

CONTRACT NO. CA0048471.0443

CONTRACT AND SPECIFICATIONS

for

Town of Edson
8th AVENUE - 2025 REHABILITATION
Edson, Alberta

8TH AVENUE - 2025 REHABILITATION

WATERMAIN, SANITARY SEWER, ROADWORKS, SIDEWALK,
CURB AND GUTTER, BASE, ASPHALTIC CONCRETE PAVEMENT AND OTHER WORK

Project No. CA0048471.0443

Prepared By:
WSP

February 2025

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IMPORTANT NOTICE

This document was prepared exclusively for Town of Edson by WSP. The quality of information, conclusions and estimates contained herein is consistent with the level of effort provided by WSP and are based on: i) information available at the time of preparation, ii) data supplied by outside sources, and iii) the assumptions, conditions and qualifications set forth in this document. This document is intended to be used by Town of Edson only, subject to the terms and conditions of its contract with WSP. Any other use of, or reliance on, this report by any third party is at that party's' sole risk.

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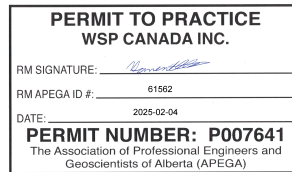
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TOWN OF EDSON
8TH AVENUE - 2025 REHABILITATION
 INVITATION TO BID

IB-01

Sealed Tenders clearly marked

"Tender for the Construction of: Town of Edson, 8th AVENUE - 2025 REHABILITATION."

are to be emailed to:

Donna Cross, Manager of Infrastructure
EMAIL: DonnaC@edson.ca
Town of Edson

Re: Town of Edson "8th AVENUE - 2025 REHABILITATION"

and received before **2:00:59 p.m., local time on Tuesday, February 26, 2025** There will be **NO** Public opening. Tenders received after the Closing Time will be returned to the Proponent(s) without being opened or considered. Email changes to the unit price schedule will be accepted. Email messages may be sent to **donnac@edson.ca**, marked **"TOWN OF EDSON 8th AVENUE - 2025 REHABILITATION UNIT PRICE SCHEDULE AMENDMENTS"**. To be acceptable, amendments must be received no later than the time and date set for the receipt of the Tender. The Owner accepts no responsibility for faxed submissions or changes. It is the Proponent's responsibility to confirm receipt of any facsimile messages.

Capitalized words and phrases not otherwise defined herein shall have the meanings ascribed thereto in Section 5.1 – Definitions.

The Work comprises of:

8th Avenue:

- | | |
|--|----------------------|
| • Water Main PVC DR18 Class 150 – 150mm | 170 m |
| • Sanitary Sewer PVC SDR 35 – 200 mm | 165 m |
| • Adjustment of Appurtenances | 1 each |
| • Common Excavation - Waste | 3,200 m ³ |
| • Trench Excavation | 465 m |
| • Water/Sanitary services | 130 m |
| • Geo-Grid material | 3,100 m ² |
| • Geotextile material | 3,100 m ² |
| • Perforated Drainage Pipe | 380 m |
| • Granular Sub-Base – (600 mm depth) | 3,100 m ² |
| • Granular Base Course – Des 2 Class 20 (300 mm depth) | 3,100 m ² |
| • Asphaltic Concrete Pavement (100 mm thick) | 2,300 m ² |
| • Asphaltic Concrete Pavement (75 mm thick) | 30 m ² |
| • Concrete Standard Monolithic (300 mm) Curb, and Gutter | 350 m |
| • Standard Concrete Sidewalk | 30 m |
| • Topsoil and Sodding | 1,200 m ² |

Copies of the Tender Documents may be obtained from Alberta Purchasing Connection on or after **1:00 p.m. on Monday, February 3, 2025.**

Tenders must be accompanied by:



CA0048171.0443

TOWN OF EDSON
8TH AVENUE - 2025 REHABILITATION
INVITATION TO BID

Tender Security in the amount of ten percent (10%) of the Tender Price, Consent of Surety, and upon request a copy of their current Safety Certificate or Temporary Letter of Certification.

The Owner reserves the right to accept or reject any or all Tenders and to waive irregularities and informalities at its discretion. The Owner reserves the right to accept a Tender other than the lowest Tender without stating reasons. By the act of submitting its Tender, the Proponent agrees that any claim the Proponent may have in relation to the award of the work by the Owner is limited to damages for the reasonable cost of preparing the Tender and that the Proponent has no right to seek loss of anticipated profit. Without limiting the generality of the foregoing, the Owner may consider any other factor, besides price and capability to perform the work, that it deems, in its sole discretion, to be relevant to its decision.

The successful Proponent shall be the Principal or Prime Contractor for the Project, pursuant to the applicable construction safety legislation, and shall have primary responsibility for the safety of all workers and equipment on the Project in accordance with such legislation.

Inquiries regarding this Project must be directed in writing no later than 11:00 a.m. **Thursday, February 20, 2025** to:

Donna Cross, Infrastructure Manager
E-mail: donnac@edson.ca

TOWN OF EDSON
8TH AVENUE - 2025 REHABILITATION

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TOWN OF EDSON
8TH AVENUE - 2025 REHABILITATION
INSTRUCTIONS TO PROPONENTS

00100

1. INSTRUCTIONS TO PROPONENTS (00100)

1.1 APPLICABLE TRADE TREATIES

Proponents should note that procurements falling within the scope of Chapter 5 of the Agreement on Internal Trade and the New West Partnership Trade Agreement are subject to those trade treaties, but that the rights and obligations of the parties shall be governed by the specific terms of each particular proposal call.

1.2 TENDER CALL

Tenders fully executed, dated, and endorsed, can be emailed to donnac@edson.ca at the Town of Edson, **until 2:00:59 p.m., on Tuesday, February 26, 2025**

The intent of this Tender is to obtain a formal offer to construct and complete the following:

Replacement of existing water main, replacement of existing sanitary sewer main, connection of lot services to mains, excavation of existing subgrade, supply and placement of non-woven geotextile and geogrid, supply and placement of granular sub-base and granular base course, supply and placement of asphalt concrete pavement, supply and installation of concrete sidewalk, curb and gutter and other work, hereinafter referred to as "The Works" located in Edson, Alberta.

Submit one (1) copy of the Tender on the forms provided, signed and sealed, together with a copy of the required securities, WCB Clearance, Certificate of Recognition, and Certificate of Insurance or equivalent letter from a Broker certifying that Insurance will be issued at the time of Contract signing.

Amendments to a submitted Tender will be permitted if received in writing no later than the time showing for receiving Tenders, and if endorsed by the same party or parties who signed the Tender.

If an arithmetical error is identified by the Engineer in the submitted Tender between any unit price and the price extension (unit price x quantity of units), the unit price shall govern the price extension, and the total Tender amount will be corrected accordingly.

Tenders will not be opened in public, after the close of the Tender period.

1.3 PROCUREMENT PROCESS NON-BINDING

The procurement process is not intended to create and shall not create a formal legally binding Tender process and shall instead be governed by the law applicable to direct commercial negotiations. For greater certainty and without limitation: (a) the Tender shall not give rise to any Contract A-based tendering law duties or any other legal obligations arising out of any process contract or collateral contract; and (b) neither the proponent nor the Owner shall have the right to make any claims (in contract, tort, or otherwise) against the other with respect to the award of a contract, failure to award a contract or failure to honour a response to the Tender.

The Tender process is intended to identify prospective vendors for the purposes of negotiating potential agreements. No legal relationship or obligation regarding the procurement of any good or service shall be created between the proponent and the Owner by the Tender process until the successful negotiation and execution of a written agreement for the acquisition of such goods and/or services.

While the pricing information provided in responses will be non-binding prior to the execution of a written agreement, such information will be assessed during the evaluation of the responses and the ranking of the proponents. Any inaccurate, misleading, or incomplete information, including withdrawn or altered pricing, could adversely impact any such evaluation, ranking or contract award.

TOWN OF EDSON
8TH AVENUE - 2025 REHABILITATION
INSTRUCTIONS TO PROPONENTS

1.4 TENDER COMMUNICATIONS AND CONFIDENTIAL INFORMATION

Proponents are advised that only those individuals identified below should be contacted with respect to any inquiries about this Tender.

For any information regarding proposal, please contact:

Donna Cross, Infrastructure Manager
605 – 50th Street
PO Box 6300
Edson, AB T7E 1N9
PH: (780) 723-4401
E-mail: donnac@edson.ca

The proponent shall not engage in any Conflict-of-Interest communications.

A proponent may not at any time directly or indirectly communicate with the media in relation to the Tender or any contract awarded pursuant to the Tender without first obtaining the written permission of the Owner Contact.

All information provided by or obtained from the Owner in any form in connection with the Tender either before or after the issuance of the Tender: is the sole property of the Owner and must be treated as confidential; is not to be used for any purpose other than replying to the Tender and the performance of any subsequent Contract; must not be disclosed without prior written authorization from the Owner; and shall be returned by the proponents to the Owner immediately upon the request of the Owner.

A proponent should identify any information in its proposal, or any accompanying documentation supplied in confidence for which confidentiality is to be maintained by the Owner. The confidentiality of such information will be maintained by the Owner, except as otherwise required by law or by order of a court or tribunal. Proponents are advised that their proposals will, as necessary, be disclosed on a confidential basis, to the Owner's advisers retained for the purpose of evaluating or participating in the evaluation of their proposals. If a proponent has any questions about the collection and use of personal information pursuant to the Tender, questions are to be submitted to the contact listed above. Any proposal submitted is subject to the Freedom of Information and Protection of Privacy Act.

Tenders will be retained by the Owner and will not be returned to proponents.

The Owner may prohibit a supplier from participating in a procurement process based on past performance or based on inappropriate conduct in a prior procurement process, and such inappropriate conduct shall include, but not be limited, to the following: (a) submissions containing misrepresentations or any other inaccurate, misleading or incomplete information; (b) the refusal of the supplier to honour its pricing or other commitments made in its proposal; or (c) any other conduct, situation or circumstance, as solely determined by the Owner, that constitutes a Conflict of Interest. For the purposes of this Section, "Conflict of Interest" shall have the meaning ascribed to it in the Submission Form (Section 4).

1.5 EVALUATION AND SELECTION

Proponents should carefully note the mandatory requirements listed in Section 2. Tenders that do not meet the mandatory requirements at the submission deadline will be disqualified.

The successful proponent will be determined by evaluation criteria as set out in Section 2 of this Tender and advised in writing by the Owner's Purchasing Section. Any contract awarded pursuant to this Tender is subject to final budget approval. The Owner may cancel or amend this Tender without liability at any time.

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When evaluating proposals, the Owner may request further information from the proponent or third parties in order to verify and clarify the information provided in the proponent's proposal. The Owner may revisit and re-evaluate the proponent's response or ranking on the basis of any such information.

1.6 PAST PERFORMANCE, REFERENCES AND MISREPRESENTATION

The Owner's evaluation may include information provided by the proponent's references and may also consider the proponent's past performance on previous contracts with the Owner or other institutions. The Owner may disqualify the proponent or rescind a contract subsequently entered into if the proponent's response contains misrepresentations or any other inaccurate, misleading or incomplete information.

The Owner's policy is to refuse to do business with parties who do not act in good faith towards the Owner, whether by failing to live up to the terms of their agreements or by entering into frivolous or vexatious litigation with the Owner. Accordingly, the Owner will review proposals based on past performance and any history of litigation in accordance with its policies.

A proponent may be disqualified at the discretion of the Owner based on firsthand experience of a past project with said proponent.

1.7 PROPONENT COSTS

Proponents shall bear their own costs associated with or incurred in the preparation and presentation of its proposal, including, if applicable, costs incurred for interviews or demonstrations.

1.8 DEBRIEFING

The Town will not provide any debriefing to any proponent upon award of the Contract. The Town, however, reserves the right to request additional information from the Proponent for clarity during the evaluation process.

1.9 QUANTITIES

The quantities given in the Tender form are to be considered as approximate only and are to be used in the comparison of Tenders. Final payment to the Contractor will be made only for the actual quantities of work performed or Materials furnished in accordance with the Plans and Specifications as determined by measurements made by the Engineer. It is agreed that the quantities of work to be done may be altered by the Engineer and such alterations or obliterations shall not be considered as a waiver of any condition of the Contract, nor as invalidating any of the provisions thereof, nor shall any changes be made in the contract unit price on account of such alterations or obliterations, but the same unit prices shall apply as if no alterations or obliterations had been made.

1.10 FORFEITURE

If, within fourteen (14) days after the Contract is presented to him for signature, hand delivered or sent by registered mail or courier addressed to him at the address stated in his Tender, the Proponent refuses or fails:

- i. To sign and return to the Owner the Contract for the performance of the Work and the supplying of Material covered by his Tender; or
- ii. To provide the security for the performance of the Contract and for labour and material payment or insurance as required by Section 3.5 Contract Security and Insurance Certificate,

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the Tender bond or deposit shall be subject to forfeiture to the Owner, and if a Contract for that Work and Material is then entered into with some other person for a greater amount, the Proponent is liable to the Owner in the amount equal to the difference between the amount of his Tender and the amount of the Contract actually entered into; the maximum not exceeding the amount of the security required under this Section.

1.11 ACCEPTANCE OR WITHDRAWAL OF TENDER

A Proponent may withdraw his Tender when he submits a request in writing signed by the Proponent, or his agent in fact, if the request is received by the Owner at any time up to the time fixed for receiving Tenders.

No Proponent may withdraw a Tender at or after the time fixed for receiving Tenders until:

- i. Some other person has entered into a contract with the Owner for the performance of the Work and the supplying of the Material specified in the notice inviting Tenders, or
- ii. Sixty (60) days after the time fixed for receiving Tenders, whichever occurs first.

1.12 ACCEPTANCE OF TENDER

The Owner reserves the right to accept the Tender that is deemed most advantageous. The lowest or any Tender will not necessarily be accepted.

After acceptance by the Owner, the Engineer, on behalf of the Owner, will issue to the successful Proponent a written Notice of Acceptance.

1.13 DURATION OF TENDER

Tenders shall remain open to acceptance and shall be irrevocable for a period of sixty (60) days after the Tender closing date, irrespective of the acceptance of any Tender.

1.14 TENDER INELIGIBILITY

Tenders that are unsigned, improperly executed, incomplete, conditional, illegible, obscure, contain arithmetical errors, additions not called for, reservations, erasures, alterations, or irregularities of any kind may be rejected as informal. The Owner reserves the right to waive informalities, reject any or all Tenders, or to accept the Tender deemed most favorable in the interest of the Owner.

The Proponent shall fill in every item in the Tender Form. Where quantities are not given, unit prices only shall be entered.

As it is the purpose of the Owner to obtain the Tender most suitable and most advantageous to the interests of the Owner, notwithstanding anything else contained within the Tender Documents, the Owner reserves the right, in its sole and unfettered discretion, to reject or accept any Tender, including the right to reject all Tenders. Without limiting the generality of the foregoing, any Tender which:

- a) is incomplete, obscure, irregular or unrealistic;
- b) is non-compliant or conditional;
- c) has erasures or corrections;
- d) omits a price on any one or more items in the Tender;
- e) fails to complete the information required in the Tender;

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

Further, without limiting the foregoing, a Tender may be rejected or accepted on the basis of the Owner's unfettered assessment as to a Proponent's past work performance for the Owner or for anyone else, a Proponent's previous or current business or professional relationship with the Owner, a Proponent's financial capabilities, a Proponent's ability to perform the work, a Proponent's ability to complete the work on schedule or without delay or interference, a Proponent's equipment, a Proponent's subcontractors, the character, integrity, reputation, judgment and experience of a Proponent, a Proponent's ability to provide maintenance or warranty work, and its history or reputation regarding the same, a Proponent's propensity for litigation or other forms of dispute, or a Proponent's history related to resolving disputes.

In no circumstance shall the Owner be required to disclose to the Proponents the Owner's reasoning or explanation behind its decision to either award a Tender or to reject all Tenders.

The Owner reserves the right after Closing Time to seek clarification or to ask for additional information from one or more Proponent and reserves the right to negotiate after closing time with the Proponent that the Owner deems has provided the most advantageous Tender; in no event will the Owner be required to seek clarification or to ask for additional information from all Proponents or to offer any modified terms to other than the most advantageous Proponent prior to entering into a Contract with the Successful Proponent and the Owner shall incur no liability to any other Proponents as a result of such discussion, negotiation or modification.

In addition to the foregoing, each Proponent, by submitting a Tender, agrees that he will not claim damages in any court proceeding or other dispute resolution forum in respect of any aspect of the within Tender process, including, but not limited to, representations made or purported to be made at any time before, during or after the Tender process and anything arising during the contract negotiation phase, in excess of an amount equivalent to the reasonable costs incurred by the Proponent in preparing the Tender, and each Proponent, by submitting a Tender, specifically waives any claim for loss of profits if no agreement is entered into with the Proponent.

The Town of Edson will not consider Tenders from any Proponent who has initiated litigation with the Town of Edson. Any such Tenders received will be returned unopened.

1.15 OMISSIONS/DISCLAIMERS/INTERPRETATIONS

Proponents finding discrepancies or omissions in the drawings or specifications or having doubt as to the meaning or intent thereof, shall at once notify the Engineer who will, if necessary, send written instructions or explanations to all Proponents.

Oral interpretations made to any Proponent shall not effect a modification to any provision of the contract documents.

Inquiries regarding this Project must be directed in writing no later than 11:00 a.m. **Thursday, February 20, 2025** to:

Donna Cross, Infrastructure Manager
605 – 50th Street
PO Box 6300

Edson, AB T7E 1N9
PH: (780) 723-4401
E-mail: donnac@edson.ca

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Proponents may, during the Tender Period, be advised by addenda of any alterations to the Tender documents. All such changes will become part of the contract, and the effects shall be included in the Tender price.

The Owner's Representative will endeavor not to issue any addenda later than seven (2) calendar days prior to the Closing Date.

1.16 ALTERNATIVES/EQUALS

Where the drawings or specifications stipulate a particular product, alternatives will be considered by the Engineer up to ten (10) days prior to receipt of Tender.

When a request to substitute an allegedly equal product is made to the Engineer, the Engineer may approve the substitution either as an equal or an alternative and will issue an Addendum to all Proponents. If a product is approved as equal, all Proponents may use that product in place of the specified product. If the product is approved as an alternative, Proponents shall base their prices upon the specified product and shall indicate in the Tender the change in price that will apply if use of the alternative product is allowed.

In submission of alternatives to products specified, Proponents shall include for any changes required in the work to accommodate such alternative products. A later claim by the Contractor for an addition to the contract price because of changes in the work necessitated by use of alternative products shall not be considered.

1.17 SITE EXAMINATION

The Proponent, either personally or through a representative, is recommended to examine the place of the work before submitting a Tender, and shall satisfy himself as to the nature and location of the work, including: local conditions; soil structure and topography at the site of the work; the equipment and facilities needed preliminary to, and during the prosecution of, the work; the necessary information as to risks, contingencies and circumstances which may affect his Tender; and all other matters which can in any way affect the work. The Proponent is fully responsible for obtaining all information required for the preparation of the Tender.

Claims for additional costs will not be entertained with respect to conditions that could reasonably have been ascertained by an inspection of the site prior to the Tender Closing Date.

1.18 TENDER SIGNING

The Tender must be executed under seal by the Proponent. If the Proponent is an individual or a partnership, the Tender shall be executed by the individual or a partner in the presence of a witness, and the signer show the capacity in which he signs (e.g. "Partner" or "Proprietor"). If the Proponent is a corporation, the Tender shall be executed under seal of the company, affixed in the presence of the authorized officers or two (2) directors. If the Proponent is a joint venture, each party to the joint venture shall execute the Tender under seal in the manner appropriate to such party.

1.19 APPENDICES TO TENDER FORM

Complete and submit all appendices with the Tender as follows:

1.19.1 Consent of Surety (Appendix A) and form signed under seal by the Surety.

1.19.2 Alternatives (Appendix B) - submit alternatives proposed for this project with the alternate prices difference.

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- 1.19.3 **Unit Price schedule (Appendix C) - unit prices for various schedules, and items of work and products as listed.**
- 1.19.4 **Subcontractors (Appendix D) - state in this appendix the names of the subcontractors for each designated part of the work.**
- 1.19.5 **Product Suppliers (Appendix E) - state in this appendix the names of the products, product suppliers and manufacturers intended for the various portions of the work.**
- 1.19.6 **Equipment (Appendix F) - state in this appendix the equipment intended for use on various portions of the work.**
- 1.19.7 **Addenda (Appendix G) – state and attach in this appendix any Addenda issued.**

1.20 SAFETY PRECAUTIONS

Contracts will only be awarded to Proponents who, prior to the time fixed for receiving Tenders, possess a Certificate of Recognition (COR) which is relevant to their industry and which is recognized by Alberta Human Resources and Employment, Workplace Health and Safety.

For Proponents who have not obtained a COR, a valid Temporary Letter of Certification (TLC) issued by the Alberta Construction Safety Association (ACSA) will be considered acceptable.

1.21 WORKERS' COMPENSATION

Proponent is to submit a letter of Account from the Workers' Compensation Board (WCB) – Alberta, including the Proponent's WCB rates and frequency of lost time incidents (LTIs) for the past two years (Frequency of LTIs = Number of LTIs x 200,000 / Total Annual Employee Hours).

1.22 SUBCONTRACTORS

Any Subcontractor who has initiated litigation with the Town of Edson will not be permitted to perform work under the Contract and the Town of Edson reserves the right to have the Subcontractor replaced at the Contractor's expense.

1.23 TOWN OF EDSON BUSINESS LICENCE

It is a requirement of the Town that all successful Contractors and their sub-contractors who are providing a service will have a valid Town of Edson Business License prior to commencement of the work and maintain that license for the duration of the project.

END OF SECTION

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2. TERMS OF REFERENCE (00119)

2.1 INTRODUCTION

This Request for Tenders is an invitation by the Owner to submit non-binding proposals for the provision of the Deliverables as set out in Section 2 of this Tender. The selected proponent will be requested to enter into negotiations for an agreement with the Owner for the provision of the surface and utility improvements listed below.

The scope of work is identified and provided by The Town of Edson; however, taking under consideration the Owner's minimum requirements, project objectives, and desired outcomes, Proponents are invited to provide input regarding:

- The methodology of delivery with respect to construction, staging and temporary traffic control and surface treatment alternatives.
- Construction schedule, completion dates, and milestones.
- Possible cost or schedule savings associated with the proposed methodology.
- Any other innovative approaches that provides benefit to The Town of Edson.

2.2 SUBMITTAL REQUIREMENTS AND EVALUATION

The evaluation process will occur in three stages.

2.3 STAGE I

Stage I will consist of a review to determine which proposals comply with all the mandatory requirements. Tenders that do not comply with all of the mandatory requirements as of the submission deadline will, subject to the express and implied rights of the Owner, be disqualified and not evaluated further.

2.3.1 Mandatory Requirements:

- a) Provide a Certificate of Commercial General Liability Insurance, Automobile Liability Insurance and Excess / Umbrella Liability Insurance.
- b) Acknowledgement of Addenda in Section 0300 – "Bid Forms", 4.4 Schedule of Addenda shall be filled in accordance with the corresponding addendum issued.
- c) Provide a Consent of Surety executed under seal by a surety company licensed as an insurer in the Province of Alberta. The Consent of Surety provides guarantees that, if the Contract is awarded to the Proponent, the surety company will furnish the bonds as may be required by the Contract. All costs associated with acquiring bonding will be covered within the Bidder's bid price.
- d) Provide a current copy of an issued COR or SECOR endorsed by the Government of Alberta, or an equivalent certificate or designation under an equivalent program in a jurisdiction other than Alberta.
- e) Proof of current Workers Compensation Board (WCB) certificate that all claims and payments are free and clear of all outstanding payments.

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Mandatory Criteria	Pass/Fail
Certificate of Insurance	
Acknowledgement of Addenda	
Consent of Surety	
Copy of Bidders COR/SECOR	
Proof of Worker's Compensation Board (WCB)	

2.4 STAGE II

Stage II will consist of a review of all compliant proposals to determine the highest-ranking proponent(s) based on the rated criteria below.

An Evaluation Committee will be used to evaluate specific portions of all responsive Tenders. The Evaluation Committee will independently review and score the items comparatively to one another based on a 1 to 10 scale. A "10" represents that the item being evaluated is dominantly greater (or has more value) than the average. A "5" represents that the item being evaluated is about average (or there is insufficient information to make a dominant decision). A "1" represents that the item being evaluated is dominantly below the average or not provided at all. Once each member has individually scored each item, their scores will be sent to the Owner Representative or designate who will then average the scores together to obtain the final average score for each of the evaluated criteria.

2.4.1 TENDER Requirements

Proponents are asked to provide a proposal, no more than 7 pages long (excluding appendices, title pages, table of contents and executive summary) to demonstrate their ability to effectively execute the project. The Proponents who meet all mandatory criteria will be further evaluated on the following desired criteria:

Rated Criteria Category	Weighting (Points)
Project Plan	20
Risk Assessment Plan	15
Value Assessment Plan	15
Previous Applicable Experience	15
Cost Tender Price	35
Total	100
Previous Experience with the Owner & Representatives	-10

2.4.1.1 Project Plan

The purpose of the Project Plan is to demonstrate to the Owner that the Proponent can visualize what they are going to do before they do it. The Project Plan should be developed around fulfilling the Owner's requirements within the known project constraints of cost, time, resources, quality, and expectations as described in this Tender. The Project Plan has three major sections as described below:

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- Tender Summary – a brief chronological description that describes the major activities and tasks, how the Proponent will meet the Owner’s expectations as set forth in this Tender. This should be a concise synopsis of the work and approach that will be taken to complete this project.
- Project Assumptions – a brief summary of the major assumptions that have been made in preparing the proposal. This should include items/tasks that the Proponent has assumed the Owner will perform, items/tasks required from the Owner, and items/tasks that have not been included in the proposal (items that the Proponent feels are outside the scope of work)
- Roles, Responsibilities, Expectations – brief summary of the expectations and responsibilities that the Proponent has of the Owner or Owner personnel.

2.4.1.2 Risk Assessment Plan

The Proponent shall prepare and submit a risk assessment plan. The Risk Assessment Plan should address risks that may impact the successful delivery of this project, considering all expectations as described in this Tender. The Proponent should list and prioritize major risk items that are unique and applicable to this project. This includes areas that may cause the project to not be completed on time, not finished within budget, generate any change orders, or may be a source of dissatisfaction for the Owner. The Proponent should rely on and use their past experience and knowledge of completing similar projects to identify these potential risks.

Each risk should be described in non-technical terms and should contain enough information to describe to a reader why the risk is a valid risk. The Proponent must also explain how it will avoid or minimize the risks from occurring. If the Proponent has a unique method to minimize the risk, the Proponent should explain it in non-technical terms. The Risk Assessment plan gives the opportunity for the Proponent to differentiate its capabilities based on its ability to visualize, understand, and minimize risk to the Owner and the risk to a successful outcome of the project. The Risk Assessment Plan is broken down into two subparts: Assessment of Controllable Risks and Assessment of Non-Controllable Risks.

- Assessment of Controllable Risks: This includes risks, activities, or tasks that are controllable by the Proponent, or by entities/individuals that are contracted by the Proponent. This includes things that are part of the technical scope of what the Proponent is being hired to do. This may also include risks that have already been minimized before the project begins due to the Proponent’s expertise (i.e. risks that are no longer risks due to the Proponent’s expertise in delivering this type of project). All risks and strategies to mitigate these controllable risks must be included in the Proponent’s base proposal cost.
- Assessment of Non-Controllable Risks: This includes risks, activities, or tasks that are not controllable by the Proponent. This may include risks that are controlled by the Owner, Owner’s agents or organizations, risks that are caused by outside agencies, or completely uncontrollable risks. Although these risks may not be controlled by the Proponent, the Proponent must identify a strategy that can be followed or used to mitigate these risks. All risks and strategies to mitigate these non-controllable risks must not be included in the Proponent’s base proposal cost.

The Risk Assessment Plan must not identify the Proponent’s Cost or Fee for this project.

2.4.1.3 Value Assessment Plan

The purpose of the Value-Added Plan is to provide Proponents with an opportunity to identify any value-added options or ideas that may benefit the Owner or project. If the Proponent can include more scope or service within

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the constraints of the Owner, the Proponent should provide an outline of potential value-added options. This may include ideas or suggestions on alternatives in implementation timelines, project scope, project cost, goals, deliverables, methodologies, etc. Value added ideas must NOT be included in the base fee of the cost proposal. After award, the Owner will determine if the value-added items will be added to or removed from the scope of work.

2.4.1.4 Previous Applicable Experience

The purpose of the applicable experience is to provide Proponents with the opportunity to showcase their past work that has prepared them to be successful in delivery of this project. The Superintendent showcased must be the same individual who will be on-site and responsible for the deliverables.

2.5 STAGE III

Stage III will consist of a review of the Unit Price Schedule and will be scored based on a relative pricing formula in comparison with other Proponents.

2.5.1.1 Cost Tender Price

The Cost Tender Price shall be for a sum of the Total Price in the Schedule of Quantities in Canadian Dollars including all tariffs, freight, duties, assessments and taxes, which are payable with respect to the Work.

If there are any discrepancies in the Schedule of Quantities and Prices between the unit prices and the extended totals, then the unit prices shall be deemed to be correct, and corresponding corrections shall be made to the extended totals. If a unit price or extended total has been omitted, the following shall apply:

If a unit price is given for an Item but the corresponding extended total has been omitted, then the extended total shall be calculated from the unit price and the estimated quantity, and inserted as the extended total;

If an extended total is given for an Item but the corresponding unit price has been omitted, then the unit price shall be calculated from the extended total and the estimated quantity, and inserted as the unit price;

If both the unit price and the corresponding extended total for an Item have been omitted, then the following test shall be applied to determine whether the Tender shall be rejected as incomplete:

- The costs for that Item shall be deemed to be included in other Item prices; and
- In no event shall page totals in the Schedule of Quantities and Prices or the total Cost Tender Price be used to calculate missing extended totals or unit prices.

The Cost Tender Price shall represent the entire cost to the Owner of the complete Work. Notwithstanding the generalities of the above, Proponents shall include in the Cost Tender Price (including unit prices, lump sum prices, or other forms of pricing) sufficient amounts to cover:

- the costs of all labour, equipment and materials included in or required for the Work;
- 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;
- all overhead costs, including head office and on-site overhead costs, and all amounts for the Contractor's profit;

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- all escalation of costs for the Contract Time; and

The Cost Tender Price will be scored based on a relative pricing formula using the rates set out in the pricing form. Each proponent will receive a percentage of the total possible points allocated to price, which will be calculated in accordance with the following formula:

$$\text{lowest price} \div \text{proponent's price} \times \text{weighting} = \text{proponent's pricing points}$$

2.5.2 Previous Experience with the Owner & Representatives

After the above scoring is completed the top scoring proponent(s) will be given a score from 0 to -10 from each member of the committee based on any previous performance based negative dealings with that proponent. This score is to be achieved within the following parameters:

If the evaluator has not previously worked with the proponent or their subcontractors or has had no negative experiences regarding their performance a 0 will be given.

If the evaluator has had a negative experience with the prime proponent's sub-contractors (only sub-contractors) being deficient in timelines or quality of workmanship they will be eligible for a score between -1 and -4.

If the evaluator has had a negative experience with the prime proponent (only prime proponent) being deficient in timelines or quality of workmanship they will be eligible for a score between -5 and -7.

If the evaluator has had a negative experience with the both the prime proponent and their sub-contractors being deficient in timelines or quality of workmanship, they will be eligible for a score between -8 and -10.

Any negative points will subsequently be added to the proponents previous score forming their total score and overall standing.

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2.6 SELECTION PROCESS, GENERAL PROCESS GUIDELINES

2.6.1 Cost Reasonableness

The Owner Representative or designate will perform a cost reasonableness assessment of the highest-ranking Proponent in the following manner:

If any Tender has a total Cost Tender Price that exceeds 50% above or below the average total of all Tenders, The Owner reserves the right to not consider that Tender (regardless of ranking).

If the highest ranked Proponent's Cost Tender Price is within 10% of the next highest ranked Proponent's Cost Tender Price, The Owner reserves the right to award to the highest ranked Proponent.

If the highest ranked Proponent's Cost Tender Price is more than 10% higher than the next highest ranked Proponent's, the Owner reserves the right to award to the second highest ranked Proponent (unless the Owner concludes that there is dominant information to proceed with the highest ranked Proponent).

The Owner reserves the right to first consider Tenders within budget. If all Tenders are over budget, the Owner may negotiate with the highest ranked Tender(s) or cancel the procurement.

2.6.2 Tie Score

In the event of a tie score, the selected proponent will be determined by the proponent whose products and services are the most beneficial to the Owner. The Owner may request additional information from proponents to make this determination.

2.6.3 Selection

The top-ranked proponent, as identified above, will receive a written invitation to enter direct contract agreement with the Owner.

Any negotiations will be subject to the process rules contained in this Tender and will not constitute a legally binding offer to enter into a contract on the part of the Owner or the proponent. Negotiations may include requests by the Owner for supplementary information from the proponent to verify, clarify or supplement the information provided in its proposal or to confirm the conclusions reached in the evaluation, and may include requests by the Owner for improved pricing from the proponent.

2.6.4 Notification to Other Proponents

Once a contract is executed between the Owner and a proponent, the other proponents will be notified directly in writing and shall be notified by public posting in the same manner that the Tender was originally posted of the outcome of the procurement process and the award of the contract.

END OF SECTION



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TENDER FORMS

3. TENDER FORMS (00300)

Date: _____, 2025

Submitted by: _____

(Name)

(Address)

_____ Telephone _____

To: **Donna Cross, Infrastructure Manager**

DonnaC@Edson.ca

Town of Edson

Project No: CA0048171.0443

Contract Name: "8th Avenue – 2025 Rehabilitation"

3.1 OFFER

Having examined the Place of Work, and all matters associated with the project plans as prepared by WSP Canada Inc. for the Work, we, the undersigned, hereby offer to complete the Work for the Unit Prices and Lump Sum Prices stated herein, which include the supply of all Products, except those specifically stated to be supplied by others, all labour, supervision, services, construction, machinery and equipment, overhead and profit, with such Unit Prices and Lump Sum Prices representing the entire cost to the Owner for completion of the Work.

Tender prices are to exclude the Goods and Services Tax on all materials and services supplied by the Contractor and incorporated into the work.

The Owner will include the applicable Goods and Services Tax payment on the monthly and final progress payment.

We agree that if the Engineer orders us in writing to perform extra work that is not reasonably inferable from the specifications or drawings as being part of the Work, we will perform the same and shall be paid in accordance with the terms of the General Conditions applicable to Changes in the Work.

We agree that the estimates of quantities shown in the Tender Form are estimates only for the purpose of comparing Tenders on a uniform basis, and that neither the Owner nor the Engineer represent that the actual quantities will correspond therewith and that we will be paid at the contract unit prices for the actual quantities handled. No claims will be entertained arising out of changes to the project quantities.

We agree that the Owner may delete from the Contract a portion or portions of the Work without any change in the unit prices, even if such deletion is for the purpose of allowing another Contractor to perform the deleted portion during the Contract Time.

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TENDER FORMS

3.2 SCHEDULE OF QUANTITIES AND PRICES

A list of "Unit Prices" is appended hereto in Appendix C, with prices provided for the Works.

Payment for work done under this Contract will be made in accordance with the following:

Where quantities are included in the Tender Documents and Unit Prices are submitted, payment will be based on the actual quantities performed on the Work as verified by the Engineer and the Unit Prices bid.

Where Lump Sum Prices are submitted, payment will be based on the respective items of work at the Lump Sums bid.

Tender prices are to exclude the Goods and Service Tax on all materials and services supplied by the Contractor and incorporated into the work.

The Owner will include the applicable Goods and Service Tax payment on the monthly and final progress payment.

3.3 SCHEDULE OF COMMENCEMENT AND COMPLETIONS

The Contractor shall begin the work within the period in the Notice to Proceed and prosecute the work in such a manner as to achieve the Completion Date(s) stated below. Completion includes all clean up and rectification of all deficiencies.

Component of Work	Date
Project Start Up:	May 1 2025
Sod Installation	August 15, 2025
Substantial Completion:	September 15 2025
Construction Completion:	October 1, 2025

All works, including provisional items if requested, rectification of all deficiencies, clean up and issuance of a Construction Completion Certificate, shall be fully completed no later than the dates indicated above for each component of work (the "Completion Date"). There will be no extensions to the Completion Date, except for the delays identified in the General Conditions, Section 4.7.3, Delays.

Time is of the essence in this contract. If the work is not completed on or before a stated Completion Date, the Contractor shall be liable for all damages including, but not limited to, additional engineering costs, third party claims being charged to the Owner due to late completion, and any other costs or damages incurred by the Owner.

The Contractor agrees that if a named Subcontractor is not acceptable to the Owner, the Contractor shall name an acceptable alternative Subcontractor.



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8TH AVENUE - 2025 REHABILITATION

TENDER FORMS

3.4 SCHEDULE OF ADDENDA

The Contractor states that the following Addenda have been received and have been considered and taken into account in determining the Tender prices.

Addendum Number	Date Issued	Number of Pages
_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____

3.5 CONTRACT SECURITY, AND INSURANCE CERTIFICATE

Contract Security shall be based on no G.S.T.

Attached to this Tender is Tender Security as follows:

- Consent of Surety for a Performance Bond and a Labour and Material Payment Bond, each for not less than fifty percent (50%) of the Tender amount.

Within fourteen (14) days after receipt of Notice of Acceptance of the Tender, the Contractor shall provide to the Owner Contract Security as follows:

- A Performance Bond and a Labour and Material Payment Bond, each for not less than fifty percent (50%) of that contract amount.

Contract Security shall be retained until the end of the Maintenance Period and returned after the issuance of the Final Acceptance Certificate.

Only Contract Security that is in the form of surety bonds shall be issued by a surety company licensed to conduct business in Alberta and approved by the Owner will be accepted. **No** other Contract Security will be accepted including any in the following form: cash, a Canadian postal money order, certified cheque, bank draft, or irrevocable letter of guaranteed credit from a Canadian Financial Association acceptable to the Owner. The irrevocable letter of credit shall name only the Owner.

Within fourteen (14) days after receipt of the Notice of Acceptance of the Tender, the Contractor shall deliver the required Certificates of Insurance.

The costs of bonds or letters of credit and insurance shall be borne by the Contractor.

The Contract Agreement shall not be executed, nor the Work allowed to commence, until the required Contract Security and Certificates of Insurance have been delivered to the Owner.

3.6 CONTRACT AGREEMENT

The Contractor agrees to sign the Contract Agreement within fourteen (14) calendar days after receipt of the Notice of Acceptance.



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TENDER FORMS

3.7 NOTICE TO PROCEED

After acceptance, the Owner will issue a "Notice to Proceed" and the date specified in this Notice shall be the date of commencement entered into the Contract Agreement.

The Contractor shall not enter onto the work site nor commence work before the date of commencement specified in the "Notice to Proceed".

The Contractor shall not proceed with construction of any work until in receipt of the contract drawings that are "Issued for Construction".

3.8 VALIDITY PERIOD

This irrevocable Tender is valid for sixty (60) days after the Tender Closing.

This Tender must be received by Donna Cross (DonnaC@edson.ca) at the **Town of Edson**, on or before **2:00:59 p.m., LOCAL TIME, Tuesday, February 26, 2025 ("Tender Closing")**.



