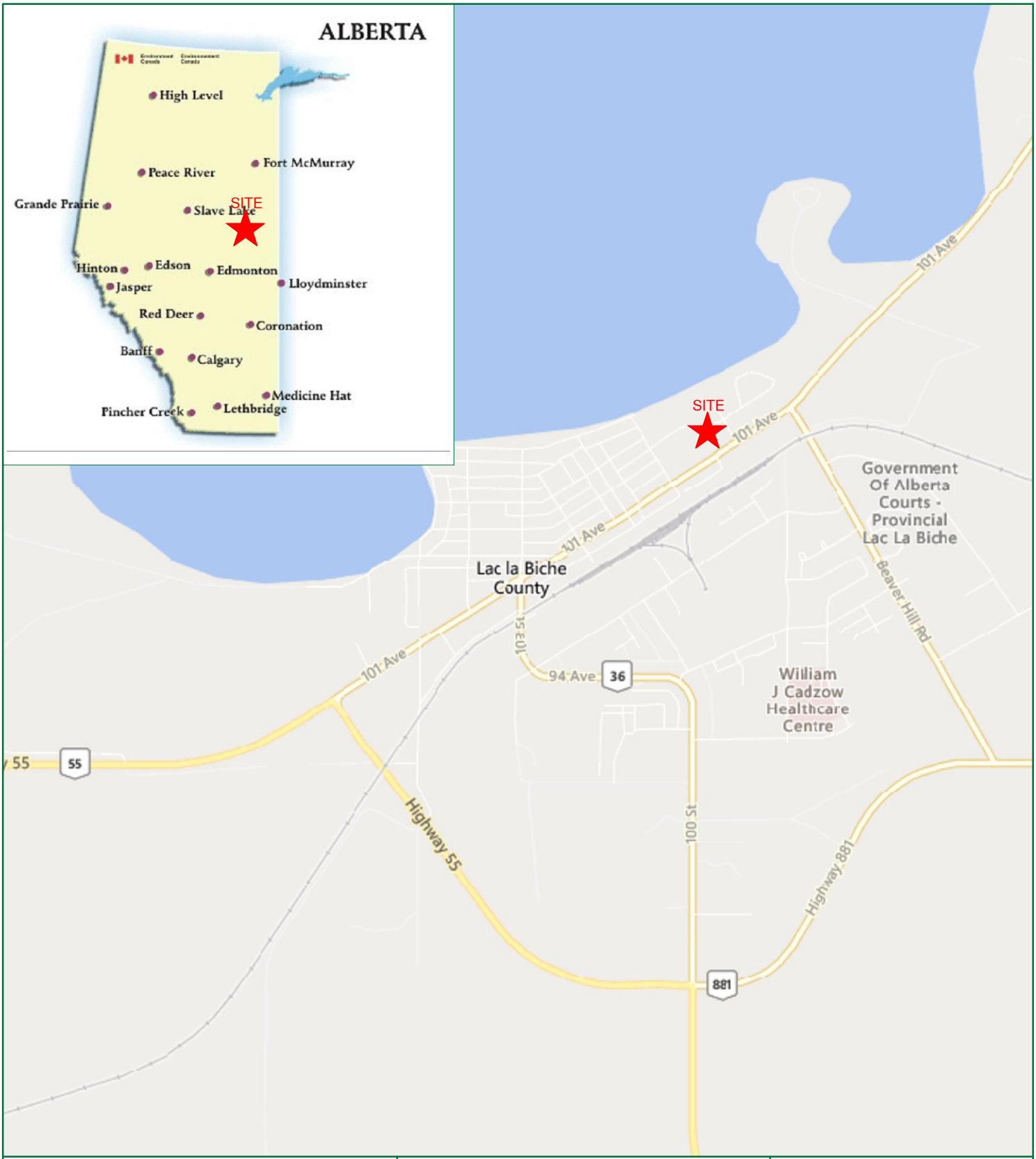
16. On-Site Services. The presence of Shelby personnel at a Site is for the sole purpose of providing the Services; their presence shall not be assumed to include the provision of the Services for any other purpose. Shelby's testing and assessing personnel cannot provide direction, including, but not limited to, the acceptance or rejection of materials, interpretation of specifications, or the means, methods, sequence, and timing of construction. Conditions of non-compliant work or materials may be found by Shelby through the provision of the Services. It is the responsibility of others to arrange for any necessary retesting of remediated non-compliant work or materials. Shelby does not supply surveying as part of the Services. Locations are approximations based upon information supplied by others' site personnel or existing points of reference. Shelby is not responsible for errors by others or the movement or removal of reference points. For any material testing services provided, material samples will be retained for their original intended purpose, after which, samples will be discarded at Shelby's discretion, unless arrangements have been made prior to receipt of samples.

17. Conflicts. The Purchase Order is incorporated by reference into the terms of this PSA. In the event of a conflict between the terms of the Purchase Order and this PSA, the terms of this PSA shall govern and prevail. No amendments to the Purchase Order or PSA shall be effective unless specifically agreed to in writing by Shelby's authorized representative. The following are hereby expressly excluded and extinguished from the Purchase Order: (a) terms and conditions in any work order, purchase order, correspondence, or other document used, prepared, or provided by the Client (excluding the Purchase Order); and (b) terms and conditions implied by applicable law (to the fullest extent that any such Law may be waived by the Client) or by trade custom, practice or course of dealing. Prior to the Client's acceptance of the Purchase Order, the Client may, by written notice to Shelby, request that Shelby amend particular terms and conditions set forth in the Purchase Order; however, such amendments will only be effective by Shelby's written acceptance of the Client's proposed revisions and such amendments may result in price increases.

Rev July 2021

APPENDIX II

Figures and Test Hole Logs



NOTES:

MAPS OBTAINED FROM GOVERNMENT OF CANADA WEBSITE ENVIRONMENT CANADA AND MICROSOFT CORPORATION BING MAPS

CLIENT:

EDS GROUP INC.

PROJECT:

MCARTHUR PARK UPGRADE
99 STREET AND 101 AVENUE
LAC LA BICHE, AB

SHELBY ENGINEERING

SITE LOCATION PLAN

DWN BY:	CKD BY:	REVISION:
VG	HC	1
PROJECT NO.:	DATE:	FIGURE NO.:
1-23639	DEC. 2022	1

NOTES:

SATELLITE IMAGERY VIA BING MAPS

N

0m 80m

SCALE: 1:2000

△ TBM: TOP OF FIRE HYDRANT ON NORTHEAST SIDE OF 99 STREET
ASSUMED ELEVATION: (100.00m)

CLIENT:

EDS GROUP INC.

PROJECT:

MCARTHUR PARK UPGRADE
99 ST. AND 101 AVE. LAC LA BICHE, AB

SHELBY ENGINEERING

BORE HOLE LOCATION PLAN

DWN BY:	CKD BY:	REVISION:
NG	HKC	1
PROJECT NO.:	DATE:	FIGURE NO.:
1-23639	DEC. 2022	2

MCARTHUR PARK UPGRADING - PHASES 1,2	EDS GROUP INC.	TEST HOLE NO.: TH-1
99 STREET AND 101 AVENUE, LAC LA BICHE, AB	START DATE: 12/2/22	PROJECT NO.: 1-23639
PROJECT ENGINEER: VG	SOLID STEM AUGERS AND SPTS	ELEVATION.: 93.15 m

SAMPLE TYPE: GRAB | SHELBY TUBE | SPT | NO RECOVERY | HOLLOW STEM | CORE

BACKFILL TYPE: BENTONITE | PEA GRAVEL | SLOUGH | GROUT | DRILL CUTTINGS | SAND

POCKET PEN (kPa) 100 200 300 400

STANDARD PENETRATION (N) 20 40 60 80

PLASTIC M.C. LIQUID 20 40 60 80

Depth (m)	SAMPLE TYPE	SAMPLE NO.	SPT (N)	SOIL DESCRIPTION	USC	SOIL SYMBOL	ADDITIONAL TESTING	Elevation (m)
0.0		1		FILL: Topsoil to 25mm.				93.0
		2		-Sand, fine, moist to wet, brown and black, trace gravel, organics.	FILL			
1.0	>>	3	6	-brown, trace clay from 650mm.			SO4%=0%	92.0
		4		-medium plastic from 750mm.				
2.0		5		CLAY TILL: Silty sandy, firm, medium plastic, moist, brown, trace gravel, oxides, rootlets.				91.0
	>>	6	10	-stiff, trace sand pockets from 1.5m.				
3.0		7		-dark brown from 2.4m.				90.0
		8		-very stiff, free water on auger from 2.9m.	TILL			
4.0	>>	9	12					89.0
		10						
5.0		11						88.0
	>>	12	18					
6.0				DEPTH OF HOLE 5.8 METRES WATER AT 3.0 METRES UPON COMPLETION SLOUGH TO 5.6 METRES UPON COMPLETION BACKFILLED				87.0
7.0								86.0
8.0								85.0
9.0								84.0