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TENDER FORMS

3.9 TENDER SIGNING

This Tender is executed under seal at

_____ this

_____ day of _____, 2025.

Name of Firm _____

Address _____

The Corporate Seal of:

_____ (Seal)

(Proponent - please print)

was hereunto affixed in the presence of:

(Authorized Signing Officer) Title

(Authorized Signing Officer) Title



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3.10 APPENDIX "A" CONSENT OF SURETY

The undersigned Surety does hereby consent and agree to become bound as surety

i) In an approved Performance Bond for the amount of _____

- and -

In an approved Labour and Materials Payment Bond for the amount of _____

all for the fulfillment of the Contract for the Work covered by the annexed Contract Documents, which may be awarded to:

Name of Proponent

Address

at prices set forth in the attached Tender. The undersigned Surety is legally entitled to do business in the Province of Alberta and is worth, over and above its present liabilities, the total amount of the bonds herein referred to.

Name of Surety

Address

Per:

Per:

(Corporate Seal)



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TENDER FORMS

3.11 APPENDIX "B" SCHEDULE OF ALTERNATIVE TENDERS

The Contractor offers the following alternative units of equipment, materials, or methods of doing the Work, and offers to increase or decrease the Price as stated for each unit of equipment, materials or methods of doing the Work. The increase or decrease includes allowance for the cost of making any adjustments to the Work, which may be required in order to make the proposed alternative fit into the Work as originally specified. The Tender increase or decrease in price shall be added to or subtracted from the price bid for the Work as originally specified. A Change Order will be issued should the alternative(s) be accepted.

Item No.	Spec. Section	Original Item	Tender Price	Alternate Item	Alternate Price Difference
----------	---------------	---------------	--------------	----------------	----------------------------

The Contractor provides for review by the Owner the following details concerning the alternative equipment, materials, or methods of doing the Work. If insufficient space exists, please attach additional pages. Attach all back up information and specifications.

TOWN OF EDSON
8TH AVENUE - 2025 REHABILITATION
TENDER FORMS

3.12 APPENDIX “C” UNIT PRICE SCHEDULE

3.12.1 SCHEDULE A – 8th Avenue Rehabilitation

Bid Item	Description	Estimated Quantity		Unit Price	Total
1	Mobilization / Demobilization (01010)	Lump Sump	1	_____	_____
2	Traffic Accommodation (01015) (02020)	Lump Sum	1	_____	_____
3	Common Excavation – Waste (02225) (02310) (02020)	m ³	3,200	_____	_____
4	Concrete Removal – Standard 1.2m Mono Curb and Gutter (02225) (02761)	lin.m	380	_____	_____
5	Remove & Dispose Concrete Surface (Various Thickness) (02225) (02761)	m ²	80	_____	_____
6	Cold Milling Asphalt Pavement (100mm max depth) (02961) (02020)	m ²	2,600	_____	_____
7	Trench Excavation, Backfill & Compaction (2.5m to 3.5m) (02020) (02315) (02564)	lin.m	465	_____	_____
8	Sanitary Sewer Pipe – PVC SDR 35, CSA B182.1 & 182.2 (200mm) (02520)	lin.m	165	_____	_____
9	Sanitary Service Pipe – PVC DR28 ASTM D3034, CSA B182.1 & 182.2 (150mm) (02564)	lin.m	130	_____	_____
10	Sanitary Manhole – 1200mm c/w Frame & Salvage Cover (F-39) (02520)	each	2	_____	_____
11	Remove and Dispose AC Watermain (02020)	m	160	_____	_____
12	Water Main – PVC CAN3-B.137.3 M86 (AWWA C900) Class 150 DR18 (150mm) (02511)	lin.m	170	_____	_____



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8TH AVENUE - 2025 REHABILITATION

TENDER FORMS

Bid Item	Description	Estimated Quantity		Unit Price	Total
13	Gate Valve c/v Valve Box (150mm) (02511)	each	2	_____	_____
14	Water Main – Fire Hydrant (02511)	each	1	_____	_____
15	Water Main – Tee Class 150 DR18 (02511)	each	1	_____	_____
16	Water Main – 22.5° Bend (150mm) (02511)	each	2	_____	_____
17	Water Service – 20mm Copper Type K Tubing (02564)	lin.m	130	_____	_____
18	Water Service – 20mm Curb Stop & Corporation (Main) Stops (02564)	each	13	_____	_____
19	Hi-40 Board Insulation (50mm Thickness) (02020) (02564)	m ²	40	_____	_____
20	Adjustment of Appurtenances – Manholes/Catch Basin (02565)	each	2	_____	_____
21	Adjustment of Appurtenances – Water Valves (02565)	each	1	_____	_____
22	Non-woven Geotextile (02020) (02342)	m ²	3,600	_____	_____
23	Triaxial Geogrid (02020)	m ²	3,100	_____	_____
24	Perforated Drainage Pipe (02020)	lin.m	380	_____	_____
25	Granular Sub-Base (600mm Thickness) (02020) (02050) (02721)	m ²	3,100	_____	_____
26	Granular Base Course – Des 2 Class 25 (300mm Thickness) (02020) (02050) (02723)	m ²	3,100	_____	_____



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8TH AVENUE - 2025 REHABILITATION

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Bid Item	Description	Estimated Quantity		Unit Price	Total
27	300mm Standard Curb and Gutter w/ 1.5m monolithic walk (02761) (03300)	lin.m	370		
28	Wheelchair/Bike Ramps (02761) (03300)	each	4		
29	Concrete Laneway Curb and Gutter Crossing (02761) (03300)	m	45		
30	Asphalt Concrete Pavement (EPS) - Type M1 (12.5mm Aggregate) (PG 52-34) (100mm Thickness) (02020) (02741) (02746)	m ²	2,300		
31	Asphalt Concrete Pavement Tie-Ins – Type M1 (12.5mm Aggregate) (PG 52-34) (75mm Thickness) (02020) (02741) (02746)	m ²	30		
32	Concrete Walkway & Driveway Tie-Ins (02020) (03300)	m ²	80		
33	Driveway Gravel Tie-Ins (100mm Thickness) (02020) (02050)	m ²	60		
34	Driveway Brick Tie-Ins (02020)	m ²	30		
35	Topsoil Placement & Sod (02020) (02910) (02920)	m ²	1,200		
36	Removal Salvage and Replace Signs and Posts (02020) (02891)	each	2		
				TOTAL	



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8TH AVENUE - 2025 REHABILITATION

TENDER FORMS

Appendix "D" Schedule of Subcontractors

The Contractor states that the following Subcontractors shall be utilized on this Contract:

Items of Work

Subcontractor

_____	_____
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____

The Contractor agrees that if a named Subcontractor is not acceptable to the Owner, the Contractor shall name an acceptable alternative Subcontractor.



TOWN OF EDSON
8TH AVENUE - 2025 REHABILITATION
TENDER FORMS

3.13 APPENDIX "E" SCHEDULE OF SUPPLIERS AND MANUFACTURERS OF MATERIALS

The Contractor states that the following Material Suppliers and Manufacturers shall be utilized for the supply items on this Contract.

Items	Supplier	Manufacturer
_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____

The Contractor agrees that, if a named Supplier or Manufacturer of materials and equipment is not acceptable to the Owner, the Contractor shall name an acceptable alternative.



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TENDER FORMS

3.14 APPENDIX "F" SCHEDULE OF EQUIPMENT

The Contractor states that the equipment listed shall be available for the work on this Contract.

The Contractor agrees that if the equipment listed is not acceptable to the Owner, the Contractor shall identify acceptable alternatives. If the Contractor does not provide a list of equipment with hourly rates, then the rates used in the most recent version of The Alberta Road Builders and Heavy Construction Association "Equipment Rates Guide and Member Roster" shall be applied to Changer Order requests.

Description of Unit	Size or Capacity	Condition	Age	Location

3.15 APPENDIX "G" ADDENDA

See Attached

END OF SECTION



TOWN OF EDSON
8TH AVENUE - 2025 REHABILITATION
UNIT PRICE CONTRACT

00500

4. UNIT PRICE CONTRACT (00500)

The Contract made in triplicate the _____ day of _____ in the year Two Thousand and _____ by and between

Town of Edson

hereinafter called the "Owner"

and

hereinafter called the "Contractor"

Witnesses: that the Owner and Contractor undertake and agree as follows:

ARTICLE A-1 THE WORK

The Contractor shall:

- a) perform all the Work required by the Contract Documents for:

Contract No. CA0048171.0443
8th Avenue – 2025 Rehabilitation

and which have been prepared by

WSP Canada Inc.

acting as and hereinafter called the "Engineer", and

- b) do and fulfill everything required by this Agreement, and
- c) subject to the provisions of General Conditions Section 5.14.1(Bonds) and Section 6.1 (Insurance), commence the Work by the _____ day of _____, 20__ and in any event attain Substantial Performance as certified by the Engineer not later than the _____ day of _____, 20__.

Time is of the essence for this contract.

TOWN OF EDSON
8TH AVENUE - 2025 REHABILITATION
UNIT PRICE CONTRACT

00500

ARTICLE A-2 CONTRACT DOCUMENTS

The following is an exact list of the Contract Documents as defined in General Conditions, Section 4.1.1 (Definitions) and referred to in Article A-1:

1. Drawings as listed in the List of Drawings,
2. Specifications as listed in the Table of Contents, and
3. Additional documents as noted in the Specifications.

ARTICLE A-3 CONTRACT PRICE

The Contract price is _____ Dollars (\$ _____) in Canadian funds, which price is the aggregate of the estimated unit quantities multiplied by the Unit Prices, and the Lump Sums set out in the executed Tender. This Contract Price will be varied as the actual quantities handled vary and will be subject to adjustments as may be determined in accordance with the Contract Documents. Contingency is not included in the contract price, and payment will not be made from any contingency monies without an approved change order.

ARTICLE A-4 PAYMENT

- (a) In accordance with the provisions of the General Conditions of the Contract, the Owner shall:
- (1) make payments to the Contractor on account of the Contract Price. The amounts of such payments shall be based on the Certificates for Payment issued by the Engineer; and
 - (2) upon Substantial Performance of the Work pay to the Contractor any unpaid balance of holdback monies then due; and
 - (3) when all the Work under the Contract other than the Warranty requirements has been performed, pay to the Contractor any unpaid balance of the Contract Price then due.
- (b) If the Owner fails to make payment to the Contractor as they become due under the terms of this Contract or in any award by arbitration or court, interest at the rate of one percent (1%) per month of such unpaid amounts, including earned interest, shall also become due and payable until payment. Such interest shall be calculated and added to any unpaid amounts monthly.

ARTICLE A-5 PROPER LAW

The law of the Province of Alberta shall govern this Contract.

ARTICLE A-6 ADDRESSES FOR NOTICES

All communications in writing between the parties, or between them and the Engineer, shall be delivered or sent to the individual, or a member of the firm, or on to an officer of the Corporation for whom they are intended to the address below. Such notices shall be deemed to be received if delivered, or, when delivered, or, if sent by prepaid mail or courier, when they should in due course of mail or courier service be delivered.



TOWN OF EDSON
8TH AVENUE - 2025 REHABILITATION
UNIT PRICE CONTRACT

00500

The Owner at:

Town of Edson

605 – 50th Street, PO Box 6300, Edson, Alberta T7E 1T7

The Contractor at:

The Engineer at:

WSP Canada Inc.

131-27 Street, Edson, Alberta T7E 1N9

ARTICLE A-7 SUCCESSION

The General Conditions of the Contract and Supplementary Conditions hereto annexed, and all other Contract Documents, are all to be read into and form part of this Agreement, and the whole shall constitute the Contract between the parties and subject to law, and the provisions of the Contract Documents shall inure to the benefit of, and be binding upon, the parties hereto, their respective heirs, legal representatives, successors and assigns.



TOWN OF EDSON
8TH AVENUE - 2025 REHABILITATION
UNIT PRICE CONTRACT

ARTICLE A-8 SIGNATURES

In witness whereof the parties hereto have caused this Agreement to be properly executed.

FOR LIMITED COMPANY

The Corporate Seal of

The Corporate Seal of

Town of Edson
(Owner)

(Contractor)

was hereunto affixed in the presence of:

was hereunto affixed in the presence of:

(Authorized Signing Officer)

(Authorized Signing Officer)

Name: _____

Name: _____

Address: _____

Address: _____

Occupation: _____

Occupation: _____

(Seal)

(Seal)



TOWN OF EDSON
8TH AVENUE - 2025 REHABILITATION
UNIT PRICE CONTRACT

00500

FOR INDIVIDUAL OR PARTNERSHIP

Signed, Sealed and Delivered By

(Owner)

(Contractor)

(Signature)

(Signature)

(Seal)

(Seal)

In the presence of:

In the presence of:

(Witness Signature)

(Witness Signature)

Name: _____

Name: _____

Address: _____

Address: _____

Occupation: _____

Occupation: _____

TOWN OF EDSON

00700

8TH AVENUE - 2025 REHABILITATION

GENERAL CONDITIONS OF THE CONTRACT

5. GENERAL CONDITIONS OF THE CONTRACT (00700)

5.1 DEFINITIONS

"**Tender**" shall mean the documents prepared and submitted by the Proponent in response to the ITB Package.

"**Proponent**" shall mean each individual, partnership, company, corporation, joint venture or any other entity who receives the Tender Documents in contemplation of submission of a Tender.

"**Tender Documents**" shall mean the documents prepared and furnished by the Owner's Representative and received by each Proponent as part of the ITB Package.

"**Tender Security**" shall mean a Tender bond, certified cheque or bank draft in the amount of ten percent (10%) of the Contract Price.

"**Tender Period**" shall mean the period of time from when the Owner's Representative first makes available the Tender Documents until the Closing Time.

"**Calendar Days**" shall have the meaning ascribed to such term in Section 12.6– Calculation of Calendar Days.

"**Certificate of Recognition**" or "**COR**" shall mean a safety certificate relevant to construction industry and which is recognized by Alberta Human Resources and Employment, Workplace Health and Safety.

"**Change**" shall mean any change and may include and/or consist of any one or more of the following.

- **an addition, omission, modification, alteration, substitution, change, deduction, delay or cancellation of the Work, or any change to the Work Schedule.**
- **a change to the character or quality of any Products or supplies described in the Contract Documents; and**
- **execution of additional work.**

"**Change Order**" shall have the meaning ascribed to such term in Section 5.7 – Changes in the Work.

"**Completion Date(s)**" shall mean the date and/or dates specified for final completion of all or portions of the Work as identified in Section 3.3 – Schedule of Completions.

"**Consent of Surety**" shall mean the consent form required to be executed by the surety as set out in Section 3.10 – Appendix "A": Consent of Surety.

"**Construction Completion Certificate**" shall mean the certificate issued by the Owner's Representative certifying that the Work has been completed by the Contractor, except for the requirements of the provisions as to Warranty in accordance with Section 5.8 – Substantial Performance and Construction Completion Certificate.

"**Contingency**" shall mean the sum identified as "Contingency" in the summary of Tender located after Section 3.12 – Unit Price Schedule, if any, with such amount, if applicable, equal to ten percent (10%) of the original Contract Price.

"**Contract**" shall mean the Unit Price Contract together with all those Contract Documents listed in Section 4.0 – Contract Documents and includes the Instructions to Proponents, Soil Logs and Tender Forms, as applicable.

TOWN OF EDSON

00700

8TH AVENUE - 2025 REHABILITATION

GENERAL CONDITIONS OF THE CONTRACT

"**Contract Design Change Tender**" shall have the meaning ascribed to such term in Section 5.7.3 – Contractor Change Requests and Tenders.

"**Contract Documents**" shall mean all documents relating to the Work issued by or through the Owner's Representative that are incorporated into the Contract and all variations and modifications issued by or approved by the Owner's Representative, including all amendments thereto incorporated before their execution as agreed upon between the parties in writing.

"**Contract Price**" shall originally mean the sum stated in Section 4.3 – Contract Price of the Unit Price Contract which sum may be adjusted from time during the progress of the Work pursuant to a Change Order.

"**Contract Security**" shall mean the Performance Bond, the Labour and Material Payment Bond or any other security that may be required by the Owner pursuant to the terms and conditions of the Contract Documents from time to time.

"**Contract Term**" shall mean the time period from the date of execution of this Contract first written above in Section 4 – Unit Price Contract until the date of specified in the final Construction Completion Certificate for all of the Work.

"**Contractor**" shall mean the party of the second part, as named in the Contract Agreement, who has been duly appointed and authorized by the Owner to proceed with Works as outlined herein.

"**Deficiency Holdback**" shall mean the Owner's Representative estimate of the cost of completing deficiencies in, or correcting defects in the Work.

"**Engineering Documents**" shall mean drawings, plans, models, designs, specifications, reports, photographs, computer software if proprietary to the Owner or Owner's Representative, surveys, calculations and other data, including computer print outs, contained in the Contract or which are otherwise used in connection with the Project, and which were prepared by or on behalf of the Owner's Representative and are instrument of service for the execution of the Work.

"**Final Acceptance Certificate**" shall mean the certificate issued by the Owner's Representative in accordance with Section 5.15.7 – Final Acceptance Certificate.

"**Final Payment**" shall mean all sums due to the Contractor when terms and conditions of the Contract appear to be complete, except for the requirements of the provisions as to Warranty.

"**Force Account**" shall mean work ordered on a construction project without an existing agreement on its cost and performed with the understanding that the Contractor will bill the Owner according to the cost of labour, materials, and equipment, plus a certain percentage for overhead and profit.

"**Force Majeure Event**" means any war, invasion, insurrection, armed conflict, act of foreign enemy, revolution, terrorist act, interference by military authorities, nuclear explosion, contamination by ionizing radiation, forest fire or flood, earthquake or other natural disaster, discovery of a historical resource, epidemic, or quarantine restriction that prevents, delays or interrupts the performance of any obligation under the Contract, other than any obligation to pay any money, and provided such event does not occur by reason of:

TOWN OF EDSON

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8TH AVENUE - 2025 REHABILITATION

GENERAL CONDITIONS OF THE CONTRACT

- i. the negligence of the party relying on the Force Majeure Event (or those for whom it is in law responsible); or
- ii. any act or omission of the party relying on the Force Majeure Event (or those for whom it is in law responsible) that is in breach of the provisions of the Contract

"Hazardous Substances" shall mean any toxic or hazardous solid, liquid, gaseous, thermal, or electromagnetic irritant or contaminant, and includes, without limitation, pollutants, moulds and hazardous and special materials and wastes whether or not defined as such in any federal, provincial, territorial or municipal laws, statutes or regulations.

"Insurance Certificate(s)" shall mean any certificate of insurance evidencing that the Contractor is insured in accordance with the provisions of Section 6.1 – Insurance or as may be directed by the Owner's Representative from time to time.

"Labour and Material Payment Bond" shall mean the bond issued in the name of the Owner for fifty percent (50%) of the Contract Price to assure the Contract makes payment to all parties it is contracted to for the performance of the Work on the standard bond form - Canadian Construction Association Document No. (S)22.

"Law(s)" shall mean all applicable laws, rules, regulations, by-laws, codes, or other governmental provisions having the force of laws, however designated, whether federal, provincial, regional or local, and whether legislative, judicial or administrative in origin, applicable at any time to the Work, and includes laws of equity.

"Liabilities" shall mean any and all actions, causes of action, prosecutions, charges, orders, claims, damages, losses, liabilities (including in connection with the death of or injury to any individual or damage to or loss of any property, including property of the Owner), costs and expenses (including legal fees and expenses and court costs on a solicitor and own client basis), fines, penalties, royalties or other payments.

"Lump Sum Item(s)" shall mean those items identified as "lump sum" under the unit price column in Section 3.12 – Unit Price Schedule.

"Net Cost" shall mean the proven cost of Products, including labour (including actual worker's pay), Workers' Compensation Insurance, Canada Pension Plan, workers' premium for Unemployment Insurance, holiday pay and medical benefits, payments to a proportionate part of the wages of foremen, plant and tools, equipment rental, and other costs, as applicable to the item being costed.

"Notice of Acceptance" shall mean the written notice provided by the Owner's Representative to the successful Proponent stating that the Owner intends to enter into the Contract with that Proponent.

"Notice to Proceed" shall mean the written notice provided by the Owner's Representative to the Contractor specifying the time period in which the Contractor is to commence the Work

"OH&S Act" means the *Occupational Health and Safety Act* (Alberta), all regulations promulgated thereunder, and all adopted codes made and adopted thereunder, as amended from time to time.

"Other Project Participant" shall mean a person, firm or corporation employed by, or having a separate contract directly or indirectly with the Owner, for work on the Project other than the Work as specifically described by this Contract.

"Owner" shall mean Town of Edson.

TOWN OF EDSON

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8TH AVENUE - 2025 REHABILITATION

GENERAL CONDITIONS OF THE CONTRACT

"**Owner's Representative**" shall mean WSP Canada Inc.

"**Performance Bond**" shall mean the bond issued in the name of the Owner for fifty percent (50%) of the Contract Price to assure the faithful performance of the Contract, including any corrections to the Work under Warranty on the standard performance bond form - Canadian Construction Association Document No. (S)21.

"**Person**" shall include any individual, partnership, limited partnership, firm, trust, body corporate, government, governmental body, agency or instrumentality, unincorporated body of persons or association.

"**Personnel**" shall mean in relation to any Person, the employees, officers, directors, consultants and agents of such Person and includes in the case of the Contractor, its Subcontractors and Subcontractors' employees, officers, directors, consultants and agents engaged in the performance of the Work in respect of the Project.

"**Place of the Work**" shall mean the site or location of the Work, designated in the Contract Documents.

"**Products**" shall mean all materials, machinery, equipment and fixtures forming, or intended to form, the completed Work or a part thereof, but excludes machinery and equipment used for preparation, fabrication, conveying and erection of the Work and normally referred to as construction machinery and equipment.

"**Prime Contractor**" shall mean the prime Contractor as defined in the OH&S Act.

"**Progress Payment Certificate**" shall mean the certificate issued by the Owner's Representative to the Owner on a monthly basis during the performance of the Work describing the payments to be made to the Contractor.

"**Project**" shall mean the total endeavor contemplated in this Contract of which the Work may be the whole or a part.

"**Project Documents**" shall have the meaning ascribed to such term in Section 5.11 – Ownership of Documents and Models.

"**Remedial Work**" shall have the meaning ascribed to such term in Section 5.15.3 – Remedies for Breach of Warranty.

"**Shop Drawings**" shall mean drawings, diagrams, illustrations, schedules, performance charts, technical brochures and other data that are to be provided by the Contractor or by others to illustrate details of a portion of the Work.

"**Subcontractor**" shall have the meaning ascribed thereto in the *Builders' Lien Act* (Alberta).

"**Substantial Performance**" shall mean when all Work or a portion thereof (excluding Work required during the Warranty Period) has been completed by the Contractor in accordance with the specifications and plans such that the Work is ready for use or is being used for the purpose intended and is so certified and/or accepted by the Owner's Representative.

"**Tax**" or "**Taxes**" shall mean all taxes, however denominated, including any interest, penalties or other additions that may become payable in respect thereof, imposed by any taxing authority, which taxes shall include all income or profits taxes (including, but not limited to, federal income taxes and provincial income taxes), capital taxes, withholding taxes, payroll and employee withholding taxes, employment insurance (including provincial health insurance, old age benefits, welfare funds, pensions and annuities and disability insurance), social insurance taxes, sales and use taxes, goods and services tax, value added taxes, ad valorem taxes, excise

TOWN OF EDSON

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taxes, customs duties, tariffs, franchise taxes, gross receipts taxes, business license taxes, occupation taxes, real and personal property taxes, stamp taxes, environmental taxes, transfer taxes, workers' compensation and other governmental charges, and other obligations of the same or of a similar nature to any of the foregoing (together with any penalties, interest or other similar amounts thereon);

"Temporary Letter of Certification" or **"TLC"** shall mean the temporary safety certification issued by the Alberta Construction Safety Association.

"Total Performance" shall mean that the Work has been completed, except for the requirements of the provisions as to Warranty.

"Warranty Period" shall mean:

- in relation to Work performed before the Construction Completion Certificate is issued, a period of two (2) years commencing on the date the Construction Completion Certificate is issued; and
- in relation to Work performed after the Construction Completion Certificate is issued, a period of two (2) years commencing on the date that Work is fully completed.

"Work" means the services and obligations to be performed by Contractor as provided in the Contract Documents and includes the provision of all labour, supervision and equipment required, in accordance with the Contract Documents, and further includes any work that is not expressly described in the Contract Documents, but which is nevertheless necessary for or ancillary to the proper execution of the work, including the construction work required by this Contract.

"Work Schedule" shall have the meaning ascribed to such term in Section 5.6.2 – Work Schedule

"Working Day" shall mean 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. Reference to a day, other than a Working Day, indicates a calendar day.

"Work Product" shall have the meaning ascribed to such term in Section 5.11 – Ownership of Documents and Models.

"Unit Price Contract" means the covering agreement titled Unit Price Contract to which all Contract Documents are attached.

"Unit Prices" shall mean those prices identified under the unit price column in Section 3.12 – Unit Price Schedule for each individual bid item.

"Utilities" shall mean utilities and facilities that are located on, in or near the property, continued within the proposed work and that may be affected by the construction, and shall include, but not be limited to, pipelines, drainage works, irrigation works, water works, sewage works, power facilities, telephone facilities, cable facilities and related appurtenances.

5.2 CONFLICT IN DOCUMENTS

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

In the event of any conflict between the Contract Documents, the following shall apply:

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- documents of later date shall govern over earlier documents of the same classification;
- figured dimensions shown on the drawings shall govern even though they may differ from scaled dimensions;
- in the event that two (2) or more plans show conflicting information, the information on the most recently dated plan shall govern;
- drawings of larger scale shall govern over those of smaller scale;
- specifications shall govern over drawings;
- except for Supplementary Specifications (if any) and the Unit Price Contract section, the General Conditions of the Contract shall govern over all other sections of Contract;
- supplementary specifications, where included in the Contract Documents, shall govern over the General Conditions of the Contract;
- the Unit Price Contract section shall govern over all documents; and
- any Law, technical and manufacturer’s standard, or code of practice referred to in the Contract Documents shall be the version current at the time any such Law, technical and manufacturer’s standard, or code of the Contract is being interpreted.

5.3 SUMMARY OF THE WORK

The Work under this Contract shall include, but not be limited to, the following:

8th Avenue:

• Water Main PVC DR18 Class 150 – 150mm	170 m
• Sanitary Sewer PVC SDR 35 – 200 mm	165 m
• Adjustment of Appurtenances	1 each
• Common Excavation - Waste	3,200 m ³
• Trench Excavation	465 m
• Water/Sanitary services	130 m
• Geo-Grid material	3,100 m ²
• Geotextile material	3,100 m ²
• Perforated Drainage Pipe	380 m
• Granular Sub-Base – (600 mm depth)	3,100 m ²
• Granular Base Course – Des 2 Class 20 (300 mm depth)	3,100 m ²
• Asphaltic Concrete Pavement (100 mm thick)	2,300 m ²
• Asphaltic Concrete Pavement (75 mm thick)	30 m ²
• Concrete Standard Monolithic (300 mm) Curb, and Gutter	350 m
• Standard Concrete Sidewalk	30 m
• Topsoil and Sodding	1,200 m ²

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5.4 ADMINISTRATION OF THE CONTRACT**5.4.1 Owner's Representative**

The Owner's Representative shall be authorized and empowered to bind the Owner in respect of any matter or thing arising in respect of this Contract and shall be authorized, without limitation, to:

- reject any Products supplied by the Contractor, or any part of the Work, which in the opinion of Owner's Representative is defective or fails to comply with the requirements of the Contract Documents;
- approve, in whole or in part, or reject the Contractor's applications for payment;
- direct the Contractor with respect to the Work, including the administration of Change Orders;
- make determinations concerning the cause of any delay or whether an extension of time for completing the Work will be given; and
- order that the Contractor stop carrying out the Work, or any portion thereof, should the Contractor fail to comply with the Law or environmental protection requirements of the Contract Documents.

The Owner's Representative shall be authorized to resolve any conflicts that exist within the Contract Documents, which decisions shall be made in writing. The Owner's Representative shall be the interpreter of the requirements of the Contract Documents and shall make findings as to the performance thereunder by the Contractor. The Contractor shall notify the Owner's Representative, in writing, within five (5) Working Days should the Contractor hold that a decision by the Owner's Representative is in error or at variance with the Contract Documents. If the question of error or variance is not resolved within five (5) Working Days, and the Owner's Representative decides that the Work in dispute shall be carried out, the Contractor shall act according to the Owner's Representative's written decision.

The Owner's Representative shall be authorized to represent and act for and on behalf of the Owner in connection with this Contract, to exercise all the rights granted to the Owner and to seek all the remedies available to the Owner under this Contract on behalf of the Owner. Any direction, request or document issued by the Owner's Representative shall be treated for all purposes under this Contract as having been issued by the Owner. All communications (whether written or oral), relating to this Contract including submittals and requests for authorization or approval, shall be addressed by the Contractor to the Owner's Representative, notwithstanding that the provisions of this Contract may refer to the Owner.

The Owner's Representative will not, except by written notice to the Contractor, stop or delay any part of the Work pending instructions or proposed changes in the Work.

If the Owner removes or replaces the Owner's Representative, the Owner shall appoint an Owner's Representative whose status, under the Contract, shall be that of the former Owner's Representative.

Nothing contained in the Contract Documents shall create any contractual relationship between the Owner's Representative and the Contractor.

5.5 OWNER**5.5.1 Owner's Responsibility**

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The Owner will promptly fulfill all of the Owners responsibilities so as not to impede the Contractor's orderly performance of the Work.

The Owner will promptly consider requests by the Contractor for directions or decisions and diligently inform the Owner's Representative of the Owner's direction or decision within a reasonable time so as not to delay the Work.

The Owner will not enter into contracts with Other Project Participants that are incompatible or inconsistent with the Work to be provided under this Contract.

5.5.2 Owner's Property

The Owner shall indemnify and hold harmless the Contractor from and against all claims, demands, losses, costs, damages, actions, suits or proceedings arising out of the Contractor's performance of the Contract that are attributable to lack of title or a defect in the title, to the Place of the Work.

Materials at the Place of the Work not supplied by the Contractor, whether existing structures, vegetation, top soil, gravel, sand or other excavated or piled materials, are the property of the Owner or of the Owner of the land on which the Work is located. Only those materials specifically noted in the specification or on drawings as belonging to the Contractor shall become the Contractor's property.

5.5.3 Owner's Right of Entry

The Owner and Owner's Representative shall have the right to enter, occupy, and use the Work, in whole or in part, at any time before completion of the Contract, if such entry, occupation and use does not prevent or interfere with the performance of the Work by the Contractor.

Such entry, occupation and use shall neither be considered as acceptance of the Work by the Owner nor shall it relieve the Contractor of responsibility to complete the Work in accordance with this Contract.

5.6 EXECUTION OF THE WORK

5.6.1 Contractor's Responsibilities and Control of the Work

The Contractor shall be prepared to begin the Work outlined in the Contract Documents in accordance with the Work Schedule.

Contractor shall perform work expeditiously and with adequate forces to achieve interim and Total Performance within the Contract Term. The Contractor shall meet each of the following Completion Dates or be liable for liquidated damages in each instance for failure to do so as provided in Section 12.11 – Liquidated Damages.

The Contractor shall have complete control of the Work and shall effectively direct and supervise the Work to ensure conformance with the Contract Documents. The Contractor shall be solely responsible for all the construction means, methods, techniques, sequences and procedures, and for coordinating all parts of the Work.

The Contractor shall have the sole responsibility for the design, erection, operation, maintenance and removal of temporary structures and other temporary facilities, and the design and execution of construction methods required in their use. The Contractor shall engage and pay for registered engineering personnel skilled in the

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appropriate discipline to perform these functions, where required by Law or by the Contract Documents, and in all cases where such temporary facilities and their methods of construction are of such a nature that professional engineering skill is required to produce safe and satisfactory results.

Notwithstanding the foregoing, the Contractor acknowledges that the Owner has appointed the Owner's Representative to administer this Contract for and on behalf of Owner and that the Owner's Representative shall have the right to instruct and direct the Contractor with respect to the performance of its obligations pursuant to the terms of this Contract.

5.6.2 Work Schedule

The Contractor shall, within seven (7) days after execution of this Contract, prepare and submit to the Owner's Representative for review and approval, the following schedules:

- a bar chart or a critical path method schedule;
- a schedule of all Shop Drawings and submittals required
- a schedule of material deliveries; and
- a schedule of construction phases,

(collectively, the "**Work Schedule**").

The Work Schedule shall show dates of commencement and completion of various parts of the Work, ordering and delivery dates of product, phasing and timing for various subcontracts, and all other detailed information, to the satisfaction of the Owner's Representative. Once accepted by the Owner's Representative, the Work Schedule shall be changed only in accordance with Section 5.7 – Changes in the Work.

If at any time the Contractor has been granted additional time under Section 5.7 - Changes in the Work or Section 5.9 – Delays, it shall forthwith submit a revised Work Schedule to the Owner's Representative for review and approval, and same shall be in sufficient detail, to the satisfaction of the Owner's Representative.

The Owner reserves the right to withhold payment from the Contractor if such Work Schedule is not submitted within the seven (7) days provided above or, in the case of a Change Order, if a revised Work Schedule is not submitted prior to the next application for payment.

5.6.3 Progress Reports

The Contractor shall maintain an accurate record of the progress of the Work and shall, each week, submit such record to the Owner's Representative on the last Working Day of the week.

The progress reports shall (i) show dates of commencement and percentage of Work completed by trades for the different parts of the Work; (ii) include particulars regarding daily weather conditions, number of workers for each trade, and percentage of Work completed weekly by trades; and (iii) relate to the Work Schedule.

5.6.4 Place of the Work

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5.6.4.1 Superintendent

The Contractor shall employ a competent superintendent who shall be in attendance at the Place of the Work at all times while the Work is being performed. If the superintendent is not at the Place of the Work, the Work is to cease. The superintendent shall represent the Contractor at the Place of the Work, and directions given to him shall be held to have been given to the Contractor. Directions may, at the sole discretion of the Owner's Representative, be confirmed by the Owner's Representative in writing to the Contractor.

The superintendent shall be satisfactory to the Owner's Representative and shall not be changed by the Contractor except for good reason, and only then after consultation with, and agreement by, the Owner's Representative.

The Owner or the Owner's Representative, at its sole discretion, shall have the authority to order the removal from the Place of the Work of any superintendent, supervisor, foreman or other employee at the Place of the Work should the Owner or the Owner's Representative consider such person detrimental to the progress or quality of the Work. Any person so removed shall not be re-employed at the Place of the Work by the Contractor or by a Subcontractor.

5.6.5 Access

Necessary access or easements to the Place of the Work will be arranged by the Owner and the Contractor shall have use of this access for the purposes of this Contract. Any such use shall not interfere with operations of the Owner, any Other Project Participant or persons employed by the Owner, or with the rights of any other Persons.

The Contractor may wish to arrange for special easements, or special use of adjoining or neighbouring public or private properties, for the purpose of expediting the Work. The Contractor shall hold the Owner and the Owner's Representative harmless from any claims arising from use thereof.

5.6.6 Use of Place of the Work

The Contractor shall confine its equipment and plant, storage of materials and its operations to limits indicated by Laws, ordinances, permits, the Contract Documents or by specific direction of the Owner's Representative, and shall not unreasonably encumber the Place of the Work.

The Contractor shall protect the Work, the Owner's property and all property adjacent to the Owner's property from damage that may arise as a result of the Contractor's performance of the Work and shall be responsible for any damage to same as a result of the Contractor's performance of the Work in accordance with Section 5.16 – Liability and Indemnity

The Contractor shall not interfere in any way with the work or scheduling of any Other Project Participant or employee of the Owner. In order to avoid or minimize such interference, the Owner's Representative may, in its absolute discretion, establish schedules or methods and shall notify the Contractor accordingly. The Contractor shall, without receiving any additional payment, comply with the schedules or methods established by the Owner's Representative.

5.6.7 Snow Removal

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The Contractor shall remove snow and ice from access roads, parking areas, office and storage areas. The Contractor shall remove snow and ice from other surfaces, as necessary for construction.

5.6.8 Inspection of the Work

The Owner, the Owner's Representative and their respective authorized representatives shall have access to the Place of the Work at any time for inspection of the Work. The Contractor shall cooperate and provide sufficient, safe and proper facilities for such access and review of the Work by the Owner and the Owner's Representative and the inspection of the Work by authorized agencies.

If special tests, inspections or approvals are required by the Contract Documents, the Owner's Representative's instructions or by Law, the Contractor shall give the Owner's Representative and where applicable, the relevant authorized authority, adequate prior notice of when such Work will be ready for review and inspection. Inspection by the Owner's Representative will be made promptly. Inspections by other authorities shall be arranged by the Contractor and the Contractor shall notify the Owner's Representative of the date and time that such inspection is scheduled. The Contractor shall furnish, promptly to the Owner's Representative, two (2) copies of all certificates and inspection reports relating to the Work.

If, without the approval of the Owner's Representative or, where applicable, the authorized authority, the Contractor covers, or permits to be covered, any of the Work that is subject to special tests, inspection or approval before any such special tests and approvals are completed, the Contractor shall, if so directed, uncover such Work, to have the inspections or tests satisfactorily completed and thereafter recovered the Work at the Contractor's sole risk and expense.

The Owner's Representative may direct examination of Work beyond the usual inspections of the Owner's Representative. If such Work is found to be in accordance with the Contract Documents, the Owner shall pay the cost of such examination and, where applicable, recovering the Work.

5.7 CHANGES IN THE WORK**5.7.1 Change Orders**

The Owner may, but only through the Owner's Representative, without invalidating the Contract, make a Change by issuing a written change order ("**Change Order**") to the Contractor, which may, at the Owner's Representative's discretion, include adjustment of the Contract Price or Work Schedule. Subject to valuation pursuant to Section 5.7.2 – Valuation and Certificate of Changes in the Work, where applicable, the Contractor shall provide notice of whether it agrees with any such Change Order within three (3) Working Days of receiving the Change Order from the Owner or the Owner's Representative. If the Contractor provides notice that it agrees with such proposed Change Order, then the Owner's notice of change shall be effective and this Contract shall be amended as specified in such Change Order. If the Contractor does not respond within such three (3) Working Days it will be deemed to have agreed to the Change Order. If the Contractor provides notice that it disputes such Change Order within such three (3) Working Days, then the Owner may issue notice requiring the Contractor to comply with the Change Order, in which event the Contractor shall comply with the Change Order, but may refer its dispute with same to dispute resolution pursuant to Section 6.3 – Dispute Resolution. Payment for any additional work outlined in any Change Order shall be as provided therein.

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The Contractor shall not make or proceed with any Change in any circumstances unless and until a Change Order has been issued by the Owner's Representative, provided that in the event of an emergency that the Owner or the Owner's Representative determines endangers or may endanger life or property, the Contractor will perform the Work according to oral instructions from the Owner or the Owner's Representative, which the Owner's Representative will confirm in a Change Order as soon as practicable after issuing any such oral instruction. In the case of ordered emergency work, the Contractor shall keep accurate records of actual costs incurred, and any time taken to address such emergency work, in order to support any claim for additional compensation, or any Change to the Work or change to the Work Schedule or Completion Date.

5.7.2 Valuation and Certification of Changes in the Work

If the Owner's Representative is of the opinion that a Change in the Work is justified, the method of determining the costs of such Change shall be established by the Owner's Representative in one of, or a combination of, the following methods:

- by the Contractor's estimate and acceptance by the Owner of a lump sum;
- by Unit Prices set out in the Contract or subsequently agreed upon by the Owner and the Contractor;
- by the Contractor's net cost and a fixed or percentage fee as provided in the Contract Documents. On labour by the Contractor, twenty percent (20%) (total) overhead and profit on the actual wage paid to workers will be allowed. All labour will be paid at straight time rates unless overtime is authorized in writing in advance. On material supplied by the Contractor, ten percent (10%) (total) handling and profit will be allowed. On work of a Subcontractor, ten percent (10%) (total) overhead and profit will be allowed. On equipment rental, including operator, fuel, grease and maintenance, either locally accepted rental rates or the "Equipment Rental Rates Guide" (ARHCA) (latest update of rates when available) will apply. The transportation costs for any equipment which has to be brought to the Place of the Work pursuant to a Change Order will be negotiated. The rental shall be paid for actual hours of use for the Work only.

For Changes in the Work paid in accordance with Section 5.7.2 above, the form of presentation of costs and methods of measurement shall be determined by the Owner's Representative and the Contractor before proceeding with the Change. The Contractor shall keep accurate records of quantities or costs and present an account of the cost of the Change in the Work, together with vouchers, where applicable.

If the method of valuation or measurement of the Change or modification to the Contract Price cannot be promptly agreed upon, then the Owner may issue notice requiring the Contractor to comply with the Change Order as issued by the Owner's Representative, in which event the Contractor shall comply with the Change Order. In the event that either party disputes a Change Order or the modification to the Contract Price therein, the Owner's Representative shall seek to settle all claims of the Contractor or of the Owner as soon as practicable. If the Owner's Representative cannot settle such a dispute either party but may refer it to dispute resolution pursuant to Section 6.3 – Dispute Resolution.

The Contractor shall have no right or claim against any part of the Contingency, if applicable, except in the event of a Change Order that results in an increase to the Contract Price.

5.7.3 Contractor Change Requests and Tenders

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If the Contractor requests a Change to the Work, Work Schedule or Contract Price, the Contractor shall prepare and submit to the Owner's Representative, at no cost to the Owner, a detailed written proposal for such proposed Change. If the Owner's Representative approves such Change proposal, the Owner's Representative shall, after approval by the Owner, issue a written Change Order to the Contractor to proceed with the Change. The value of work performed pursuant to the Change Order shall be included for payment with the next Progress Payment Certificate. If the Owner rejects such Change proposal, the Owner may instruct the Contractor to re-do the Change proposal, not proceed with any Change or issue a Change Order in accordance with Section 5.7.2 – Valuation and Certification of Changes in the Work.

If the Contractor proposes a Change to the Owner's Contract design or any component thereof, the Contractor shall prepare and submit to the Owner's Representative, at no cost to the Owner (except as provided in Section 6.2.2 – Payment), a detailed proposal for an alternate design ("**Contract Design Change Tender**") in accordance with Section 6.2 – Contract Design Change Tenders. Such Contract Design Change Tender may be accepted or rejected at the discretion of the Owner and the Owner's Representative. If the Contract Design Change Tender is approved and the Owner and the Contractor have agreed upon the terms and conditions of such alternate design, the Owner's Representative shall issue a Change Order that reflects such agreed upon Contract Design Change Tender.

5.8 SUBSTANTIAL PERFORMANCE AND CONSTRUCTION COMPLETION CERTIFICATE

5.8.1 Notice of Substantial Performance

When the Contractor is of the opinion that the Work is substantially performed, it shall give written notice to the Owner's Representative that the Contractor has reached Substantial Performance. The Owner's Representative shall, on behalf of the Owner, within five (5) Working Days of receipt of such notice, make an inspection and assessment of the Work. The Owner's Representative shall, within five (5) Working Days its inspection, advise the Contractor, in writing, of (i) any deficiencies in the Work, the costs of completing the Work and/or correcting any Work and, where applicable, a listing of the items of Work that cannot be completed on account of Force Majeure which do not impair the usefulness of the Work for the purposes intended; and (ii) whether a Construction Completion Certificate will be issued. Thereafter the Contractor shall diligently and forthwith act to remedy any issues with the Work as identified by the Owner or the Owner's Representative.

In the event of deficiencies in the Work, in the opinion of the Owner's Representative, the Owner's Representative shall, in its absolute discretion, determine the Deficiency Holdback and certify such list of defects and/or deficiencies in the Work.

5.8.2 Construction Completion Certificate

When the Contractor is of the opinion that the Total Performance of the Work has been reached, the Contractor shall give notice to the Owner's Representative identifying the date of Total Performance. Within five (5) Working Days of receipt of such notice, the Owner's Representative shall inspect and review the Work and shall either (i) issue a Construction Completion Certificate, stating that the Work is ready for use, or is being used for the purposes intended, and indicate the Warranty Period; or (ii) advise the Contractor of the reasons the Work is not fully complete. Thereafter, the Contractor shall diligently and forthwith act to remedy any issues with the Work as identified by the Owner or the Owner's Representative, and thereafter may re-apply for a Construction

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Completion Certificate in the manner hereinbefore provided. The issuance of the Construction Completion Certificate shall not relieve the Contractor of any obligations pursuant to the Contract Documents.

5.9 DELAYS**5.9.1 Owner's Delay**

If, in the opinion of the Owner's Representative, the Contractor is delayed in the performance of the Work or any part thereof as a result of any act, error or omission of the Owner, the Owner's Representative or any of their respective Personnel, the Contractor shall immediately, and in any event not later than fourteen (14) days after the commencement of the delay, give written notice thereof to the Owner's Representative setting out in detail the cause of the delay and the effect of the delay on the Contractor's ability to carry out the Work, including the number of its Personnel made idle by such delay and the effect any such delay will have on the Work Schedule and any other matters the Contractor deems relevant.

If the Owner's Representative determines that the delay was caused by the Owner, the Owner's Representative or any of their respective Personnel, and that it affects the Contractor's ability to carry out the Work, the Owner's Representative may, by way of an issuance of a Change Order at its sole option and discretion, modify the Work Schedule, or otherwise extend the Construction Completion Date by an amount necessary to overcome the time lost as a result of the delay.

5.9.2 Contractor's Delay

If the Contractor fails to perform the Work in accordance with the requirements of the Work Schedule or if the Contractor fails to comply with any Laws or OH&S Act requirements, including those set forth in this Contract, which results in an order that the Contractor immediately stop the Work or any part thereof or pursuant to the order of any authority, and, in the sole opinion of the Owner or the Owner's Representative, it appears that as a result of the foregoing the Contractor will not be able to meet the dates set out in the Work Schedule, the Owner or the Owner's Representative may request that the Contractor work overtime, acquire and utilize necessary additional equipment, hire additional qualified manpower or perform other acts as may be necessary to accelerate the progress of the Work so that it is done in accordance with the dates and time frame set out in the Work Schedule, at the sole expense of the Contractor. Night work will not be permitted and Work on Sunday shall be in accordance with the Municipality bylaws where performance of the Work is being completed.

If such stop work order was not issued as a result of any act or fault of the Contractor or its Personnel, then the Work Schedule shall be adjusted or Completion Date extended as determined by the Owner or Owner's Representative.

5.9.3 Force Majeure Delay

If the Contractor is rendered unable, wholly or in part, by a Force Majeure Event to carry out its obligations under the Contract, other than its obligations to make payment of money due hereunder, the Contractor shall give written notice to the Owner's Representative stating full particulars of such Force Majeure Event as soon as possible after the occurrence thereof, but in any event no later than fourteen (14) days after the commencement of the Force Majeure Event. The obligations of the Contractor that cannot be performed because of the Force

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Majeure Event shall be suspended during the continuance of any inability caused by the Force Majeure Event, provided that the Contractor takes all reasonable action to either remedy the effect of the Force Majeure Event or resume the performance of the suspended obligations with all reasonable dispatch.

5.9.4 Extension of the Completion Date

If the Work is suspended as a result of a Force Majeure Event and the Owner's Representative on investigation determines that the suspension will affect the Contractor's ability to attain Total Performance by the Completion Date, the Owner's Representative may, at its sole option and discretion, by way of a Change Order, extend the time for attaining Total Performance or extend the Completion Date by an amount equivalent to the duration of the suspension of Work caused by the Force Majeure Event.

5.9.5 No Increase to the Contract Price

If the time for attaining a Construction Completion Certificate is extended pursuant to Section 5.9.4 – Extension of the Completion Date, the Contractor shall not be entitled to an increase in the Contract Price, including payment of any costs incurred by the Contractor as a result of the suspension of Work. Where the Contractor experiences a Force Majeure Event and sends a written notice in accordance with Section 5.9.3 – Force Majeure Event, such Force Majeure Event shall only excuse the Contractor's obligations for that portion of the Work that is directly affected by the Force Majeure Event.

No extension of the Contract Term shall be considered for delay unless written notice of claim is given to the Owner's Representative within fourteen (14) days of the commencement of the basis for such a claim.

5.10 DEFAULT AND TERMINATION**5.10.1 Owner's Right to Terminate for Default**

In addition to any other right or remedy that the Owner may have at Law, or otherwise, the Owner shall have the right to terminate the Contractor's right to perform any or all of the Work or may terminate the Contract, by providing written notice to the Contractor in the event:

- the Contractor becomes insolvent or unable to pay its debts generally as they become due, commits any act of bankruptcy, makes a general assignment for the benefit of creditors, or should a receiver be appointed on account of its insolvency, or should it take advantage of any legislation for the benefit of insolvent persons, or enter into any arrangement with its creditors, in any which case the Contract shall terminate immediately on issuing such notice; or

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- the Contractor, in the opinion of the Owner or Owner's Representative in its sole discretion:
 - is neglecting to execute the Work properly or in accordance with the Work Schedule;
 - is failing, or has failed, to perform any provision of the Contract;
 - refuses or fails to supply sufficiently skilled workers, provide proper workmanship, supply sufficient or proper Products, construction machinery or equipment;
 - persistently disregards Law or ordinances, or the Owner's Representative's instructions; or otherwise violates to a substantial degree the provisions of the Contract,
- and the Contractor has failed to correct such failure or default within five (5) Working Days (or such other time as specified in the notice) of receipt of notice; provided however, if the failure or default is such that, in the opinion of the Owner's Representative, it cannot be corrected within the time specified in the notice, the Contractor shall be deemed to have complied with the notice if the Contractor:
 - commences the correction of the failure or default within the time specified in the notice; and
 - furnishes the Owner's Representative with a schedule for such correction, acceptable to the Owner's Representative, within the time specified and completes such correction within the time or times set forth in such schedule.

If the Owner terminates the Contract or the Contractor's right to perform the Work in accordance with this Section 5.10.1 – Owner's Right to Terminate for Default, the Owner is entitled:

- to take possession of the Place of the Work and Products thereon and utilize the construction machinery and equipment, the whole subject to the rights of third parties, and to finish the Work by whatever methods the Owner may deem expedient but without undue delay or expense;
- to withhold any further payment to the Contractor until the Work has been completed in accordance with this Contract;
- upon Total Performance of the Work, charge the Contractor the amount by which the full cost of finishing the Work, as certified by the Owner's Representative, including compensation to the Owner's Representative for his additional services and a reasonable allowance as determined by the Owner's Representative to cover the cost of any corrections which may be required by General Conditions Section 5.14 - Warranty, exceeds the unpaid balance of the Contract Price, or, if such cost of finishing the Work is less than the unpaid balance of the Contract Price, pay the Contractor the difference; and
- on expiry of the Warranty Period or periods, charge the Contractor the amount by which the cost of corrections under General Conditions Section 5.14 - Warranty exceeds the allowance provided for such corrections, as described in c) above, or, if the cost of such corrections is less than the allowance, pay the Contractor the difference.

5.10.2 Termination at Owner's Discretion

The Owner may, at any time, and for any reason, in its discretion, terminate the Work or any part thereof by giving written notice to the Contractor, whether or not the Contractor is in default. If the Owner terminates the

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Work in accordance with this Section 5.10.2, the Contractor shall be entitled to compensation for only the portion of the Work performed by the Contractor to the date of termination, subject to any claims the Owner may have arising therefrom under this Contract, at Law or otherwise.

5.10.3 Contractor's Right to Terminate

In addition to any other right or remedy that the Contractor may have at Law, or otherwise, the Contractor may terminate the Contract by providing written notice to the Owner, with a copy to the Owner's Representative, in the event:

- the Owner becomes insolvent or unable to pay its debts generally as they become due, commits any act of bankruptcy, makes a general assignment for the benefit of creditors, or should a receiver be appointed on account of its insolvency, or should it take advantage of any legislation for the benefit of insolvent persons, or enter into any arrangement with its creditors, in any which case the Contract shall terminate immediately on issuing such notice;
- the Work should be stopped or otherwise delayed for a period of thirty (30) days or more under an order of any court, or other public authority, provided such order was not issued as the result of any act or fault of the Contractor or of anyone directly or indirectly employed by him, or acting on his request; or
- the Owner fails to pay to the Contractor within thirty (30) days of the issue date of any Progress Payment Certificate, subject always to the Owner's rights under Law or this Contract to withhold payment or make deductions; provided such written notice shall advise the Owner that if such default is not corrected within ten (10) Working Days from the Owner's receipt of the written notice, the Contractor may, without prejudice to any other right or remedy the Contractor may have, terminate the Contract.

If the Contractor terminates the Contract under the provisions of Section 5.10.3. set out above, the Contractor shall be entitled to be paid for all Work performed up to the date of termination. The Owner's Representative shall, in its absolute discretion, certify the value of such Work to the said date. If the Contractor terminates the Contract under the provisions of Section 5.10.3 set out above, the Contractor shall also be entitled to two and one half percent (2 1/2%) of the difference between such value and the Contract Price, if such value is less than fifty percent (50%) of the Contract Price, and to five percent (5%) of the difference between such value and the Contract Price, if such value is fifty percent (50%) or more of the contract Price, in lieu of all other claims for damages.

5.11 OWNERSHIP OF DOCUMENTS AND MODELS

The Contractor agrees that all reports, surveys, studies, specifications, memoranda, drawings, other documents, work products and materials furnished by the Contractor, or by any Subcontractor to the Contractor ("**Project Documents**"), and used in the performance of the Work shall be the sole and exclusive property of the Owner or for use by the Owner for any purpose without any additional compensation to the Contractor or any Subcontractor and shall be immediately delivered to the Owner upon the Owner's written request. The Contractor shall not and shall cause its Subcontractors to not release or publish any data or documents used in the performance of the Work without the prior written consent of the Owner.

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Other than as may be required for the performance of the Work hereunder, nothing in this Contract shall be construed as granting the Contractor any license or other right to use any intellectual or other property that the Owner, the Owner's Representative or their respective Personnel may now or hereafter own, possess, or in which the Owner, the Owner's Representative or their respective Personnel may hold licensing rights. The Engineering Documents are not to be used on any other project without the prior written consent of the Owner's Representative.

In addition, the parties agree that all work product, materials, documents and intellectual property (including without limitation all inventions, designs, ideas, discoveries, works, creations, patents, copyrights and trademarks) and all intellectual property rights or other rights relating thereto developed by the Contractor or its Personnel during the course of, or in connection with, the performance of the Work, by the Contractor or its Personnel (collectively "**Work Product**") shall be the property of, and owned by, the Owner. The Contractor agrees that it has no ownership rights of any kind therein.

The Contractor hereby assigns and, upon performance of each element of the Work, automatically assigns, to the Owner all of the Contractor's and its Personnel's right, title and interest, if any, in the Project Documents and Work Product. This assignment includes any and all rights to secure any intellectual property, patent, trade-mark, copyright, industrial design or other registrations (including any renewals or extensions thereto) with respect of the Work Product. The Contractor hereby unconditionally and irrevocably waives and shall cause its Personnel to unconditionally and irrevocably waive, all moral rights of the Contractor or its Personnel that exist or may exist in any Work Product. The Contractor shall, upon the Owner's request, obtain from each and every one of its Personnel any agreement or assignment required to confirm ownership rights in the Project Documents and Work Product in favour of the Owner, the licenses granted herein and the waiver of all moral rights therein.

If Contractor or its Personnel incorporate into any Project Documents or Work Product any pre-existing intellectual property owned by the Contractor or its Personnel or in which the Contractor or its Personnel has an interest, the Owner is hereby granted and shall have a nonexclusive, royalty-free, irrevocable, perpetual, worldwide license to make, have made, modify, use, sell, license (at any level) and in any other way exploit such pre-existing intellectual property as part of or in connection with such Project Documents or Work Product, without obligation to account to, or obtain consent from, the Contractor or its Personnel.

5.12 SUBCONTRACTORS AND OTHER PROJECT PARTICIPANTS

5.12.1 Subcontractors

The Contractor agrees to incorporate in each subcontract, to the extent applicable, the terms and conditions of this Contract along with the requirement that no Subcontractor shall further subcontract any portion of its work without first receiving the written approval of the Owner's Representative, and a provision permitting the assignment of any such subcontract from the Contractor to the Owner.

The Contractor shall provide to the Owner a complete list of all of its Subcontractors prior to the commencement of the Work and the Owner and the Owner's Representative reserve the right to reject any Subcontractor or to require the termination of any subcontract at any time, and for any reason in the discretion of the Owner or Owner's Representative, including if, in the opinion of Owner or Owner's Representative, the Subcontractor is not capable of performing the Work in accordance with the requirements of the Contract Documents or fails to

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perform the Work in accordance with the requirements of the Contract Documents. As of the date hereof, the Owner has approved those Subcontractors listed in Section 3.13 Schedule "D" – Schedule of Subcontractors. Subsequent approvals of Subcontractors by the Owner or the Owner's Representative must be in writing.

The Owner's approval of any Subcontractor shall not create any relationship whatsoever between the Owner and the Owner's Representative and any Subcontractor, but the Contractor shall be and remain fully liable to the Owner as if no such subcontract had been approved by the Owner.

Notwithstanding anything to the contrary contained herein, the Contractor shall remain fully responsible to the Owner for any act, omission, indebtedness, or Liabilities of any of the Contractor's Subcontractors and of any Personnel either directly or indirectly employed by its Subcontractors. The Contractor agrees to preserve and protect the rights of the Owner under the Contract with respect to any Work to be performed by Subcontractors.

5.12.2 Other Project Participants

The Owner reserves the right to enter into separate contracts in connection with the Project and to coordinate insurance coverages.

The Owner's Representative will coordinate the work of Other Project Participants as it affects the Work of this Contract.

The Owner will take all reasonable precautions to avoid labour or other disputes on the Project arising from the work of Other Project Participants but shall not be in any way liable for delays or costs occasioned by such disputes, beyond the provisions of Section 5.9.1 – Owner's Delay.

The Contractor shall coordinate its work with that of Other Project Participants and connect or interface as described in Section 01130 – Project Management and Coordination. If the Contractor causes delay to the Other Project Participants resulting in the work of the Other Project Participants being accelerated, the Contractor shall be solely liable for the costs of such acceleration.

The Contractor shall report to the Owner's Representative, in writing, any apparent deficiencies in Other Project Participants work which could affect the Work as prescribed by this Contract, immediately as they come to the Contractor's attention. Failure to report shall invalidate any claims by the Contractor against the Owner by reason of the deficiencies of Other Project Participants' work, except those deficiencies which the Contractor could not reasonably have been aware of.

5.13 PAYMENT CERTIFICATES**5.13.1 Progress Payment Certificate**

The Engineer will prepare the progress payment certificate monthly for payment on account, as provided for in Article A-4 of the Unit Price Agreement, as the Work progresses, and it shall be for the monthly period ending on the twenty-fifth day of each month.

The Contractor shall submit to the Engineer, before the first Progress Payment Certificate, a Contract Price breakdown for the Lump Sum items of the Work, aggregating the total amount of the Lump Sum price(s) and divided so as to facilitate evaluation of applications for payment. Unless a specific date is provided in the Supplementary Conditions, the breakdown shall also identify the date of the month for all monthly claim periods.

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The Progress Payment Certificate shall identify the items of Work, actual quantities performed on the Work, Contract Unit prices, Lump Sums, the total of money paid to date, all holdback sums and the net amount approved for payment up to the last day of the agreed monthly period. Measurement for payment shall be in accordance with the relevant provisions of the Specifications.

5.13.2 Substantial Performance

When the Contractor is of the opinion that the Work is substantially performed, he may issue a notice to the Engineer, on behalf of the Owner, requesting an inspection of the work.

The Engineer, on behalf of the Owner, shall, within five (5) working days of receipt of the notice, make an inspection and assessment of the Work. The Engineer shall, within five (5) days of his inspection, notify the Contractor, in writing, of his approval or disapproval to issue a Construction Completion Certificate.

A Construction Completion Certificate shall state that the Work, or a substantial part of the Work, under the Contract or a Subcontract is ready for use, or is being used for the purposes intended, and indicate the date for the start and end of the warranty period. The Engineer shall separately identify the cost of completing or correcting any unfinished Work and list the items of the Work that cannot be completed expeditiously, on account of climatic or other reasons beyond the control of the Contractor or Subcontractor, and that do not impair the usefulness of the Work for the purposes intended.

The Engineer shall, in his absolute discretion, determine the Deficiency Holdback and certify a list of defects and/or deficiencies in the Work.

The provisions relating to Construction Completion and holdbacks shall apply to the Work even if the Builders' Lien Act provided that no lien exists.

5.13.3 Certificates and Payments

The Progress Payment Certificate shall apply only to the value of the work performed and Products furnished to the Place of the Work.

The Owner will retain holdback in the amount of ten percent (10%) of the value of each progress estimate.

The Owner shall, within thirty (30) days of the date of the Engineer's Progress Payment Certificate, make payment to the Contractor on account, in accordance with the provisions of Article A-4 of the Unit Price Agreement. The actual payment paid is subject to the Owner's rights under law, and the provisions of this Contract, to make deductions.

The Engineer's Final Progress Payment Certificate will be submitted following the review of the Project's Final Details, approximately 4 to 8 weeks after completion of the project. At this time the Contractor may submit his Final Invoice directly to the Owner, with a copy to the Engineer.

The Engineer shall, if he does not reject a notice of Substantial Performance, within ten (10) working days of receipt of the notice, certify the date of Substantial Performance and issue a Construction Completion Certificate

Notwithstanding any other provisions of this Contract:

- a) Upon acceptance of a notice of substantial Performance and the Issuance of a Construction Completion Certificate by the Engineer on behalf of the Owner, the Owner shall pay the Contractor the Lien Holdback retained for such contract following the expiration of the statutory period stipulated in the Lien Legislation, and applicable to the Place of the Work, providing no lien derived under that subcontract is preserved by anything done under the appropriate Lien Legislation, and the Subcontractor has submitted to the Owner a sworn statement that all accounts for labour,

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subcontractors, products, construction machinery and equipment, and any other indebtedness that may have been incurred by the Subcontractor in the performance of the subcontract and for which the Owner might in any way be held responsible, have been paid in full except holdback monies properly retained.

- b) If the Contractor, on behalf of a Subcontractor, has submitted a notice for a Construction Completion Certificate for a phase of the Work, the Engineer shall, within ten (10) working days, make an inspection and assessment of the Subcontract work to verify the validity of the notice. The Engineer shall, within five (5) working days of his inspection, issue a Construction Completion Certificate for a particular phase of the Work, or shall notify the Contractor, in writing, of his refusal to do so and the reason therefore. The Owner shall make payment to the Contractor of the amount shown on such Certificate, less all amounts already paid, and less any deductions permitted by law or the Contract, and less all amounts, if any, required to be retained under the Lien Legislation. Any amount required to be retained by the Lien Legislation shall be paid, to the Contractor, following the expiration of the statutory period stipulated in the Lien Legislation, providing no liens have been registered which are then outstanding.
- c) Notwithstanding the provisions of Article b) above and the wording of such Certificates, the Contractor shall ensure that the Work of such subcontract is protected pending the Total Performance of the Work, and be responsible for the correction of any defects in it, regardless of whether or not they were apparent when the Construction Completion Certificate of the Work for this subcontract was issued.

As soon as practicable, the Engineer shall seek to settle all claims of the Contractor or of the Owner for extra work or deletions to the Work, and shall certify the total amount due to the Contractor for the performance of the Work. The Owner shall make payment to the Contractor of the amount shown on such Certificate, less all amounts already paid and less any deductions permitted by law of the Contract, and less all amounts, if any, required to be retained under the Lien Legislation, providing the Contractor has submitted to the Owner a sworn statement that all accounts for labour, Subcontracts, products, construction machinery and equipment, and any other indebtedness which may have been incurred by the Contractor in the performance of the Work and for which the Owner might, in any way, be held responsible, have been paid in full, except holdback monies properly retained. Any amounts required to be retained by the Lien Legislation shall be paid to the Contractor following the expiration of the statutory period stipulated in the Lien Legislation, provided no liens have been registered which are then outstanding.

No Certificates, nor any payments made thereunder, nor any partial or entire use or occupancy of the Work by the Owner, shall constitute an acceptance of any work or Products not in accordance with the Contract Documents.

5.14 PERFORMANCE ASSURANCE

5.14.1 Bonds

The Contractor shall provide the Performance Bond and the Labour and Material Payment Bond prior to commencing any Work on this Contract.

The Owner shall have the right to require the Contractor to provide and maintain additional bonds throughout the performance of the Contract, as specified by the Owner or the Owner's Representative from time to time. If the Owner requests bonds of the Contractor that were not required prior to the execution of this Contract, the

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Owner shall reimburse for such cost, the Contractor on receipt of a receipted premium demand and the executed bond itself.

All bonds shall be issued by a duly incorporated surety company approved by the Owner and authorized to transact a business of suretyship in the Province of Alberta. The forms of such bonds shall be acceptable to the Owner.

5.15 WARRANTY**5.15.1 Warranties**

The Contractor represents and warrants that all Work, including Products, performed or provided by the Contractor shall be performed or provided (i) in a good and workmanlike manner; (ii) in compliance with the Contract Documents and instructions of Owner or Owner's Representative, as the case may be; and (iii) free from defects in design, workmanship and materials, and free of any defect in title.

To ensure the Owner has benefit of any and all Products or system warranties offered by manufacturers or others, the Contractor shall ensure that all Warranties are assignable and are assigned to the Owner in the Owner's name. Such assignment shall not relieve the Contractor of its obligations under this Section 5.14 – Warranty.

No certificate of the Owner's Representative nor payment hereunder shall relieve the Contractor from its responsibility herein.

5.15.2 Rejected Work

Owner's Representative shall have the right to reject any Work or Products, or any part of the Work or Products, whether incorporated into the Work or not, which in the opinion of the Owner's Representative is defective or fails to comply with the requirements of the Contract Documents.

5.15.3 Remedies for Breach of Warranty

Notwithstanding any other remedies the Owner may have hereunder, at Law or otherwise, the Contractor shall, at its sole expense, promptly correct or remedy any defect or failure in the Work performed by the Contractor and correct, remedy or replace, at the Contractor's sole expense, any failure or defect in the Products supplied by the Contractor, whether incorporated into the Work or not, which appears defective:

- in relation to Work performed before the Construction Completion Certificate is issued, during a period of two (2) years after the Construction Completion Certificate is issued; and
- in relation to Work performed after the Construction Completion Certificate is issued, during a period of two (2) years following the date that Work is fully completed,

(referred to in this Section as the "**Remedial Work**").

The Contractor agrees that it shall be solely responsible for the Remedial Work and shall pay for the cost of Remedial Work, together with the cost of any damage to other work or property caused by the defect, failure or Remedial Work and the cost of any testing as the Owner may require to verify the Remedial Work complies with

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the requirements of the Contract Documents or the Remedial Work performed in relation to other work or property is performed satisfactorily.

The Contractor further warrants that the Remedial Work shall be free from failure or defect for a period of the later of: Warranty Period; or one year following the completion of the Remedial Work, whichever is longer and that it shall promptly repair or replace any Remedial Work which appears defective prior to or during the first year from the date the Remedial Work is completed, and shall bear the cost of any damage to other work or property caused by the defect, failure or Remedial Work and the cost of any testing as Owner may require to verify the Remedial Work complies with the requirements of the Contract Documents or the Remedial Work performed in relation to other work or property is performed satisfactorily.

5.15.4 Owner Performed Remedial Work

The Owner reserves the right to correct defective or rejected Work and deduct the cost of the same from the Contract Price.

The Owner may, in an emergency or if the Contractor fails to correct defects for any reason, perform the Work or Remedial Work, or direct someone else on its behalf to perform the same, and deduct the cost of the same from the Contract Price.

5.15.5 Non-Performance of the Remedial Work

If, in the opinion of the Owner's Representative, it is not expedient to correct defective Work or Work not completed in accordance with the Contract Documents, the Owner may deduct from the Contract Price the difference in value between the Work completed to date and the Work completed as required by the Contract; the amount of which shall be determined by the Owner's Representative in its absolute discretion.

5.15.6 Notice of Defects

Each party hereto shall promptly provide written notice to the other, with a copy to the Owner's Representative, of any observed defects or deficiencies in the Work, including Products supplied by the Contractor or its Subcontractors, whether it is Work required by this Contract or Remedial Work. Provision of such Notice shall not relieve the Contractor of any of its obligations hereunder.

The Owner's Representative will, two (2) months prior to termination of the Warranty Period, notify the Owner and the Contractor, by written notice, that a final inspection of the Work is required and shall, in such notice, fix a date for such inspection which shall be within the next ten (10) days. The inspection will be carried out by the Owner's Representative, who may be accompanied by the Owner and the Contractor. The Owner's Representative will record defects requiring repair or correction and will instruct the Contractor, in writing, to remedy such defects within fifteen (15) days. If the Contractor refuses or neglects, for any reason, to correct such defects, the Owner may correct them or direct someone else, on its behalf, to correct them, and charge the Contractor for all costs of such correction.

5.15.7 Final Acceptance Certificate

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The Contractor is not relieved of his obligation to maintain the Work until such time as the Owner signs the Final Acceptance Certificate. The Owner may request an extension to the Warranty Period due to faulty materials or poor workmanship. The Contractor will be held responsible for maintaining the system for this period of extension at no cost to the Owner.

After due notification, in writing, to the Contractor, the Owner may proceed with correction of any fault at the expense of the Contractor and his surety. In emergency situations endangering life or public property, the Owner shall proceed with repairs and thereupon advise the Contractor of the failure, and resulting costs shall be paid by the Contractor.

The Owner's Representative will issue a Final Acceptance Certificate to the Contractor when the Warranty Period is complete, all maintenance deficiencies are rectified, and approval has been received from the Owner.

5.16 LIABILITY AND INDEMNITY**5.16.1 Liability**

Each party hereto shall be liable to the other party for all Liabilities of whatever nature which may be brought against the other party or which the other party may incur, sustain or pay that is attributable to or arises out of the fault or negligence of such party or such party's Personnel. The party that is liable to the other shall, where applicable, be subrogated to the rights of the other party in respect of such fault or negligence.

5.16.2 Indemnification

The Contractor shall indemnify and hold harmless the Owner and the Owner's Representative, and their respective Personnel, from all Liabilities of whatever nature which may be brought against the Owner or suffered by the Owner or which the Owner may incur, sustain or pay that is attributable to or arises out of or is connected in any way with any one or more, or any combination of, the following:

- any breach of this Contract by the Contractor or any of its Personnel or anyone for whose acts or omissions the Contractor may be liable;
- any fault or negligent act or omission of the Contractor or its Personnel or anyone for whose acts or omissions the Contractor may be liable;
- any liabilities arising in connection with any damage to property or injury to any Person or Other Project Participant arising in the performance of the Work, including any Remedial Work;
- liens filed against any part of the Work or Products after the time available to the Contractor for filing liens;
- any environmental deficiencies caused by the Contractor or any of its Personnel or anyone for whose acts or omissions the Contractor may be liable; and
- any non-compliance by the Contractor or any of its Personnel or anyone for whose acts or omissions the Contractor may be liable with any Laws, including all OH&S Act requirements at the Place of the Work.

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Claims under this Section shall be made, in writing, to the party liable within ten (10) Working Days after the first observance of such claim or damage, and may be settled by negotiation, or in the manner set out in Section 6.3 – Dispute Resolution, for the settlement of disputes.

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

Nothing in the Contract Documents or any approval, expressed or implied, of the Owner's Representative or the Owner, shall relieve the Contractor of any liability as set forth in this Section 5.15.2 or which may be imposed by Law.

5.17 INSURANCES

The Contractor shall maintain Comprehensive Liability and Property Insurance applicable to the Work and all parties thereto for the full term of the Contract including the Warranty period(s), unless specified otherwise.

The Contractor shall provide proof of all insurance to the owner prior to commencing the Work.

A specific listing of required insurance may be described in Supplementary Conditions.

5.18 PROTECTION OF WORK AND PROPERTY

The Contractor shall protect all property adjacent to the Place of the Work from damage as the result of his operations under the Contract.

The Contractor shall protect the Work and the Owner's property from damage, and shall be responsible for any damage that may arise as the result of his operations under the Contract.

5.19 WORKER'S COMPENSATION

Prior to commencing Work, and prior to receiving payment for Substantial Performance of the Work and the final payment, and at any time during the Contract Term, when requested by the Owner's Representative, the Contractor shall provide evidence that the Contractor and all Subcontractors have complied with all requirements of the Province in which the Work is being completed with respect to Workers' Compensation, including payments due thereunder.

5.20 MISCELLANEOUS

5.20.1 Entire Agreement

This Contract constitutes the entire agreement between the Owner and the Contractor relating to the Work and supersedes all prior agreements between them, whether written or oral, respecting the Work. No other terms, conditions or warranties, whether express or implied, form a part of this Contract.

5.20.2 Time of Essence

Time is of the essence for this Contract.

5.20.3 Assignment

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Neither party to the Contract shall assign the Contract, nor any portion thereof, without the prior written consent of the other.

5.20.4 Waiver

Failure by either party to insist on any one or more instances upon the strict performance of any one of the covenants contained herein shall not be construed as a waiver or relinquishment of such covenants. For greater certainty, if the Contractor fails to complete the Work, or any specified portion of the Work, within the times specified in the Work Schedule, but nevertheless is permitted to proceed and complete the Work, such permission shall not modify nor waive in any respect any responsibility of the Contractor for damages arising from such non-completion within the time specified.

No waiver by any party of any such covenant shall be deemed to have been made unless expressly made in writing signed by the waiving party.

5.20.5 Amendment

No change to this Contract or of any term or condition hereof shall be valid unless reduced to writing and signed by both parties hereto or made pursuant to a Change Order issued pursuant to this Contract.

5.20.6 Rights and Remedies Cumulative

Notwithstanding any other provisions of this Contract, the rights, remedies, warranties and indemnities provided to Owner under this Contract shall be cumulative and in addition to and not in substitution for any rights, remedies, warranties or indemnities provided by Law or in equity or otherwise.

5.20.7 Joint and Several

If Contractor is a joint venture or partnership, the Persons comprising the joint venture or partnership are jointly and severally liable to Owner for the joint venture or partnership's obligations pursuant to this Contract and Contractor represents and warrants that it has due authorization and authority to execute this Contract on behalf of the other joint ventures or partners and bind such joint ventures or partners hereto.

5.20.8 Further Assurances

The parties shall from time to time execute such further documents and instruments and do all acts and things as the other party may reasonably require to effectively carry out or better evidence or perfect the full intent and meaning of this Contract. This includes, but is not limited to, all acts or documentation required by Owner to effectively carry out or evidence tax credits or refund claims.

5.20.9 Survival

All covenants, agreements, representations, warranties and indemnities which by their nature extend beyond any termination or expiry of this Contract shall, notwithstanding anything else herein contained, continue in full force and effect notwithstanding the expiration or termination of this Contract.

END OF SECTION

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6. SUPPLEMENTARY CONDITIONS (00800)

The Supplementary Conditions shall be read in conjunction with the General Conditions and shall govern over them.

6.1 INSURANCE

Supplement Section 5.17 – Insurance with the following:

Without restricting the generality of General Condition, Section 5.16.2 - Indemnification, the Contractor shall provide, maintain and pay for the insurance coverage's listed hereafter.

The specific minimum requirements of insurance called for by the General Conditions of contract and required under this contract are as follows:

- i.) Comprehensive Public Liability and Property Damage Insurance, Five Million Dollars (\$5,000,000.00) inclusive.
- ii.) Automobile Liability Insurance, five Million Dollars (\$2000,000.00) inclusive.
- iii.) List the Owner as an additional insured.
- iv.) Contain a cross-liability clause.
- v.) Contain a contractual liability clause.
- vi.) Contain a non-owned automobile clause.
- vii.) Include a waiver of subrogation in favour of the Owner.
- viii.) Be endorsed to provide the Owner with 30 days' written notice of cancellation.
- ix.) Have a deductible not exceeding \$5,000, with the Contractor to be responsible for payment of all deductibles.
- x.) Wrap-up Liability Insurance Policy with a policy limit of \$5,000,000 per occurrence. The Policy must:
 - a. Be issued in the joint names of the Owner, the Contractor, and the Consultant.
 - b. Have a deductible not exceeding \$10,000, with the Contractor to be responsible for payment of all deductibles.
 - c. Include 24 months' Products and Completed Operations coverage, with all liability coverage maintained 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.
 - d. Contain a non-owned automobile clause.
 - e. Contain a cross-liability clause.

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- f. Contain a contractual liability clause
- g. Be endorsed to provide the Owner with 30 days' written notice of cancellation.
- xi.) Environmental Impairment/Pollution Liability Insurance Policy with a limit of \$2,000,000 per occurrence, and a deductible not exceeding \$50,000, with the Contractor to be responsible for payment of all deductibles.
- xii.) Builders' Risk/Course of Construction Insurance for 1.1x the total project value and a deductible not exceeding \$10,000, with the Contractor to be responsible for payment of all deductibles.

Without in any way limiting the obligations or liabilities of the Contractor, the Contractor shall maintain and keep in force during the term of this contract until the date of final acceptance, in an insurance company or companies and under policies of insurance acceptable to and approved by the Owner, the following insurance with limits not less than that shown under the Special Conditions of contract. Insurance policies shall remain in force for the duration of the contract, including the specified warranty period and until the date of issuance of the Final Acceptance Certificate. No policy shall be altered in any manner that would affect the interest of the Owner, nor cancelled, either by the Contractor or the insurer, without thirty (30) days notice by registered mail to the Owner. When changes in the contract are material to the risk, the Contractor shall notify the insurance and the surety. All policies required under this clause shall name the Owner and WSP as an additional insured, and shall indemnify the Owner and WSP Canada Inc., their officers and agents.

Automobile Liability Insurance on all vehicles used in connection with the work under this contract, whether owned by the Contractor or his sub-contractors or not, shall include any and all liability assumed under this contract.

Aircraft or Watercraft Liability covering all licensed craft, whether owned by either the Contractor or the sub-contractor or chartered, used in connection with the work under this contract shall cover any liability assumed under this contract.

Comprehensive Public Liability and Property Damage Insurance shall apply to all operations of the Contractor in connection with this contract. This protection shall include, but not be limited to, the Contractor's contingent liability with respect to subcontractors, contractual liability assumed under this contract, completed operations, and, if Worker's Compensation Act is not applicable, to any employees of the Contractor or his subcontractors employer's liability. The Contractor shall have the Owner and WSP added as an additional insured, with cross-liability to such insurance.

The Contractor shall deposit with the Engineer, at the office from which the contract is let, before commencement of the work, insurance policies or certified copies thereof, required under the above. Original policies will be returned to the Contractor without undue delay.

6.2 CONTRACT DESIGN CHANGE TENDERS

6.2.1 General

After the Tender is awarded, the Contractor has the option of submitting a Contract Design Change Tender for an alternate design or change to the Owner's design or any component thereof, provided cost savings can be achieved without compromising the integrity and quality of the project. These proposals will be accepted or

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rejected by the Owner or the Engineer at its sole discretion. Tenders shall be submitted through the Owner's Engineer.