SHELBY ENGINEERING
#172, 2693 BROADMOOR BLVD.
SHERWOOD PARK, AB
T8H 0G1

LOGGED BY: NG	COMPLETION DEPTH: 5.80 m
REVIEWED BY: AC	COMPLETION DATE: 12/2/22
FIGURE NO.: 3	Page 1 of 1

MCARTHUR PARK UPGRADING - PHASES 1,2	EDS GROUP INC.	TEST HOLE NO.: TH-2
99 STREET AND 101 AVENUE, LAC LA BICHE, AB	START DATE: 12/2/22	PROJECT NO.: 1-23639
PROJECT ENGINEER: VG	SOLID STEM AUGERS	ELEVATION.: 98.22 m

SAMPLE TYPE: GRAB | SHELBY TUBE | SPT | NO RECOVERY | HOLLOW STEM | CORE

BACKFILL TYPE: BENTONITE | PEA GRAVEL | SLOUGH | GROUT | DRILL CUTTINGS | SAND

POCKET PEN (kPa) 100 200 300 400

STANDARD PENETRATION (N) 20 40 60 80

PLASTIC M.C. LIQUID 20 40 60 80

Depth (m)	SAMPLE TYPE	SAMPLE NO.	SPT (N)	SOIL DESCRIPTION	USC	SOIL SYMBOL	ADDITIONAL TESTING	Elevation (m)
0.0		1		FILL: Topsoil to 40mm.				98.0
		2		-Clay till, silty, sandy, very stiff, medium plastic, moist, brown, trace gravel, oxides, organics to 1.2m.	FILL			
1.0				-frost to 300mm.				97.0
		3		-slight hydrocarbon odour from 40mm to 1.2m.				
2.0				CLAY TILL: Silty, sandy, very stiff, medium plastic, moist, dark brown, trace gravel, oxides, coal to 2.1m.	TILL			96.0
		4		CLAY: Silty, sandy, soft, medium plastic, wet, light brown, trace oxides, coal.				
3.0		5						95.0
		6		-soft to firm, trace sand from 3.7m.	CI-CH			
4.0								94.0
		7		-firm form 4.3m.				
5.0		8		-free water on auger from 5.3m				93.0
6.0		9		DEPTH OF HOLE 6.1 METRES WATER AT 5.6 METRES UPON COMPLETION NO SLOUGH UPON COMPLETION BACKFILLED				92.0
7.0								91.0
8.0								90.0
9.0								89.0

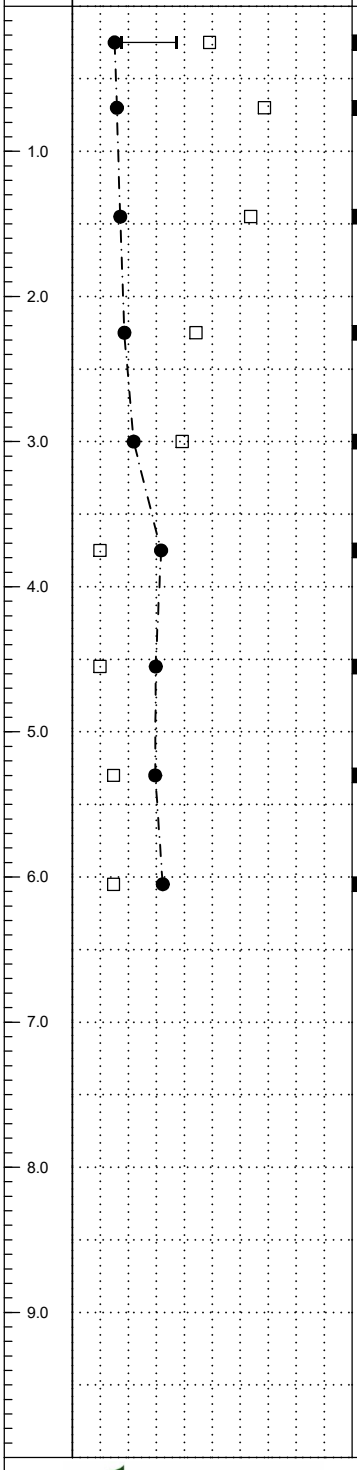
SHELBY ENGINEERING
#172, 2693 BROADMOOR BLVD.
SHERWOOD PARK, AB
T8H 0G1

LOGGED BY: NG	COMPLETION DEPTH: 6.10 m
REVIEWED BY: AC	COMPLETION DATE: 12/2/22
FIGURE NO.: 4	Page 1 of 1

MCARTHUR PARK UPGRADING - PHASES 1,2	EDS GROUP INC.	TEST HOLE NO.: TH-3
99 STREET AND 101 AVENUE, LAC LA BICHE, AB	START DATE: 12/2/22	PROJECT NO.: 1-23639
PROJECT ENGINEER: VG	SOLID STEM AUGERS	ELEVATION.: 97.32 m

SAMPLE TYPE: GRAB | SHELBY TUBE | SPT | NO RECOVERY | HOLLOW STEM | CORE

BACKFILL TYPE: BENTONITE | PEA GRAVEL | SLOUGH | GROUT | DRILL CUTTINGS | SAND



SAMPLE TYPE	SAMPLE NO.	SPT (N)	SOIL DESCRIPTION	USC	SOIL SYMBOL	ADDITIONAL TESTING	Elevation (m)
	1		FILL: Topsoil to 25mm.				97.0
	2		-Clay till, silty, sandy, very stiff, medium plastic, moist, dark brown and black, trace gravel, oxides, coal, organics to 3.7m.				
	3		-frost to 500mm.				96.0
			-slight hydrocarbon odour from 300mm.				
	4		-trace woodchips from 1.8m.	FILL			95.0
	5						94.0
	6		CLAY: Silty, soft to firm, high plastic, wet to saturated, dark brown, trace oxides.				93.0
	7		-slight hydrocarbon odour at 3.8m.				
			-brown, trace grey streaks, mottled.	CH			92.0
	8		-firm, free water on auger.				91.0
	9		DEPTH OF HOLE 6.1 METRES WATER AT 4.9 METRES UPON COMPLETION NO SLOUGH UPON COMPLETION BACKFILLED				90.0
							89.0
							88.0

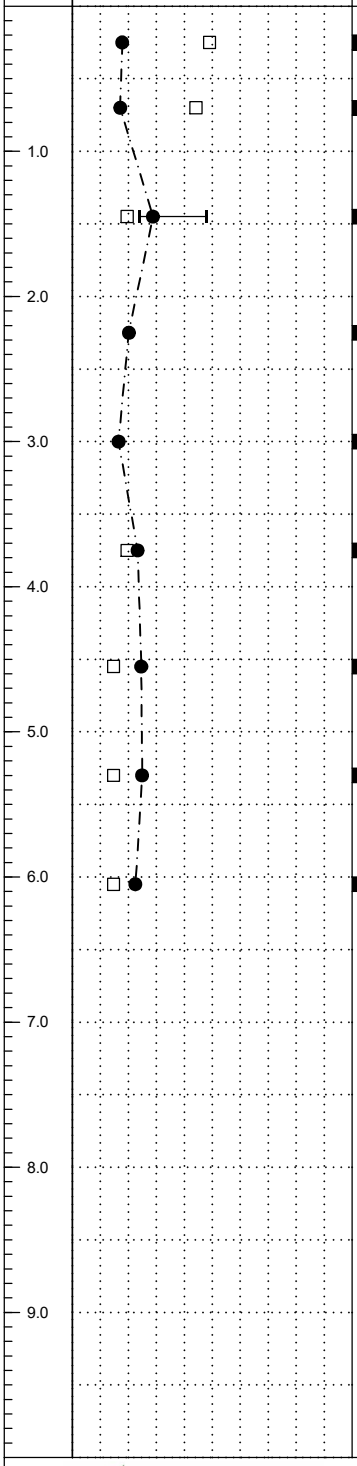
SHELBY ENGINEERING
#172, 2693 BROADMOOR BLVD.
SHERWOOD PARK, AB
T8H 0G1