Project Net Cost Savings will be shared on a sixty five percent/thirty five percent (65%/35%) basis between the Contractor and the Owner. These net savings shall be identified, itemized, confirmed and fixed prior to the Owner giving approval to proceed with the proposed changes.

When a Contract Design Change Tender is submitted, a preliminary technical review will be conducted by the Owner's Engineer to ensure it meets the Owner's requirements. A one (1) week period will be required for this review, after which the proposal will be accepted or rejected. If the proposal is accepted, the Contractor shall complete a detailed design as required.

When submitting a Design Change Tender, the Contractor shall also provide non-refundable certified cheques in accordance with the following:

- a) Preliminary Technical Review – At the time the proposal is submitted, the Contractor shall provide a non-refundable certified cheque in the amount of five hundred dollars (\$500.00)
- ii) Final Design Review – If the Project Net Cost Savings (PNCS) is more than ten thousand dollars (\$10,000.00), the Contractor shall provide an additional non-refundable certified cheque in the amount of three thousand dollars (\$3,000.00) at the final design review stage. If the PNCS is less than or equal to ten thousand dollars (\$10,000.00), the Contractor will not be required to provide the three thousand dollars (\$3,000.00).

Contract Design Change Tenders shall be sufficiently complete at the preliminary technical review stage so that the Owner can fully access alternatives for equivalencies, and compliance to standards and practices, including functionality, serviceability, durability, maintainability, and overall cost effectiveness. The owner may recommend or request adjustments or alterations to the proposal to make it acceptable.

Acceptance or rejection of the proposal at any time during the initial review process will not be considered a basis for claim or relieve the Contractor of any obligations of the Contract.

Once both parties have agreed to the terms and conditions of the proposal, the Contract will be modified through a supplementary agreement (Contract Change) to incorporate the changes agreed upon; all other Contract conditions will remain in effect.

6.2.2 Payment

Project Net Cost Savings (PNCS) shall be taken as the cost difference between the Owner's Tender design and the Contractor's proposed design, net any additional costs or savings incurred by the Owner. The Contractor's Cost for Contract Changes (CCCC) shall include, but is not limited to, any required design work, the preparation of the proposal submission, the involvement of the Contractor's Engineer if necessary, and all costs associated with construction and profit. The Owner's costs and/or savings (OC) shall include those that are project related but outside the terms of the Contract, such as, but are not limited to, Engineer costs for participating in the review of the Contractor's proposal, project testing, measurement, inspection including any specialized inspection required by the Owner, and management;

- PNCS - Project Net Cost Savings
- OTDC - Owner's Tender Design Cost
- CCCC - Contractor's Cost for Contract Changes
- OC - Owner's Cost (Savings(+), Additional Costs(-))

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Payment to the Contractor to complete the work identified in the proposal will be made through progress payments, in accordance with the terms and conditions agreed to for the proposal. This payment shall not exceed the Contractor's estimate for the work as identified in the proposal.

Payment of the Contractor's sixty five percent (65%) share of the Project Net Cost Savings will be made as a lump sum payment to the Contractor once the project is ready for the Construction Completion Inspection.

6.2.3 Engineering Standards and Guidelines for Contract Design Change Tenders

6.2.3.1 General Requirements

Tenders will be evaluated for compliance with Technical Standards and Guidelines for the Work items in the proposal. If a proposed alternate does not meet or exceed the Engineering standards, guidelines, practices or specifications, it is the responsibility of the Contractor to undertake the level of engineering necessary to justify the deviation. Details of the justification, with supporting documentation, must be provided to the Owner's Engineer with the submission.

For environmental and other approval requirements, the Contractor shall note that the conditions on any existing permits and approvals are only applicable for the existing contract. When required, the Contractor must resubmit the plans and drawings for review and obtain new or revised permits and approvals.

6.2.3.2 Preliminary Technical Review – Submission Requirements for the Contract Design Change Tenders

The preliminary technical review will be conducted by the Owner's Engineer to assess the proposal for equivalencies and compliance to the relevant engineering standards, guidelines and practices. For the submission at this stage, where plans and drawings are required to illustrate the proposal, the Contractor may make use of, and modify as required, the Owner's plans. For major design changes, the Contractor shall prepare additional sketch plans, as required, that reasonably represents the design alternate or change.

To permit the Owner and the Owner's Engineer to assess the proposal, the Contractor shall provide a written submission to the Owner's Engineer which includes, when applicable, information on the following items:

- (i) Describe the difference between the existing Contract requirements and the proposal.
- (ii) Indicate the Contractor's Cost for Contract Changes (CCCC) as identified herein, with supporting calculations and cost estimates.
- (iii) Identify potential impacts of the proposal on stakeholders, including, but not limited to, landowners, municipalities, utility companies, and other government agencies, with respect to access, usage, and right-of-way agreements. The Contractor shall outline how he will resolve these issues.
- (iv) Indicate the date by which the proposal must be accepted to realize the cost savings identified, and also identify the effect, if any, the proposal has on the Contract Completion Date and, when applicable, the number of Site Occupancy days identified in the contract.
- (v) Identify the key human resources to be employed in preparing the proposal, including details of their past related project experience.

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- (vi) Where significant change to the Contract is proposed, provide evidence that the Contractor's Bonding Company is aware of, and supports, the proposal submission.

The following are typical requirements for a submission that involves major changes to the Owner's Tender design. Items from this list will apply as appropriate to minor changes and the nature of the change.

- (i) Plan View showing structure layout, geometrics and alignment, changes, and right-of-way limits.
- (ii) Elevation View showing elevations, dimensions and technical data.
- (iii) Section View showing dimensioned details.
- (iv) Description of materials to be used and finish treatment.
- (v) Geotechnical: indicate any additional testing requirements, changes in materials, slope changes or erosion control requirements.
- (vi) Surfacing Design changes: including first course gravel, base courses, asphaltic concrete pavement, and Portland cement concrete pavement. Provide details of changes to surfacing strategy, structural design, aggregate requirements, binder material, geometrics and clearances. Provide details of any effects the proposed changes would have on design life of the surfacing structure.
- (vii) Safety: show changes required to any fencing, signage, barriers, pavement markings or other features necessary to maintain project safety.

6.2.3.3 Detailed Design Review – Requirements for Contract Design Change Tenders

If the proposal is accepted, the Contractor shall complete a detailed engineering design. The design drawings shall be in similar format, and carried out to the same level of detail, as the original design.

The alternate design or change shall be designed and independently checked by Professional Engineers, registered in the Province of Alberta, and shall be complete in all respects, including all drawings and other information necessary to perform the Work. The designer shall stamp the drawings.

Upon receiving the detailed design submission, the Owner will require a total period of eight (8) working days for reviewing the design drawings and details. The Owner and its Engineer assume no responsibility for correctness or adequacy of the design as a result of this review. The Contractor's Engineer will assume professional responsibility, as Engineer of Record, for all engineering aspects associated with the proposed changes.

The detailed design shall meet appropriate technical standards and guidelines for the Work item in the proposal.

6.2.3.4 Other Requirements and Conditions for Contract Design Change Tender

During the detailed design process or construction phase, the Contractor shall be responsible for making adjustments or alterations at his own cost, for whatever cause, to the proposal to make it congruent with the specified requirements for a complete job.

No portion of construction can commence until the design or change has been accepted for that portion of the Work.

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The Owner's Engineer will be responsible for resident engineering services during construction. The Contractor shall make provision for the involvement of his Engineer as necessary. If the proposal involves inspection work which is unfamiliar or beyond the capabilities of the Owner's Engineer, and a specialist is required, all cost for additional or specialized inspection will be the responsibility of the Owner.

In the development or preparation of the proposal, the Contractor shall not employ the Owner's Engineer who is providing engineering services on this contract.

6.3 DISPUTE RESOLUTION

The parties will make reasonable efforts to resolve disputes arising under this agreement by amicable negotiations. They agree to provide frank, candid and timely disclosure of relevant facts, information and documents to facilitate these negotiations, without prejudice to their rights and recourses.

If a dispute has not been resolved by negotiations, either party may notify the other party that it wishes the dispute to be resolved by mediation. If the parties are unable to agree upon the choice of a mediator, either party may apply to a superior court in the jurisdiction where the project is located to appoint a mediator.

Should mediation not resolve the dispute, a party may refer the unresolved dispute to the courts or, upon mutual agreement, to any other form of dispute resolution, including binding arbitration.

Unless the parties otherwise agree, any mediation or arbitration under this Agreement will be conducted in accordance with Alberta Rules of Court (the New Rules) - Alternative Dispute Resolution, as applied to and compatible with this Agreement, save that arbitration will be limited to a single arbitrator.

Any endeavor to resolve disputes arising out of this agreement by negotiation, mediation or other means of dispute resolution, including arbitration, will be conducted on a confidential basis.

The parties agree to submit to the exclusive jurisdiction of the courts in the place of the work if a dispute is to be resolved by the courts, or to mediation or arbitration at the place of the work if a dispute is to be resolved by mediation or arbitration.

END OF SECTION

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GENERAL REQUIREMENTS

7. GENERAL REQUIREMENTS (01010)

7.1 GENERAL

The Contractor acknowledges that he has examined the site under this Contract and is completely familiar with every detail of the scope and intent of the Work required. The Contractor further acknowledges that he has examined the site and the surrounding areas and is familiar with all conditions and/or restrictions that could affect or limit his operation due to such things as environmental constraints, public traffic, existing utilities, and property of others. The Contractor shall supply all materials required for this Contract.

7.2 SAFETY PREQUALIFICATION

The Contractor must possess a valid Certificate of Recognition (COR) that is relevant to their industry and that is recognized by Alberta Human Resources and Employment, Workplace Health and Safety. A small employer's Certificate of Recognition (for employers with less than ten (10) employees) is not considered acceptable. If the Contractor has applied for and is waiting for a COR, a valid Temporary Letter of Certification (TLC), issued by the Alberta Construction Safety Association (ACSA), will be considered acceptable.

The Contractor shall be the Prime Contractor for the Project, pursuant to all Laws and the OH&S Act and shall have primary responsibility for the safety of all workers and equipment on the Project in accordance with such Laws.

During the progress of the Work, the Contractor shall complete Monthly Health and Safety Summary Reports and submit these reports to the Owner's Representative's Representative at the end of each month.

7.3 MUNICIPAL WATER SYSTEM

The Contractor may be required to tie into a municipal water system or to shut off system valves to undertake the proposed Work. When this is required, the Contractor shall:

- 1) Notify the Municipality of the proposed Work and schedule.
- 2) Supply all water necessary for the Work and obtain written permission from the Municipality prior to using any hydrants.
- 3) Obtain written permission prior to operating any of the Municipality's valves and/or hydrants. The Contractor shall be held responsible for any damage done to the hydrants, valves or surrounding area. The Municipality may require their own personnel to operate their valves and/or hydrants.
- 4) Make an agreement with the Municipality for payment of water used.
- 5) Be responsible for the supply of all water necessary for the Work.
- 6) Supply twenty-four (24) written hours notice to any property owner affected by water service disruption.
- 7) Provide alternative water service if the water disruption is longer than four (4) hours.
- 8) The above noted requirements shall be done at the Contractor's cost.

7.4 NOTIFICATION OF DISRUPTION OF WATER SERVICES

If water service interruption is necessary to carry out the work, provide written notice to residents or occupants of the building 24 hours in advance. Identify the duration of the water interruption.

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Provide temporary water supply to buildings if existing water service connections are shut down. The cost shall be included in the overall tender price. No extra payment will be allowed.

Notify the Owner 48 hours in advance for shutting down of water supply to buildings and/or operating (opening/closing) of water valves.

7.5 SALVAGE AND DISPOSAL OF MATERIALS

Materials taken off site for salvage or disposal at a site of the Contractor's choice, or at a designated municipal site or other site as directed by the Engineer, shall be disposed of in a manner suitable to the Engineer.

Material designated for salvage shall be carefully handled and not damaged, and neatly stockpiled. Written approval is required from the owners of the disposal sites that they are satisfied with the disposal and the clean up of their property and shall be submitted as evidence of their acceptance before final payment is made.

7.6 COORDINATION

7.6.1 Cooperation

The Contractor shall cooperate with other Contractors and ensure that all Subcontractors cooperate with each other, and with other Contractors, to ensure that work will be carried out expeditiously.

The Contractor shall ensure that all Subcontractors examine the drawings and specifications covering the work of others that may affect the performance of their work. Examine the work of others and report to the Engineer, in writing, of any defects or deficiencies that may affect the work. In the absence of any such report, the Contractor shall be held to have waived all claims due to defects in such work.

7.6.2 Use of Premises

Because of other work within, and adjacent to, the limits of this Contract, the Contractor shall not have the exclusive occupancy of the area within, or adjacent to, the limits of the Contract. The Contractor shall cooperate with companies, the owners of various utilities and other Contractors, and shall coordinate and arrange the sequence of his work in order to expedite the completion of the project.

The Contractor shall confine apparatus, the storage of products and the operations of workers to limits indicated by laws, ordinances, permits and by directions of the Engineer. Do not unreasonably encumber the premises with products.

7.6.3 Responsibility for Existing Features

All of the existing facilities, whether or not shown on the drawings, must remain in service in their present locations or as described, and shall be protected by the Contractor against damage by construction equipment and operations until the temporary or permanent replacement facilities are in place and in service. The Engineer has shown the existing facilities on the contract drawings from information made available from the Owners of each facility. The Engineer assumes no responsibility for the accuracy or completeness of the information shown.

Location of existing facilities shall be investigated and verified in the field by the Contractor. Excavation in the vicinity of existing structures and utilities shall be carefully performed. The Contractor will be held responsible for any damage to, and for maintenance and protection of, existing structures and utilities.

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The locating of any utilities is the responsibility of the Contractor, who shall pay for any service supplied for that purpose.

Fences, or other existing features at locations that interfere with construction operations, shall be safely removed by the Contractor and re-erected on completion of the works as required by the Engineer.

The Contractor shall notify the appropriate representatives of utility companies or departments of his intention to carry out operations in the vicinity of any utility structure, at least one (1) week in advance of commencement of such operations.

The Contractor shall make suitable arrangement with the utility company or municipal department for the protection of pipelines, conduits, drains, lines, wiring or other structures, whether underground, on the surface or overhead, and satisfy the company or department that the methods or operations are effective.

7.6.4 Conflict with Existing Services

Where it becomes necessary to relocate existing mains or house connections due to conflict with new installations, extra compensation will be allowed for such work. Prospect ahead of excavation for pipe likely to cross trench and take care to avoid damage to such pipelines. If damage occurs, replace damaged pipe lines at Contractor's expense and no additional cost to Owner. In each case, prior to commencing work, obtain Engineer's approval for method of relocation.

Payment for the work of relocation, including extra materials, will be made as "Changes in the Work". Maintain on hand a supply of such pipe and fittings so that work is not unduly delayed. Payment will be made only for labour, equipment and materials directly engaged in work of relocation. No payment will be made for exploratory excavations, any delay caused in progress of work or for standing time of equipment or personnel idle during work of the relocation.

7.6.5 Construction Constraints

The Contractor's work schedule shall recognize the constraints placed on his work program by the existing and proposed facilities, whether or not described herein or on the drawings, and whether or not the relocated facilities are wholly or partially constructed under this contract or by others.

7.7 CONTRACTUAL AGREEMENT

Work under this contract shall be performed under a single Unit Price Contract.

For convenience of reference only, the specifications are separated into titled sections (see Table of Contents). Sections are identified by title and a five (5) digit numbering system.

In the case of a dispute, the General Contractor shall decide which Subcontractor supplies and installs required materials or equipment. Extras will not be considered on the grounds of differences in interpretation of the specifications as to which Subcontractor does what work.

7.8 HAUL ROUTES

All hauling on local roads or municipal streets is to be on designated truck routes only, unless special permission is received from the local municipality or road authority.

Obtain approval from the Municipality, Owner, and Engineer prior to using any road as a haul road.

The Contractor shall be responsible for damage and/or spillage on all roads used for hauling materials and equipment to and from the site, subject to the Engineer being satisfied such damage or spillage was a direct

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result of the actions of the Contractor or one of the Contractor's agents in the performance of the Work required under this Contract.

The Contractor shall be responsible for regular maintenance of haul roads including dust control.

Upon notification by the Engineer that remedial work is necessary, immediately clean and/or restore the affected areas designated by the Engineer.

This Work shall be performed at no extra cost to the Owner or Municipality.

7.9 HAUL ROAD MAINTENANCE

The Contractor shall be responsible for the maintenance and restoration of all haul roads. No payment will be made by the Owner for the restoration of the Haul Roads damaged by the Contractor's Operations. **This will include but will NOT be limited to any gravel surfacing, dust abatement, asphalt stabilized base course or asphalt concrete pavement materials.**

7.10 MOBILIZATION AND DEMOBILIZATION

Where mobilization is included as a bid item, it shall consist of the necessary work and operation including, but not limited to, the movement of personnel, equipment, supplies and incidentals to the Work, the establishment of offices, camps and other facilities necessary to undertake the Work and for expenses incurred for other work and operations that must be performed prior to the commencement of the Work.

The Owner will pay for mobilization at the lump sum price bid for "Mobilization", which payment shall be compensation in full for all costs associated with mobilization and demobilization. No payment for mobilization will be made until the value of the work completed on bid items other than the mobilization exceeds ten percent (10%) of the total bid price. When the amount bid for Mobilization exceeds ten percent (10%) of the total original contract Tender amount, the Owner will withhold the portion in excess of ten percent (10%) until the date of Construction Completion. The Contractor will receive sixty percent (60%) of the lump sum price bid for Mobilization and the remaining forty percent (40%) of the lump sum price bid upon cleaning up of the site and demobilization to the satisfaction of the Engineer.

The amount bid for Mobilization will be paid only once, regardless of the number of times the Contractor mobilizes. If the Contract does not contain a bid item for "Mobilization", no direct payment will be made for costs associated with mobilization.

Where there is no bid item for Mobilization or Demobilization, such work shall be considered incidental to other work or payment items of the contract.

7.11 EXAMINATION

Examine drawings and soils reports and visit the site to determine existing conditions. No additional compensation will be given for extra work due to existing conditions that such examination should have disclosed.

Examine previously constructed work. Notify the Engineer in writing of any conditions which may prejudice proper completion of the work. Commencement of work implies acceptance of existing conditions.

It shall be the Contractor's responsibility to examine all other drawings and specifications that may have an effect on any portion of the Work to be undertaken, and verify in the field all connections to, and locations of, all existing structures and equipment.

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7.12 PROTECTION

Protect all monuments, bench marks, stakes and lines located on site. Protect existing structures, services, appurtenances, trees and shrubs.

Repair or replace items damaged by this work to Engineer's approval at Contractor's expense, and at no cost to Owner.

Notify the Engineer forty-eight (48) hours in advance of the required removal of any survey points.

When compacting around concrete structures, use portable vibrators.

7.13 DE-WATERING

Keep excavations free of water at all times by trenching, well points, ditches, sumps and pumps of sufficient capacity.

Method and location of piping for water disposal shall be to governing authorities' approval.

Water flow through fresh concrete is not permitted. Do not pump during placing of concrete, and for at least twenty-four (24) hours after, unless from sumps separated from concrete with watertight walls or other methods approved by Engineer.

Water flow over inverts, foundations, and pipe joints, or through utilities piping, is not permitted unless approved by the Engineer in writing.

Use all means necessary to control dust on and near the site. Moisten surfaces as required to prevent dust nuisances to the public, surrounding properties and others on site.

END OF SECTION

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TRAFFIC ACCOMMODATION

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8. TRAFFIC ACCOMMODATION (01015)

8.1 GENERAL

This specification details the requirements for traffic accommodation including the preparation of the Traffic Accommodation Strategy and the supply, installation, maintenance and removal of temporary construction signing and traffic control devices which are specifically related to construction, and which are generally removed when the Work is completed, or the situation returns to normal.

8.2 TRAFFIC ACCOMMODATION STRATEGY

The Contractor shall prepare a Traffic Accommodation Strategy detailing his proposed methods for accommodating traffic throughout the Work Zone.

The Traffic Accommodation Strategy shall consist of drawings detailing the configuration of temporary construction signs and other traffic control devices in the work area(s) and, written confirmation of the methods or procedures being used by the Contractor to address specific traffic safety related issues or situations at the work zone. When localized detours are required, the Contractor's Traffic Accommodation Strategy shall include detailed drawings of proposed traffic accommodation measures. The detour plans shall be drawn to scale and shall include the proposed vertical and horizontal alignments.

Unless otherwise specified, the Contractor shall submit the Traffic Accommodation Strategy to the Engineer a minimum of 14 days prior to the pre-construction meeting for the project. The Engineer will review the Traffic Accommodation Strategy and communicate any concerns to the Contractor within 7 days of the pre-construction meeting. Any issues or concerns regarding the Contractor's proposed Traffic Accommodation Strategy shall be addressed to the mutual satisfaction of the Contractor and the Engineer prior to the commencement of the Work. The Contractor shall have no claim against the Owner resulting from the Engineer's failure to accept the Contractor's Traffic Accommodation Strategy submission, nor any costs incurred by the Contractor to address concerns raised by either the Engineer or the Owner during the review of the Contractor's Traffic Accommodation Strategy submission.

8.2.1 Requirements for Traffic Accommodation and Temporary Signing

Unless otherwise specified, the Contractor shall accommodate Public traffic through the Work Zone on a 24-hour per day basis using any means at the Contractor's discretion, subject to the minimum requirements of the following:

The Contractor shall:

- Make suitable provisions, including the use of detours, to accommodate all vehicular and pedestrian traffic safely and with a minimum of inconvenience through or around the Work.
- Provide, install, maintain and protect traffic control devices such as signs, barriers, fences and lights at his own expense.
- Install, maintain and protect at his expense, any additional traffic control devices that the Owner chooses to provide.

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- Provide the required number of flag persons, during all periods of active equipment operations which may affect normal traffic operations.
- Control his operations to ensure normal school bus operations are not interfered with.
- Ensure uninterrupted access to developments along the project.
- Obtain approval from the Engineer prior to changing or disrupting existing accesses and road crossings.
- Carry out construction operations in one continuous operation at road crossings, intersections and entrances for each phase of the Work.
- Provide a designated contact person not associated with the construction operations to ensure all traffic accommodation signage is in compliance with the “Traffic Accommodation Strategy”.
- Supply and place a minimum of two (2) portable free standing signs one point two (1.2) meters by two point five (2.5) meters in dimensions, which includes the Contractors name, contact telephone number and phrase “Working to Improve Your Community”.

The Contractor shall promptly make any modifications to the traffic accommodation operations deemed necessary by the Engineer. Where, in the opinion of Engineer, the Contractor fails to adequately provide for the safety of the public, for recurring safety issues and/ or when the Contractor fails to comply with orders issued by the Engineer regarding traffic accommodation operations, the Engineer may suspend Work.

The Contractor shall remove or cover all traffic control devices when not essential for the safe accommodation of traffic, in order to eliminate unnecessary inconvenience to the traffic.

The Contractor shall coordinate his traffic accommodation measures with those of other forces that may be working at or adjacent to the Work, as required, to accommodate traffic safely and conveniently. This shall not relieve the Contractor of his responsibility for the safe accommodation of traffic over the whole of the Work.

8.3 TEMPORARY CONSTRUCTION SIGNING

8.3.1 Materials

The Contractor shall supply all signing materials including sign posts, weighted stands, brackets and any required mounting hardware and miscellaneous materials required for the erection of temporary construction signs.

All signs, barricades and other traffic control devices shall conform to the requirements for shape, colour and size specified in accordance with Alberta Transportation Section V of the Traffic Accommodation in Work Zones manual. The orange portion of all signs, barricades and other traffic control devices shall be fully reflectorized using high brightness, retro-reflective, non-metalized, prismatic sheeting material which incorporates durable, transparent, fluorescent pigment and meets the brightness requirements as specified in ASTM D4956 for Type VIII sheeting.

All other colors of sheeting material shall be Type III or Type IV high intensity retro-reflective sheeting meeting or exceeding the minimum requirements as specified in ASTM-D4956.

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Larger construction signs or oversized signs may be used where conditions require greater visibility in order to be effective. They shall be used in special circumstances where more than average attention value is required from the sign.

8.3.1.1 Erection of Signs

Work on the project shall not commence until all necessary temporary construction signs and all other traffic control devices as proposed in the traffic accommodation strategy are in place. When signs require frequent moves, portable type signs, mounted on weighted stands, may be used. Portable signs shall be placed on the shoulder of the road such that the face of the sign is fully visible to oncoming traffic and the bottom of the sign is not less than 0.3 m above the road surface. The stands shall be securely weighted and erected to ensure against being blown over by prevailing winds or gusts from passing vehicles.

Non-portable signs shall be conspicuously posted, and erected at right angles to the roadway, with the bottom of the sign at a height of 1.5 m above the roadway surface, and not less than 2.0 m nor more than 6.0 m from the nearest traffic lane. Traffic signs and devices shall be moved and kept as close to the Work Area as practical as construction progresses.

Objects within or immediately adjacent to the roadway which constitute a hazard to traffic shall be marked with alternating black and orange stripes attached directly to the object or erected immediately in front of it.

The use of signs shall be held to a minimum to prevent confusion.

"STOP" signs shall be installed on all subsidiary roads (local, district, municipal, service or approach) intersecting a primary highway detour route.

Speed zones, where required, shall be posted as indicated on the applicable drawing contained in the Alberta Transportation "Traffic Accommodation in Work Zones" manual or as shown in the Special Provisions.

8.3.1.2 Maintenance and Removal of Signs

Poorly maintained, defaced, damaged and/or dirty construction signs shall be replaced, repaired or cleaned without delay. Special care shall be taken to ensure that construction materials and dust are not allowed to obscure the face of a sign. Signs not in effect shall be covered or removed; and all construction signs shall be removed after the project has been completed.

8.3.1.3 Modifications to Temporary Construction Signing

The Contractor shall be responsible for the supply and proper placement of temporary construction signs. However, in the case of potential danger to the travelling public or other circumstances where the Engineer determines that signing is inadequate, the Engineer may direct that changes to the Contractor's operations be implemented to remedy the situation. These changes may involve the use of different types and/or sizes of signs, modifying the number or locations of signs, and/or any other modifications or additions required to protect the safety of the travelling public.

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TRAFFIC ACCOMMODATION

8.3.1.4 Daily Recording of Temporary Construction Signing

Each day and as the work area changes, the Contractor shall record the location of all temporary construction signs and any other traffic control devices used at the work areas. The Contractor shall record this information on a form suitable to the Engineer and shall submit it to the Engineer on a weekly basis or when requested.

8.3.2 REMOVAL OF EXISTING SIGNS AND GUIDEPOSTS

Unless otherwise specified, all existing signs which must be removed in the prosecution of the Work shall be carefully salvaged by the Contractor. Guideposts which must be removed shall be disposed of. Critical signs necessary for the protection of traffic such as railroad crossing signs or stop signs shall be maintained.

Payment for the removal and salvage of existing signs will be made at the applicable unit prices bid in accordance "Regulatory Roadway Signing (02891)". All costs associated with the maintenance of existing signs and the removal and disposal of guideposts will be considered incidental to the Work, and no separate or additional payment will be made.

8.4 SEQUENTIAL ARROWBOARDS AND VARIABLE MESSAGE BOARDS

8.4.1 General

When specified in the Special Provisions, the Specifications, or as directed by the Engineer, the Contractor shall use sequential arrowboards for the accommodation of traffic. The Contractor shall have the option of supplying either stationary arrowboards or truck-mounted mobile arrowboards.

When specified in the Special Provisions, the Specifications, or as directed by the Engineer, the Contractor shall supply and operate an electronic variable message board in advance of the sequential arrowboard.

8.4.2 Stationary Arrowboards

Stationary arrowboards shall meet the following requirements:

- (i) Minimum size of 1.22 m x 2.44 m (4 ft x 8 ft),
- (ii) Minimum of 25 lamps that are legible at a minimum distance of 1 200 m,
- (iii) Fully adjustable light intensity on all arrowboard lights,
- (iv) Operating modes which include:
 - (a) sequential left arrow or chevron
 - (b) sequential right arrow or chevron
 - (c) sequential double arrow or chevron
 - (d) horizontal bar
 - (e) all four lamps in the extreme corners of the panel shall be flashing.

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8.4.3 Truck-Mounted Mobile Arrowboards

Truck-mounted mobile arrowboards shall meet the following requirements:

- (i) Minimum size of 0.75 m x 1.52 m (2.5 ft x 5 ft),
- (ii) Minimum of 25 lamps are legible at a minimum distance of 500 m,
- (iii) Fully adjustable light intensity on all arrowboard lights,
- (iv) Operating modes which include:
 - (a) sequential left arrow or chevron
 - (b) sequential right arrow or chevron
 - (c) sequential double arrow or chevron
 - (d) horizontal bar
 - (e) all four lamps in the extreme corners of the panel shall be flashing

8.5 FLAGPERSONS

8.5.1 General

When construction operations or Work Zone conditions cause interruption, delay or hazard to the traveling public or anyone on the worksite and necessitates the use of flag persons, the Contractor shall provide and equip responsible flag persons for the direction and control of traffic. The Contractor shall ensure that flag persons are instructed and use proper traffic control procedures appropriate for the prevailing conditions.

Flag persons shall have proof of certification from a recognized training program on traffic control procedures through construction zones. The Owner will recognize traffic control programs administered by the Alberta Construction Safety Association; however, the Owner reserves the right to accept or reject certification from any other institute.

8.5.2 Night Time Operations

During hours of darkness, flag persons shall be equipped with handheld red traffic signal wands of sufficient brightness to be clearly visible to approaching traffic. In addition, flagging stations shall be illuminated by overhead lighting; and signs indicating hazardous conditions and/or signs requiring increased attention shall be marked with flashers.

8.6 DETOURS

Unless otherwise indicated in the Special Provisions or shown on the Drawings, the Contractor shall have the option of constructing temporary localized detours or utilizing local roads for the accommodation of public traffic around major phases of the Work.

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8.6.1 Localized Detour Within or Adjacent to the Right-of-Way

Subject to review by the Engineer, localized detours within or adjacent to the right-of-way may be utilized by the Contractor to carry traffic around the Work.

If the Engineer directs the construction of a localized detour; the Engineer will obtain any required Environmental Authorizations and/or right-of-way easements; and will arrange for the temporary relocation of utilities.

When the Engineer directs that a localized detour be constructed, payment for the construction and removal of the detour, including gravel surfacing, will be made at the applicable unit prices bid for the types of work incorporated.

If the Contractor elects to accommodate traffic using localized detours, the Contractor shall be responsible for the design, construction and removal of the localized detour. In addition, the Contractor shall be responsible for obtaining any required Environmental Authorizations and/or right-of-way easements, the temporary relocation of any utilities, and the reclamation of disturbed areas to a condition similar to that which existed prior to the disturbance. Prior to the commencement of any construction, the Contractor shall provide a copy of the Authorizations and easement agreements to the Engineer for review.

When the Contractor elects to construct a localized detour, all associated costs including, but not limited to, design, construction, maintenance, and removal of the detour will be considered incidental to the Work, and no separate or additional payment will be made.

8.6.2 Local Road Detour

When traffic is diverted entirely off the right-of-way via local roads, the Contractor shall establish and maintain local road detour signing, complete with signs at every intersection, in accordance with the Plans and Specifications.

The Contractor shall initially condition, maintain and restore roads used as local road detours to the satisfaction of the agency having jurisdiction and to the satisfaction of the Engineer.

The Contractor shall maintain the local roads, including dust abatement as required, and, following completion of construction operations, restore the roads to a condition comparable to that which existed prior to the commencement of the Work.

If the Contractor elects to use local roads to accommodate Public traffic, the Contractor shall be solely responsible for obtaining authority to utilize the local road detour from the Agency having jurisdiction. In situations where the Engineer directs the use of a local road detour, the Engineer will obtain the necessary approvals from the local road authority.

Unless otherwise stated in the Special Provisions, all costs associated with local road detours including, but not limited to, local road signing, initial road conditioning, maintenance, dust abatement, gravel surfacing, and local road restoration, will be considered the incidental to the Work, and no separate or additional payment will be made.

8.7 PARKING

Unless otherwise specified, the Contractor shall accommodate parking on a 24-hour per day basis using any means at the Contractor's discretion, subject to the minimum requirements of the following:

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The Contractor shall:

- Notify each affected owner where parking and access will be affected during the construction operations and provide an acceptable alternative to each owner.
- Provide temporary parking spaces for property owners whose access to their normal parking spaces, e.g. garages, driveway, are affected by construction operations. The cost to provide temporary parking spaces and other related costs shall be borne by the Contractor.
- Upon approval of the Engineer, provide temporary "No Parking Signs" for alternate parking location on nearby adjacent streets.
- Provide back lane access to each affected owner.
- Provide parking of Contractor vehicles and/or Contractor employee vehicles at the Contractor's designated storage area. No vehicle shall be permitted to park on any residential street, which will limit or provide shortage of parking spaces for residents.

During the construction period, the Contractor shall respond to a property owner's request to provide temporary access to his or her property within two (2) hours of being notified. If the Contractor fails to provide adequate access to the property owner after a two (2) hour time period, the Engineer and/or owner shall have the right to provide temporary access using the Owner's own forces or hiring another Contractor and shall charge the Contractor the costs of the work and deduct from the contract value or any money due to the Contractor.

8.8 PEDESTRIAN TRAFFIC AND SAFETY

The safety of pedestrians and cyclists must be considered in the design, set up and operation of temporary traffic control. Accommodation must be made to provide safe passage one point two (1.2) meter in width through or around the work area at all times. In order to ensure these measures are addressed, the Contractor shall:

- Provide each affected owner safe access to each property.
- Provide pedestrians with a physical means of separation from workers and equipment in the work area. This may include, but is not limited to, barricades, fence, barriers, bridges (complete with handrails) or other means deemed necessary.
- Provide wheelchair accessible access to residents where required. This shall include a continuous hard smooth surface a minimum one point five (1.5) meter in width and consist of but not limited to ramps, warning signs, lighting or other means deemed necessary.

8.9 ROADWAY MAINTENANCE AND GRAVEL SURFACING

When the Work requires disturbance of the surface of an existing roadway that is carrying public traffic, the Contractor shall, at his own expense keep the disturbed areas of the travelled lanes well graded, free of potholes and of sufficient width for the required number of travel lanes. When, in the opinion of the Engineer, surfacing gravel is required for traffic accommodation on areas disturbed by the Contractor prior to the completion of the Work on these areas, the Contractor shall supply and place surfacing gravel to the satisfaction of the Engineer. Any surface gravel used to accommodate traffic is incidental to the unit price bid item for Traffic Accommodation.

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If the Contractor fails to promptly carry out maintenance and/or the application of surfacing gravel when directed by the Engineer, the Owner may make other arrangements to have the Work done and deduct the cost thereof from any money owing to the Contractor.

The Contractor will not be responsible for maintenance of those areas of an existing roadway which are to be constructed or reconstructed, but which have not yet been disturbed by the Contractor's construction or hauling activities.

8.10 WORK AREA RESTRICTIONS

The Contractor shall confine their construction activity to the amount of roadway permitted by the Engineer and by the Owner. Roadways adjacent to the construction area will not be permitted for the storage of equipment, material, with piles of material or any other construction related items. These items however will be permitted to be stored within the construction area of the adjacent corresponding street.

8.11 PROLONGED SHUT-DOWN

Prior to any prolonged shut-down of construction, the Contractor shall ensure that any disturbed roadway surface is restored to a condition suitable for traffic operations and acceptable to the Engineer. The Contractor will not be responsible for normal winter snow and ice control for traffic accommodation during the prolonged shut-down.

Prior to commencing any prolonged shut-down of the Work, the Contractor shall host a meeting between the Contractor, the Engineer, and Owner. The purpose of the meeting shall be to develop a "Shutdown Plan" based on the specific needs and requirements of the project. The "Shutdown Plan" shall outline the Contractor's methods and procedures for monitoring and maintaining the project during the winter shutdown period, and will outline any responsibilities of the other parties.

Notwithstanding the above, no component of the shut-down plan will negate the Contractor's responsibilities for the project, except for snow and ice control.

8.12 DUST ABATEMENT/STREET SWEEPING

The Contractor shall maintain detours and disturbed roadways that carry traffic within the project limits free of excessive dust. In this case, "disturbed roadways" shall mean sections of roadway under construction and/or sections of roadway being used by the Contractor for hauling of equipment or materials. The Contractor shall supply and apply all necessary equipment or materials at his expense to address.

If the Contractor fails to promptly undertake measures, the Owner may make other arrangements to have the Work done and deduct the cost thereof from any money owing to the Contractor.

8.13 MONITORING TRAFFIC ACCOMMODATION AT THE WORK ZONE

To ensure the traffic accommodation strategy is performing as intended, the Contractor shall monitor and maintain traffic accommodation at the work zone on a regular basis. The Contractor shall designate a specific individual or individuals not associated with the construction operations to perform this function to ensure any issues arising are addressed in a consistent and timely manner.

Designated personnel shall be qualified, trained and experienced in traffic control and shall be knowledgeable in the operation of the traffic control devices and other related equipment. These workers shall be provided vehicles equipped with revolving warning lights and suitable communication devices to contact others for

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assistance if and when required. The Contractor shall identify those workers who will be responsible for monitoring and maintaining the traffic control devices at the pre-construction meeting.

The Contractor shall monitor all traffic control devices, temporary signing and roadway conditions during periods of inactivity. The frequency of inspection shall be commensurate with the traffic volumes on the highway. For all localized detours on roadway and bridge projects, and for staged construction on bridge projects, under no circumstances shall consecutive inspections be more than six hours apart, unless otherwise agreed by the Engineer. All site inspections shall be documented by the Contractor and available for the Engineer's review upon request.

The Contractor's traffic accommodation measures will be monitored by the Owner and the Engineer. If, in the opinion of the Engineer, traffic is being unduly hindered, the Contractor may be required to modify his traffic accommodation measures.

8.14 COMPLIANCE

In cases where the Contractor is not in compliance with the specifications and, in the opinion of the Engineer there is imminent danger to the travelling public, the Engineer has the authority to order the immediate suspension of work. Such orders will be made in writing.

In other cases where the Contractor is not in compliance with the specifications but, in the opinion of the Engineer, the infraction is not causing imminent danger to the travelling public, the Engineer will use the following escalating process to address the situation:

- (i) Issue verbal instructions requiring the Contractor to correct the infraction.
- (ii) Issue a written warning instructing the Contractor to correct the infraction.
- (iii) Issue a written order instructing the Contractor to suspend work until the infraction is corrected to the satisfaction of the Engineer.

8.15 PAYMENT

Traffic accommodation and temporary construction signing shall be a Lump Sum unit price. Unless otherwise stated, all costs include, but are not limited to, the preparation and implementation of the Traffic Accommodation Strategy; the supply, installation, maintenance and removal of all traffic control devices and temporary construction signing; the daily recording of temporary construction signing; the provision of flag persons; gravel surfacing; detour design, construction, dust abatement, maintenance, and removal; local road detour preparation, maintenance and restoration, dust abatement, surface gravel and all labour, materials, equipment, tools, incidentals necessary to complete the Work to the satisfaction of the Engineer.

When the amount bid for Traffic Accommodation exceeds 10 percent (10%) of the total original contract Tender amount, the Contractor will receive sixty percent (60%) of the lump sum price bid for traffic accommodation and the remaining forty percent (40%) of the lump sum price bid upon the issuance the Construction Completion Certificate.