LOGGED BY: NG	COMPLETION DEPTH: 6.10 m
REVIEWED BY: AC	COMPLETION DATE: 12/2/22
FIGURE NO.: 5	Page 1 of 1

MCARTHUR PARK UPGRADING - PHASES 1,2	EDS GROUP INC.	TEST HOLE NO.: TH-4
99 STREET AND 101 AVENUE, LAC LA BICHE, AB	START DATE: 12/2/22	PROJECT NO.: 1-23639
PROJECT ENGINEER: VG	SOLID STEM AUGERS	ELEVATION.: 100.48 m

SAMPLE TYPE: GRAB | SHELBY TUBE | SPT | NO RECOVERY | HOLLOW STEM | CORE

BACKFILL TYPE: BENTONITE | PEA GRAVEL | SLOUGH | GROUT | DRILL CUTTINGS | SAND



SAMPLE TYPE	SAMPLE NO.	SPT (N)	SOIL DESCRIPTION	USC	SOIL SYMBOL	ADDITIONAL TESTING	Elevation (m)
	1		FILL: Sand, fine grained, moist, brown, trace gravel to 25mm.				100.0
	2		-Clay till, silty, sandy, very stiff, medium plastic, moist, dark brown, trace organics to 1.4m.	FILL			
			-slight hydrocarbon odour at 300mm.				
	3		-frost to 800mm.				99.0
			CLAY: Silty, firm to stiff, medium plastic, wet, brown, trace oxides to 2.4m.	CH			
	4		-and sand, saturated from 2.0m.				98.0
			SAND: Silty, fine grained, saturated, brown, trace gravel, coal to 3.4m.	SM			
	5						97.0
	6		CLAY TILL: Silty, sandy, firm to stiff, saturated, brown, trace gravel, coal.				
	7		-firm, dark brown.	TILL			96.0
	8						95.0
	9		DEPTH OF HOLE 6.1 METRES WATER AT 4.4 METRES UPON COMPLETION NO SLOUGH UPON COMPLETION BACKFILLED				94.0
							93.0
							92.0
							91.0

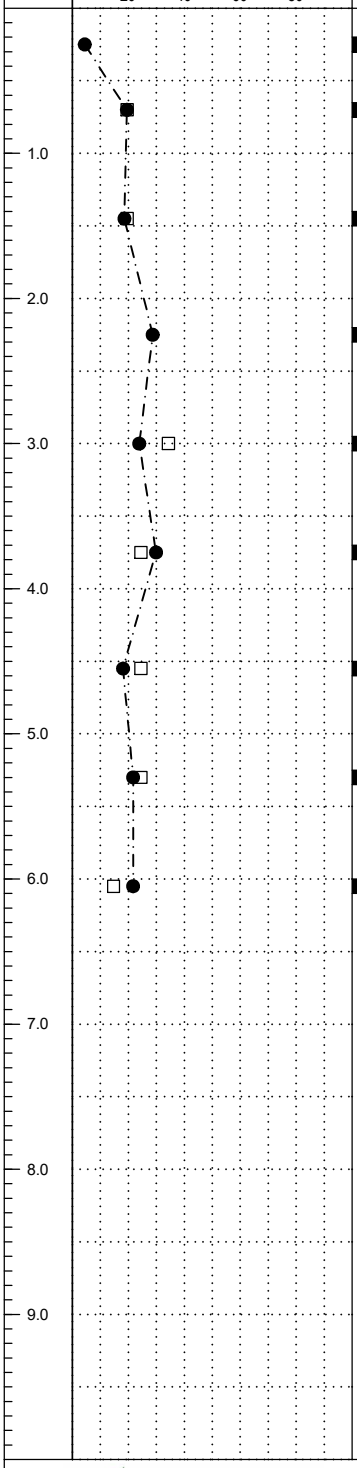
SHELBY ENGINEERING
#172, 2693 BROADMOOR BLVD.
SHERWOOD PARK, AB
T8H 0G1

LOGGED BY: NG	COMPLETION DEPTH: 6.10 m
REVIEWED BY: AC	COMPLETION DATE: 12/2/22
FIGURE NO.: 6	Page 1 of 1

MCARTHUR PARK UPGRADING - PHASES 1,2	EDS GROUP INC.	TEST HOLE NO.: TH-5
99 STREET AND 101 AVENUE, LAC LA BICHE, AB	START DATE: 12/2/22	PROJECT NO.: 1-23639
PROJECT ENGINEER: VG	SOLID STEM AUGERS	ELEVATION.: 100.19 m

SAMPLE TYPE: GRAB | SHELBY TUBE | SPT | NO RECOVERY | HOLLOW STEM | CORE

BACKFILL TYPE: BENTONITE | PEA GRAVEL | SLOUGH | GROUT | DRILL CUTTINGS | SAND



SAMPLE TYPE	SAMPLE NO.	SPT (N)	SOIL DESCRIPTION	USC	SOIL SYMBOL	ADDITIONAL TESTING	Elevation (m)
	1		FILL: Sand, fine grained, moist, brown, trace gravel to 600mm.	FILL			100.0
	2		CLAY: And sand, silty, firm to stiff, medium plastic, moist, brown, trace oxides.				
	3						99.0
	4		-sandy, soft, wet, mottled from 2.0m.				98.0
	5		-stiff from 2.7m.				97.0
	6			SACL			96.0
	7		-some clay till lenses.				95.0
	8						94.0
	9		-firm, free water on auger.				93.0
			DEPTH OF HOLE 6.1 METRES TRACE WATER UPON COMPLETION NO SLOUGH UPON COMPLETION BACKFILLED				92.0
							91.0

SHELBY ENGINEERING
#172, 2693 BROADMOOR BLVD.
SHERWOOD PARK, AB
T8H 0G1

LOGGED BY: NG	COMPLETION DEPTH: 6.10 m
REVIEWED BY: AC	COMPLETION DATE: 12/2/22
FIGURE NO.: 7	Page 1 of 1

SOIL CLASSIFCATION SYSTEM (MODIFIED U.S.C.)

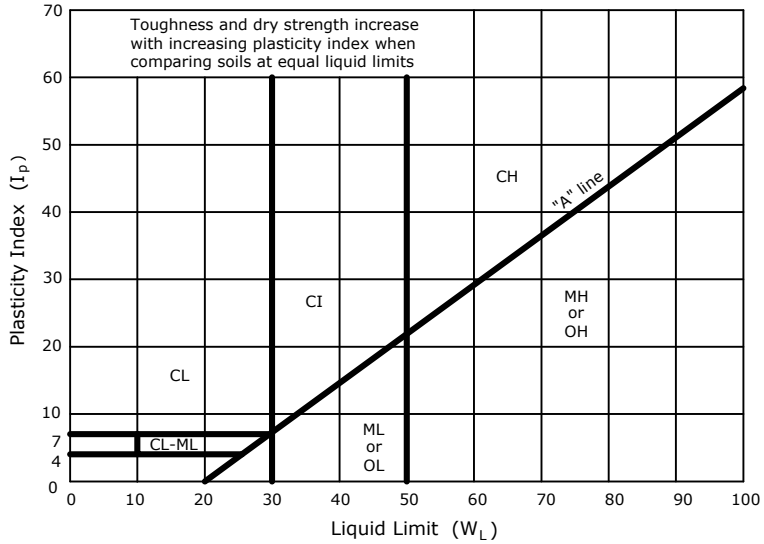
MAJOR DIVISION			GROUP SYMBOL	GRAPHIC SYMBOL	GROUP NAME	LABORATORY CLASSIFICATION CRITERIA
HIGHLY ORGANIC SOILS			PT		PEAT AND OTHER HIGHLY ORGANIC SOILS	STRONG COLOR OR ODOR, AND OFTEN FIBROUS TEXTURE
COARSE-GRAINED SOILS (MORE THAN 50% RETAINED ON NO.200 SIEVE)	GRAVELS (MORE THAN 50% OF COARSE FRACTION RETAINED ON NO.4 SIEVE)	CLEAN GRAVELS (LESS THAN 5% FINES)	GW		WELL-GRADED GRAVELS, GRAVEL-SAND MIXTURES, < 5% FINES	$Cu = \frac{D_{60}}{D_{10}} > 4$ $\quad 1 \le Cc = \frac{(D_{30})^2}{D_{10} \times D_{60}} \le 3$
			GP		POORLY-GRADED GRAVELS, GRAVEL-SAND MIXTURES, < 5% FINES	NOT MEETING ALL ABOVE REQUIREMENTS
		DIRTY GRAVELS (MORE THAN 12% FINES)	GM		SILTY GRAVELS, GRAVEL-SAND-SILT MIXTURES, > 12% FINES	ATTERBERG LIMITS BELOW "A" LINE OR $I_P < 4$
			GC		CLAYEY GRAVELS, GRAVEL-SAND-CLAY MIXTURES, > 12% FINES	ATTERBERG LIMITS ABOVE "A" LINE OR $I_P > 7$
	SANDS (MORE THAN 50% OF COARSE FRACTION PASSES NO. 4 SIEVE)	CLEAN SANDS (LESS THAN 5% FINES)	SW		WELL-GRADED SANDS, GRAVELLY SANDS, < 5% FINES	$Cu > 6$ and $1 \le Cc \le 3$
			SP		POORLY-GRADED SANDS, OR GRAVELLY SANDS, < 5% FINES	NOT MEETING ALL ABOVE REQUIREMENTS
		DIRTY SANDS (MORE THAN 12% FINES)	SM		SILTY SANDS, SAND-SILT MIXTURES, > 12% FINES	ATTERBERG LIMITS BELOW "A" LINE OR $I_P < 4$
			SC		CLAYEY SANDS, SAND-CLAY MIXTURES, > 12% FINES	ATTERBERG LIMITS ABOVE "A" LINE OR $I_P > 7$
FINE-GRAINED SOILS (MORE THAN 50% PASSES NO. 200 SIEVE)	SILTS (BELOW "A" LINE ON PLASTICITY CHART; NEGLIGIBLE ORGANIC CONTENT)		ML		INORGANIC SILTS AND VERY FINE SANDS, ROCK FLOUR, SILTY SANDS OF SLIGHT PLASTICITY	$W_L < 50$
			MH		INORGANIC SILTS, MICACEOUS OR DIATOMACEOUS, FINE SANDY OR SILTY SOILS	$W_L > 50$
	CLAYS (ABOVE "A" LINE ON PLASTICITY CHART; NEGLIGIBLE ORGANIC CONTENT)		CL		INORGANIC CLAYS OF LOW PLASTICITY, GRAVELLY, SANDY, OR SILTY CLAYS, LEAN CLAYS	$W_L < 30$
			CI		INORGANIC CLAYS OF MEDIUM PLASTICITY, SILTY CLAYS	$30 < W_L < 50$
			CH		INORGANIC CLAYS OF HIGH PLASTICITY, FAT CLAYS	$W_L > 50$
	ORGANIC SILTS AND ORGANIC CLAYS (BELOW "A" LINE ON PLASTICITY CHART)		OL		ORGANIC SILTS AND ORGANIC SILTY CLAYS OF LOW PLASTICITY	$W_L < 50$
			OH		ORGANIC CLAYS OF HIGH PLASTICITY	$W_L > 50$

SEE PLASTICITY CHART BELOW

1. All sieve sizes mentioned on this chart are U.S. Standard, ASTM E11
2. Boundary classifications possessing characteristics of two groups are given combined group symbols. eg. GW-GC is a well-graded gravel-sand mixture with clay binder of between 5% and 12%.
3. Soil fractions and limiting textural boundaries are in accordance with the Unified Soil Classification System (ASTM D2487), except that an inorganic clay of medium plasticity (CI) is recognized.
4. The following adjectives may be employed to define percentage ranges by weight of minor components (per Canadian Foundation Engineering Manual, 1992):

And	-	35% to 50%
(y/ey)	-	20% to 35%
Some	-	10% to 20%
Trace	-	1% to 10%

PLASTICITY CHART



SHELBY ENGINEERING

SOIL CLASSIFICATION CHART

TECHNICAL SPECIFICATIONS

Part 1 General

1.1 SEALS AND SIGNATURES

.1 Seals and Signatures: Seals and Signatures attached to this Section authenticate that Project Specifications prepared and delivered by the listed Registered Professionals are appropriate for proper use, and can be relied upon for the delivery of services described by the Specifications, and as follows:

.1 Seals and Signatures do not represent a warranty, nor do they create a guarantee of accuracy for the information contained in the Specifications.

.2 Seals and Signatures are provided by the listed Registered Professionals according to provincial legislation and standards of conduct described by regulatory bodies.

.3 Information contained in the document set was created by, or under the direct supervision of Registered Professionals licensed for the discipline and extent of Work associated with the Seals and Signatures applied to this Section.

.2 Status of Drawings: Seals and Signatures attached to Drawings, have the same status as Seals and Signatures attached to Specifications as described in this Section and as follows:

.1 Drawings and Specifications are complementary, and what is required by one document is required by all documents.

.2 Consultant will interpret any request for interpretation of the Drawings and Specifications in accordance with the Contract.

.3 Document Set: Seals and Signatures attached to this Section authentic use of the Specifications only for the document set described below:

.1 Project Name: McArthur Park

.2 V3 Project No.: C22-092

.3 Date: March 08, 2023

.4 Purpose: Issued for Tender

1.2 REGISTERED PROFESSIONAL OF RECORD

.1 Discipline: Civil.

.2 Name and Title: Braeden Veeneman, P.Eng., Project Manager

.3 Company: V3 Companies of Canada, Ltd.

Stamp:	Permit to Practice:
PROFESSIONAL ENGINEER ALBERTA BRAEDEN VEENEMAN 2023-03-08 ID 116095	PERMIT TO PRACTICE V3 COMPANIES OF CANADA LTD. RM SIGNATURE: RM APEGA ID #: 80480 DATE: 9 Mar. 2023 PERMIT NUMBER: P010899 The Association of Professional Engineers and Geoscientists of Alberta (APEGA)

Authentication applies to Specification Sections listed on the following page.

1.3 AUTHENTICATED DOCUMENTS

Section 02 41 13.14	Asphalt Paving Removals
Section 03 30 00.01	Cast-In-Place Concrete – Short Form
Section 31 05 16	Aggregate Material
Section 31 14 13	Topsoil Stripping and Stockpiling
Section 31 22 16.13	Roadway Subgrade Reshaping
Section 31 23 33.01	Excavating, Trenching, and Backfilling
Section 32 11 23	Aggregate Base Course
Section 32 12 13.16	Asphalt Tack Coats
Section 32 12 16.01	Asphalt Paving – Short Form
Section 32 13 15	Concrete Curbs and Gutters
Section 32 17 23	Pavement Markings
Section 33 05 13	Manholes and Catchbasins
Section 33 41 00	Storm Utility Drainage Piping

END OF SECTION

Part 1 General

1.1 SECTION INCLUDES

.1 Methods for removal of existing asphalt pavement.

1.2 WASTE MANAGEMENT AND DISPOSAL

.1 Divert unused asphalt materials from landfill to local facility approved by Engineer.

Part 2 Execution

2.1 PREPARATION

.1 Prior to beginning removal operation, inspect and verify with Engineer areas, depths and lines of asphalt pavement to be removed.

2.2 PROTECTION

.1 Protect existing pavement not designated for removal, light units and structures from damage. In event of damage, immediately replace or make repairs to approval of Engineer at no additional cost.

2.3 REMOVAL

.1 Remove existing asphalt pavement to lines and grades as indicated.

.2 Use equipment and methods of removal and hauling which do not damage or disturb underlying pavement or road structure.

.3 Prevent contamination of removed asphalt pavement by topsoil, underlying gravel or other materials.

.4 Provide for suppression of dust generated by removal process.

.5 Ensure saw-cuts remain straight following removal. Any broken edges are to be re-cut prior to paving at no additional cost.

2.4 STOCKPILING OF MATERIAL

.1 Dispose of removed asphalt pavement by stock-piling in location designated by Engineer.

.2 Removed asphalt pavement which is to be recycled in hot mix asphalt concrete under this contract may be stockpiled at designated asphalt plant site.

2.5 SWEEPING

.1 Sweep remaining asphalt pavement surfaces clean of debris resulting from removal operations using rotary power brooms and hand brooming as required.

END OF SECTION

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 SECTIONS INCLUDE

.1 This section includes subgrade compaction requirements prior to the placement of granular base and asphalt cement for roadway rehabilitation.