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The amount bid for Traffic Accommodation will be paid only once, regardless of the number of times the Contractor must accommodate traffic. If the Contract does not contain a bid item for "Traffic Accommodation", no direct payment will be made for costs associated with traffic accommodation.

Where there is no bid item for Traffic Accommodation, such work shall be considered incidental to other work or payment items of the contract.

END OF SECTION

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FIELD ENGINEERING

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9. FIELD ENGINEERING (01050)

9.1 REQUIREMENTS INCLUDED

The Contractor is responsible for field engineering survey services to control the installation of the Work, using the horizontal and vertical survey control reference points established or set by the Engineer or others engaged by the Owner.

The Contractor is to determine that all survey is correct prior to starting construction.

9.2 SURVEY CONTROL

The Owner will identify existing survey control points and property limits.

All setting out and surveying data for this contract is based on the North American Geodetic Datum (1983). The Contractor shall be responsible for the conformance and recording of the finished work to this data, even though it may be checked by the Engineer. The Engineer's responsibility will be limited to the data he has supplied. Critical elevations (existing elevations, etc.) are to be surveyed by the Contractor, and any discrepancies or deviations from the plans are to be reported immediately to the Engineer.

The Contractor shall notify the Engineer of his construction program to allow for survey and layout of control points. Arrange a work schedule with the Engineer to ensure that all work and checking of work is carried out in advance of the Contractor's proposed start dates in each area. The Engineer will not be responsible for any delays as a result of the Contractor's failure to arrange those work schedules. A minimum forty eight (48) hours notice will be required for survey requirements, including any survey checks.

The Contractor shall be responsible for the timely removal of all obstructions and impediments to the work of the survey crews, at no cost to the contract.

The Contractor shall provide the Engineer with one experienced and qualified rodman, per instrument, for all quantity measurements and/or layout and checking of the work, at no cost to the contract.

The Contractor shall employ on this Contract sufficient persons capable of controlling grades, preparing record drawings, etc. from the survey data provided by the Engineer.

When rechecking of the work is required because of previous deficiencies, the Contractor shall reimburse the Owner for all costs incurred.

9.3 CONSTRUCTION SURVEY LAYOUT

The Engineer will set a reference point hub line, for elevations and lines, with hubs at intervals which the Engineer deems suitable for the performance of the work. Grade sheets will be supplied for underground utilities and road construction.

One (1) set only of reference points will be established for any one stretch of line.

The Contractor shall give forty-eight (48) hours notice of need for reference points and ensure that line for reference points has been cleared.

In the opinion of the Engineer, the Contractor is responsible for the cost to correct any construction errors or omissions that such a review might have reasonably revealed.

The Contractor is to check all survey lay out against the project drawings to ensure there are no errors or omissions.



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The Contractor shall be satisfied as to the correct meaning of all reference points. Discontinue work and advise Engineer immediately if an error is suspected in drawings, specifications, reference points, string lines, grade sheets or any other aspect of the work. To proceed with the work where an error in survey is suspected constitutes full acceptance of responsibility for costs associated with correction of the work.

9.4 PROTECTION

The Contractor shall protect all monuments, bench marks, stakes and lines located within limits shown on the drawings. Protect existing structures, services, appurtenances, trees and shrubs. Repair or replace items damaged by this work to Engineer's approval at Contractor's expense.

END OF SECTION

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REGULATORY REQUIREMENTS

01060

10. REGULATORY REQUIREMENTS (01060)

10.1 GENERAL

10.1.1 Permits/Inspections/Fees/Certificates

The Contractor shall provide all necessary notices, and obtain and pay for all permits, licenses, certificates and governmental inspections in force at the Tender closing date and required for the performance of the Work.

All necessary certificates shall be furnished as evidence that the installations conform to the laws and regulations of all authorities having jurisdiction, before final certificates are issued.

The Contractor shall give all required notices and comply with all local, provincial, and federal laws, ordinances, rules, regulations, codes and orders relating to the Work, that are in force, or become in force, during the performance of the Work.

10.1.2 Applicable Codes/Standards

Where dates with specified standards are noted, or where specified standards are not dated, the Contractor shall conform to the latest issue of specified standards, as amended and revised to the Tender closing date.

10.1.3 Safety

The Contractor shall observe and enforce all construction safety measures required by Code, Workers' Compensation Board, Occupational Health & Safety and applicable municipal statutes and authorities. In the event of discrepancy between any provisions of such authorities, the most stringent provisions shall apply.

The Contractor shall employ a qualified specialty Engineer for the design of all false work for the temporary support of all structural elements, earth banks, roads, or other features.

The Contractor shall make available four (4) "Visitor safety helmets" for authorized visitors.

Where refuse burning is permitted by regulations and the Owner, the Contractor shall prevent staining or smoke damage to structure or materials. Replace stained or damaged work.

If "NO SMOKING" regulations are in effect in areas of the Work, the Contractor shall ensure that all workers comply with the regulations.

The Contractor shall ensure that all workers comply with the Owner's safety regulations, where such regulations are in effect.

Do not load, or permit to be loaded, any part of the Work with a weight, load or force that will exceed the design loading and endanger its safety.

10.2 ENVIRONMENTAL MANAGEMENT

The Contractor shall not dump, spill or dispose of any overburden, trees, brush, petroleum products, camp refuse or other debris into any watercourse, reservoir or other natural water basin, or into any area that may ultimately cause pollution to water drainage or storage systems. The Contractor shall clean up any deposits of waste arising from his Work that may cause subsequent pollution, and should he fail to do so, the Owner may, without

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further notice, arrange the clean up of such deposits at the expense of the Contractor. Any inert solid waste materials resulting from the production of asphalt concrete pavement, concrete or soil cement shall be stored by the Contractor in stockpiles during activities and operations on the disturbed land. The Contractor shall remove and dispose of such material in a manner acceptable to the appropriate regulatory agencies and the Engineer, on completion of the Work.

The Contractor shall conduct his operations in accordance with the current legislation concerning pollution control, including the Environmental Protection and Enhancement Act and other related legislation.

It shall be the Contractor's responsibility to familiarize himself with the applicable legislation and regulations and obtain all necessary permits and approvals for his operations.

10.2.1 Operation of Asphalt Mixing Plants

The Contractor is also advised that operation of any asphalt mixing plant is subject to the conditions and regulations of the Code of Practice for Asphalt Paving plants as issued by Alberta Environment. The following provisions of this code of practice will be monitored by the Engineer:

- i. The asphalt mixing plant must be registered with Alberta Environment, Environmental Service, Enforcement and Monitoring Division, and a copy of this registration must be kept with the plant at all times during set up and operation. This registration shall also be made available for inspection by the Engineer.
- ii. The person responsible (Contractor) shall notify the Enforcement and Monitoring Division of Alberta Environment prior to initially locating, or any relocation, of the plant.
- iii. In addition to reporting any contraventions of the code to the Enforcement and Monitoring Division (Section 10, Reporting in the Code of Practice), any such reports shall also be provided to the Engineer.

Monitoring of these provisions by the Engineer is for information purposes only, and shall not in any way be considered acceptance or approval of the Contractor's compliance with the requirements of the Code of Practice.

10.2.2 Environmental Permits, and Other Regulations

The Engineer will obtain the Environmental Permits required in respect of stream crossings, and will have planned the general project schedule in compliance with such Permit. The Contractor shall conduct his operations in all respect to comply with the conditions of the Permit as referenced in the Contract.

The natural banks of streams shall not be disturbed, except as noted on the plans or by permission of the Engineer. If a cut is permitted, the area is to be restored to its original condition to the satisfaction of the Engineer. Restoration may include re-seeding and the establishment of permanent vegetation.

The Contractor shall obtain whatever further Permits may be found necessary, and shall provide the Engineer with written confirmation of the approval, by the Permit agencies, of his full compliance before holdback will be released.

10.2.3 Responsibility and Conditions of Payment for Environmental Management

The Contractor shall comply with all conditions of all environmental approvals and permits for the project, familiarize himself with the applicable legislation and regulations concerning environmental protection, and shall conduct his activities in accordance with such legislation and regulations.

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The Contract documents may specify the use of various erosion control or environmental control devices at specific locations throughout the project. These are items that are considered necessary for erosion or environmental control for some period of time following the completion of construction. The timing of the installation or construction of these devices, and the quantities required, will be specified in the Contract or determined by the Engineer. These devices, only at the locations and quantities specified in the Contract, will be paid for at the applicable unit price bid for the specific device used.

All other environmental or erosion control devices or procedures required to ensure compliance with the applicable legislation, regulations or approvals during construction are deemed to be necessary only as “temporary environmental control measures” and shall be the direct responsibility of the Contractor. This shall include the responsibility for determining the quantities, nature and locations of such devices or procedures and the timing of each event. The Contractor shall, to the extent possible, identify these devices or procedures in his Environmental Construction Operations Plan.

If, at any time during the project, it is determined that the devices or procedures detailed in the Environmental Construction Operations Plan (any specific measures, locations or quantities proposed) are insufficient, the Contractor shall modify the Plan accordingly.

With the exception of removing and disposing of silt from silt containment ponds and sediment barriers, no separate payment will be made for any “temporary environmental control measures” undertaken by the Contractor, regardless of whether or not the temporary measure is detailed in the Contractor’s Environmental Construction Operations Plan or whether or not the Contract contains a bid item for the device(s) or procedure(s) used. Removing and disposing of material from silt containment ponds and sediment barriers will be paid for as Extra Work, in accordance with General Conditions Section 4.8.2 Valuation and Certification of Changes in the Work.

10.2.4 Environmental Construction Operations Plan

The Contractor shall prepare and implement an Environmental Construction Operations Plan for each phase of the project, in accordance with Alberta Transportation’s manual entitled “Environmental Construction Operations Plan (ECO Plan) Framework,” latest version. The Plan shall detail temporary environmental control measures that the Contractor shall undertake to comply with all applicable legislation, regulations and approvals during the course of construction and during “winter shut down”.

The Environmental Construction Operations Plan shall not cover any permanent or long term environmental or erosion control devices or work specified in the Contract.

The Contractor shall submit the Environmental Construction Operations Plan to the Engineer at least fourteen (14) calendar days prior to the pre-construction meeting. The Engineer will review the Environmental Construction Operations Plan and communicate any concerns to the Contractor at least seven (7) calendar days prior to the pre-construction meeting. The Contractor shall address any issues or concerns regarding the proposed the Environmental Construction Operations Plan to the satisfaction of the Engineer prior to the commencement of the Work.

The finalization of the Plan, to the mutual satisfaction of the Engineer and the Contractor, does not constitute an approval or assurance from the Engineer or the Owner that the temporary environmental control measures detailed in the Environmental Construction Operations Plan are sufficient to ensure compliance with all applicable legislation, regulations or conditions of approval. The Contractor is ultimately responsible to ensure all measures used on the project are sufficient to ensure compliance with all applicable authorities. This may mean increasing the number of installations, providing alternate devices or modifying procedures.

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The cost of preparing the Environmental Construction Operations Plan, and the performance of all Work necessary to ensure compliance with the applicable legislation, regulations or conditions or approval (with the exception of removing and disposing of material from silt containment ponds and sediment barriers), will be incidental to the Work and will not be paid for separately.

10.2.5 Reporting Procedures for Spills of Deleterious or Hazardous Materials

During construction, any releases of silt or other deleterious substances into a body of water or watercourse shall be immediately reported to the Engineer, Alberta Environment and the Federal Department of Fisheries and Oceans (1-800-222-6514).

In the event of the release of silt or other deleterious substance into a body of water or watercourse, the Contractor shall take all reasonable measures to contain the release and repair any damage at his expense.

Spills or releases of hazardous materials shall also be immediately reported to the Engineer and Alberta Environment and, if a body of water is involved, the Engineer and Federal Department of Fisheries and Oceans (1-800-222-6514). The Contractor shall take all reasonable measures to contain and clean up the spill, and any such work shall be performed in accordance with the applicable legislation and regulations at the Contractor's expense.

10.3 POLLUTION CONTROL

The Contractor shall conform to local ordinances and bylaws relating to littering of streets, dust and noise. The Contractor shall conduct noisy operations in such a manner as to cause the least disturbance to neighbouring residents.

The Contractor shall take precautions to prevent depositing mud or debris on public or private roadways adjacent to the work. Clean up immediately, otherwise the Engineer will direct necessary clean up, with all costs back-charged to the Contractor.

The Contractor shall use all means necessary to control dust on or near the site. Moisten surfaces as required to prevent dust nuisance to the public, surrounding properties and others on site.

10.4 WORKING LIMITS/TEMPORARY EASEMENTS

The Contractor shall confine all operations within the Owner's property limits. Where encroachment on areas beyond staked lines or property lines is necessary, the Contractor shall make arrangements separately with the property owners.

The Contractor shall obtain consent of adjoining property owners regarding need for any temporary easements or any other encroachment, well in advance of the encroachment. Upon completion of the Contract, make good any damage to adjacent property.

10.5 METRIC USAGE

10.5.1 General Policy

Contractors are required to provide metric products in the sizes called for in the Contract Documents, except where a valid claim can be made that a particular product is not available on the Canadian market.

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Claims for exemption from use of metric products shall be in writing and fully substantiated with supporting documentation prior to commencing work. Promptly submit claims to the Engineer for consideration and ruling. Non-metric products may not be used unless Contractor's claim has been approved in writing by the Engineer.

Difficulties caused by the Contractor's lack of planning and effort to obtain metric products that are available on the Canadian market will not be considered sufficient reason for claiming that they cannot be provided.

Claims for additional costs due to provision of specified metric products will not be considered.

10.5.2 General Usage

SI metric units of measurement are used exclusively on the drawings and in the specifications, with exceptions as follows:

Certain nominal values that are related to some CSA standards will remain in imperial measure pending the publication of revised standards that will specify the correct metric values and units to be used.

In case of conflict between metric and imperial terminology, metric terminology shall govern.

The metric language conforms to the CSA Canadian Metric Practice Guide (CAN3-Z234, 1-76).

Where numeric dates are used, eg. 1990-09-16; conform to four (4) digits for year, two (2) digits for month, two (2) digits for day; in descending order and separated by hyphens.

10.6 FIRE PREVENTION AND PROTECTION

The Contractor shall perform all work in a fire safe manner.

The Contractor shall comply with all applicable governmental requirements and, without limiting the generality of the foregoing, and supply and maintain at the job site adequate and proper firefighting equipment.

10.7 ACCIDENT AND ACCIDENT REPORTS

Except as otherwise agreed to in the Contract, the Contractor shall supply and maintain all articles necessary for giving first aid to any person who may be injured on the job site and establish an emergency procedure for the immediate removal of any injured person to a hospital or a doctor's care in accordance with applicable legislative and regulatory requirements.

The Contractor shall promptly report in writing to the Owner and Owner's Representative all accidents of any sort arising out of or in connection with the performance of the work whether on or adjacent to the job site, giving full details and statements of witnesses.

If death or serious injuries or damages are caused, the accident shall be promptly reported by the Contractor to the Owner and the Owner's Representative by telephone or messenger in addition to any reporting required under provincial laws and regulations.

If a claim is made by anyone against the Contractor or any subcontractor on account of any accident, the Contractor shall promptly report the facts in writing to the Owner and the Owner's Representative, giving full details of the claim.

END OF SECTION

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01070

UTILITIES

11. UTILITIES (01070)

11.1 GENERAL

"Utilities" shall mean utilities and facilities that are located on, in or near the property, continued within the proposed work and that may be affected by the construction, and shall include, but not be limited to, pipelines, drainage works, irrigation works, water works, sewage works, power facilities, telephone facilities, cable facilities and related appurtenances.

The Contractor will notify all known utility owners or operators to adjust their utility installations as necessary, within or adjacent to the Work. All such utility adjustments will be made by the Owner or operator, except as otherwise provided for in the special provisions or as specifically noted on the plans.

The Contractor shall be reasonable to ensure that all utility installations are located and clearly marked on the ground before commencing his construction operations. The Engineer may provide information respecting the existence of known utility installations, such as power, telephone, pipeline, coaxial or fibre optic cables or other utilities. However, the Contractor shall be responsible for contacting all affected utility owners or operators to determine the existence and location of all utility installations, maintaining liaison with the utility owners or operators concerning the adjustment of all utilities and coordinating his operations.

It is understood and agreed that the Contractor has considered in his Tender the present and proposed position of all permanent and temporary utilities. No additional compensation will be paid by the Owner for any delay, inconvenience or damage sustained by the Contractor that is caused by the existence of, or adjustment to, the utilities.

It is further understood and agreed that the Contractor has considered in his Tender the scheduling of those items of the Work essential to the adjustment of the utilities, and that the Work will be scheduled and performed at the time required to accommodate these adjustments and without additional compensation.

Additional specific requirements for work in the vicinity of utilities, and coordination with the owners and/or operators, may be listed under the particular utility.

The known utility companies, owners, and operators and their representatives are as follows:

Shaw	Phone 1 (866) 344-7429
Fortis Alberta	Phone (780) 310-9473
ATCO Gas	Phone (780) 542-7448
Telus	Phone (780) 310-2887
Town of Edson Public Works Darin Borysko	Phone (780) 723-6461

11.2 LIABILITY

In order for the Owner to obtain the necessary permission from the affected companies for construction in the proximity of their pipelines and other facilities, the Owner may be required to enter into agreements with the respective utility Owners and assume liability for damages that may occur as a result of the Contractor's operations in those areas. In the event the Owner becomes liable for these damages by virtue of any agreements made between themselves and the companies, the Contractor shall save harmless and indemnify the Owner in accordance with Section 5.1, Insurance, and he shall be fully responsible for his operations.

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UTILITIES

11.2.1 General

Pipelines may be located within the limits of this project. Any adjustment work will be carried out concurrently with the construction operations.

Dependent upon the magnitude and degree of complexity of the adjustments required, the work may not be completed until the latter stage of his operations. In that event, the Contractor shall be required to arrange his operations clear of those pipelines until the required adjustments are completed and permission to construct in their vicinity is received. The Contractor shall not have any claim for compensation or damages against the Owner for any stoppage, delays, inconvenience or damage sustained by him due to any interference from the pipelines, or the operation of moving them.

11.2.2 Pipeline Accidents

The Contractor is advised that in the event of a pipeline accident, all work is to cease immediately, and he is to contact the pipeline company involved as well as the Energy & Utility Board (E.U.B.) representative in the area.

11.3 PRECAUTIONARY MEASURES

Where the requirements of this section conflict with the requirements of other sections of the specifications, or with bylaw or ordinances, the more stringent requirements shall apply.

The Contractor shall take all precautionary measures as may be necessary when working over or adjacent to utility installations whether above or below ground and shall control his equipment and method of construction to prevent damage to any utility and its appurtenances.

Under no circumstances shall the Contractor carry out any construction operations over or adjacent to any utility until the required adjustments and protection as required for the proposed construction have been completed. Additionally, he shall provide at least forty-eight (48) hours notice to the utility owner or operator in advance of commencing his construction operations in that area. After completion of the utility work by the utility owner or operator, the Contractor shall continue to work in close liaison with the utility owner/operator and, if the utility owner or operator so requires, ensure that a representative of the affected utility owner or operator is present at all times during active equipment operations at that location. The Contractor shall ensure that no equipment crosses or operates over or under any utility installation at locations other than where required protection has specifically been provided, and he shall work in close cooperation with the utility owner or operator in the execution of the work. When construction is involved in the vicinity of any unprotected utility installation, the Contractor shall exercise extreme caution to ensure that the utility installation is not damaged by the construction equipment or applied loads. When haul road or equipment crossings are required at locations other than where the Department has specifically arranged for the crossing, it shall be the Contractor's responsibility to determine, provide, and install any protective works necessary and to observe any other precautions which are required.

11.4 PIPELINES

11.4.1 General

Pipelines may be located within the limits of this project. Any adjacent work will be carried out concurrently with the construction operations.

Dependent upon the magnitude and degree of complexity of the adjustment required, the work may not be completed until the latter stage of his operations. In that event, the Contractor shall be required to arrange his operations clear of those pipelines until the required adjustments are completed and permission to construct in their vicinity is received. The Contractor shall not have any claim for compensation or damages against the

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Owner for any stoppage, delays, inconvenience or damage sustained by him due to any interference from the pipelines, or the operation of moving them.

11.4.2 Precautionary Measures to be taken when working in the Vicinity of Pipelines

Prior to the commencement of construction operations, the Contractor shall review the project with representatives of each pipeline company and the Engineer to determine the location and specifics of each pipeline within the project limits. Upon completion of this step the Contractor may begin his operations, and shall carry out all work in the vicinity of pipelines in accordance with the following precautionary measures.

- i. The Contractor, being fully aware of the location of all pipelines, shall mark the location of the same so their positions are readily identifiable to all work forces.
- ii. Under no circumstances shall work be commenced within thirty meters (30m) of any pipeline until the required adjustments (if any) have been completed and a written crossing agreement has been received from the affected company.
- iii. The Contractor shall contact the company representative seventy-two (72) hours prior to commencing construction operations within thirty meters (30m) of a pipeline, so arrangements may be made to have a company representative, or his delegate, present during the period machinery is being employed within thirty meters (30m) of a pipeline. Absolutely no work shall be undertaken within these limits until a company representative is present at the site and has authorized the same.
- iv. No operations involving the use of machinery shall be commenced within five meters (5m) of a pipeline until the line has been hand exposed, its location accurately referenced, and any required protection is put in place and/or adjustment to the pipeline is complete. The exposure and backfilling of the pipelines shall be undertaken by the Contractor under the direct supervision of the Engineer and the pipeline company's representative. The exposure and backfilling of pipelines will not be paid for separately and will be considered incidental to the Work items in the Unit Price Schedule.
- v. If the Contractor proposes to move any construction equipment across the pipeline right-of-way prior to the commencement of construction operations, the Contractor shall use timbers or a pad of earth, if the pipeline company so desires or the Engineer so directs. This protection shall be constructed to specifications established by the pipeline company and the Engineer. All labor, equipment, materials and incidentals, as may be required for the protection of a pipeline and the safe execution of work, will not be paid for separately and will be considered incidental to the Work items in the Unit Price Schedule.
- vi. Clearing required within thirty meters (30m) of a pipeline shall be carried out using suitable hand operated tools and burning or burial of debris within thirty meters (30m) of a pipeline is strictly prohibited. The method of removal and disposal of the debris shall require the approval of the Engineer. Clearing will be incidental to the work and not paid for separately.
- vii. The Contractor shall not store, park or drive any equipment, materials and/or vehicles over or along any pipeline right-of-way, except as reasonably necessary in the actual construction of the roadway.
- viii. Notwithstanding the foregoing, the Contractor shall conduct his operations in the vicinity of all pipelines in accordance with the Pipeline Act of Alberta, the National Energy Board Regulations and other related legislation.

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11.4.3 Utilities and Pipelines

It is the Contractor's responsibility to locate all underground and above ground utilities and pipelines. The Contractor is responsible for the cost of repairing any gas line, or telephone cables, or any utilities and pipelines, damaged as a result of the construction.

The Contractor shall assume full responsibility for safeguarding all existing and relocated utility installations during the progress of the Work.

11.4.4 Pipeline Accidents

The Contractor is advised that in the event of a pipeline accident, all work is to cease immediately, and he is to contact the pipeline company involved, and the Energy & Utility Board (E.U.B.) representative in the area.

11.5 TELEPHONE FACILITIES

Contact **Alberta One Call at 1-800-242-2447** two working days prior to any excavation. When crossing **TELUS** Communications Inc **fibre optic or transport** cable, please call **Cable Dispatch/Repair (toll free @ 310-2887)** forty-eight (48) hours prior to construction start, in order to have a **TELUS** representative on site.

The Contractor shall have the TELUS facility locate and consent documents available on site.

At its discretion, TELUS may require that no work activity shall commence within five meters (5m) of the TELUS facilities without a representative being present. Any standby service that the Contractor requires for extended periods, due to lateness or the length of the project, is subject to rescheduling in the event of other TELUS commitments.

The Contractor shall carry out all Work in the crossing area in a proper and diligent manner, and in accordance with good engineering and construction practices.

When performing the Work, the Contractor shall comply with any additional conditions and protection requirements, as directed by the TELUS representative, for the purpose of protecting its facilities. TELUS may withhold approval to cross if, in its reasonable opinion, it determines that the excavation cannot be done safely.

The Contractor shall ensure that no damage occurs to existing facilities while the work is being performed in the work area, including damage that may result from the use of heavy work equipment outside the crossing area.

If the TELUS facility is to be exposed over night due to the Contractor's work, all protective apparatus and costs shall be borne by the Contractor.

Before proceeding to excavate within five meters (5m) of the crossing area, the Contractor shall fully expose the TELUS facility by hand digging. The Contractor shall not use, or permit the use of, an excavating machinery within one point five meters (1.5m) of either side of any existing TELUS facility, unless otherwise agreed to by the TELUS representative.

Auguring, drilling or pipe pushing by the Contractor is permitted under or over a TELUS facility only if the head end of the augur, drill or pipe is visible (that is, open parallel trench on approach side of the TELUS facility maximum three meters (3m) and a minimum of one meter (1m) from the TELUS facility).

The Contractor shall not reduce the depth of the soil covering the TELUS facility.

The Contractor shall, where applicable, install and maintain suitable markers indicating the location of a TELUS facility in the crossing area during performance of the Work.

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Where necessary, the Contractor shall support a TELUS facility as required, or as directed by TELUS, while any Work is being carried out. If the Contractor is required to build a support structure to protect a TELUS facility, the Contractor shall provide TELUS with plans for the structure that are certified by an Engineer.

In the event that a TELUS facility suffers contact damage or other damage as a result of the Contractor's Work, TELUS shall be notified, and its repair shall be carried out, as directed by TELUS, at the Contractor's cost.

The Contractor must contact TELUS prior to re-entering the crossing area to carry out repairs on, or removal of its facilities.

The Contractor must maintain a minimum distance of fifteen meters (15m) between the Contractor's geophysical operations and a TELUS fibre optic facilities and one meter (1m) distance between the Contractor's geophysical operations and a TELUS "other than fibre" facility. If such distances cannot be maintained, and TELUS is required to reinstall or relocate its facilities, the Contractor shall bear the responsible costs thereof.

11.6 POWER LINES

11.6.1 General

The power utility has power facilities that may be within the limits of this project, and alterations to their facilities may be carried out concurrently with the proposed work. Therefore, the Contractor shall maintain close liaison with the power utility and schedule his operations accordingly.

The Contractor, in undertaking any work near existing power lines shall comply with the Regulations under the Electrical Protection Act.

11.6.2 General Restrictions

General restrictions are shown on Figures 1 and 2. The Contractor is to confirm these requirements with the utility company.

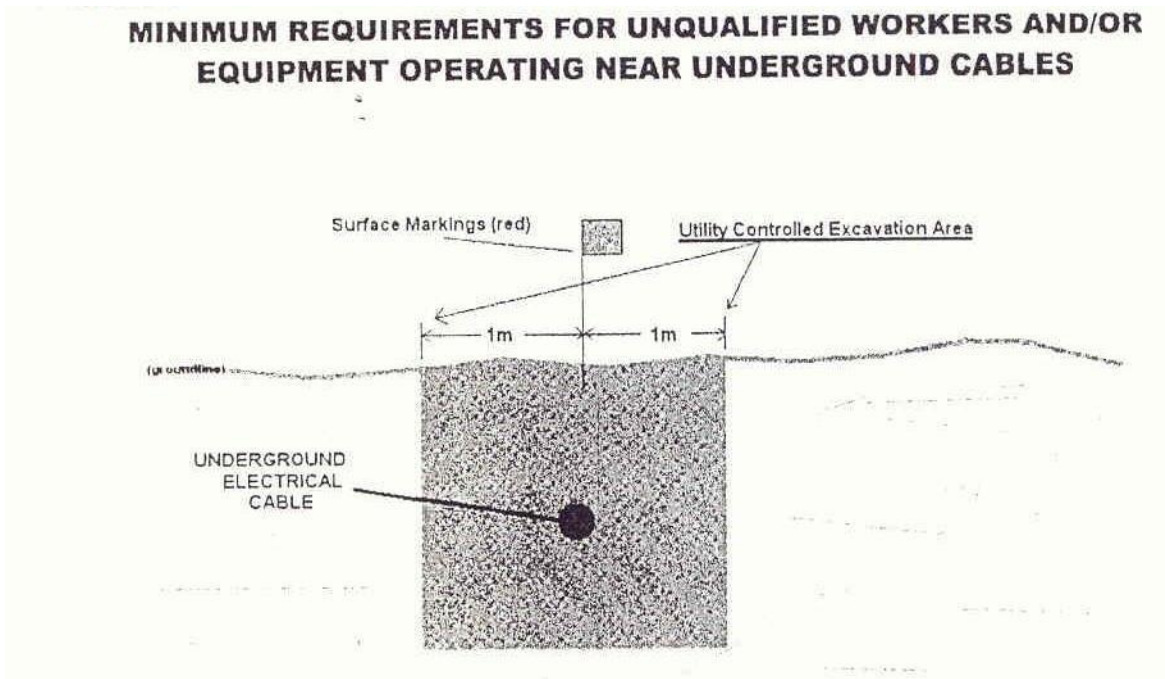
Prior to commencement of power line relocation, the Contractor shall first carry out the necessary right-of-way clearing. The clearing for power lines may also include clearing an additional strip (up to 6 meters wide) immediately adjacent to the right-of-way, payment for which will be made at the applicable unit price bid for "Clearing" or "Clearing and Timber Salvage". When the Contract does not contain bid items for clearing or clearing and timber salvage, any required clearing will be considered incidental to the work. It shall be the Contractor's responsibility to maintain liaison with the power company to ensure that the necessary land clearances have been arranged.

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Figure 1.



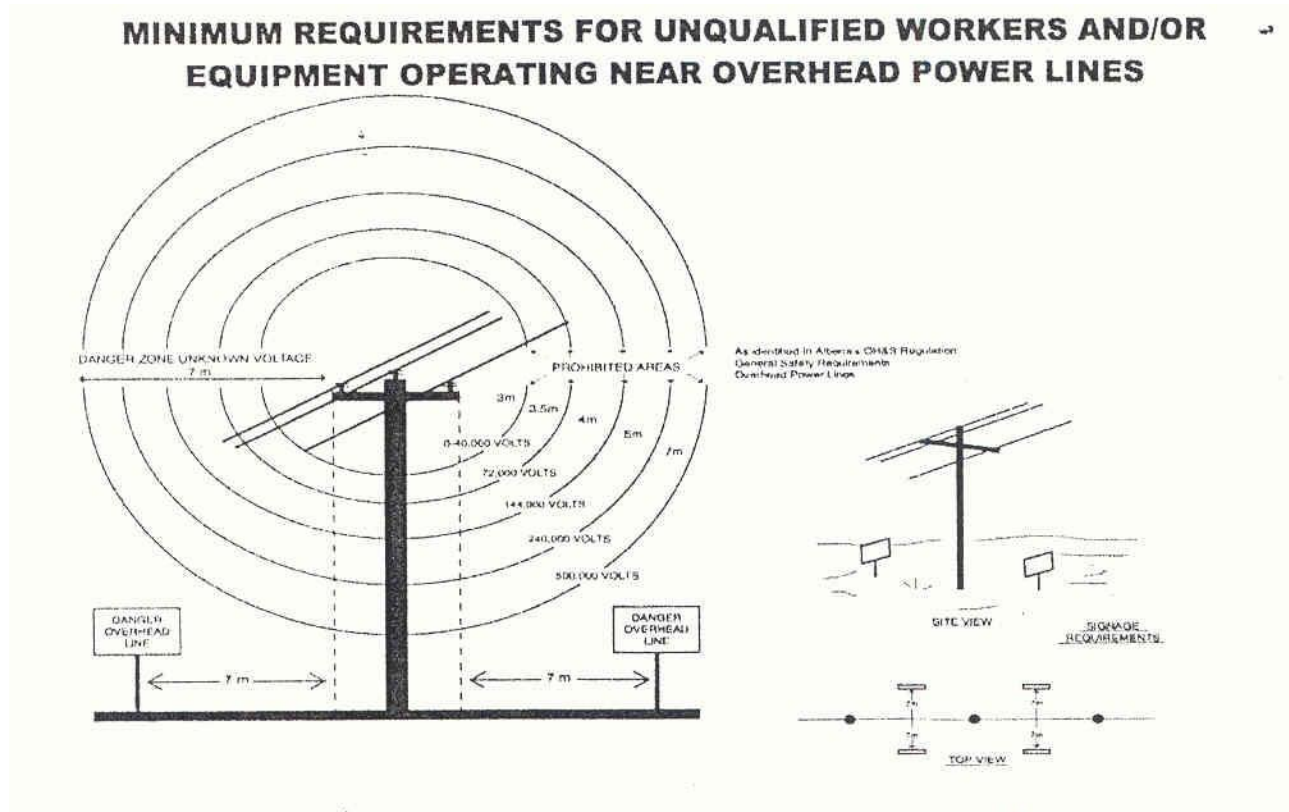
- 1) Prior to any ground disturbance, the person responsible for the excavation must contact **ALBERTA ONE CALL 1-800-242-3447** to ascertain whether underground power cables are located at or near the excavation site, and to request a locate. For other underground facilities, contact the operator of the facility.
- 2) Prior to any ground disturbance or excavation activity, the Contractor will have the utility company identify and mark any underground cables that are located near the utility controlled excavation area.
- 3) The person responsible for an excavation must make sure that no excavation work is undertaken within **one meter (1m)** of any underground power cables unless:
 - a) The excavation work is done under the control of the utility company, and
 - b) The excavation work method is approved by the utility company.

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Figure 2



- 1) Danger Zone (unknown voltage) Equipment must **NOT** be operated within seven meters (7m) of any overhead power line without notifying Fortis.
- 2) Prohibited Area (voltage confirmed by Fortis Alberta Inc.)
 - a) No unqualified worker or equipment can enter the Prohibited Area.
 - b) Fortis Alberta Inc. recommends all work within the seven meter (7m) Danger Zone, but outside the Prohibited Area requires a designated signaller who can communicate by radio or air horn with all workers and equipment.
- 3) **NEVER ALLOW WORKERS OR EQUIPMENT TO ENTER THE PROHIBITED AREA!** If work cannot be done outside the Prohibited Area contact the utility company.
- 4) Work near power lines must be done during daylight hours only.
- 5) Fortis Alberta Inc. recommends installing a minimum of two (2) fifty point eight centimeters by seventy one centimeters (50.8 cm x 71 cm) "Danger Overhead Line" signs when operating equipment near the lines. (These can be purchased through most safety supply companies.) The signs must be installed on both sides

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of the line – at a height of one point eight meters (1.8m) and a distance of seven meters (7m) from the line. (Refer to diagrams above.)

- 6) On site workers must have a copy of the crossing agreement and all on site personnel must be knowledgeable of its requirements.

Any violation could lead to sanctions under the OH&S Act and Regulation.

END OF SECTION

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12. MEASUREMENT AND PAYMENT (01120)

12.1 GENERAL

12.1.1 Contract Price

The Owner shall, subject to the terms of this Contract, pay the Contractor as full and total compensation for properly performed Work the Contract Price.

The Contract Price as delineated for various items of Work outlined in Section 3.12 – Unit Price Schedule shall include the supply of all labour, material, products, and equipment necessary to construct the Work in accordance with the Contract Documents, unless specifically noted otherwise. The Tender prices for supply and installation shall be full compensation for supplying, hauling, installing, cleaning and placing in service together with all other Work subsidiary and incidental thereto for which separate payment is not provided elsewhere.

Where the Contract Price shows separate items for supply and installation, the Tender prices for supply shall include supplying, delivering, loading, unloading and all allowances for handling, storage, breakage and waste. Payment will be made only for material actually installed in the Work.

Payment for supply-only items shall be made only for material and products brought to the Place of the Work and in the Contractor's care, and shall then become the property of the Owner.

In the event that this Contract contains an amount allocated as Contingency, no portion of the Contingency shall be allotted to the performance, the correction or the replacement of any Work which the Contractor is required to perform under the terms and conditions of the Contract Documents

12.1.2 Changes and Contingency

The Contract Price is subject to adjustment in accordance with the Change provisions described in Section 5.7 – Changes in the Work. In the event that a Change results in an increase to the Contract Price, the Contractor shall also be entitled to payment for such Change as determined in accordance with Section 5.7.2 – Valuation and Certification of Changes in the Work.

In the event that the Owner or Owner's Representative issues a Change Order that results in an increase to the Contract Price and this Contract contains Contingency, then such amount will be allocated from the Contingency (until the Contingency amount is reduced to nil) and such amount of the Contingency will become payable to the Contractor.

12.1.3 Payment

The Owner shall, within thirty (30) days of the date of the Owner's Representative's issuance of any Progress Payment Certificate, make payment to the Contractor on account. The actual payment made is subject to the Owner's rights under Law, and the provisions of this Contract, to make deductions.

If the Owner fails to make payment to the Contractor as they become due under the terms of this Contract or in any award by arbitration or court, interest at the rate of one percent (1%) per month of such unpaid amounts, including earned interest, shall also become due and payable until payment. Such interest shall be calculated and added to any unpaid amounts monthly.

12.1.4 Currency

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All amounts referred to in the context of this Contract shall be in Canadian dollars.

12.2 PAYMENT CERTIFICATES

In accordance with the provisions of this Contract, the Owner shall:

- make payments to the Contractor on account of the Contract Price. The amounts of such payments shall be based on the Progress Payment Certificates issued by the Owner's Representative.
- upon Substantial Performance of the Work, pay to the Contractor any unpaid balance of holdback monies then due; and in compliance with the *Builders' Lien Act* (Alberta)
- upon issuance of the Construction Completion Certificate, pay to the Contractor any unpaid balance of the Contract Price then due.

The Progress Payment Certificate will be prepared by the Owner's Representative on a monthly basis as the Work progresses and it shall be for the monthly period ending on the twenty-fifth day of each month.

Before the first Progress Payment Certificate, the Contractor shall submit to the Owner's Representative, a Contract Price breakdown for the Lump Sum Items of the Work, aggregating the total amount of the lump sum price(s) and divided so as to facilitate evaluation of applications for payment. Unless a specific date is provided in the Supplementary Conditions, the breakdown shall also identify the date of the month for all monthly claim periods.

The Progress Payment Certificate shall identify the items of Work, actual quantities completed on the Work, Unit Prices, Lump Sums Items, the total of money paid to date, all holdback sums and the net amount approved for payment up to the last day of the agreed monthly period. Measurement for payment shall be in accordance with the relevant provisions of the specifications. The Progress Payment Certificate shall apply only to the value of the Work performed and Products furnished to the Place of the Work.

No Progress Payment Certificate, nor any payments made thereunder shall constitute acceptance of any Work or Products not in accordance with the Contract Documents.

12.3 BID ITEMS

12.3.1 Lump Sum Bid Items

At the end of each payment period, the Owner's Representative, in cooperation with the Contractor, will estimate payment for any Lump Sum Items based on percentage complete or as detailed below. The following are typical Lump Sum Items that may appear in Section 3.12 – Unit Price Schedule:

12.3.2 Mobilization and Demobilization

Where mobilization and demobilization are included as a Lump Sum Item, it shall include the Contractor's costs of mobilization at the beginning of the Project and the cost of demobilization at the end of the Project. Mobilization shall include, but not be limited to, items such as bonding, insurance, permits, moving personnel, equipment, materials, supplies and incidentals to the Place of the Work, the establishment of offices, camps and other facilities necessary to undertake the Work and all expenses incurred for other work and operations that must be

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performed prior to the commencement of the Work. Demobilization shall include items such as submission of Operation & Maintenance Manuals & submission of Drawings of Record, removal of all personnel, materials and equipment, and cleanup of the Place of the Work. For greater certainty, the SUBMISSION OF THESE ITEMS SHALL BE PRIOR TO THE SUBMISSION OF THE LAST PROGRESS PAYMENT.