1.2 RELATED SECTIONS

.1 Section 32 11 23 – Aggregate Base Course.

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

1.3 REFERENCES

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

.1 ASTM D698-[00a], Test Method for Laboratory Compaction Characteristics of Soil Using Standard Effort (600 kN-m/m^3).

1.4 DEFINITIONS

.1 Reshaping subgrade: scarifying, pulverizing, blading, reshaping and recompacting existing subgrade surface.

1.5 WASTE MANAGEMENT AND DISPOSAL

.1 Excess or deleterious material rejected by the Engineer is to be removed and disposed of accordingly. Payment for work will be incidental to the work performed as specified herein.

Part 2 Execution

2.1 SCARIFYING AND RESHAPING

.1 Subgrade reshaping is to take place as soon as reasonably possible following the completion of trench backfill. Cement modification or replacement of subgrade material required as a result of delays caused by Contractor coordination or mobilization will be completed at the Contractors expense.

.2 The finished subgrade surface shall be firm and uniform, true to grade and cross-section, and shall be approved by the Engineer before placing subsequent material Theron. Subgrade that does not conform to the requirements as to grade, cross-section, moisture content or density shall be reworked until such requirements are met.

.3 The subgrade shall be prepared to a depth of at minimum of 150mm. If the Engineer has specified that additional depth is required, the work shall be carried out in layers, each of which do not exceed 150mm in depth, and requirements for density and optimum moisture as specified above shall apply for each layer.

.4 Cement modification is to be carried out with mechanical spreading and mixing equipment capable of breaking subgrade material into suitable sizes for compaction, and for thorough and even distribution of cement power.

.5 Blade and trim pulverized material to elevation and cross section dimensions as indicated in the Engineering drawing details and specifications.

.6 Where deficiency of material exists, add and blend additional subgrade material as directed by the Engineer.

2.2 COMPACTING

.1 Break material down to sizes suitable for compaction and mix for uniform moisture to full depth of layer.

.2 Compact each layer below the subgrade depth to the densities identified in Section 31 23 33.01 – Excavating, Trenching, and Backfilling – item 2.2.4, except the depth of subgrade. Scarify and compact the depth of subgrade to 100% maximum dry density, ASTM D698 (AASHTO T99).

.3 Add water or dry as required to bring moisture content of materials to level required to achieve specified compaction.

.4 If required and approved by the Engineer, cement modification will be completed at a rate and depth determined by the Geotechnical Engineer. Additional cement powder at specified depths will be applied as approved by the Engineer.

.5 Prepared areas should be compacted to an elevation slightly higher than the final subgrade elevation then cut back to final subgrade elevation.

.6 Testing Frequency

.1 A standard proctor density will be required prior to the testing of subgrade.

.2 Within reason an additional standard proctor density will be required if the material changes along the length of the project or if the Engineer recommends Cement Stabilization of the subgrade.

.3 The frequency for the field density and moisture content test shall be one (1) per one thousand square meters ($1000m^2$) of subgrade and at various locations offset left and right of center line, or as directed by Engineer.

.7 Proof Rolling: A proof roll will be required prior to the cement stabilization of the subgrade and at the completion of the subgrade preparation.

.1 For proof rolling, contractor is to supply a fully loaded gravel truck with operator.

.2 Obtain approval from Engineer to use non-standard proof rolling equipment.

.3 Proof roll at level in subgrade preparation as indicated. If use of non-standard proof rolling equipment is approved, Engineer to determine level of proof rolling.

.4 Make sufficient passes with proof roller to subject every point on surface to three separate passes of loaded tire.

.5 Where proof rolling reveals areas of defective subgrade:

.1 Remove base and subgrade material to depth and extent as directed by Engineer.

.2 Backfill excavated subgrade with material and compact in accordance with Engineer's directions.

2.3 SITE TOLERANCES

.1 Shape entire roadbed to within 25 mm of design elevations. The roadbed shall not be uniformly high or low.

.2 Remove rocks over 150 mm in dimension from the top 300 mm of the subgrade.

.3 Hard finish areas by hand that cannot be finished satisfactorily by machine.

.4 Trim between constructed slopes and edge of clearing to provide drainage and free of humps, sags and ruts.

2.4 PROTECTION

.1 Maintain reshaped surface in condition conforming to this section until succeeding material is applied or until Engineer acceptance.

2.5 CLEANING

.1 Upon completion of installation, remove surplus materials, rubbish, tools and equipment barriers.

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 SECTION INCLUDES

.1 Materials and application of asphalt tack coat to an existing asphalt or concrete surface prior to asphalt paving.

1.2 RELATED SECTIONS

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

1.3 REFERENCES

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

.1 ASTM D140-01, Standard Practice for Sampling Bituminous Materials.

.2 Canadian General Standards Board (CGSB)

.1 CAN/CGSB-16.2-M89, Emulsified Asphalts, Anionic Type, for Road Purposes.

1.4 SUBMITTALS

.1 Upon request by Engineer, submit manufacturer's test data and certification that asphalt tack coat material meets requirements of this section.

1.5 QUALITY ASSURANCE

.1 Provide access on tank truck for a qualified assurance laboratory to sample asphalt material to be incorporated into Work.

1.6 DELIVERY, STORAGE AND HANDLING

.1 Deliver, store and handle materials in accordance with ASTM D140.

.2 Provide, maintain and restore asphalt storage area.

Part 2 Products

2.1 MATERIALS

.1 Asphalt material: MC 30/70 or SS-1.

.2 Water: clean, potable, free from foreign matter.

2.2 EQUIPMENT

.1 Pressure distributor to be:

.1 Designed, equipped, maintained and operated so that asphalt material can be:

.1 Maintained at even temperature.

.2 Applied uniformly on variable widths of surface up to 4 m.

.3 Applied at readily determined and controlled rates from 0.2 to 5.4 L/m^2 with uniform pressure, and with an allowable variation from any specified rate not exceeding 0.1 L/m^2.

.4 Distributed in uniform spray without atomization at temperature required.

.2 Equipped with meter, registering metres of travel per minute, visibly located to enable truck driver to maintain constant speed required for application at specified rate.

.3 Equipped with pump having flow meter graduated in units of 5 L or less per minute passing through nozzles and readily visible to operator. Pump power unit to be independent of truck power unit.

.4 Equipped with an easily read, accurate and sensitive device which registers temperature of liquid in reservoir.

.5 Equipped with accurate volume measuring device or calibrated tank.

.6 Equipped with nozzles of same make and dimensions, adjustable for fan width and orientation.

.7 Equipped with nozzle spray bar, with operational height adjustment.

.8 Cleaned if previously used with incompatible asphalt material.

Part 3 Execution

3.1 APPLICATION

.1 Obtain Engineer's approval of surface before applying asphalt tack coat.

.2 Apply asphalt tack coat only on clean and dry surface.

.3 For MC 30/70, apply asphalt tack coat at 100% concentration at a rate of 0.3 +/- 0.1 L/sq.m.

.4 For SS-1, apply asphalt tack coat at 50% concentration, thoroughly mixed at a ratio of 1:1 with water, at a rate of 0.5 +/- 0.2 L/sq.m.

.5 Paint contact surfaces of curbs, gutters, headers, manholes and like structures with thin, uniform coat of asphalt tack coat material.

.6 Do not apply asphalt tack coat when air temperature is less than 5 degrees C or when rain is forecast within 2 hours of application.

.7 Apply asphalt tack coat only on unfrozen surface.

.8 Evenly distribute localized excessive deposits of tack coat by brooming as directed by Engineer.

.9 Where traffic is to be maintained, treat no more than one half of width of surface in one application.

.10 Keep traffic off tacked areas until asphalt tack coat has set.

.11 Re-tack contaminated or disturbed areas as directed by Engineer.

.12 Permit asphalt tack coat to set before placing asphalt pavement.

3.2 MAINTENANCE

.1 The contractor shall maintain the tacked surface until the next asphalt course has been placed. Maintenance shall include patching any breaks in the tacked surface with additional asphaltic material.

END OF SECTION

Part 1 General

1.1 RELATED SECTIONS

.1 Section 01350 – Submittals.

.2 Section 31 05 16 – Aggregate Material.

.3 Section 32 11 23 – Aggregate Base Course.

.4 Section 32 17 23 – Pavement Markings.

1.2 REFERENCES

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

.1 ASTM D698-00a, Standard Test Methods for Laboratory Compaction Characteristics of Soil Using Standard Effort (12,400 ft-lbf/ft^3 (600 kN-m/m^3)).

.2 Canadian General Standards Board (CGSB)

.1 CAN/CGSB-1.5-M91(March 1999), Low Flash Petroleum Spirits Thinner (Reaffirmation of December 1991).

.2 CAN/CGSB-1.74-2001, Alkyd Traffic Paint.

.3 Alberta Transportation Standard Specifications for Highway Construction

1.3 SAMPLES

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

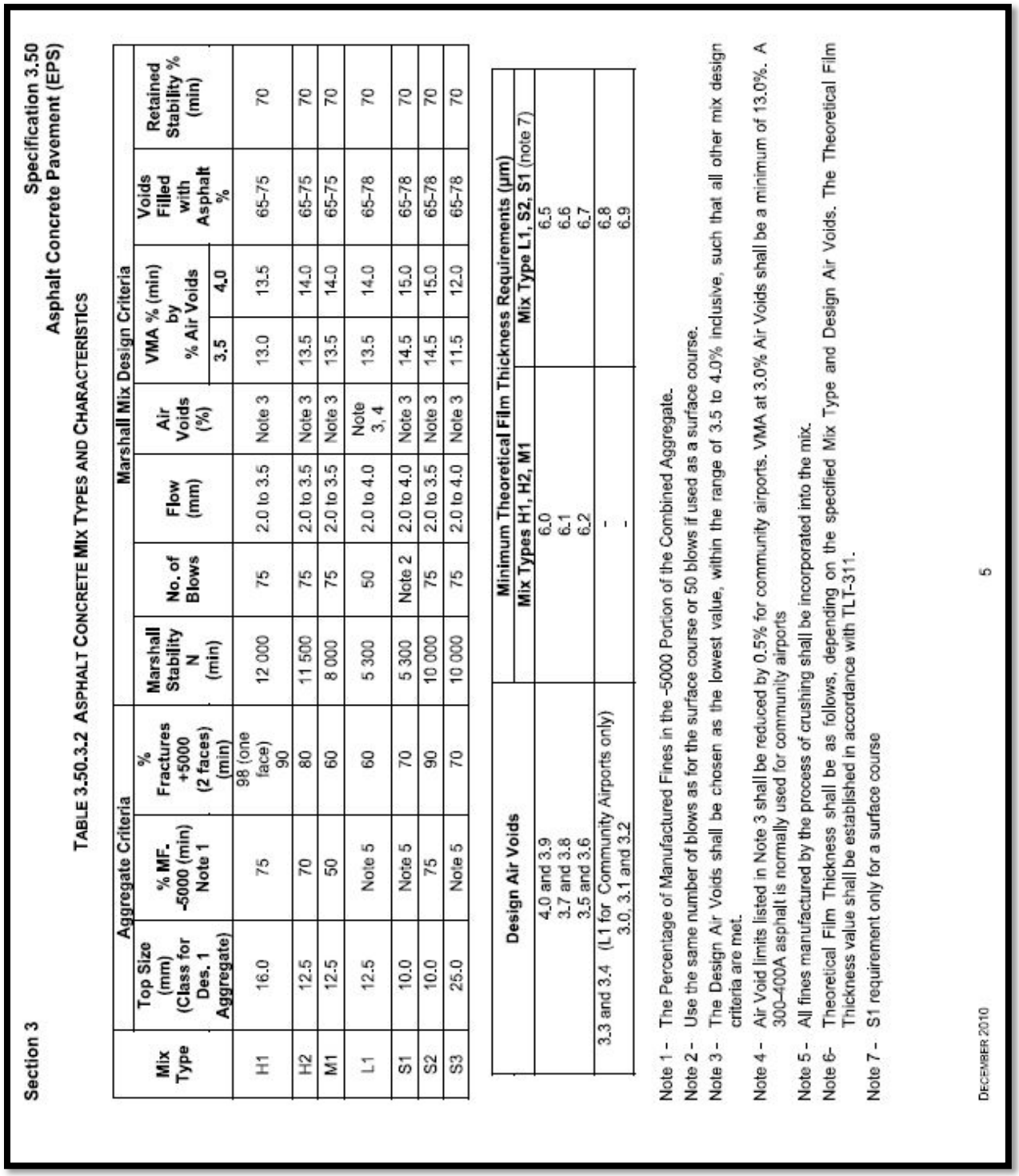
.2 Submit to Engineer, samples of material for sieve analysis at least 2 weeks before beginning Work.

Part 2 Products

2.1 MATERIALS

.1 Asphalt Concrete Mix Types and Characteristics can be located on Table 3.50.3.2 on page three of these specifications.

Table 3.50.3.2



Section 3

Specification 3.50
Asphalt Concrete Pavement (EPS)

TABLE 3.50.3.2 ASPHALT CONCRETE MIX TYPES AND CHARACTERISTICS

Mix Type	Aggregate Criteria			Marshall Mix Design Criteria							
	Top Size (mm) (Class for Des. 1 Aggregate)	% MF. -5000 (min) Note 1	% Fractures +5000 (2 faces) (min)	Marshall Stability N (min)	No. of Blows	Flow (mm)	Air Voids (%)	VMA % (min) by % Air Voids		Voids Filled with Asphalt %	Retained Stability % (min)
								3.5	4.0		
H1	16.0	75	98 (one face) 90	12 000	75	2.0 to 3.5	Note 3	13.0	13.5	65-75	70
H2	12.5	70	80	11 500	75	2.0 to 3.5	Note 3	13.5	14.0	65-75	70
M1	12.5	50	60	8 000	75	2.0 to 3.5	Note 3	13.5	14.0	65-75	70
L1	12.5	Note 5	60	5 300	50	2.0 to 4.0	Note 3, 4	13.5	14.0	65-78	70
S1	10.0	Note 5	70	5 300	Note 2	2.0 to 4.0	Note 3	14.5	15.0	65-78	70
S2	10.0	75	90	10 000	75	2.0 to 3.5	Note 3	14.5	15.0	65-78	70
S3	25.0	Note 5	70	10 000	75	2.0 to 4.0	Note 3	11.5	12.0	65-78	70

Design Air Voids	Minimum Theoretical Film Thickness Requirements (µm)	
	Mix Types H1, H2, M1	Mix Type L1, S2, S1 (note 7)
4.0 and 3.9	6.0	6.5
3.7 and 3.8	6.1	6.6
3.5 and 3.6	6.2	6.7
3.3 and 3.4 (L1 for Community Airports only)	-	6.8
3.0, 3.1 and 3.2	-	6.9

Note 1 - The Percentage of Manufactured Fines in the -5000 Portion of the Combined Aggregate.

Note 2 - Use the same number of blows as for the surface course or 50 blows if used as a surface course.

Note 3 - The Design Air Voids shall be chosen as the lowest value, within the range of 3.5 to 4.0% inclusive, such that all other mix design criteria are met.

Note 4 - Air Void limits listed in Note 3 shall be reduced by 0.5% for community airports. VMA at 3.0% Air Voids shall be a minimum of 13.0%. A 300–400A asphalt is normally used for community airports

Note 5 - All fines manufactured by the process of crushing shall be incorporated into the mix.

Note 6- Theoretical Film Thickness shall be as follows, depending on the specified Mix Type and Design Air Voids. The Theoretical Film Thickness value shall be established in accordance with TLT-311.

Note 7 - S1 requirement only for a surface course

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.2 Aggregate shall consist of hard, durable, uniformly graded crushed gravel and shall not contain organic or soft materials that break up when alternately frozen and thawed or wetted and dried, nor other deleterious materials

.3 Aggregate 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 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.

Los Angeles Abrasion Maximum % loss by mass: 40%.

a) Crushed Fragments: For each mix type, the minimum percentage, by mass retained down to the 5.000 mm sieve of fragments having at least 2 freshly fractured faces shall be as follows:

Designation	1		
Class (mm)	10	12.5	16
% Fracture by Weight (2 Faces)	60+	60+	See Note N1

N1: Asphalt Concrete Mix Type 1 – 90+ (98% 1 Face)
Asphalt Concrete Mix Type 2 – 70+
Other Asphalt Concrete Mix Types – 60+

b) Maximum of 3.0% total deleterious matter by total mass of combined aggregate.

.4 Unless otherwise specified, asphalt binder shall be PG 58-28.