Payment for mobilization and demobilization will be made as follows, as approved by the Owner's Representative:

- Sixty percent (60%) of the lump sum bid will be included in the first Progress Payment Certificate if, and only if, the value of Work completed other than mobilization exceeds ten (10%) of the Contract Price. In the event that the amount of the first Progress Payment, other than mobilization, does not exceed ten percent (10%) of the Contract Price, it will be paid (pro rata) on subsequent Progress Payments; and
- Forty percent (40%) of the lump sum bid will be included in the final Progress Payment Certificate upon cleaning up of the Place of the Work and demobilization to the satisfaction of the Owner's Representative.

When the amount bid for Mobilization exceeds ten percent (10%) of the Contract Price, the Owner will withhold the portion in excess of ten percent (10%) of the Contract Price until the issuance of the Construction Completion Certificate. The Owner's Representative may, at his discretion, recommend partial payment if mobilization or demobilization is not complete.

The amount specified in the Contract Price for mobilization and demobilization will be paid only once, regardless of the number of times the Contractor mobilizes or demobilizes. If the Contract does not contain an amount for mobilization and demobilization, such work shall be considered incidental to the Work and no direct payment will be made for the costs associated with it.

12.4 SITE SERVICES

Where site services are included as a Lump Sum Item, it shall include the supply, installation and connection of the following site services (as stated and shown in Contract drawings, specifications, and appendices and all incidental and associated work for which separate payment is not specified elsewhere):

- Site landscaping and drainage;
- Access road;
- Sidewalk;
- Site clearing; and
- Site conditions

12.5 PROJECT CLOSURE

Where Project closure is included as a Lump Sum Item it shall include the start up, commissioning, maintenance and procedure manuals, as built drawings, training and demonstration and all incidental work for which separate payment is not specified elsewhere.

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12.6 CALCULATION OF CALENDAR DAYS

Calendar Days will be calculated as whole days. The assessment of calendar days will commence on the day of the first disturbance within the project limits. Thereafter, every day will be counted as a Calendar Day with the exception of when:

- 1) the Contractor is prohibited from working due to restrictions imposed by local bylaws after the Contract has been awarded or as a result of directives from the Owner,
- 2) the Contractor schedules employee time off subject to the conditions specified herein,
- 3) the project is delayed due to inclement weather subject to the conditions specified herein,
- 4) the project is shut down for winter, or
- 5) the Contractor pre-schedules interruptions to continuous prosecution of the Work as a result of the desire to schedule distinct phases of the Work at different times. Distinct phases are generally defined as the larger work groups such as site grading, underground installations, or surface work improvements, that require different types of equipment; however, the Engineer may approve scheduled interruptions for other components of the Work at his discretion. Any such interruptions must be identified in the Contractor's construction schedule and approved by the Owner.

12.6.1 Employee Time Off

The Contractor will be granted a maximum of eight (8) non-charged days per thirty (30) day period for the purpose of allowing employee time off, providing:

- 1) the Engineer is given at least seven (7) days notice,
- 2) there is no construction taking place that requires the presence of the Engineer, and
- 3) no more than five (5) consecutive days are taken at one time.

The thirty (30) day period will start at the commencement of work, as defined above, and any of the time off days not taken in a specified thirty (30) day period will not be permitted to be used in subsequent periods. When the estimated number of Calendar Days required to complete the project is less than thirty (30), the number of allowable days off for this purpose will be calculated on a prorate basis and rounded to the nearest whole number of days.

12.6.2 Inclement Weather

On a day that the Contractor works less than a normal working day on the job site for reasons of inclement weather, but works at least half of a normal working day, that day will be counted as a Calendar Day.

A normal working day shall comprise the average duration worked by the Contractor on the preceding five (5) uninterrupted working days.

A day on which the Contractor is unable to work on the site, or works less than half a normal working day, for reasons of inclement weather or conditions resulting from inclement weather, shall not be counted as a Calendar Day.

12.6.3 General

Assessment of Calendar Days will cease only when, in the opinion of the Engineer, the project is ready for the Construction Completion inspection. Calendar Days will not be assessed during the period from the date of

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completion of the entire Work to the actual date of the Construction Completion inspection, or during the completion of any deficiencies identified through the Construction Completion inspection.

The Engineer will, on a weekly basis, prepare a statement for the Contractor showing the number of Calendar Days worked on the Contract during that week. In the event that the Contractor disagrees with the number of Calendar Days shown on the statement, he shall, within one (1) week of the date of such statement, notify the Engineer in writing of reasons for the disagreement, otherwise the number of Calendar Days shown on the statement shall be considered final.

An increase in the number of Calendar Days to complete the Work will be considered for an increase in quantities, late delivery of owner supplied materials, design changes to the project, or any other reason that, in the opinion of the Engineer, is outside the control of the Contractor, or could not have been reasonably foreseen by the Contractor.

If the Contractor believes there is an entitlement to an extension of the number of Calendar Days required to complete the Work, he shall, prior to the completion of the Work, submit a written request to the Engineer setting out the reasons for the request, justifying the number of additional days required.

12.6.4 Payment

Payment for "Site Occupancy" will be made as follows:

- 1) If the Contractor completes the Work in more than the number of Calendar Days entered in the "Site Occupancy" bid item, an assessment equal to the unit price per day as shown multiplied by the difference between the estimated and actual number of Calendar Days will be made and charged to the Contractor. This assessment will be deducted from any monies due the Contractor.
- 2) If the Contractor completes the work in fewer Calendar Days than the number entered in the "Site Occupancy" bid item, a payment will be made equal to the unit price per day as shown multiplied by the difference between the estimated and actual number of Calendar Days.
- 3) If the Contractor completes the work in the exact number of days entered in the "Site Occupancy" bid item, no payment will be made.

12.7 INCIDENTAL WORK

The following will be considered incidental to the Work under this Contract, and separate payment will not be made:

- i. Locating and protecting existing utilities and structures;
- ii. Ground and surface water disposal;
- iii. Provision of additional backfill material and disposal of excess excavated or unsuitable materials off the site;
- iv. Restoration of any existing facilities damaged during construction;
- v. Coordination with the Client, Owner's Representative, Other Project Participants and utility authorities as required;
- vi. Dewatering of the Place of Work for construction purposes; and

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- vii. Any other work related to the performance of the Contract for which separate payment is not specified elsewhere.

12.8 ALLOWANCES

12.8.1 Cash Allowances

The Contract Price may be reduced by the cash allowances for any services, products, and/or equipment supplied to the Contractor by the Owner for the performance of the Work. A cash allowance is for materials or work that is known to definitely be required, but which cannot be specified with adequate detail to permit accurate pricing by the Contractor at the time of the Tender call. Such materials or work are describable in general terms and their cost can be estimated. This estimated cost is the specified amount of the cash allowance. When more information subsequently becomes available to permit the materials or work to be more accurately priced, the Owner approves expenditure of the cash allowance amount. A cash allowance excludes any amounts for the Contractor's overhead and profit on the cash allowance item, which the Contractor is required to carry separately in the Contract Price.

Amount of each cash allowance includes:

- Actual cost of Materials.
- Applicable taxes, except GST.
- Delivery to site.

Amount of each cash allowance does not include costs for the following items, which must be included separately in the Contract Price.

- Handling on site
- Labour and all other costs related to installation.
- Contractor's and, where applicable, Subcontractor's and Sub-subcontractor's overheads and profits related to the cash allowance.

Upon receipt of required documentation to permit pricing and a "Charge Order Request for Tender" from the Owner, identify potential suppliers and Subcontractors as applicable, and obtain at least three competitive prices for each cash allowance item. Where a cash allowance includes work that would be most efficiently performed by the Contractor's own forces, provide the Owner with a price proposal for performing own forces work.

If requested by the Owner, disclose to the Owner originals of all Tenders, quotations and other price related information received from suppliers or Subcontractors.

Where expenditure of a cash allowance has been approved by the Owner, the value of completed Work or delivered Materials included in the cash allowance may be claimed as part of the Contractor's monthly applications for payment, in accordance with the Contract payment conditions. Cash allowance expenditures claimed must not exceed the maximum expenditure amount authorized by the Owner.

When the total maximum amount expended for a cash allowance item is determined, the Contract Price will be adjusted accordingly by change order as follows:

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- Where the amount expended for a cash allowance item is less than the specified amount of the cash allowance, the Minister will be credited for the unexpended amount as a credit change order, in accordance with the General Conditions of Contract. The Minister will not be credited for the Contractor's overhead and profit on the unexpended amount.
- Where the amount to be expended for a cash allowance item exceeds the specified amount of the cash allowance, the excess amount, plus an amount for the Contractor's overhead and profit on the excess, will be processed as a change order in accordance with the General Conditions of Contract
- Multiple cash allowances will not be combined for the purpose of calculating adjustments to the Contract Price as specified above.

The Contractor is not entitled to any extra payment on account of a specified cash allowance, except as specified above, and is not entitled to any unexpended allowance amounts.

12.9 ADDITIONAL OWNER RIGHTS RELATED TO PAYMENT

12.9.1 10% Holdbacks

The Owner shall be entitled to deduct and retain all amounts as may be prescribed pursuant to the *Builders' Lien Act* (Alberta) or equivalent legislation or otherwise prescribed by Laws. All such amounts retained by the Owner shall be paid to the Contractor in accordance with the terms and conditions of such Laws.

Notwithstanding any other provisions of this Contract:

- Upon acceptance of a notice of Substantial Performance and the issuance of a Substantial Completion Certificate or a Construction Completion Certificate by the Owner's Representative on behalf of the Owner, the Owner shall pay the Contractor any holdbacks following the expiration of any holdback period prescribed by Laws and applicable to the Place of the Work, provided that no lien derived under any subcontract is outstanding, and the Contractor has submitted to the Owner a sworn statement that all accounts for labour, subcontractors, products, construction machinery and equipment, and any other indebtedness that may have been incurred by the Contractor in the performance of the Contract and for which the Owner might in any way be held responsible, have been paid in full except holdback monies properly retained.

12.9.2 Set Off

The Owner shall have the right to apply any monies due to Contractor or any affiliate of Contractor howsoever arising toward the payment of any sums which Contractor or any affiliate of Contractor may now or hereafter owe to Owner.

12.10 TAXES

12.10.1 GST

The Contract Price is exclusive of GST for which Owner is liable pursuant to the *Excise Tax Act* (Canada), as amended and the regulations thereunder ("ETA"). GST shall be added to the Contractor's invoice amount as

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required pursuant to any Laws including the ETA. Payment of GST on any holdback shall be made at the time of final holdback release.

12.10.2 **General**

Except for GST payable by Owner, Contractor is exclusively liable for, and shall pay before delinquency, all Taxes imposed or levied by any taxing authority in respect of the performance of the Work and this Contract. Contractor shall be liable for and shall indemnify and hold the Owner harmless from and against all such Taxes, expenses or costs incurred or suffered by Owner attributable to Contractor's failure to pay Taxes. Owner may deduct or withhold from any payments made under this Contract (without any gross-up for the Taxes so withheld or indemnity to Contractor) any amounts that are required to be deducted or withheld therefrom in respect of any Taxes pursuant to any Laws, shall remit such amounts to the applicable taxing authority and shall, within a reasonable time, furnish a Tax form, receipt or other evidence to Contractor showing payment of any Tax or withholding.

12.11 **LIQUIDATED DAMAGES**

If the Contractor fails to complete and deliver the Work or any of the specified portion of the Work, by the Completion Date required by the Contract Documents, it is agreed that the Contractor shall pay to the Owner, as **liquidated damages, three thousand dollars (\$3,000.00) for each day** that any portion of the Work, in the opinion of the Owner's Representative, remains incomplete after the Completion Date, and the Owner, in addition to any other rights and remedies it may have, shall be entitled to deduct from any payments due to the Contractor the additional costs to the Owner of the engineering services incurred as a result of the Contractor's failure to complete the Work on time. The liquidated damages described above are a genuine pre-estimate, to the best of the parties' abilities, of the financial, reputational, and other non-financial damages that the Owner will suffer as a result of the Contractor failing to complete the work on time and are not a penalty.

END OF SECTION

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8TH AVENUE - 2025 REHABILITATION**

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PROJECT MANAGEMENT AND COORDINATION

13. PROJECT MANAGEMENT AND COORDINATION (01130)

13.1 GENERAL

The Contractor shall be responsible for:

- a) Coordination of Work with other project participants under the administration of the Owner's Representative.
- b) Coordination with utility companies.
- c) Construction organization and start up meetings.
- d) Progress meetings.

13.2 COORDINATION

Although the specifications set forth the work of various trades under separate Divisions, it is not intended that the work of that trade is limited to or includes all work set forth in that particular division. The Contractor shall delegate the extent of the Work to be done by the various trades and shall coordinate execution of the Work by all trades.

Although the specifications are separated into titled divisions, neither the Owner's Representative nor the Owner will act as an arbitrator to establish limits of any agreements between the Contractor and his Subcontractor.

The Contractor shall coordinate with other Project Participants.

13.3 PROJECT PROGRESS MEETINGS

The Contractor shall:

- a) Schedule and administer pre-installation meetings when specified in the Contract Documents and when required to coordinate related or affected work.
- b) Prepare agenda for meetings.
- c) Distribute written notice of each meeting four (4) days in advance of meeting date to Owner's Representative.
- d) Provide physical space and make arrangements for meetings.
- e) Preside at meetings.
- f) Record minutes. Include significant proceedings and decisions. Identify action by parties.
- g) Reproduce and distribute copies of minutes within three (3) days after each meeting and transmit to meeting participants, affected parties not in attendance, Owner and Owner's Representative.

The Owner's Representative will schedule and administer project meetings throughout the progress of the Work.

The Contractor shall provide physical space, table and chairs for all participants and make arrangements for meetings.

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PROJECT MANAGEMENT AND COORDINATION

Representatives of Contractor, Subcontractor and suppliers attending meetings shall be qualified and authorized to act on behalf of the party each represents.

13.4 CONSTRUCTION ORGANIZATION AND START UP

Within five (5) days after execution of the Contract, the Owner's Representative will request a meeting of all parties in the contract to discuss and resolve administrative procedures and responsibilities.

The appropriate senior representatives of the Owner, Owner's Representative, and the Contractor are to be in attendance. The Contractor may invite senior representatives of major Subcontractors if he so desires.

After time and location of meeting is established, the Contractor shall notify all parties concerned to attend.

The Owner's Representative will chair and record discussion and decisions, and will circulate minutes to all parties present.

Construction Organization and Start up Meeting (Pre-construction meeting) will be arranged by the Owner's Representative after Award of the Contract to discuss and resolve administrative procedures and responsibilities.

The meeting will be held at the Owner's Representative's Administration Office, or at an alternate location at or near the Place of the Work.

Representatives of the Owner, Owner's Representative, Contractor, Major Subcontractors, Field Inspectors and Supervisor must be in attendance.

After the time and location of this meeting has been established, the Contractor shall notify all parties concerned minimum four (4) days before meeting.

The Owner's Representative will chair and record discussions and decisions, and circulate the minutes to all parties concerned.

Agenda will include, but is not limited to, the following:

- a) Appointment of official representatives of participants in the Work;
- b) Safety, roles and responsibilities of designates;
- c) Weekly Safety meeting with all employees;
- d) Schedule of the Work, progress scheduling;
- e) Requirements for temporary facilities, site sign, offices, storage sheds, utilities, fences;
- f) Delivery schedule of specified equipment;
- g) Site security;
- h) Contemplated Change Order and Change Order, procedures, approvals required, mark-up percentage permitted, time extensions, overtime, administrative requirements;
- i) Owner-supplied products;
- j) Drawing of Records;
- k) Monthly Progress Claims, administrative procedures, photographs and hold backs;

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PROJECT MANAGEMENT AND COORDINATION

- l) Appointment of inspection and testing agencies or firms; and
- m) Insurances and transcript of policies.

13.5 ON-SITE DOCUMENTS

The Contractor shall maintain at the Place of the Work, one (1) copy of each of the following:

- a) Contract Documents;
- b) Contract Drawings;
- c) Specifications;
- d) Addenda;
- e) Change Order;
- f) Reviewed Shop Drawings;
- g) Modifications to the Contract;
- h) Field Test Results;
- i) Copy of the up to date Construction schedule;
- j) Manufacturer's Installation and Application; and
- k) Labour conditions and wage schedules.

13.6 SCHEDULE

The Contractor shall submit the Work Schedule in accordance with Section 5.6.2 – Work Schedule and revise and resubmit such Work Schedule as directed by the Owner's Representative as per the provisions of this Contract.

END OF SECTION

TOWN OF EDSON
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ENVIRONMENTAL PROTECTION

01140

14. ENVIRONMENTAL PROTECTION (01140)

14.1 NOISE CONTROLS

The Contractor shall comply with the requirements of municipal and/or provincial bylaws regarding noise abatement and hours of work, and shall take all necessary steps to ensure the generation and transmission of noise and vibration which is found to be objectionable is corrected at no additional cost to the Owner and to the satisfaction of the Owner's Representative.

Night work or holiday work requires written permission from the Municipality.

14.2 DUST CONTROL

Perform the work in a manner that will not produce an objectionable amount of dust as determined by the Owner. Dust control measures shall be paid for by the Contractor.

14.3 ENVIRONMENTAL MANAGEMENT

The Contractor shall not dump, spill or dispose of any overburden, trees, brush, petroleum products, camp refuse or other debris into any watercourse, reservoir or other natural water basin, or into any area that may ultimately cause pollution to water drainage or storage systems. The Contractor shall clean up any deposits of waste arising from his Work that may cause subsequent pollution, and should he fail to do so, the Owner may, without further notice, arrange the cleanup of such deposits at the expense of the Contractor. Any inert solid waste materials resulting from the production of asphalt concrete pavement, concrete or soil cement shall be stored by the Contractor in stockpiles during activities and operations on the disturbed land. The Contractor shall remove and dispose of such material in a manner acceptable to the appropriate regulatory agencies and the Owner's Representative, on completion of the Work.

The Contractor shall conduct his operations in accordance with the current legislation concerning pollution control, including the Environmental Protection and Enhancement Act and other related legislation.

It shall be the Contractor's responsibility to familiarize themselves with the applicable legislation and regulations and obtain all necessary permits and approvals for his operations.

14.3.1 Operation of Asphalt Mixing Plants

The Contractor is also advised that operation of any asphalt mixing plant is subject to the conditions and regulations of the Code of Practice for Asphalt Paving plants as issued by Alberta Environment. The following provisions of this code of practice will be monitored by the Owner's Representative:

- The asphalt mixing plant must be registered with Alberta Environment, Environmental Service, Enforcement and Monitoring Division, and a copy of this registration must be kept with the plant at all times during set up and operation. This registration shall also be made available for inspection by the Owner's Representative.
- The person responsible (Contractor) shall notify the Enforcement and Monitoring Division of Alberta Environment prior to initially locating, or any relocation, of the plant.

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ENVIRONMENTAL PROTECTION

01140

- In addition to reporting any contraventions of the code to the Enforcement and Monitoring Division (Section 10, Reporting in the Code of Practice), any such reports shall also be provided to the Owner's Representative.

Monitoring of these provisions by the Owner's Representative is for information purposes only, and shall not in any way be considered acceptance or approval of the Contractor's compliance with the requirements of the Code of Practice.

14.3.2 Environmental Permits, and Other Regulations

The Owner's Representative will obtain the environmental permits required in respect of stream crossings, and will have planned the general project schedule in compliance with such permit. The Contractor shall conduct his operations in all respect to comply with the conditions of the permit as referenced in the Contract.

The natural banks of streams shall not be disturbed, except as noted on the plans or by permission of the Owner's Representative. If a cut is permitted, the area is to be restored to its original condition to the satisfaction of the Owner's Representative. Restoration may include re-seeding and the establishment of permanent vegetation.

The Contractor shall obtain whatever further permits may be found necessary, and shall provide the Owner's Representative with written confirmation of the approval, by the permit agencies, of his full compliance before holdback will be released.

14.3.3 Responsibility and Conditions of Payment for Environmental Management

The Contractor shall comply with all conditions of all environmental approvals and permits for the project, familiarize themselves with the applicable legislation and regulations concerning environmental protection, and shall conduct his activities in accordance with such legislation and regulations.

The Contract documents may specify the use of various erosion control or environmental control devices at specific locations throughout the project. These are items that are considered necessary for erosion or environmental control for some period of time following the completion of construction. The timing of the installation or construction of these devices, and the quantities required, will be specified in the Contract or determined by the Owner's Representative. These devices, only at the locations and quantities specified in the Contract, will be paid for at the applicable unit prices for the specific device used.

All other environmental or erosion control devices or procedures required to ensure compliance with the applicable legislation, regulations or approvals during construction are deemed to be necessary only as "temporary environmental control measures", and shall be the direct responsibility of the Contractor. This shall include the responsibility for determining the quantities, nature and locations of such devices or procedures and the timing of each event. The Contractor shall, to the extent possible, identify these devices or procedures in his Environmental Construction Operations Plan.

If, at any time during the Project, it is determined that the devices or procedures detailed in the Environmental Construction Operations Plan (any specific measures, locations or quantities proposed) are insufficient, the Contractor shall modify the Plan accordingly.

With the exception of removing and disposing of silt from silt containment ponds and sediment barriers, no separate payment will be made for any "temporary environmental control measures" undertaken by the

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Contractor, regardless of whether or not the temporary measure is detailed in the Contractor's Environmental Construction Operations Plan or whether or not the Contract contains a bid item for the device(s) or procedure(s) used. Removing and disposing of material from silt containment ponds and sediment barriers will be paid for as extra work, in accordance with General Conditions Section 5.7.2 - Valuation and Certification of Changes in the Work.

14.3.4 Environmental Construction Operations Plan

The Contractor shall prepare and implement an Environmental Construction Operations Plan for each phase of the project, in accordance with Alberta Transportation's manual entitled "Environmental Construction Operations Plan (ECO Plan) Framework," latest version. The Plan shall detail temporary environmental control measures that the Contractor shall undertake to comply with all applicable legislation, regulations and approvals during the course of construction and during "winter shut down".

The Environmental Construction Operations Plan shall not cover any permanent or long term environmental or erosion control devices or work specified in the Contract.

The Contractor shall submit the Environmental Construction Operations Plan to the Owner's Representative at least fourteen (14) calendar days prior to the pre-construction meeting. The Owner's Representative will review the Environmental Construction Operations Plan and communicate any concerns to the Contractor at least seven (7) calendar days prior to the pre-construction meeting. The Contractor shall address any issues or concerns regarding the proposed the Environmental Construction Operations Plan to the satisfaction of the Owner's Representative prior to the commencement of the Work.

The finalization of the Plan, to the mutual satisfaction of the Owner's Representative and the Contractor, does not constitute an approval or assurance from the Owner's Representative or the Owner that the temporary environmental control measures detailed in the Environmental Construction Operations Plan are sufficient to ensure compliance with all applicable legislation, regulations or conditions of approval. The Contractor is ultimately responsible to ensure all measures used on the project are sufficient to ensure compliance with all applicable authorities. This may mean increasing the number of installations, providing alternate devices or modifying procedures.

The cost of preparing the Environmental Construction Operations Plan, and the performance of all Work necessary to ensure compliance with the applicable legislation, regulations or conditions or approval (with the exception of removing and disposing of material from silt containment ponds and sediment barriers), will be incidental to the Work and will not be paid for separately.

14.3.5 Reporting Procedures for Spills of Deleterious or Hazardous Substances

During construction, any releases of silt or other deleterious substances into a body of water or watercourse shall be immediately reported to the Owner's Representative, Alberta Environment and the Federal Department of Fisheries and Oceans (1-800-222-6514).

In the event of the release of silt or other deleterious substance into a body of water or watercourse, the Contractor shall take all reasonable measures to contain the release and repair any damage at his expense.

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Spills or releases of Hazardous Substances shall also be immediately reported to the Owner's Representative and Alberta Environment and, if a body of water is involved, the Owner's Representative and Federal Department of Fisheries and Oceans (1-800-222-6514). The Contractor shall take all reasonable measures to contain and clean up the spill, and any such work shall be performed in accordance with the applicable legislation and regulations at the Contractor's expense.

14.4 POLLUTION CONTROL

The Contractor shall conform to local ordinances and bylaws relating to littering of streets, dust and noise. Conduct noisy operations in such a manner as to cause the least disturbance to neighbouring residents.

The Contractor shall take precautions to prevent depositing mud or debris on public or private roadways adjacent to the work. Clean up immediately, otherwise the Owner's Representative will direct necessary clean up, with all costs back-charged to the Contractor.

Perform the work in conformance with the applicable sections of the Provincial Regulations with respect to air and water pollution control requirements.

Maintain temporary erosion and pollution control features installed under this contract.

Control emissions from equipment and plant to local authorities' emission requirements.

Cover dry materials and rubbish to prevent blowing dust and debris.

Tightly seal against corrosion and rust all containers of fuel, hazardous or toxic chemicals.

Vehicle and equipment maintenance shall occur in designated areas. Contain and handle all maintenance fluids in accordance with the current National Fire Code of Canada. Spillage on the ground is prohibited.

Hoses and equipment for transfer of fuels and other hazardous fluids shall be in good condition, properly functioning with approved check valves and shall be attended by a qualified person for the duration of transfer of fuels or hazardous fluids.

Greasy and oily rags and oil waste shall be contained in approved, sealed containers. Remove from the worksite and dispose of this material in accordance with the most stringent of applicable Federal, Provincial and Municipal Regulations.

Abide by the Alberta Board of Health Regulations 572-57-5 as amended 262-61 regarding air pollution.

The use of oil for dust control is prohibited. Use only fresh water.

Comply with any Local, Provincial or Federal Noise Bylaws or Regulations.

14.5 DISPOSAL OF WASTES

Burying of rubbish and waste on site is not permitted.

Disposal of waste or volatile materials into waterways, storm or sanitary sewers is not permitted.

Pumping or draining water containing silt in suspension into waterways, sewers or drainage systems is prohibited.

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ENVIRONMENTAL PROTECTION

All disposal of construction waste material shall be hauled to and properly disposed of at the Town of Edson Landfill including asphaltic concrete pavement, concrete sidewalk and any other material not permitted in the backfill.

14.6 WORK ADJACENT TO WATERWAYS

Prohibit operation of construction equipment in waterways.

Do not remove borrow material or dump excess fill material into waterways.

14.7 SITE CLEANING AND PLANT PROTECTION

Remove trees, fences and other structures from the site of the work, as necessary to perform the work. Tree removal must be approved by the Owner's Representative.

Remove only those items that must be removed, or are clearly shown on the drawings to be removed.

Protect all remaining trees, plants, fences and other items from damage during construction.

Restrict the stripping of topsoil and vegetation to areas indicated or approved by the Owner's Representative.

Take precautions to prevent depositing mud or debris on public or private roadways adjacent to the work. Clean up immediately, otherwise the Owner's Representative will direct necessary cleanup with all costs charged to the Contractor.

Pay special attention to the existing surface features on site and in private lots. In particular where fences, garbage bins and sheds, landscaping and other surface features are affected, reinstate these existing surface features after backfilling.

14.8 FIRES

Fires and burning of rubbish on site are not permitted unless approved by Municipality.

14.9 DRAINAGE

Provide temporary drainage and pumping as necessary to keep excavations and site free from water.

Do not pump water containing suspended materials into waterways, sewer or drainage systems.

Control disposal or runoff of water containing suspended materials or other harmful substances in accordance with local authority requirements.

14.10 SPILLAGES

Report immediately to the Owner's Representative any accidental spill of chemicals, liquid or dry.

Report immediately to the Owner's Representative all spills of fuel whether contained in a dyke or otherwise.

Identify the spill, take all safety precautions before approaching it, determine the source of the leak, attempt to stop the flow, and contain the escaped material.

Report the spill to the appropriate environmental authority if required.



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ENVIRONMENTAL PROTECTION

END OF SECTION

**TOWN OF EDSON
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01160

CONTRACT CLOSEOUT

15. CONTRACT CLOSEOUT (01160)

15.1 WORK INCLUDED

- a) Final cleaning
- b) Document submission
- c) Project commissioning
- d) Inspection and takeover procedures

15.1.1 Final Cleaning

When the work is substantially performed, the Contractor shall remove surplus products, tools, construction machinery and equipment not required for the performance of the remaining work.

The Contractor shall remove waste products and debris other than that caused by the Owner, other Contractors or their employees, and leave the work clean and suitable for acceptance by Owner.

When the work is totally performed, remove remaining products, tools, construction machinery and equipment. The Contractor shall remove waste products and debris other than that caused by the Owner or other Contractors.

The Contractor shall remove waste materials and debris from the site at regularly scheduled times or dispose of as directed by the Owner's Representative. Do not burn waste materials on site.

The Contractor shall make arrangements with and obtain permits from authorities having jurisdiction for disposal of waste and debris.

15.1.2 Documents

The Contractor shall collect reviewed submittals and assemble documents executed by Subcontractors, suppliers and manufacturers.

The Contractor shall submit material prior to final Progress Certificate Application.

The Contractor shall provide warranties and bonds fully executed and notarized.

The Contractor shall execute transition of Performance and Labour and Materials Payment Bond to warranty period requirements.

The Contractor shall submit a final Progress Certificate giving total adjusted Contract Sum, previous payments and monies remaining due.

As specified in other sections of the specifications, the Contractor is required to provide a set of engineering drawings with approved changes made during construction and as built details marked in red for review by the Owner's Representative, who will prepare record drawings. The Contractor is also required to provide service connection reports, survey notes, test results and all other documents. Such information shall be turned over to the Owner's Representative before the Construction Completion Certificate is issued.

Record documents shall be neat, legible and accurate.

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CONTRACT CLOSEOUT

15.1.3 Project Commissioning

The Contractor shall:

Expedite and complete deficiencies and defects identified by the Owner's Representative.

Submit required documentation such as statutory declarations, Workers' Compensation Certificates, warranties, certificates of approval or acceptance from regulatory bodies.

Review inspection and testing reports to verify conformance to the intent of the documents and that changes, repairs or replacements have been completed.

Provide ongoing review, inspection and attendance to maintenance and repair problems during the Warranty periods.

15.1.4 Takeover Procedure

Prior to application of Construction Completion Certificates, the Contractor shall carefully inspect the work and ensure it is complete, and the site is clean. The Contractor shall notify the Owner's Representative in writing, of satisfactory completion of the work and request an inspection.

END OF SECTION

TOWN OF EDSON

01300

8TH AVENUE - 2025 REHABILITATION

SUBMITTALS

16. SUBMITTALS (01300)**16.1 ENVIRONMENTAL CONSTRUCTION OPERATIONS PLAN (ECO PLAN)**

The Contractor shall submit the ECO Plan to the Engineer at least fourteen (14) calendar days prior to the pre-construction meeting, as required in Section 01060 Regulatory Requirements.

16.2 TRAFFIC ACCOMMODATION STRATEGY

The Contractor shall submit a Traffic Accommodation Strategy to the Engineer for review at least fourteen (14) calendar days prior to the pre-construction meeting, in accordance with Alberta Transportation manual "Traffic Accommodation in Work Zones" – current edition.

16.3 SHOP DRAWINGS

"Shop Drawings" mean custom drawings, product data, diagrams, illustrations, schedules, performance charts, brochures and other data that are to be provided to illustrate details of a portion of Work.

Arrange for the preparation of clearly identified shop drawings as specified, or as the Engineer may reasonably request. Shop drawings are to clearly indicate materials, methods of construction and attachment or anchorage, erection diagrams, connections, explanatory notes and other information necessary for completion of Work. Shop drawings are to indicate their relationship to design drawings and specifications. Notify the Engineer in writing of any deviations in shop drawings from the requirements of the Contract Documents.

Submit materials and equipment by manufacturer, trade name and model number. Include copies of applicable brochure or catalogue material. Do not assume applicable catalogues are available in the Engineer's office. Maintenance and operating manuals are not suitable submittal material.

Clearly mark each sheet of printed submittal material (using arrows, underlining or circling) to show particular sizes, types, model numbers, ratings, capacities, options, and similar criteria for item, actually being proposed. Cross out non applicable material. Specifically note on the submittal specified features, such as special tank linings, pump seals, impellor type, materials, painting, etc.

Include dimensional data for roughing-in and installation; technical data sufficient to check that equipment meets requirements of drawings and specifications; wiring, piping, and service connection data; and motor sizes, complete with voltage ratings and schedules as applicable.

Examine all shop drawings, prior to submission to the Engineer, to ensure that all necessary requirements have been determined and verified, and that each shop drawing has been checked and coordinated with the requirements of the Work and the Contract Documents. Examination of each shop drawing shall be indicated by stamp, date and signature of a responsible person. Shop drawings not stamped, signed and dated will be returned without being reviewed and shall be considered rejected.

Submit shop drawings to the Engineer for his review, with reasonable promptness and in an orderly sequence, so as to cause no delay in Work. Failure to submit shop drawings in ample time is not to be considered sufficient reason for an extension of Contract Time, and no claim for extension by reason of such default will be allowed. If requested, the Engineer will jointly prepare a schedule fixing the dates for submission and return of shop drawings.

The Engineer will review and return shop drawings in accordance with any schedule agreed upon or otherwise with reasonable promptness, so as to cause no delay in Work.

Submit nine (9) copies of white prints to the Engineer for review.

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SUBMITTALS

Shop drawing review by the Engineer is solely to ascertain conformance with the general design concept. Responsibility for approval of detail design inherent in shop drawings rests with the Contractor, and review by the Engineer shall not imply such approval.

Review by the Engineer shall not relieve the Contractor of his responsibility for errors or omissions in shop drawings, or for proper completion of the Work in accordance with the Contract Documents.

Responsibility for verification and correlation of field dimensions, fabrication processes, techniques of construction, and installation and co-ordination of all parts of the Work rests with the Contractor.

Shop drawings will be returned to the Contractor with one of the following notations:

When stamped "REVIEWED", distribute additional copies as required for execution of the Work.

When stamped "REVIEWED AS MODIFIED", ensure that all copies for use are modified and distributed, same as specified for "REVIEWED".

When stamped "REVISE & RE-SUBMIT", make the necessary revisions, consistent with the Contract, and submit again for review.

When stamped "NOT REVIEWED", submit other drawings, brochures, or other necessary information for review, consistent with the Contract.

Only shop drawings bearing "REVIEWED" or "REVIEWED AS MODIFIED" shall be used on the Work, unless otherwise authorized by the Engineer.

Application of any of the above stamps is not to be inferred as lessening any of the Contractor's responsibilities outlined in clauses 1.7, 1.8 and 1.9 of this section.

After submittals are stamped "REVIEWED" or "REVIEWED AS MODIFIED", no further revisions are permitted unless resubmitted to the Engineer for further review.

Any adjustments made on shop drawings by the Engineer are not intended to change the Contract Price. If it is deemed that such adjustments affect the Contract Price, clearly state as such in writing prior to proceeding with fabrication and installation of work.

Make changes in shop drawings, which the Engineer may require, consistent with Contract Documents.

When resubmitting, notify the Engineer in writing of any revisions other than those requested by the Engineer.

Shop drawings indicating design requirements not included in the Contract documents require the seal of a Professional Engineer, registered in the province of the place of the work. Engineering calculations shall be submitted for review, if requested, and signed by a Professional Engineer.

16.4 RECORD DRAWINGS

After award of Contract, the Engineer will provide a complete set of drawings to the Contractor for the purpose of maintaining "as-built" record drawings. The Contractor shall accurately record significant deviations from Contract documents caused by site conditions and changes ordered by the Engineer.

The Contractor shall record locations of concealed elements of construction. Identify drawings as "Project Record Copy". Maintain in good condition and make available for inspection on site by Engineer at all times. The Contractor shall submit record drawings to Engineer for review on a monthly basis including copies of photographs taken during the same period of time. The Contractor shall also submit copies of the "Service Connection Report" on a monthly basis for each property in which each service is installed.



TOWN OF EDSON

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SUBMITTALS

Failure to submit satisfactory record drawings will entitle the Engineer to withhold contract monthly payments until satisfactory record drawings are submitted and approved. The Engineer may also deduct any costs incurred by the Engineer or the Owner in generating satisfactory record drawings. The Contactor shall also submit copies of all survey record data recorded during construction.

16.5 PHOTOGRAPHS AND PUBLICITY

No photographs of the site, or of any portion of the Work, will be permitted without prior approval of the Engineer.

No press or publicity releases will be permitted without prior approval of the Engineer.

END OF SECTION

**TOWN OF EDSON
8TH AVENUE - 2025 REHABILITATION**

01310

SCHEDULES

17. SCHEDULES (01310)

17.1 SCHEDULE

The Contractor shall, within seven (7) calendar days after acceptance of Tender, prepare and submit to the Engineer, a bar chart or a critical path method schedule for review.

Schedule shall show dates of commencement and completion of various parts of the Work, ordering and delivery dates of product, phasing and timing for various subcontracts, and all other detailed information, to the satisfaction of the Engineer.

All orders for materials shall be placed in ample time for adherence to the schedule.

Special note is to be made of those times when multiple work shifts are indicated to complete work.

Prepare definitive schedules for the following specific items:

- Schedule of all shop drawings and submittals required.
- Schedule of material deliveries
- Schedule of construction phases.

17.2 PROGRESS REPORTS

The Contractor shall maintain an accurate record of the progress of the Work. Submit weekly to the Engineer.

The reports shall show dates of commencement and percentage of work completed by trades for the different parts of the Work, and include particulars regarding daily weather conditions, number of workers for each trade, and percentage of work completed weekly by trades, and shall relate to the Schedule.

17.3 MANPOWER/OVERTIME

The Contractor shall cease work at any particular point and transfer workers to other designated points, when so directed, should the Engineer judge it necessary to expedite the work.

Should Work fail to progress according to the approved progress schedule, work such additional time (including weekends and holidays), employ additional workers, or both, as may be required to bring the Work back on schedule, at no additional cost to the Owner.

Night work will not be permitted. Work on Sunday will be subject to local Municipality By-laws.

If this Contractor causes delay to another Contractor, this Contractor shall bear all costs of expediting the work of such other Contractor.

17.4 USE OF SCHEDULE FOR PROJECT CONTROL

17.4.1 Changes in Schedule

Whenever proposing a change in construction program, submit proposed revised Schedule to the Engineer, together with such analyses thereof as are required to clearly indicate the purpose and anticipated results of such changes.

If, in the opinion of the Engineer, any proposed change is not within the specified time, or is otherwise not in accordance with the specifications, or if Work is not being adequately or properly prosecuted in any respect, the



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SCHEDULES

Engineer reserves the right to require a revised Schedule, together with such analyses thereof as are required to indicate the anticipated results of such revision.

Claim for additional compensation or extension of Contract Time on account of such requirements will not be considered.

END OF SECTION

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01430

QUALITY ASSURANCE

18. QUALITY ASSURANCE (01430)

18.1 INSPECTION AND TESTING OF WORK

18.1.1 Laboratories/Agencies

Independent inspection/testing agencies will be engaged by the Owner for the purpose of inspecting and/or testing portions of work. All costs of such services will be borne by the Owner, except as noted in this section.

All equipment required for carrying out inspection and testing will be provided by the respective agencies.

Employment of inspection/testing agencies in no way relieves the Contractor of responsibility to perform work in accordance with the contract documents.

18.1.2 Access to Work and Plant

The Contractor shall allow the inspection/testing agencies access to all portions of work on site, and manufacturing and fabrication plants, as may be necessary. Cooperate to provide reasonable facilities for such access.

18.1.3 Procedures for Test

The Contractor shall notify the respective agencies and Engineer well in advance of the requirements for tests, in order that necessary arrangements can be made. Claims for costs or schedule extensions arising from delays associated with testing requirements will not be entertained.

The Contractor shall submit necessary samples and/or materials required for testing, as specifically requested in specifications. Submit with reasonable promptness and in an orderly sequence, so as to cause no delay in work.

The Contractor shall provide workers and facilities to obtain and handle samples and/or materials on site. Provide sufficient space to facilitate the storage and curing of test samples.

If defects are revealed during inspection and/or testing, the inspection/testing agencies will request additional inspection and/or testing to ascertain full degree of defects. The Contractor shall correct defects and irregularities. Pay all costs for re-testing and re-inspection.

Refer to General Conditions, Section 5.15.2 for "Rejected Work".

Notify the Engineer and authorities in ample time before testing to permit inspection and to allow tests to be witnessed.

Remove or repair defective products or work that fail to meet specified requirements, as directed by the Engineer, at the Contractor's expense.

18.2 TESTS AND MIX DESIGNS

The Contractor shall furnish to the Engineer test results and mix designs as requested in the specifications.

18.3 REFERENCE STANDARDS

18.3.1 Within the text of the specifications, reference may be made to the following standards:

ACI American Concrete Institute



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QUALITY ASSURANCE

ANSI	American National Standards Institute
ASTM	American Society for Testing Materials
AWWA	American Water Works Association
CGSB	Canadian Government Specification Board
CSA	Canadian Standards Association
FM	Factory Mutual Engineering Corporation
NBC	National Building Code
ULC	Underwriters Laboratories of Canada

The Contractor shall conform to such standards, in whole or in part, as specified.

Where dates with specified standards are noted, or where specified standards are not dated, conform to the latest issue of the specified standards, as amended and revised to the Tender closing date.

If there is a question as to whether any product or system is in conformance with applicable standards, the Engineer reserves the right to have such products or systems tested to prove or disprove conformance. The cost for such testing will be borne by the Owner, in the event of conformance with contract document, or by the Contractor, in the event of non-conformance.

END OF SECTION

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QUALITY CONTROL

19. QUALITY CONTROL (01450)**19.1 GENERAL**

Quantity control inspection and testing will be that of the Owner. The Owner, at their expense, shall perform such inspections and testing as deem necessary to ensure that the Work conforms to the required relevant standard specification specified within each section. Testing shall be in accordance with the selected standards of the Section 01430.

The Contractor may retain the services of an independent qualified laboratory testing agency under the supervision of a registered Professional Engineer, to complete all field inspection and laboratory testing procedures should they wish to contest the result of the Owner.

Quality Control testing and submission of test results to the Engineer will be incidental to the Work of respective Tender Item.

Testing required providing quality control to assure that the Work strictly complies with the Contract requirements shall include, but not limited to:

- Testing of all concrete, asphalt concrete pavement, granular base course, granular sub base and all backfill materials.
- The Owner and the Engineer shall have access to the Work. If part of the Work is in preparation at locations other than the place of the Work, access shall be given to such work whenever it is in progress.
- Give timely notice requesting inspection if Work is designated for special tests, inspections or approvals by Engineer instructions, or the law of the place of the Work.
- If the 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 the inspections or tests satisfactorily completed and make good such Work.
- The Engineer may order any part of the Work to be examined if the Work is suspected to be not in accordance with the Contract Documents. If, upon examination, such Work is found not in accordance with the Contract Documents, correct such Work and pay the cost of examination and correction. If such Work is found in accordance with the Contract Documents, the Owner shall pay the cost of examination and replacement.
- When initial tests indicate non-compliance with the Contract Documents, all subsequent retesting because of the non-compliance shall be performed by the same testing laboratory and the costs will be deducted from the Contractor's payments

Testing and frequency of testing shall be based on the testing requirements specified in the Contract Documents and the "Owner of Edmonton Complete Streets Design and Construction Standards". In the event of a conflict between the Owner of Edmonton Complete Streets Design and Construction Standards and these specifications, the more stringent requirement shall govern.

The Owner and the Engineer shall have access to the Work. If part of the Work is in preparation at locations other than the place of the Work, access shall be given to such work whenever it is in progress. The Contractor give timely notice requesting inspection if Work is designated for special tests, inspections or approvals by Engineer instructions, or the law of the place of the Work.

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QUALITY CONTROL

If the 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 the inspections or tests satisfactorily completed and make good such Work.

The Engineer may order any part of the Work to be examined if the Work is suspected to be not in accordance with the Contract Documents. If, upon examination, such Work is found not in accordance with the Contract Documents, correct such Work and pay the cost of examination.

19.2 TESTING BY CONTRACTOR

The Contractor shall retain the services of an approved independent testing agency and pay the costs of testing services as follows:

- Standard Proctor Density tests for borrow materials.
- Sieve Analysis of sands, and aggregates supplied.
- Product testing that is required and is specified under various sections of the Specifications.
- Quality control tests for precast concrete.
- Mix Designs as required in other sections of the Specifications.

The testing agency shall supply copies of all test results related to this Contract directly to the Engineer.

The Contractor shall supply all labour, materials, and equipment, and shall perform tests for linings, coatings, pressure tests, leakage tests, infiltration tests, and all other tests specified under various sections of these Specifications. The Contractor shall provide all labour, materials, and equipment necessary to assist the Owner in conducting camera tests.

19.3 TESTING BY OWNER

The Owner will retain and pay for the services of an independent testing agency for sample testing during construction to check quality of the Work. This may include the following and other tests:

- Standard Proctor, sample density, and moisture content tests for trench backfill, fill, embankment, road subgrade, and granular materials.
- Quality assurance testing for concrete pursuant to Section 02761.
- Quality assurance testing for asphaltic concrete pursuant to Section 02741.

END OF SECTION

**TOWN OF EDSON
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01500

TEMPORARY FACILITIES

20. TEMPORARY FACILITIES (01500)

20.1 FIELD OFFICES AND SHEDS

20.1.1 Contractor's Office

The Contractor shall provide and maintain in clean condition, during entire progress of work, a suitable office, adequately lighted, heated and ventilated, for own usage.

The Contractor shall locate where directed by the Engineer.

The Contractor shall provide within office space adequate first aid facilities, as recommended by the Department of Labour.

20.1.2 Engineer's Office

Resident Engineer's office will not be required.

20.1.3 Subcontractor's Office

Subcontractors are to provide themselves with offices as necessary.

The Contractor shall locate where directed by the Engineer.

20.1.4 Equipment and Tool Storage

The Contractor shall provide and maintain in clean and orderly condition adequate lockable storage sheds for tools and equipment. Locate where directed by the Engineer.

20.1.5 Materials Storage

The Contractor shall provide and maintain in clean and orderly condition suitable weatherproof and lockable sheds for storage and protection of materials which require protection. Locate shed where directed by the Engineer.

The Contractor shall allocate storage areas on site for materials that do not require weatherproof sheds. Maintain areas in clean and orderly condition. Limit storage of materials and items to storage areas only.

20.2 UTILITIES

20.2.1 Sanitary Facilities

The Contractor shall provide sufficient sanitary facilities for workers, in accordance with local health authorities. Maintain facilities in clean and tidy condition. Remove and make good site prior to completion of the work.

The Contractor shall ensure that disruption to the residential sanitary sewer system is limited to four (4) hours. Written notice shall be provided to all affected residents and alternate arrangements shall be made if the disruption to service exceeds four hours.

20.2.2 Water Supply

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TEMPORARY FACILITIES

The Contractor shall provide a continuous supply of water for use during construction and make necessary arrangements for connection with appropriate utility company. Remove and make good site prior to completion of the work.

The Contractor shall maintain water supply in good condition until permanent supply is installed and ready for use. All temporary water systems shall be cleaned, disinfected, laboratory tested approved by a Public Health Laboratory Agency or equivalent prior to use. Use permanent water supply, provided damage does not occur.

Payment for this work will be incidental to the Work.

20.2.3 Temporary Telephone

Temporary telephones will not be required.

20.2.4 Dewatering

The Contractor shall provide temporary drainage and pumping facilities as may be necessary to keep excavations and site free from water at all times. The Contractor should be prepared to properly handle flowing water in excavations. No consideration will be given to claims arising as a result of a lack of effort on the part of the Contractor in dewatering the work area. Any dewatering required shall be considered incidental to the contract.

The Contractor shall not discharge drainage water into any municipal sewers without written approval from the governing authority.

The Contractor shall not discharge drainage water containing silt in suspension into sewage lines.

20.3 SERVICES

20.3.1 Existing Services

The Contractor shall maintain existing services in operation at all times during the construction. Temporary services shall be provided for service outages greater than four (4) hours, or as approved by the Engineer. Temporary service connections shall be checked at least once per day for any leaks or problems. The Contractor shall provide a copy record for each day for each service inspected and any repairs completed on the temporary water service. Copies of these records should be forwarded to the Engineer on a weekly basis.

The Contractor shall protect all existing services from damage. Repair services damaged by construction at no additional cost to the Owner, and to the Engineer's approval.

If service interruptions are necessary for the work, such interruption shall be made only at times approved by the Owner and local governing authorities.

20.3.2 Responsibility to Existing Features

The existence and location of utilities indicated on the plans have been determined from existing records, but are not guaranteed. These shall be investigated and verified in the field by the Contractor. Excavation in the vicinity of existing structures and utilities shall be carefully performed. The Contractor will be held responsible for any damage to, and for maintenance and protection of, existing structures and utilities.

The Contractor shall notify the appropriate individuals of utility companies or departments of his intention to carry out operations in the vicinity of any utility structure, at least one (1) week in advance of commencement of such operations.

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TEMPORARY FACILITIES

The Contractor shall indemnify and save harmless the owners of any such mains, lines, conduits, drains, or other structures or utility for any loss or damage which may be suffered by reason of the operations of the Contractor in the performance of this contract.

- i. In the case of waterworks and sewerage works – Town of Edson Public Works;
- ii. In the case of telephone, conduit or lines – Telus;
- iii. In the case of gas mains or lines – ATCO Gas;
- iv. In the case of electrical power conduit or lines – Fortis Alberta;
- v. In the case of Cable T.V. – Shaw Communication.

The Contractor shall be responsible for determining which utilities may require altering. In such cases, the Contractor shall be responsible for making all necessary arrangements to have this work done and shall be responsible for all costs of the work.

20.3.3 Access to Property

The Contractor shall provide and maintain reasonable access to all private property and places of business. Prior to removing access to residences or businesses the Contractor shall provide twenty four (24) hours notice that residences will be inaccessible to vehicular traffic. The Contractor shall provide for safe walking access for residences at all times.

20.4 BARRIERS

20.4.1 Guard Rails and Barricades

The Contractor shall provide all necessary guard railings and barricades required around all excavations, open shafts, or other works, to protect workers or the general public from possible injury. Provide as recommended by local governing authorities and/or the Engineer.

20.5 CONSTRUCTION AIDS

20.5.1 Temporary Retaining Walls

The Contractor shall provide temporary sheeting, piling or shoring as may be required to protect excavations and trenches from damages caused by rain water, ground water, and other soil and weather conditions. Erect in a manner which will not encumber the performance of work.

20.6 ROADS

20.6.1 Access to Site

The Contractor shall provide and maintain access roads (including existing temporary roads), sidewalk crossings, ramps and construction runways as may be required by workers for access to and on site. Conform to requirements of local governing authorities when required, and, when necessary, make arrangements with adjacent property owners. Locate these traffic facilities where they are least disruptive to normal street traffic.

20.7 TRAFFIC CONTROL

20.7.1 Emergency Services

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TEMPORARY FACILITIES

It is the Contractor's responsibility to inform the Police Department, Fire Department and Ambulance Services of the proposed work schedule and changes to the schedule, including times of work and activities required on the various street locations within the Municipality.

20.7.2 Public Traffic Flow

The Contractor shall provide and maintain flag persons, traffic signals, barricades, and flares/lights/lanterns, as may be required, to direct the flow of equipment used in performance of work and protect public traffic. Make arrangements with local governing authorities when these facilities will disrupt the normal flow of public traffic.

20.7.3 Traffic Accommodation During Construction:

The Contractor shall make suitable provisions, including the use of detours, to accommodate all vehicular and pedestrian traffic safely and with a minimum of inconvenience through or around the Work.

The Contractor shall provide, install, maintain and protect traffic control devices, such as signs, barriers, fences and lights, at his own expense.

The Contractor shall provide the required number of certified flag persons, during all periods of active equipment operations that may affect normal traffic operations.

The Contractor shall control his operations to ensure emergency vehicle operations and normal school bus operations are not interfered with and shall ensure that there is uninterrupted access to developments along the project(s).

20.7.4 Parking

Temporary parking will be permitted on site, provided it does not disrupt the performance of work and if it is practicable. The Contractor shall not allow trucks or equipment to park on streets and roads if disruptive to public traffic flow or access to site.

20.8 PROTECTION OF WORK AND PROPERTY

20.8.1 Protection for Off-Site and Public Property

The Contractor shall protect adjacent private and public property from damage during the performance of work. During excavation, the Contractor shall provide sheeting, piling or shoring, as may be required, to protect adjacent building foundations and streets from movement.

The Contractor shall be responsible for all damages incurred due to improper protection.

20.8.2 Fire Protection

The Contractor shall provide and maintain adequate temporary fire protection equipment during performance of work, as required by insurance companies having jurisdiction.

The Contractor shall provide minimum one fire extinguisher in each equipment and tool shed, temporary office and material storage shed.

Where subjected to low temperatures, extinguishers are to be anti-freeze type. In proximity to gas, oil, grease or paint storage locations, they are to be #10 - carbon dioxide type. Extinguishers for all other locations are to be soda-acid type. All extinguishers are to be minimum eleven liter (11 l) capacity and be ULC labeled.

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TEMPORARY FACILITIES

The Contractor shall handle gasoline and like combustible materials with good, safe practice.

The Contractor shall remove combustible debris from site daily.

20.8.3 Snow Removal

The Contractor shall remove snow and ice from access roads, parking areas, office, and storage areas.

The Contractor shall remove snow and ice from other surfaces, as necessary for construction.

20.9 SECURITY

20.9.1 Security Personnel

At the Contractor's discretion, provide and pay for responsible security personnel to guard the site and contents after working hours, and on nights, weekends and holidays. Allow security personnel access to sanitary facilities and warm, weatherproof shelter.

20.9.2 Site Lighting

The Contractor shall provide and pay for temporary site lighting for night time hours if required. Install lamps in suitable locations to obtain unobstructed light over the entire site.

The Contractor shall perform daily inspection of site lighting and replace burned out and missing lamps. Relocate promptly any lights that become obstructed by new work.

20.10 PROJECT IDENTIFICATION

20.10.1 Warning and Traffic Signs

When work is performed within public areas, the Contractor shall provide and erect adequate warning and traffic signs, as necessary to give the public proper warning. Place signs sufficiently in advance to enable the public to respond to directions.

Warning and traffic signs shall be illuminating or reflective type, visible to the public and traffic during night time hours.

END OF SECTION

**TOWN OF EDSON
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PRODUCTS/WORKMANSHIP

21. PRODUCTS/WORKMANSHIP (01600)

21.1 PRODUCTS

21.1.1 Quality of Products

Products, workmanship and testing shall conform to standards specified in this section. All products and workmanship are subject to inspection by the Engineer.

All materials, equipment and articles incorporated in the work are to be new, not damaged or defective, and of the best quality, compatible with specifications for the purpose intended. If requested, the Contractor shall furnish evidence as to type, source and quality of products required.

Defective materials, equipment and articles, whenever found, may be rejected, regardless of previous inspection. Inspection by the Engineer, or an inspector, does not relieve the Contractor of his responsibility, but is merely a precaution against oversight or error. Remove and replace defective materials at own expense and be responsible for all delays and expenses caused by rejection.

Should any dispute arise as to the quality or fitness of materials, equipment or articles, the decision rests strictly with the Engineer, based upon the requirements of the contract documents.

Unless otherwise indicated in the specifications, the Contractor shall maintain uniformity of manufacturer for any particular or like item throughout the work.

Permanent labels, trademarks and nameplates on materials, equipment and articles are not acceptable in prominent locations, except where required for operating instructions.

21.1.2 Availability of Products

Immediately upon contract award, the Contractor shall review product requirements and anticipate foreseeable delivery delays in any items. If delays in deliveries of material, equipment or articles are foreseeable, notify the Engineer in order that substitutions, or other remedial action, may be authorized in ample time to prevent delay in performance of work.

If such notice is not given, the Engineer reserves the right to substitute more readily available products in order to prevent delays, at no additional cost to the Owner.

No substitution of any item will be permitted unless the approved item cannot be delivered to the job site in time to comply with the schedule.

To receive approval, proposed substitutes must equal or exceed the quality, finish and performance of those specified and/or shown and must not exceed the space requirements allotted on the drawings.

The use of trade names in these specifications and on drawings shall constitute a basis upon which equals may be established. Substitution will be allowed, but only on written consent and conditions from the Engineer. Further, wherever a trade name is stated, the Work shall be executed in accordance with the manufacturer's printed instructions. Substituted equipment shall not require redesign of structural, architectural, electrical or mechanical components unless approved by the Engineer. Any additional provisions or changes required for the equipment shall be the responsibility of the Contractor.

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PRODUCTS/WORKMANSHIP

The Contractor shall provide documentary proof of equality, difference in price (if any), and delivery dates in the form of certified quotations from suppliers of both specified items and proposed substitutions.

The Contractor shall include all costs in the difference in price (if any) for any required revisions to other structures and products to accommodate such substitutions.

21.1.3 Storage, Handling and Protection of Products

The Contractor shall handle and store products in a manner to prevent damage, contamination, deterioration and soiling, and in accordance with manufacturer's recommendations when applicable.

The Contractor shall store packaged or bundled products in original and undamaged condition, with manufacturer's seals and labels intact. Do not remove from packaging or bundling until required in work.

Products subject to damage from weather are to be stored in weatherproof enclosures.

The Contractor shall store cementitious material clear of earth or concrete floors, and away from walls.

The Contractor shall keep sand, when used for grout or mortar materials, clean and dry. Store sand on wooden platforms and cover with waterproof tarpaulins during inclement weather.

The Contractor shall remove and replace damaged products at own expense and to the satisfaction of the Engineer.

21.1.4 Manufacturer's Directions

Unless otherwise directed in the specifications, install or erect all products in accordance with manufacturer's recommendations. Do not rely on labels or enclosures provided with products. Obtain instructions directly from manufacturers.

Notify the Engineer, in writing, of any conflicts between the specifications and manufacturer's instructions, so that the Engineer may establish the course of action to follow.

Improper installation or erection of products due to failure in complying with these requirements authorizes the Engineer to require any removal and reinstallation that may be considered necessary, at no increase in contract prices.

21.1.5 Transportation Costs of Products

The Contractor shall pay all costs of transportation of products required in the performance of work. Be responsible for ensuring Subcontractors include the costs of transporting products that are part of their work.

Transportation costs of products supplied by the Owner will be paid for by the Owner. Be responsible for unloading, handling, and storage of such products, unless specified otherwise.

21.2 WORKMANSHIP

21.2.1 General Requirements

Workmanship is to be of the best quality, executed by workers fully experienced and skilled in their respective trades holding current certificate of proficiency issued pursuant to the Tradesmen's Qualification Act in respect to the applicable trade, and in accordance with all local relevant codes and regulations. Immediately notify the Engineer if work is required in such a manner as to make it impracticable to produce required results.

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PRODUCTS/WORKMANSHIP

The Contractor shall at all times enforce discipline and good order among workers. Do not employ any unfit person or anyone unskilled in the duties assigned to him. The Engineer reserves the right to require the removal from the site of workers deemed incompetent, careless, insubordinate or otherwise objectionable.

Decisions as to the quality of, or fitness of, workmanship in cases of any dispute rests solely with the Engineer, whose decision is final.

21.2.2 Coordination

The Contractor shall ensure full cooperation among all trades in laying out work. Maintain efficient and continuous supervision.

The Contractor shall ensure that the work of various subcontractors does not conflict or create interference, thus assuring satisfactory performance of work.

The Contractor shall be responsible for the proper coordination and placement of openings, sleeveings and accessories.

21.2.3 Existing Surface Features

When tying into, or connecting with, existing roads, lanes, walkways, curbs, or other existing surface features, the Contractor shall carry out work at times as directed by local governing authorities, with a minimum of disturbance to existing features.

The Contractor shall protect and maintain existing surface features as required.

21.2.4 Inspection and Testing

Do not cover any work before inspection and testing, unless authorized by Engineer in writing.

Perform all tests required by the specifications and by authorities having jurisdiction.

END OF SECTION

**TOWN OF EDSON
8TH AVENUE - 2025 REHABILITATION**

02010

SUMMARY OF WORK

22. SUMMARY OF WORK (02010)

22.1 WORK INCLUDED

The work under this contract shall include, but is not limited to, the following:

8th Avenue from 51st Street to 52nd Street

- Excavation, haul and placement offsite of existing sub-grade material in roadway and under proposed curbs and sidewalks
- Removal and disposal, and placement of existing topsoil.
- Excavation, removal and disposal of existing water main and sanitary sewer.
- Supply and placement of new water main and sanitary sewer.
- Supply and installation of new sanitary manholes.
- Adjust existing catch basins.
- Excavation, removal and disposal of existing water and sanitary services to property
- Supply and replacement of new services to existing property.
- Supply and placement of non-woven geotextile
- Supply and placement of geogrid
- Supply and placement of perforated drain pipe
- Supply, haul and placement of granular sub-base material.
- Supply, haul and placement of Des 2 Class 20 granular base course.
- Supply of Concrete for and construction of: 300mm standard monolithic sidewalk, monolithic lane and driveway crossings, concrete walkways and concrete wheelchair/bike ramps, driveway and walkway tie-ins
- Supply, haul and placement of topsoil material, fertilizer and grass seed of disturbed areas.
- Supply, haul and placement of topsoil material, fertilizer and sodding of disturbed areas.
- Supply of materials and adjustment of any manholes, catch basins or valves as required in the work area.
- Sawcut and cold mill existing asphalt concrete pavement edges prior to placement of new ACP.
- Supply, haul and placement of asphalt concrete pavement.

The most recent copy of the Owner of Edmonton Complete Streets Design and Construction Standards shall be used as reference for those specifications not identified in this Contract Document.

The Contractor shall be prepared to begin the work outlined in the Contract Documents in accordance with the work schedule as set out elsewhere in this document.

Time and all time limits stated in the Contract Documents are of the essence. Contractor shall perform work expeditiously and with adequate forces to achieve interim and total completion within the contract time. The Contractor shall meet each of the following completion dates or be liable for liquidated damages in each instance for failure to do so.



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02010

SUMMARY OF WORK

22.1.1 Timing of Work by Others

Tentative dates for Work items by others are as follows. These dates are not guaranteed. The Contractor will be kept informed of changes in these dates and will revise his construction schedule to accommodate the changes. Claim for extra compensation due to revisions to these dates will not be entertained. Completion dates for the Contract, or specified portions, will be extended only if, in the opinion of the Engineer, delays encountered due to the work of others at that location directly affected the Contractor's progress to the extent that he could not complete by the specified date. Notwithstanding the above, the Contractor shall be required to use all possible measures, including additional forces, extended hours of work, and other construction management methods, to meet specified completion dates.

Tentative Work Schedule and Completion Dates

All other work shall be completed by:

October 31, 2025

END OF SECTION



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CONTRACT DRAWINGS, PERMITS, AND ATTACHMENTS

23. CONTRACT DRAWINGS, PERMITS, AND ATTACHMENTS (02015)

23.1 CONTRACT DRAWINGS

	<u>Description</u>	<u>Revision</u>
	Cover Sheet	
C001	Legend, Sheet List, and General Notes	1
C100	8 TH Ave Existing Plan	0
C200	Temporary Water Servicing Plan	1
C201	8 th Avenue Plane Profile	1
C400	Intersection Grading Plan	1
C500	Concrete and Cross Section Details	1
C501	Concrete and Underground Water Details	1
C502	Underground Water Details	1
C503	Underground Storm and Sanitary Details	1
C504	Underground Water and Sanitary Details	1

END OF SECTION

TOWN OF EDSON
8TH AVENUE - 2025 REHABILITATION
SUPPLEMENTAL SPECIFICATIONS

02020

24. SUPPLEMENTAL SPECIFICATIONS (02020)

24.1 GENERAL

The following amendments shall supplement the referenced specification sections and shall apply to this contract. Where discrepancies arise, the supplemental specifications will govern over the related specification section in this contract.

The "Owner of Edmonton Complete Streets Design and Construction Standards (October 2021)" shall form part of the Contract Documents.

In the event of a conflict between this document and Owner of Edmonton Complete Streets Design and Construction Standards and the remaining Contract Documents, the more stringent requirement shall govern.

The Town of Edson has a fixed budget to undertake the Work described in this contract and itemized in the Unit Price Schedules. Should the Total Tender Price exceed the Municipality's budget amount, the Owner reserves the right to delete any Schedule or any number of items within a Schedule. The Contractor shall not be compensated for any deletions of the work.

24.2 EMERGENCY SERVICES

It is the Contractor's responsibility to inform the RCMP/Police Department, Fire Department and Ambulance Services of the proposed work schedule and changes to the schedule including times of work and activities required within the place of Work.

24.3 ADJUSTMENT TO COMPLETION DATES

The Owner will adjust the specified Contract Completion date and/or interim completion data as applicable under the following conditions only. These conditions also apply in situations where a completion date has been previously adjusted by the Owner.

- The Contractor submits a written request to the Engineer as soon as possible after the occurrence of the circumstance giving rise to the request and not later than fourteen (14) days after the occurrence of the circumstance. Failure to submit a request within this prescribed time period will prejudice the Contractor's right to receive an adjustment to the completion date, unless the Contractor can demonstrate to the satisfaction of the owner that such delay did not prejudice the ability of the Owner to validate the request, and
- The written request is accompanied by an adjusted detailed schedule of the Contractor's work to enable completion on the requested adjusted date and,
- The reason for the request, stated in the request, is one of the following:
 - Completion of the Contract requires work or material in greater amounts or quantities than those estimated amounts or quantities shown in the Contract, or
 - The work site is not available to the Contractor through no fault of the Contractor, or
 - There is a delay in the availability of materials which are to be supplied by the owner, or
 - The Engineer suspends the Work and standby payments may occur in accordance with the Contract, or

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- There is a delay resulting from an order of a court, or from strikes or lock-outs, or
- There is a delay for reasons of inclement weather, or conditions resulting from inclement weather. Such delays will be considered when the Contractor works on the Right of Way less than half a normal working day for reasons of inclement weather. A normal working day shall comprise the average duration worked by the Contractor on the preceding five (5) uninterrupted days.

Inclement weather occurring during the period between November 1 and April 30 of the following year will not be considered as a reason for delay.

- The circumstances precipitating the request occurred prior to the completion date and the Contractor demonstrates to the satisfaction of the Engineer that the circumstance impacted the overall project schedule, preventing completion of the Contract by the specified interim or Contract completion date.

24.4 DURATION OF WORK AND SITE OCCUPANCY

The Duration of work and the Calculation of Calendar Days will proceed once the Owner issues a Notice to Proceed.

Employee Time off will be calculated as a Calendar Day and shall not be considered as an extension to the Completion Date.

Site Occupancy will not be paid for separately and will not be considered as part of this Contract.

24.5 CONSTRUCTION STAKING

The Engineer will provide all survey/construction staking for all work contained in this Contract.

24.6 NOISE BYLAW

The Contractor shall conform to the regulations pertaining to construction noise in accordance to Town of Edson Noise Bylaw. No person shall operate construction equipment so as to create a Noise or disturbance which may be heard in residential buildings between the hours of Ten O'clock (10:00) in the evening and Seven O'clock (7:00) in the morning of Monday through Sunday.

24.7 DEMOLITION

Payment for Removal and Disposal, unless otherwise specified within the unit price schedule, will be incidental to the unit price bid for the respective items as follows:

- Removal and Disposal of existing water, sanitary or storm sewer mains will be incidental to the unit price bid for supply and install respective Water, Sanitary or Storm Sewer Main.
- Removal and Disposal of manholes, pipes, services, valves, hydrant fittings and other related items will be incidental to the unit price bid for the applicable bid item being installed.

The price bid will be considered full compensation and shall include all necessary work including, but not limited to, excavating, removal, hauling and disposal, saw-cutting, sealing, grouting plugging, abandoning, backfill and compaction, and all labor, equipment, tools and incidentals necessary to complete the Work.

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SUPPLEMENTAL SPECIFICATIONS

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24.8 TRAFFIC ACCOMMODATION

24.8.1 Traffic Accommodation

The Owner reserves the right to modify the Contractor's operations if, in the opinion of the Engineer, traffic is being unduly hindered.

The Contractor shall be required to provide the Engineer with a 'Traffic Accommodation Strategy' prior to starting any construction operations.

The Contractor shall ensure that his operations are coordinated in a manner to allow backfill of all excavation on the same day the excavation was removed. There will be no open excavations left overnight on this project.

The Contractor shall be required to provide the Engineer with a 'Traffic Accommodation Strategy' prior to starting any construction operations.

Should the Contractor decide to utilize detours around the construction zones, all detours will be subject to the approval of the Owner. The Contractor shall establish and maintain all local road detour signing, complete with signs at every intersection as well as every commercial access and shall meet the requirements in accordance to the Contractors Traffic Accommodation Strategy. The Contractor shall ensure that each residential property has at least one access available at all times from the street and the rear lane. Prior to any road closure, the Contractor shall provide each residence with a 48-hour notice of road closure and an alternative access route. Contractor shall also be responsible for maintenance and dust control at the Contractor's expense as directed by the Engineer.

Traffic Accommodation shall be paid as a Lump Sum item which shall include submittal of an approved Traffic Accommodation Plan, supply and install temporary traffic accommodation construction signage and control; measures, flag-persons, submittal of weekly reports.

24.8.2 Road Use Agreement

The Contractor shall enter into a Local Road Use Agreement with the Owner. The Agreement will cover the use of local roads as haul roads and detour roads and will address maintenance and restoration of roads used under this contract. Town of Edson contact is:

Mr. Armia Mikhael, Infrastructure Manager

Town of Edson

Phone: 780-723-6461

24.8.3 Towing Traffic

No separate or additional payment will be made for towing traffic through the work. Any costs for towing traffic shall be included in the unit price bid for "Common Excavation - Waste". The Contractor shall supply operators and equipment for standby and towing at all times, twenty-four (24) hours a day, seven (7) days a week for the duration of the contract, at the request of the Engineer.

24.8.4 Contractor's Use of Lime

The Town of Edson will **not** reimburse the Contractor for fifty percent (50%) of the cost for the supply of lime for drying wet materials. If the Contractor elects to use lime for drying, no separate or additional payment will be made for the work.

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24.9 DIESEL FUEL COST ADJUSTMENT

Diesel Fuel Cost Adjustment will **not** be used on this project.

24.10 CONTROL OF EQUIPMENT

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

24.11 BURNING

There will be no burning of trees, garbage or the like. All debris is to be disposed of by a method or at a site that is approved by the Engineer.

24.12 HISTORICAL RESOURCES

Pursuant to Section 27 of the Historical Resources Act, should any palaeontological or historical resources be discovered during the conduct of construction activities, the Engineer's Representative is to be informed immediately. Pursuant to information from the appropriate governing body, it may be necessary for Town of Edson to issue further instructions regarding the documentation of these resources.

24.13 WATER MAINS**24.13.1 Temporary Water**

The Contractor shall, where required by the Engineer, provide a temporary water service connection to each property where a disruption in water service will be more than four (4) hours.

Water service hoses to be used for connection from the temporary service pipe to the building/residence shall have a minimum working pressure rating of 1100 kilopascal and be made of a material that will not have an adverse effect on the taste or odor of the water. Contractor shall submit a plan for disinfecting, flushing and testing the temporary water system to the Town prior to work starting. The Contractor shall provide a calibrated water meter at all times for temporary water supply for the duration of the work.

One week prior to temporary water connection, the Contractor shall deliver "door hanger" notices supplied by the Contractor to each affected residence and business. The Contractor shall make all connections to the customer's water service line on a day and at a time that is convenient to the customer. Connection from the temporary bypass pipe to the water service line shall be made outside at the hose bib. Should the Contractor not be able to connect to an outside hose bib, the Contractor shall make every effort to ensure that each owner has temporary water. Upon an approved method by the Engineer, the Contractor shall submit a claim for extra work in accordance with Section 5.7. All extra work shall be completed by a registered independent qualified plumber or equivalent.

Temporary water system must meet NSF-61 standards and shall include temporary bypass pipe, hoses, connections and related appurtenances necessary to maintain a continuous supply of water. Temporary bypass system shall be maintained in a safe and operative condition at all times. The Contractor shall inspect daily each connection for leaks and be fixed in a timely manner.

For protection of the work and the public, flashers and barricades shall be installed at locations as directed by the Engineer. The flashers and barricades shall be maintained in proper operating condition. In event of emergency, the Contractor shall have response plan to address unexplained water outage within one (1hour) of

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being notified of an incident. The Contractor shall provide the engineer with a twenty-four hour (24 hr) contact name and number to be notified in case of an emergency.

Temporary bypass pipe crossing streets and sidewalk access ramps shall be installed shall not block or otherwise impede access to any sidewalk access ramp. The Contractor shall maintain uninterrupted accessibility to sidewalk access ramps at all times.

After completion of the water main work and restoration of the supply of water back to the water main, the Contractor shall remove all temporary bypass pipe and related appurtenances. The street, sidewalks and adjacent property shall be restored to a neat and orderly condition.

The Contractor shall disinfect the hydrant standpipe prior to connecting the bypass pipe to the hydrant by pouring a solution containing approximately five percent (5%) sodium hypochlorite into the pipe. Introduce disinfectant according to AWWA C651-99, and to approval of Engineer and Provincial Ministry of Health. The pipe shall be filled with clean water and let stand for a minimum of twenty-four (24) hours. The hydrant shall then be flushed and the bypass pipe connected to it. Conform to AWWA C651-99 for quantity of disinfectant, method of distribution throughout system and final flushing.

After final flushing, and before placing temporary water in service, the Engineer will collect samples in sterile bottles from an approved sampling point. The sampling is to be witnessed by local authorities as necessary. Samples will be submitted to Provincial Ministry of Health for testing, and test results forwarded to Local Authorities. Heterotrophic plate counts will be provided.

If initial disinfection fails to produce satisfactory results, repeat disinfection until satisfactory samples is obtained.

After a satisfactory disinfection sample has been obtained and approved by the Engineer, the Contractor shall flush each water service prior to the water meter to ensure all deleterious substances have been flushed from the line prior to placing the service back into operation.

Payment for Temporary Water will be incidental to the unit price bid for "Water Main - PVC CAN3-B.137.3 M86 (AWWAc900) Class 150 DR18 (200mm)" and "Water Main - PVC CAN3-B.137.3 M86 (AWWAc900) Class 150 DR18 (250mm)". The Price bid will be considered full compensation for all labour, materials and equipment.

Where itemized in Unit Price Schedule, special circumstances will be paid for at contract lump sum price for extra work in accordance with Section 5.7. Includes costs for pipe, fittings, taps, meters and all other labor and products required to complete the work.

24.13.2 Remove and Dispose Asbestos Cement Pipe

A portion of the existing water line may be Asbestos Cement (AC) Pipe and therefore special precautions must be taken when removing the pipe. All work must be in compliance with the Alberta Asbestos Abatement Manual (October 2012) available at:

<http://work.alberta.ca/documents/Asbestos-Abatement-Manual.pdf>

Refer to the Alberta Asbestos Abatement Manual for safe handling procedures. The Contractor is responsible for all forms and notifications required for working with the AC pipe. Copies of all forms and notification shall be provided to the Engineer that material has been safely disposed of at an approved landfill facility.

Payment for Remove and Dispose of the Asbestos Cement Pipe will be at the unit price bid made in lineal meters (lin.m), for "Remove and Dispose AC Watermain" which shall be for full compensation for all materials, disposal, equipment and labour required necessary to complete the Work.

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24.13.3 Remove and Dispose Fire Hydrant Assembly

The Contractor shall, where required by the Engineer, remove and dispose of existing fire hydrant assemblies within the work area including, but not limited to the fire hydrant and standpipe assembly, hydrant gate valve, pipe, fittings, and all work necessary to complete the work, excluding excavation and backfill, restoration and all work necessary to complete the work.

Payment for Remove and Dispose Fire Hydrant Assembly will be made at the unit price bid for each "Water Main – Hydrant Assembly Removal" removed and shall be for full compensation for all materials, equipment and labour required necessary to complete the Work.

24.13.4 Remove and Dispose Pipe and Structures

The Contractor shall, remove and dispose of existing water main, sanitary sewer pipe, storm sewer pipe, catch basin leads, catch basins and manholes as encountered during the trenching, excavation and installation of new pipe. If existing pipe material cannot be broken into small material to be incorporated back into the backfill material, as accepted by the Engineer, it shall be properly disposed of at a certified landfill site. The exception to this will be all asbestos cement pipe which must be properly removed and disposed of as per contract specifications.

Payment to Remove and Dispose of existing water main and sanitary sewer pipe, unless otherwise identified, will be incidental to the respective unit price bid of the type pipe being installed and shall be for full compensation for all materials, equipment and labour required necessary to complete the Work.

24.13.5 Cathodic Protection

Where connection is made to existing steel, cast iron or ductile iron pipe, at least two 7.7 kg magnesium anodes shall be attached to the existing metal pipe at point of connection.

All buried fittings and valves shall be cathodically protected with 2.3 kg zinc anodes and all hydrants shall be cathodically protected with a 5.5 kg zinc anode as per the General Details.

Zinc anodes shall be supplied as specified below:

1. Zinc anodes shall conform to ASTM B418-73 Type II and shall have the following composition:
 - Aluminum 0.005% maximum
 - Cadmium 0.003%
 - Iron 0.001%
 - Zinc remainder
2. Magnesium anodes shall conform to ASTM B843
3. Lead wire No. 10AWG/7, 2 meters long.
4. Anodes shall be packed in a permeable cloth bag or cardboard chip type tube containing the anode and backfill material, consisting of:
 - Ground Hydrated Gypsum 75%
 - Powdered Wyoming Bentonite 20%
 - Anhydrous Sodium Sulphate 5%

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- Grain size limiters are:
 - 100% passing the 850 x 10-6 m sieve size, and
 - 50% or more retained by the 150 x 10-6 m sieve size.
- 5. The mixture shall be firmly packaged around the anode by means of adequate vibration. Backfill material should be of sufficient quantity to cover all parts of the anode to a minimum thickness of 25 x 10-6 meters.
- 6. Anodes packed in cloth bags shall be shipped in a plastic or heavy paper bag of sufficient thickness to permit normal handling without tearing.
- 7. The plastic shipping container is to be removed prior to installation. Anodes shall carry a label identifying the manufacturer, type of anode, metal and backfill composition, and the net weight of the anode.
- 8. Wires shall be connected to fittings with a Cadweld as per Standard Drawing No. 43.
- 9. A minimum of 2 liters of water shall be poured on each 2.3 kg anode and 3 litres on 5.5 kg anode to initiate the anode's operation. An alternative is to soak the above anodes in water for a minimum of 10 minutes.
- 10. All exterior bolts on valves, hydrants and couplings shall be Stainless Steel 304 or approved equivalent.
- 11. All water services shall be cathodically protected with a 5.5 cg zinc anode as per the General Details.