.5 The asphalt stabilized base course mix design shall follow the Marshall Method of Mix Design as outlined in the latest edition of procedure TLT-302 or TLT-303 Alberta Transportation Test methods as appropriate. Mix design shall meet the following characteristic requirements at the design asphalt content:

	HF-500M	MC-250 or MC-800
Marshall Stability (N)	3000+	6700+
Air Voids	3% to 6%	3% to 6%

The contractor shall submit the mix design to the Consultant for approval and shall include the following information:

(a) The gradation of each aggregate to be used in the mixture

(b) The percentage by mass of each aggregate to be used in the mixture

(c) The mix design gradation of the combined aggregate

(d) Other characteristics of the combined aggregate specified in Specification 3.2, Aggregate Production and Stockpiling

(e) All Marshall mix design characteristics, including graphs used in arriving at the final mix design, the bulk specific gravity of the combined aggregates, and the asphalt absorption of the combined aggregate; and

(f) The recommended design asphalt content expressed as a percentage of dry weight of the aggregate.

.6 The Marshall Stability Value and the Flow Index shall be tested in accordance with the current issue of ASTM D1559 for Resistance to Plastic Flows of Bituminous Mixtures.

.7 The Percentage Voids and Percentage Aggregate Voids Filled with Asphalt shall be determined according to the Marshall Method of Mix Design for Hot Mix Asphalt Paving, as set out in the latest edition of the Asphalt Institute Manual Series.

Part 3 Execution

3.1 PREPARATION

.1 Patch and correct depressions and other irregularities to approval of the Engineer before beginning paving operations. Prior to laying mix, clean surfaces of loose and foreign material and apply primer coat or tack coat.

3.2 MIX TOLERANCES

.1 All mixture furnished shall conform to the job mix formula within the range of tolerance specified. After the Job Mix Formula gradation and proportioning of the various aggregate sizes have been established and approved, no alteration to the Job Mix Formula will be permitted.

.2 Any deviation whatsoever from the approved Job Mix Formula shall require the prior written approval of the Consultant, and the Consultant will not accept any asphalt mix produced prior to this approval.

.3 The Estimated Original Binder content of any individual sample shall not vary by more than 0.5% from the Job Mix Formula and the daily average by more than 0.3% from the Job Mix Formula.

3.3 MIXING PLANT

.1 The mixing plant and auxiliary equipment shall be such as to combine, dry and heat the mineral aggregate, heat the asphalt and accurately proportion the asphalt and aggregate to produce a uniform mixture in accordance with these specifications.

3.4 TRANSPORTATION OF MIX

.1 The mixture shall be transported from the mixing plant to the work in vehicles with tight metal bottoms previously cleaned of all foreign materials. The vehicle shall be suitably insulated and each load shall be covered with canvas or other suitable material of sufficient size to protect it from weather conditions. The inside surface of all vehicles may be lightly lubricated with a thin oil or soap solution prior to loading but excess lubricating will not be permitted.

.2 Any accumulation of asphaltic material which was collected in the box shall be thoroughly cleaned before loading with hot mix.

.3 Trucks shall be maintained perfectly clean of mud or any substance which could contaminate the working area.

3.5 EQUIPMENT

.1 Pavers:

.1 Mechanical grade controlled self-powered pavers capable of spreading mix within specified tolerances, true to line, grade and crown indicated.

.2 Roller:

.1 The rollers used for compaction shall be self-propelled steel-wheeled or rubber-tired rollers, providing at least 35 Newtons per millimeter width of tread. The size of the roller used for base repair sections shall be of a width to allow the machine to perform the proper compaction requirements within the base repair trench. The roller shall be in good condition without backlash when reversed and shall be operated by competent rollermen. The wheels shall be kept properly moistened, but excess water or oil will not be permitted.

.3 Hand Tools:

.1 Lutes or rakes with covered teeth for spreading and finishing operations.

3.6 PLACING

.1 Obtain Engineer's approval of base and existing surface and tack coat and prime coat prior to placing asphalt. The Asphaltic concrete shall be uniformly placed on the prepared and approved surface at the rate of application required to yield the nominal compaction thickness specified or designated by the consultant.

.2 Placing Conditions:

.1 The mix shall be spread and compacted only when the ambient temperature is 5ºC or greater and its moisture content is 1.0% or less as measured by any individual test.

.2 Do not place hot mix asphalt when pools of standing water exist on surface to be paved, during rain, or when surface is damp.

.3 Mixtures shall be spread at temperatures which, when measured in the hopper of the spreader, are not lower than 125°C or higher than 150°C.

.4 Do not place hot mix asphalt when pools of standing water exist on surface to be paved, during rain, or when surface is damp.

.5 The material shall be distributed uniformly to avoid segregation of the coarse and fine aggregates. Broadcasting of material shall not be permitted. During the spreading operation, all material shall be thoroughly loosened and uniformly distributed by lutes or rakes. Material that has formed into lumps and does not break down readily shall be rejected.

.6 Unless otherwise shown on the Drawings, the asphalt mix shall be placed in the following lift thicknesses:

(i) in a single lift when the design compacted total thickness is 70 mm or less.

(ii) in two or more lifts when the design compacted total thickness is greater than 70 mm. The lift thickness selection shall be determined by the Contractor except that: (a) the maximum thickness of any lift shall be 100 mm. (b) the minimum thickness of a top lift shall be 50 mm, unless it is placed directly over a Mix Type S3, in which case the minimum thickness shall be 60 mm. (c) When a total ACP thickness of 80 mm is specified, the thickness of the first lift shall be 30 mm and the final lift shall be 50 mm. Section 3 Specification 3.50 Asphalt Concrete Pavement (EPS) DECEMBER 2010 21 (d) When a total ACP thickness of 90 mm or more is specified, the minimum thickness of all lifts except the top lift shall be 40 mm or greater. (e) The minimum lift thickness for any lift using a Mix type S3 shall be 80 mm.

3.7 ROLLING AND COMPACTION

.1 Before rolling is started, the surface shall be checked, inequalities in depth adjusted and fat spots or sandy accumulations replaced and irregularities in alignment or grade along the outside edge shall be corrected.

.2 The rollers must be kept in continuous operation as nearly as practicable and all parts of the pavement shall receive substantially the same compaction. Rolling shall be done at a maximum speed of 8 km per hour.

.3 At least one roller shall be used for every 40 tonnes of asphaltic concrete laid per hour. Rolling shall start as soon as the pavement will bear the roller without checking or undue displacement, working from the low part or edge to the high part or edge continuously until no roller marks are left in the finished surface and no further compaction is possible. Where width permits the pavement shall be rolled diagonally in two directions. At all curbs, manholes and other appurtenances, and at all locations not accessible to the rollers, hand tampers shall be used to produce the same density as provided by the roller. Where the asphaltic concrete is laid in more than one lift, each lift shall be so compacted.

.4 The Consultant may at any time take measurements using nuclear equipment to determine if the Control Maximum Wet Density has been attained. If the results at ten randomly selected test sites do not average at least 98.0% of the Control Maximum Wet Density, then the Contractor shall carry out more passes until such an average is attained, or he shall construct a new Control Strip to establish a new Control Maximum Wet Density and a new Control Minimum Number of Passes, as directed by the Consultant.

.5 The Contractor shall compact areas such as entrances, where all of the specified equipment cannot work practically, using a vibratory steel-wheeled roller until 95.0% of the Control Maximum Wet Density has been achieved.

3.8 JOINTS

.1 The mixture shall be laid so that all longitudinal joints are made while the first mat of the two being laid is still hot.

.2 A narrow strip along the edge of a mat which is joined with another asphalt mat shall be left without rolling until the adjoining mat has been placed against it. The joint which is formed shall be rolled immediately after the adjacent mat has been placed to ensure a bonding of the material while the asphalt is still hot.

.3 Transverse joints shall be carefully constructed and thoroughly compacted to provide a smooth-riding surface. Joints shall be straight-edged to assure smoothness and true alignment and shall be offset at least one meter from joints of adjacent mats. The vertical face shall be treated with freshly laid mixture raked against it, tamped with hot tampers and rolled. Heat shall be used as necessary to ensure a proper bond.

.4 All concrete or metal structures such as gutters, manholes, etc. shall be painted with an approved bituminous material prior to placing the plant mix.

.5 New asphalt shall be tied in to existing asphalt along a straight cut surface painted with an approved bituminous material prior to placing the plant mix.

3.9 FINISH

.1 The finished pavement shall be true to the required profile and cross-section. Tests of pavement profile and thickness shall be made after the first layer of asphalt has been placed, and depressions or bumps in excess of 5 mm shall be corrected. The allowable tolerance for finished pavement shall be ±5 mm, and the surface shall show no depressions or bumps exceeding 3 mm under a straight-edge 3 m long placed parallel to the road centerline.

.2 Finished surface shall have a tightly knit texture free of visible signs of poor workmanship such as, but not limited to:

.1 Segregation;
.2 Areas exhibiting excess or insufficient asphalt;
.3 Improper matching of longitudinal and transverse joints;
.4 Roller marks, cracking, or tearing;

If surface and grade tolerances are exceeded, or if surface texture is not met, grind down and resurface defective areas as required by the Engineer.

3.10 DEFECTIVE WORK

.1 Correct irregularities which develop before completion of rolling by loosening surface mix and removing or adding material as required. If irregularities or defects remain after final compaction, remove surface course promptly and lay new material to form a true and even surface and compact immediately to specified density.

.2 Repair areas showing checking or hairline cracking.

3.11 TESTING AND INSPECTION

.1 The Engineer or his representative shall retain core samples from the completed pavement, from which depth of pavement and density tests shall be made.

.2 One core shall be taken for approximately every 1,000 m2 of asphalt or at least once each day during placing operations. The following tests shall be carried out:

.1 Marshall stability (test for resistance of plastic flow of bituminous mixtures) using
Marshall Apparatus as per ASTM D1559.
.2 Sieve analysis of extracted aggregates in accordance with ASTM C136 and entire washed sample in accordance with ASTM C117.
.3 Bulk specific gravity of compacted mixtures in accordance with ASTM D2726.
.4 Bitumen content of paving mixtures in accordance with ASTM D2172.
.5 Percent voids in the mineral aggregates (VMA) is to be calculated on the basis of ASTM D2726 Bulk Specific Gravity of the aggregate.
.6 Air voids in compacted mix in accordance with ASTM D3203.

.3 The Contractor shall repair all test holes with fresh, hot mix asphaltic concrete mixture, and thoroughly compact it to the required density with no additional compensation.

3.12 PENALTIES

.1 Thickness:

.1 If a deficiency in the thickness is found, two more cores shall be taken in the area, and the average thickness of the three cores shall represent the area. The Contract Unit Price shall be adjusted as follows for areas deficient in thickness.
.1 No payment shall be made for asphaltic surface course deficient in thickness by 15 mm or more.
.2 If the surface course is found deficient by more than 6 mm but less than 15 mm, then the adjusted unit price shall be as follows;

Thickness Deficiency (mm)	Pay Factor (%)
6.0	100.0
7.0	97.0
8.0	93.7
9.0	90.0
10.0	85.5
11.0	80.5
12.0	75.0
13.0	68.0

14.0	60.0
15.0	50.0
Over 15.0	Grind and resurface

.2 Density:

.1 The cores will be used to determine density. If any test fails to meet the density specified, two more cores shall be taken in the area. If the densities are less than specified, the Contract Unit Price shall be adjusted as follows:

ASPHALT PAY FACTORS					
98% Required		97% Required		96% Required	
Actual Density %	Pay Factor %	Actual Density %	Pay Factor %	Actual Density %	Pay Factor %
98.0	100.0	97.0	100.0	96.0	100.0
97.9	99.9	96.9	99.9	95.9	99.7
97.8	99.8	96.8	99.7	95.8	99.3
97.7	99.6	96.7	99.4	95.7	98.9
97.6	99.4	96.6	99.1	95.6	98.4
97.5	99.1	96.5	98.7	95.5	97.8
97.4	98.7	96.4	98.2	95.4	97.1
97.3	98.3	96.3	97.7	95.3	96.4
97.2	97.8	96.2	97.1	95.2	95.6
97.1	97.2	96.1	96.3	95.1	94.6
97.0	96.5	96.0	95.5	95.0	93.4
96.9	95.8	95.9	94.6	94.9	92.2
96.8	95.0	95.8	93.6	94.8	90.7
96.7	94.2	95.7	92.5	94.7	89.1
96.6	93.3	95.6	91.3	94.6	87.3
96.5	92.3	95.5	89.9	64.5	85.1
96.4	91.1	95.4	88.4	94.4	82.6
96.3	89.8	95.3	86.7	94.3	79.5
96.2	88.5	95.2	84.8	94.2	75.5
96.1	87.1	95.1	82.7	94.1	69.7
96.0	85.5	95.0	80.3	94.0	60.0
95.9	83.8	94.9	77.6	Under 94.0	Reject
95.8	82.0	94.8	74.3		
95.7	80.0	94.7	70.6		
95.6	77.7	94.6	66.0		
95.5	75.4	94.5	60.0		
95.4	73.0	Under 94.5	Reject		
95.3	70.3				
95.2	67.2				
95.1	63.7				
95.0	60.0				
Under 95.0	Reject				

Actual Density = % of Marshall density.
Pay Factor = % of contract price.

3.13 ACCEPTANCE

.1 Locations shall be cleared of all excess material resulting from the paving operation and any damage caused by the Contractor shall be repaired to the Engineer's satisfaction within 3 days of the date of completion of the street or lane. Failure to cleanup or repair damage may result in other crews undertaking this work without notice to the Contractor and deducting the costs from money due to the Contractor.

.2 No traffic shall be allowed on the finished surface until it has cooled to atmospheric temperature.

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:

$$P - [\frac{2P\,(A - B)}{A}]$$

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

Part 1 General

1.1 RELATED WORK

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

1.2 REFERENCES

.1 CAN/CGSB-1.5-M91, Low Flash Petroleum Spirits Thinner.

.2 CGSB1-GP-12c-68, Standard Paint Colours.

.3 CGSB1-GP-71-83, Method, of Testing Paints and Pigments.

.4 CGSB1-GP-74M-79, Paint, Traffic, Alkyd.

1.3 SAMPLES

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

.2 If requested, submit to Engineer the following material sample quantities at least 4 weeks prior to commencing work.

.1 Two 1L samples of each type of paint.

.2 One 1kg sample of glass beads.

.3 Sampling to CGSB1-GP-71.

.3 Mark samples with name of project and its location, paint manufacturer's name and address, name of paint, CGSB specification number and formulation number and batch number.

Part 2 Products

2.1 MATERIALS

.1 Paint:

.1 To CGSB1-GP-74M, alkyd traffic paint.

.2 Colour: to CGSB1-GP-12C, yellow 505-308, black 512-301, white 513-301.

.3 Upon request, Engineer will supply a qualified product list of paints applicable to work. Qualified paints may be used but Engineer reserves right to perform further tests.

.2 Thinner: to CAN/CGSB-1.5.

.3 Glass beads:

.1 Overlay type: to CGSB1-GP-74M.

Part 3 Execution

3.1 EQUIPMENT REQUIREMENTS

.1 Paint applicator to be an approved pressure type mobile distributor capable of applying paint in single, double and dashed lines. Applicator to be capable of applying marking components uniformly, at rates specified, and to dimensions as indicated, and to have positive shut-off.

.2 Distributor to be capable of applying reflective glass beads as an overlay on freshly applied paint.

3.2 CONDITION OF SURFACES

.1 Pavement surface to be dry, free from ponded water, frost, ice, dust, oil, grease and other foreign materials.

3.3 TRAFFIC CONTROL

.1 Provide adequate warning signs and traffic channelization devices to prevent tracking by vehicles.

3.4 APPLICATION

.1 Lay out pavement markings.

.2 Unless otherwise approved by Engineer, apply paint only when air temperature is above 10º C, wind speed is less than 60 km/h and no rain is forecast within next 4 h.

.3 Apply traffic paint evenly at rate recommended by manufacturer.

.4 Do not thin paint unless approved by Engineer.

.5 Symbols and letters to conform to dimensions indicated.

.6 Paint lines to be of uniform colour and density with sharp edges.

.7 Thoroughly clean distributor tank before refilling with paint of different colour.

.8 Apply glass beads at rate of 140 to 250 g/m^2 of painted area immediately after application of paint. The glass beads shall be applied to the wet paint so that the beads are embedded and retained in the paint and uniformly cover the painted surface.

3.5 TOLERANCE

.1 Paint markings to be within plus or minus 12 mm of dimensions indicated.

3.6 PROTECTION OF COMPLETED WORK

.1 Protect pavement markings until dry.

END OF SECTION

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

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

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

SODDING

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

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

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