Payment for Cathodic Protection will be incidental to the unit price bid for the respective item identified in the unit price schedule, which shall be for full compensation for all materials, equipment and labour required for supply and installation of the buried fitting, valve and all appurtenances necessary to complete the Work.

24.13.6 Connect to Existing Water Main

Within the scope of work, there are various locations that a new one hundred fifty-millimetre (150mm) PVC Water Main is required to be connected to the existing water main. Hymax, Alpha or equivalent transition couplings shall be used to tie the new PVC Water Main to the existing Water Main.

Payment for connecting to existing water main will be incidental to the unit price bid for "Water Main - PVC CAN3-B.137.3 M86 (AWWAc900) Class 150 DR18 (150mm)" or identified in the unit price schedule, which shall be for full compensation for all materials, equipment and labour required for supply and installation of the valve and all appurtenances necessary to complete the Work.

24.13.7 Pipe Restraints

Within the scope of work, there are various locations that a new one hundred fifty-millimetre (150mm) PVC Water Valves is required to be connected to the existing water main. Uni-Flange Series for PVC Pipe used with mechanical joint for pushed-on fittings be used to connect the new PVC Water Main pipe with new valve.

Payment for connecting to existing water main will be incidental to the unit price bid for "Water Main - PVC CAN3-B.137.3 M86 (AWWAc900) Class 150 DR18 (150mm)" or identified in the unit price schedule, which shall be for full compensation for all materials, equipment and labour required for supply and installation of the valve and all appurtenances necessary to complete the Work.

24.13.8 Field Applied Coating and Wrapping of Valves, Fittings, Flanges and Hydrants

Damaged coating on valves, fittings and hydrants shall be repaired to the satisfaction of the Engineer. In a non-metallic distribution system each valve, fitting and hydrant shall be cathodically protected as specified. All bare

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fastener threads, nuts and bolting surfaces on flanges and fittings shall be protected with an approved petrolatum paste and tape as listed below. Stainless steel nuts and bolts are exempt from paste and tape requirements.

24.13.9 Field Applied Coating and Wrapping

Specific components, and installed elements as specified and detailed throughout these Specifications shall be field coated and wrapped and damaged factory applied coating shall be repaired with materials listed below in conformity with the Manufacturer's Specifications.

Ductile Iron Pipe- Bell and Spigot Joints

Primer	Tape
Denso Paste	Denso, Denso LT,
Petro Primer	Petro Wrap LT
Petro Petrocor	Petrolatum Tape
Prempaste	Premtape LT
Trenton	Trenton Tec-Tape
PetroGuard	PetroGuard LT, or approved equal.

Couplings, Joint Restraints, Flanged and MJ Joints, Services and Threaded Bolting Surfaces

Appropriate mastics, mastic blankets, fillers, over-wraps, and rockshields from the listed manufacturers are required for these applications by the Engineer.

Primer	Tape
Denso Paste	Denso, Denso LT
Trenton	Trenton Tec-Tape
Petrocor	Petrocor Petrolatum Tape
Petro Primer	Petro 40, Petro Wrap LT
Prempaste	Premtape LT
Petro Coating Systems	PCS LT

Payment for Field Applied Coating and Wrapping will be incidental to the unit price bid for the respective item identified in the unit price schedule, which shall be for full compensation for all materials, equipment and labour required for supply and installation of the valve, buried fitting, flange, hydrant and all appurtenances necessary to complete the Work.

24.14 WASH ROCK BEDDING

The Contractor will be responsible supply and placement of wash rock material for bedding only for all pipe material installed. For all water main and sanitary sewer, including services, shall have a minimum of one hundred fifty millimetres (150 mm) depth of wash rock place below each pipe installed

Payment for wash rock shall be incidental unit price bid per horizontal meter (m) for "Trench Excavation, Compaction & Backfill (0.0m to 2.5m)" or "Trench Excavation, Compaction & Backfill (2.5m to 3.5m)" for the corresponding depth.

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24.15 FENCE REPLACEMENT

The Contractor will be responsible for the removal, salvage, storage and replacement of all fences located within the Work area, as directed by the Engineer. All fence posts shall be removed and disposed of as directed by the Engineer.

The Contractor shall be responsible for the cost of repair or replacement of any portion of damaged fence as a result of construction activities.

Payment for Fence Replacement will be incidental to the unit price bid for "Sanitary Service Pipe - PVC DR28 ASTM D3034, CSA B182.1 & 182.2 (150mm)" identified in the unit price schedule, which shall be full compensation for but not limited to, remove and salvage existing fence and hardware, remove and dispose existing post, supply and install new post including concrete piles, supply and install new hardware, and all labour, equipment, tools and incidentals necessary to complete the Work.

24.16 TREE REMOVAL

Under special circumstances, the Contractor shall, where required by the Engineer, cut and remove existing trees near excavations that pose a safety concern to the Contractor and Owner of the adjacent property. Upon an approved method by the Engineer, the Contractor shall have the Work completed and obtain all necessary clearances and approval from each landowner prior to completing the Work.

Payment for Tree Removal, including the removal of existing stumps and trees on the site will be considered incidental for "Trench Excavation, Compaction & Backfill (2.5m to 3.5m)" which shall be considered full compensation for all labor, materials and equipment necessary for the removal and off-site disposal of existing stumps, trees and filling of holes with approved material, and including cutting, hauling and burial as necessary.

If a professional tree removal company is required to remove a tree that is hazardous to the Contractor's operation or a safety risk to private property, a change order under section 5.7 will be approved at the engineer's discretion.

24.17 SANITARY SEWER**24.17.1 Connect to Existing Sanitary Manhole**

Within the scope of work, there is location that a new two hundred-millimeter (200 mm) PVC sanitary sewer is required to be connected to the existing sanitary manhole. Connection will require to be sealed with non-shrink grout.

Payment for connecting to existing VCT Sanitary Sewer will be incidental to the unit price bid for "Sanitary Sewer Pipe - PVC SDR 35, CSA B182.1 & B182.2 (200mm)" identified in the unit price schedule, which shall be for full compensation for all materials, equipment and labour required for supply and installation of the valve and all appurtenances necessary to complete the Work.

24.18 INSULATION

In locations as shown on drawings or as directed by the Engineer, the Contractor shall field insulate pipe with extruded polystyrene board, Type HI-40 or approved equal as detailed.

Payment will be made at the unit price bid per square meter of 50mm thick of board insulation as measured along the centerline of the pipe. Unit price shall include supply and installation, trenching, bedding, backfilling, compacting, and all work performed, and materials supplied that are not specifically itemized elsewhere and paid for separately in the Unit Price Schedule.

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24.19 ROADWORK

24.19.1 Common Excavation - Waste

The Contractor shall excavate, load, haul, dispose and level any excess or unsuitable material to the Town of Edson Lagoon located in the NW 24-53-17-W5 in a location as directed by the Engineer. The Contractor will be responsible for providing the appropriate equipment necessary for leveling material as directed by the Engineer. The cost to provide a separate piece of equipment including mobilization and demobilization plus operator shall be incidental to the unit price bid per cubic metre for “Common Excavation – Waste” and measured based on the field survey from the material removed from the project work limits.

Payment will be made at the unit price bid per cubic metre for “Common Excavation - Waste”. Such payment shall be full compensation for the excavating, loading, hauling, disposal, shaping and smoothing of disposal areas, constructing and maintaining of access roads, of all excavated waste materials.

24.19.2 Cold Milling Asphalt Pavement

The Contractor shall excavate, load, haul, dispose and pile milled asphalt material to the Town of Edson Rendleman yard located in the NW 24-53-17-W5 in a location as directed by the Engineer. The Contractor will be responsible for providing the appropriate equipment necessary pile the material as directed by the Engineer. The cost to provide a separate piece of equipment including mobilization and demobilization plus operator shall be incidental to the unit price bid per square metre for “Cold Milling Asphalt Concrete” and measured based on the field survey from the material removed from the project work limits.

24.19.3 Non-Woven Geotextile

The Contractor shall supply the product to meet the following standards:

Property	ASTM Test	Units	Mechanical Properties Minimum Average Roll Values ¹	
			Class 1 Nonwoven ²	Class 2 Nonwoven
Grab Tensile Strength	D4632	(N)	900	700
Grab Tensile Elongation	D4632	%	≥50%	≥50%
CBR Puncture	D6241	(N)	1925	1375
Trapezoid Tear	D4533	(N)	350	250
Sewn Seam Strength	D4632	(N)	810	630
Ultraviolet Stability	D4355	%	50% @ 500 hr.	50% @ 500 hr.
Apparent Opening Size	D4751	(mm)	0.3	0.3
Permittivity	D4491	(sec-1)	0.5	0.5

1. All values in Table 2.1.3, except AOS, represent minimum average roll values (MARV) in the weaker principal direction. Values of AOS represent maximum average roll values.

2. Default geotextile selection. The designer may specify a Class 2 nonwoven geotextile in a roadway structure if the designer has found the class of geotextile to have sufficient survivability based on field experience.

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Installation of the nonwoven geotextile shall be as follows:

- The non-woven geotextile will be installed along the full width of excavation and sidewalls of roadway excavation (1000mm below top of ACP), unless otherwise directed by the Engineer. In areas of concern, the Engineer may direct the Contractor to install the non-woven geotextile at any other location within the road structure. The minimum overlap is two hundred millimeter (200mm), pinned or tied every one meter (1m) using a non-degrading material.
- The installation site shall be prepared by clearing, grubbing, and excavating or filling the area to the design grade. This includes the removal of topsoil and vegetation.
- Soft spots and unsuitable areas will be identified during site preparation or subsequent proof rolling. These areas shall be excavated and backfilled with select material and compacted using normal procedures.
- The geosynthetic shall be laid smooth without folds or significant wrinkles on the prepared subgrade in the direction of construction traffic. Adjacent geosynthetic panels shall be overlapped or sewn as required in the plans.
- overlap requirements shall apply as follows:

CBR \geq 3%	300 - 450 mm overlap
1% \leq CBR < 3%	600 - 900 mm overlap
0.5% \leq CBR < 1%	900 mm overlap or sewn
CBR < 0.5%	sewn

- On curves, the geosynthetic may be cut to conform to the curves. The overlap shall be in the direction of construction and held in place by piles of Granular Base Course or Granular Subbase Course.
- Prior to covering, the geosynthetic shall be inspected to ensure that it has not been damaged during installation. The inspection shall be done by the Engineer. Damaged geosynthetic, as identified by the Engineer, shall be repaired immediately. Cover the damaged area with a geosynthetic patch that extends an amount equal to the required overlap beyond the damaged area.
- The subbase shall be placed by end dumping onto the geosynthetic from the edge of the geosynthetic or from previously placed subbase aggregate. Construction vehicles shall not be allowed directly on the geosynthetic.
- The subbase shall be placed such that at least the minimum specified lift thickness shall always be between the geosynthetic and equipment tires or tracks. Turning of vehicles shall not be permitted on the first lift above the geotextile.
- On subgrades having a CBR value of less than 1.0%, the subbase aggregate should be spread in its full thickness as soon as possible after dumping to minimize potential of localized subgrade failure due to overloading of the subgrade.

Payment for non-woven geotextile will be made at the unit price bid for square metre (m²) of "Non-Woven Geotextile" installed for the Work. The unit price bid shall include all costs for supply, installation, labour, equipment, tools and incidentals required to complete the Work.

The non-woven geotextile will be measured in square metres (m²) of Subgrade covered in place, as determined by field measurement. No additional measurement or payment will be made for overlap, seams or repairs.

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24.19.4 **Geogrid**

The Contractor shall supply the product developed by Tensar International called TriAx (TX) 160 Geogrids. There will be no product substitution approved by the Engineer on this project.

The Geogrid will be installed over the first lift of four hundred fifty millimeter (450mm) lift of Granular Sub-Base. The Geogrid will extend the full width of excavation, unless otherwise directed by the Engineer. In areas of concern, the Engineer may direct the Contractor to install the Geogrid over the non-woven geotextile, or at any other location within the road structure. The minimum overlap is six hundred millimeter (600mm), pinned or tied every one meter (1m) using a non-degrading material.

The Contractor will not be allowed to travel with any equipment on the installed Geo-Grid, the Geo-Grid must remain flat as the Granular Sub-Base is being placed. Failure to do so the Geo-Grid will be removed and reinstalled to ensure flatness. Contractor will have no claim to the owner for Geo-Grid that is removed or reinstalled due to Contractor methods of installation.

Payment for Geogrid will be made at the unit price bid for square metre (m²) of Geogrid installed for the Work. The unit price shall include all costs for supply, installation, labour, equipment, tools and incidentals required to complete the Work.

The Geogrid will be measured in square metres (m²) of Subgrade covered in place, as determined by field measurement. No additional measurement or payment will be made for overlap, seams or repairs.

24.19.5 **Perforated Drainage Pipe**

The Work shall consist of trenching, supplying, and installing perforated pipe with filtration sock, back filling with select filter material, separation geotextile, at locations and to the depths indicated by drawings or as directed by Engineer.

The Contractor shall supply Armtec weeping tile consisting of 100mm diameter HDPE Big 'O' tubing perforated subdrain pipe. Pipes shall be fit with friction fit bell ends and come with capped ends. The Contractor shall supply filter sock or filter fabric for wrapping the perforated pipe. The Contractor shall supply washed rock drainage aggregate composed of hard, durable mineral particles free from organics, clay, silt and other deleterious materials.

Perforated pipe shall be installed to the depth and grade shown on the drawings or as directed by the Engineer. Wrap pipe with geotextile fabric or insert pipe in geotextile sleeve as shown on the drawings as directed by the Engineer. Lay perforated pipe with perforations downwards. Make joints in accordance with manufacture's specifications. Place filter rock over drainage pipe to depth shown in contract drawings. Wrap filter material around top of filter rock. Ensure ends overlap a minimum of 300mm.

Measurement and payment will be made in lineal meters. The unit price bid shall cover the cost of trenching and preparation, supply and install of perforated pipe and sock, supplying, hauling, laying and jointing the pipe and geotextile filter fabric and backfilling of the trench. Connections to manholes or catch basins and overlap will be considered incidental to the work in this section. No additional measurement or payment will be made for overlap, seams or repairs.

24.19.6 **Granular Sub-Base**

The Granular Sub-Base is the material lying above the Subgrade and below the base course. The total thickness of compacted granular sub-base will be six hundred millimeters (600mm).

The Granular Sub-Base shall not be placed until the underlying subgrade, non-woven geotextile and Geogrid have been inspected and approved by the Engineer.

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The Granular Sub-Base shall be placed in two (2) uniform layers not exceeding one hundred and fifty millimeter (150mm) in thickness, or as directed by the Engineer. The material shall be placed by mechanical spreaders or deposited in windrows and leveled with a suitable motor grader. Each lift of Granular Sub-Base must be compacted to a minimum of ninety eight percent (98%) Standard Proctor Density. Once approved by Engineer, Contractor will supply and install Geo-Grid (24.18.2) and place in one (1) lift of Granular Sub-Base material one hundred and fifty millimeter (150mm) in thickness after compaction or as directed by the Engineer. The material shall be placed by mechanical spreaders or deposited in windrows and leveled with a suitable motor grader. Granular Sub-Base must be compacted to a minimum of ninety eight percent (98%) Standard Proctor Density.

Payment for Granular Sub-Base will be made at the unit price bid per square meter (m²). Such payment shall be full compensation for the supply, crushing, loading, hauling, placing, moisture conditioning, shaping, compacting, proof rolling, re-working, re-compaction and clean up. The price bid will be considered full compensation for all labour, materials and equipment required to complete the work.

24.19.7 Granular Base Course – Des 2 Class 20

The total compacted thickness of the Granular Base Course will be three hundred millimeters (300mm). The Granular Base Course shall not be placed until the underlying granular sub-base has been inspected and approved by the Engineer.

Unless otherwise specified, the Granular Base Course shall be placed in two (2) uniform layers not exceeding one hundred fifty millimeters (150mm) in thickness after compaction. The material shall be placed by mechanical spreaders or deposited in windrows and leveled with a suitable motor grader.

The Granular Base Course must be compacted to a minimum of one hundred percent (100%) Standard Proctor Density. In addition, the Contractor along with the Engineer shall complete a final roll test inspection utilizing a loaded tandem water truck (to the maximum legal capacity), will be carried out on the entire Granular Base Course surface prior to approving the base course for placement of asphaltic concrete pavement.

Measurement will be field measured based on the dimensions indicated on the drawing and as satisfactorily installed and approved by the Engineer, in writing, in its final compacted position. Measurements will be made on the finished top surface of the Granular Base Course as shown on the drawings

No payment will be made for unsatisfactory material based on gradation, compaction, or other failures. No allowance will be made for shrinkage, swelling, or waste of the sub-base material, or for loss of material into yielding underlying soil.

Payment for Granular Base Course will be made at the unit price bid per square meter (m²). Such payment shall be full compensation for the supply, crushing, loading, hauling, placing, moisture conditioning, shaping, compacting, proof rolling, re-working, re-compaction and clean up. The price bid will be considered full compensation for all labour, materials and equipment required to complete the work.

24.19.8 Asphalt Concrete Pavement

The Contractor shall be advised that **NO** "Recycled Asphalt Product" will be permitted to be used within the design mix for Hot Mix Asphalt Concrete Paving. All mix material used for Hot Asphalt Concrete Pavement shall be of new material prepared in accordance with the design specifications.

24.19.9 Concrete Walkway and Driveway Tie-ins

The Contractor shall excavate as required, place and compact one hundred fifty millimeter (150mm) of Des 2 Class 20 Granular Base Course, pour, place and finish one hundred millimeter (100mm) of concrete to match existing walkways and driveways. Concrete shall be placed from back of new sidewalk to property line. In cases

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where concrete must tie-in on private property to maintain positive drainage or grade, approval must be obtained from the Engineer prior to work taking place. The Contractor is responsible for communicating with the property owner throughout the construction.

Payment for concrete walkways and driveways will be made at the unit price bid per square meter (m²) for "Concrete Walkway and Driveway Tie-ins". Such payment shall be full compensation for any excavation required, supplying, placing and compacting GBC, supplying, forming, placing, and finishing concrete, and any other labour, materials and equipment required to complete the work in accordance with these specifications. No separate payment will be made for the excavation or gravel base. Work beyond property line will be paid at the unit price bid for "Concrete Walkway & Driveway Tie-ins".

Any concrete removed and saw cutting, including concrete beyond property line, will be paid at the unit price bid per square meter (m²) for "Remove and Dispose Concrete Surface – Various Thickness".

24.19.10 Gravel Driveway Tie-ins

The Contractor shall excavate as required, supply, place and compact one hundred fifty millimeter (150mm) of Des 2 Class 20 Granular Base Course to tie existing gravel driveways to the back of new sidewalk or curb and gutter. Gravel shall only be compacted and placed beyond property line if directed to do so by the Engineer.

Payment for Graveling Driveways Tie-Ins will be made at the unit price bid per square meter (m²) for "Gravel Driveway Tie-ins (100mm Thickness)" and shall be full compensation for supplying, hauling, placing, grading and compacting gravel and all other labour, materials and equipment required to complete the work in accordance with these specifications. Work beyond property line will be paid at the unit price bid for "Gravel Driveway Tie-ins (100mm Thick)".

24.19.11 Asphalt Concrete Pavement Driveway Tie-In and Repair

The Contractor shall excavate as required, place and compact three hundred millimeter (300mm) of Des 2 Class 20 Granular Base Course, place and finish surface with seventy-five millimeters (75mm) of asphalt concrete pavement to match existing walkways and driveways. In cases where asphaltic concrete pavement must tie-in on private property to maintain positive drainage or grade, approval must be obtained from the Engineer prior to work taking place. The Contractor is responsible for communicating with the property owner throughout the construction.

Payment for Asphalt Concrete Pavement Tie-Ins will be made at the unit price bid per square meter (m²) for "Asphalt Concrete Pavement Tie-Ins – Type M1 (12.5mm Aggregate) (PG 52-34) (75mm Thickness)". Such payment shall be full compensation for any excavation required, supplying, placing and compacting GBC, supplying, placing, and finishing asphaltic concrete, and any other labour, materials and equipment required to complete the work in accordance with these specifications. No separate payment will be made for the excavation or gravel base. Work beyond property line will be paid at the unit price bid for "Asphalt Concrete Pavement Tie-Ins – Type M1 (12.5mm Aggregate) (PG 52-34) (75mm Thickness)".

24.19.12 Driveway Brick Tie-ins

The Contractor shall excavate as required, place and compact one hundred fifty millimeter (150mm) of Des 2 Class 20 Granular Base Course, and fifty millimeter (50mm) of sand, supply and replace bricks to match existing driveway colour and pattern. Bricks shall be placed from back of new sidewalk to property line. In cases where brick must tie-in on private property to maintain positive drainage or grade, approval must be obtained from the Engineer prior to work taking place. The Contractor is responsible for communicating with the property owner throughout the construction.

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Payment for driveway brick tie-in will be made at the unit price bid per square meter (m²) for “Driveway Brick Tie-ins”. Such payment shall be full compensation for any excavation required, supplying, placing and compacting GBC and sand, supplying, placing brick to match existing colour and pattern, and any other labour, materials and equipment required to complete the work in accordance with these specifications. No separate payment will be made for the excavation, gravel or sand base. Work beyond property line will be paid at the unit price bid for “Driveway Brick Tie-ins”.

24.20 SHALLOW UTILITIES

24.20.1 Excavation around Utilities

An ATCO gas line enters the area of excavation. In addition to typical hand-digging or hydro-vacating to determine the location and depth of the lines, the Contractor may be required to expose longer sections of lines if the utilities are within the boundaries of excavation. The Contractor shall hand expose as much line as necessary to maintain adequate road structure, to the approval of the Engineer. At the request of the Engineer, the Contractor shall lower the line by a maximum of point three meter (.3m) and backfill with bedding sand as required.

Known crossings include:

- ATCO gas line along 8th Avenue Lane, near 1+040
- ATCO gas line along 51st Street

Additional crossings may or may not be shown on the drawings and shall be located in the field. These drawings are for the purpose of “**Information Only**” and the Owner is not liable nor takes responsibility for the accuracy of the information provided.

The Contractor is responsible for contacting all utility companies prior to exposing their lines and ensuring a utility company representative is on site as required.

Payment for exposing the shallow utilities shall be considered incidental to the unit price bid for “Common Excavation - Waste”. The price bid will be considered full compensation for all labour, materials sand bedding and equipment. No separate payment will be made for exposing large portions of shallow utilities by hand or hydrovac or any means required to properly support the utility while installation of any deep underground infrastructure.

24.20.2 Bedding Sand for Shallow Utilities

Where any shallow utility is located within the excavation, the Contractor shall expose the entire length of utility line and place a minimum of one hundred fifty millimetres (150mm) of bedding sand around all exposed sides of the exposed line prior to backfilling.

Supplying and installing bedding sand for shallow utilities will be considered incidental to “Trench Excavation, Compaction & Backfill (0.0m-2.5m Depth)” and “Trench Excavation, Compaction & Backfill (2.5m-3.5m Depth)”, and no separate or additional payment will be made.

24.21 TRAFFIC SIGNS

The Contractor will be responsible for the removal, salvage, storage and replacement of all regulatory, roadside, and address street signs within the limits of construction as directed by the Engineer. All signs posts shall be removed and disposed as directed by the Engineer.

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The Contractor shall be responsible for the cost of repair or replacement of any traffic signs damaged as a result of construction activities. Critical signs, such as Stop and Yield signs, necessary for the protection of traffic, shall be temporarily erected and maintained by the Contractor during the period of construction.

The Contractor shall be aware that the street address signs are unique to the Hamlet of Evansburg and must be replaced as directed by the Engineer. The mounting hardware for each street sign shall be removed, disposed and replaced with new hardware suitable for mounting on "U" channel steel posts.

Measurement for Traffic Signs shall be based on one complete sign unit which will include all signs, tabs, hardware, post, break-away post and all material necessary to install one unit.

Payment for Traffic Signs will be made at the the lump sum unit price bid for each "Remove Salvage and Replace Sign and Post". The price bid will be considered full compensation for, but not limited to, remove and salvage existing sign, tab, and hardware, remove and salvage existing post, reinstall post including break-away post, supply and install new hardware, and all necessary work, to complete the Work.

24.22 TOPSOILING AND SOD

The Contractor will be responsible for the general landscaping, top-soiling, fertilizing and sodding of the disturbed areas along the curbs and sidewalks. The area to be topsoiled, fertilized and sodded is estimated to be one thousand five hundred square meters The Contractor will be responsible for landscaping, top-soiling, fertilizing and sodding all disturbed areas up to and beyond the property line as required maintaining natural drainage over the new curb and sidewalk.

The sod bed shall consist of minimum depth of one hundred-millimeter (100 mm) of topsoil capable of supporting good vegetation growth. The topsoil shall be placed and graded evenly and shall be free of rock, root, stumps, weeds and other deleterious material.

The grade of fertilizer used on the project shall be slow release formulated 16-30-0 or 11-54-0 applied at a rate of 75kg/ha.

No heavy equipment will be permitted on the completed asphalt surface for the purpose of landscaping.

Payment for the general landscaping, top-soiling, fertilizing and sodding of the disturbed areas along the curbs and sidewalks and all disturbed areas up to and beyond the property line as required maintaining natural drainage over the new curb and sidewalk will be made at the unit price bid per square metre for "Topsoil and Sod". Such payment shall be full compensation for supplying, loading, hauling and placing topsoil and sod on all disturbed areas, from the back of walk to property line and beyond property line where required. The price bid will be considered full compensation for all labour, materials and equipment necessary to complete the Work. No separate payment will be made for warranty or maintenance work for landscaping, topsoiling and sodding through to the end of the warranty period.

24.23 CANADA POST COMMUNITY MAILBOX

The Contractor shall be advised that there is a Canada Post Community Mailbox that will need to be removed, salvaged, relocated and replaced as part of the Obliteration of Existing Roadway. The Contractor shall contact Canada Post to make arrangements for the temporary relocation and permanent installation of the Community Mailbox.

Maintenance, salvage and reinstallation of the Canada Post Community Mailbox will not be paid for separately but shall be considered incidental the unit price bid for "Common Excavation - Waste".

Damages as a result of this work shall be at the Contractor's expense to repair or replace.



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END OF SECTION

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02050

AGGREGATES GENERAL

25. AGGREGATES GENERAL (02050)

25.1 GENERAL

This section specifies general requirements for supplying and processing of aggregates to be stockpiled or incorporated into work. Specific requirements for physical properties of aggregates not provided in this section are given in related work sections.

25.1.1 Source Approval

Source of materials to be incorporated into work or stockpiled requires approval.

Inform Engineer of proposed source of aggregates and provide access for sampling at least two (2) weeks prior to commencing production.

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

Should a change of material source be proposed during work, advise Engineer two (2) weeks in advance of proposed change to allow sampling and testing.

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

25.1.2 Production Sampling

Aggregate will be subject to continual sampling during production.

Provide Engineer with ready access to source and processed material for purpose of sampling and testing.

Bear the cost of sampling and testing of aggregates in order to meet design gradations and specifications.

25.1.3 Measurement for Payment

No measurement to be made under this section. Include costs in items of work that require aggregates.

25.2 PRODUCTS

25.2.1 General

All imported backfill, granular material, gravel and screened rock shall be suitable for the uses intended.

Aggregate shall be sound, hard, durable material free from soft, thin, elongated, or laminated particles, organic material, or other deleterious substances.

Flat elongated particles are those whose greatest dimension exceeds five (5) times their least dimension.

Fine aggregates satisfying requirements of applicable section shall be one of, or a blend of, the following:

Natural sand,

Manufactured sand and/or fines,

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

Course aggregates satisfying requirements of applicable section shall be one of following:

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AGGREGATES GENERAL

Crushed rock or slag,

Gravel composed of naturally formed particles of stone.

25.2.2 Materials

Gradation: To be within the limit for the types of materials specified below, when tested to ASTM C117 and ASTM C136, and having a smooth curve without sharp breaks when plotted on a semi-log grading chart to ASTM E11.

Production of Manufactured Fines: Manufactured fines are defined as that portion of the material passing the five thousand (5,000) sieve size which is produced by the crushing process.

In the event the manufactured fines in the total combined aggregate do not meet the requirement for the specified Asphaltic Concrete Mix, extra manufactured fines shall be produced by screening the pit-run material so that the screened material contains no more than five percent (5%) material passing a five thousand (5,000) sieve. This screened material shall then be crushed so that one hundred percent (100%) passes the ten thousand (10,000) sieve and a minimum of ninety five percent (95%) passes the five thousand (5,000) sieve. All material produced by this crushing process shall be placed in a separate stockpile and designated as manufactured fines.

Moisture Content: As specified in specific sections.

Bedding Sand: Bedding sand shall be free from organic material and meet the following gradation:

Sieve Size (mm)	% Passing by Mass
12.5	100
5.0	90 – 100
1.25	55 – 85
0.315	10 – 35
0.08	0 - 5

The liquid limit shall not exceed twenty five (25) and the PlastiOwner Index shall not exceed six (6).

Granular Material (imported Sand): Imported sand shall be free from rubbish, rubble, organic material, vegetation, and clay lumps and meet the gradation of bedding sand.

Granular Material (Imported Gravel): Imported gravel shall be a well graded mixture of sand and gravel meeting the following gradation:

Sieve Size (mm)	% Passing by Mass
80	100
50	80 – 100
25	50 – 75
5	25 – 55
0.08	2 – 10

Screened Rock: Screened rock shall be composed of sound, hard, uncoated particles free from clay lumps, flaky particles, soft shale, friable materials, roots, vegetable matter and frozen lumps, meeting the following

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AGGREGATES GENERAL

gradation:

Sieve Size (mm)	% Passing by Mass
50	100
40	95 – 100
20	5 – 10
10	0 – 5
5	0 – 5

25.3 EXECUTION

25.3.1 Processing

Process aggregate uniformly using methods that prevent contamination, segregation and degradation.

Split and combine aggregates, if required to obtain gradation requirements specified. Use approved methods and equipment. Do not blend in stockpiles.

Blending to increase percentage of crushed particles or decrease percentage of flat and elongated particles is permitted.

Wash aggregates, if required to meet specifications. Use only equipment approved by Engineer.

25.3.2 Handling

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

25.3.3 Stockpiling

Stockpile aggregates on site in location indicated or designated. Do not stockpile on completed pavement surfaces where damage to pavement may result.

Stockpile aggregates in sufficient quantities to meet project schedules.

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

Except where stockpiled on acceptably stabilized areas, provide a compacted sand base not less than three hundred millimetres (300mm) in depth to prevent contamination of the aggregate or, if permitted, stockpile aggregates on ground but do not incorporate bottom three hundred millimetres (300mm) of pile into work.

Separate aggregates by substantial dividers, or stockpile far enough apart to prevent intermixing.

Reject intermixed or contaminated materials. Remove and dispose of rejected materials as directed, within forty eight (48) hours of rejection.

Stockpile materials in uniform layers of thickness as follows:

- 1) Maximum one meter (1m) for course aggregate and base course materials,
- 2) Maximum two meters (2m) for fine aggregate and sub base materials,
- 3) Maximum one point five meters (1.5m) for other materials.

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AGGREGATES GENERAL

Complete each layer over entire stockpile area before beginning next layer.

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

Coning of piles, or spilling of material over edges of pile, will not be permitted. Stacking conveyors will not be permitted for stockpiling road base and graded seal coat aggregates.

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

25.3.4 Stockpile Clean up

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

Remove any unused aggregates as directed.

END OF SECTION

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DEMOLITION

26. DEMOLITION (02225)

26.1 GENERAL

This section specifies requirements for demolishing, salvaging, and removing, wholly or in part, various items designated to be removed or partially removed, and for backfilling resulting trenches, holes and pits.

26.1.1 Work Included

Supply all labour, materials and equipment to complete the Demolition required for this work, as indicated on the Drawings or as specified herein, including, but not necessarily limited to, the following:

- Removal of trees, shrubs and bushes
- Removal of existing water main, water services and appurtenances
- Removal of existing sanitary line, sanitary services and appurtenances
- Removal of existing storm line, storm leads, catch basins and manholes
- Removal of existing sidewalks, ramps, curb and gutter
- Removal of existing asphalt concrete pavement
- Removal and salvage of existing street signs
- Removal and disposal of unusable excavated materials

26.1.2 Protection

Protect in accordance with Trench Excavation, Backfill, and Compaction requirements.

Protect existing items designated to remain and materials designated for salvage. In event of damage to such items, immediately replace, or make repairs, to approval of the Engineer and at no cost to the Owner.

26.1.3 Solid Waste Disposal

26.1.3.1 Fill Material

Only clean soil, free of any rubble, demolition, concrete, tree stumps, or other deleterious material will be accepted at the Town of Edson Sewage Lagoon site.

26.1.3.2 Dry Waste Disposal Site

Disposal of asphalt rubble, and concrete rubble shall be at the Town of Edson Landfill.

26.1.3.3 Landfill Charges and/or Dry Waste Disposal Site

Landfill charges and/or Dry Waste Disposal Site costs at the Town of Edson Landfill are exempt for the purpose of this Contract and shall not be included in the Tender amount.

If disposal is at a site other than the Landfill Site or Dry Waste Site, a copy of the site permit or license is to be submitted to the Engineer.

26.2 EXECUTION

26.2.1 Preparation

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DEMOLITION

Inspect site, and verify with Engineer, items designated for removal and items to remain.

Locate and protect utility lines. Preserve, in operating condition, active utilities traversing site.

Notify utility companies before starting demolition.

Coordinate demolition with the Owner and Engineer to minimize disruption of the Owner's operation.

All material and equipment demolished and dismantled shall be removed from the site only after obtaining permission from the Owner, who shall have first refusal on material removed.

26.2.2 Saw-cutting

Saw-cuts are to be made with a concrete or asphalt saw capable of providing a true straight joint of consistent depth, as specified. Saw-cuts in concrete work are to be made at a construction or surface joint at each end of the designated repair area. Saw-cuts in asphalt adjacent to designated areas of concrete removal shall be parallel to the edge of concrete work, at a minimum distance of two hundred millimetres (200mm) and a maximum distance of five hundred millimetres (500mm) from the lip of gutter.

26.2.3 Removal

Remove items as indicated.

Do not disturb adjacent items designated to remain in place.

In removal of pavements, curbs and gutters:

- a) Square up adjacent surfaces to remain in place by saw-cutting or other method approved by the Engineer.
- b) Protect adjacent joints and load transfer devices.
- c) Protect underlying granular materials.
- d) When removing curbs and gutters adjacent to pavements, saw-cut as per requirements of this section and remove asphalt and granular material in order to complete form work.

When removing pipes under existing or future pavement areas, excavate at least three hundred millimetres (300mm) below pipe invert.

26.2.4 Salvage

Carefully dismantle items containing materials for salvage, and stockpile salvaged materials at locations as indicated, or as directed by the Engineer.

26.2.5 Sealing

Seal pipe ends and walls of manholes or catch basins as indicated, or as directed by the Engineer. Securely plug, to form watertight seal.

26.2.6 Disposal of Material

Dispose of materials not designated for salvage or reuse in work, on site or off site, as directed by the Engineer.

Trim disposal areas to approval of the Engineer.

26.2.7 Restoration

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DEMOLITION

Upon completion of Work, remove debris, trim surfaces and leave work site clean.

Reinstate areas, and existing works outside areas of demolition, to conditions that existed prior to commencement of work, as outlined in specific sections for each type of work.

26.3 MEASUREMENT AND PAYMENT

26.3.1 Demolition

Payment for Demolition will not be made directly but shall be included in the Lump Sum Price bid for Demolition in the Tender Form Schedule(s), and shall be considered full compensation for the supply of all labor, supervision, equipment and materials necessary to complete the Work in accordance with the Drawings and Specifications.

26.3.2 Measurement and Payment

Contract unit price items specified as "Remove and Dispose" shall be measured and paid to requirements of specific payment clauses.

Milling of asphalt concrete pavement will be paid on a square metre (m²) basis for the thickness and type specified in the Schedule of quantities.

Removal of granular base and subbase materials will be measured in cubic metres in place.

Removal of culverts, pipes and drains regardless for the thickness and type unless otherwise specified in the Schedule of quantities shall be incidental to the respective pipe being supplied and installed. End points of measurements will be at centres of manholes or catch basins or open ends of pipes, as applicable.

Removal of manholes and catch basins will be measured in units (U). .8 Removal of cable duct banks, regardless

Payment for saw-cutting will be incidental to the contract unit price items specified as "Remove and Dispose

Removal of asphaltic concrete pavement or similar material shall be measured and paid at the contract unit price items specified as "Remove & Dispose – Asphalt Concrete Pavement" regardless of thickness.

Removal of concrete work will be measured as follows:

- a) Monolithic curb, gutter, and sidewalk to be measured in lineal metres (m).
- b) Separate sidewalk and wheelchair ramps to be measured in square metres (m²).
- c) Curb and gutter to be measured in lineal meters (m).
- d) Miscellaneous concrete work removal to be measured in square metres (m²).

Removal of manholes and catch basins will be incidental to the contract unit price for each manhole, catch basin or catch basin/manhole supplied and installed.

Salvage, stockpiling, sealing, disposal, excavating, backfilling, and restoration if not identified within the Unit Price Schedules will not be measured and consider incidental to the Work.

END OF SECTION

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SITE PREPARATION AND GRADING

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27. SITE PREPARATION AND GRADING (02310)

27.1 GENERAL

27.1.1 Work Included

Provide all labor, products and equipment required for the site preparation work, including but not limited to:

- Pre-grading and final grading of site
- Off-site disposal of waste material
- Excavation, stockpiling and placement of topsoil
- Berm construction and grading
- Placement of fill in low areas
- Lot grading
- Pre-grading roadways
- Grading for shallow utilities

After the completion of the Work items, the site shall be left in a condition that the surface is graded smooth and is free draining, to prevent ponding and standing water at all times.

27.1.2 Products and Definitions

Topsoil: Material capable of supporting good vegetation growth and suitable for use in top dressing, landscaping and sodding.

Common excavation shall consist of all materials such as earth, topsoil, organic material, muskeg, clay, hardpan, shale, silt, sand, gravel, fractured bedrock, cobbles and frozen material, and asphaltic concrete pavement removed from the roadway and placed in fill or embankment areas, or otherwise disposed as approved by the Engineer. Excavation shall be to the lines and grades indicated on the plans, or as directed by the Engineer. Schedule work to utilize all excavation materials completely. Borrowing materials will be authorized only after excavated materials have been utilized.

27.2 EXECUTION

27.2.1 Clearing and Grubbing

Cut off and remove all trees, brush, fallen timber, logs, shrubs and other vegetation within the limits shown on drawings or staked in the field, except those shown to remain.

Excavate and completely remove all stumps and roots larger than thirty-millimeter (30 mm) diameter, to a minimum of two hundred fifty millimeters (250mm) below level of existing grade, filling holes with approved fill material.

Remove surface boulders and rubbish.

All materials deemed by the Engineer to be unsuitable for incorporation into the work are to be disposed of off-site.

27.2.2 Topsoil Stripping

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Excavate, haul and stockpile (or immediately re-spread), as specified, all organic material considered as topsoil or loam from within the contract limits. Do not mix topsoil with subsoil. All cultivated areas are to be stripped or as directed by the Engineer.

Strip and stockpile all topsoil from the cultivated land work area and equipment parking areas before installation of the waterline. Salvage all topsoil from all new or widened haul, access and service roads before grading or surfacing. Soil materials should also be salvaged at least three meters (3m) (ten feet (10 ft)) out from the edges of areas to be excavated but should not exceed the width of the Contract Work areas.

Salvage all soil materials using a single lift soil handling method consisting of the handling topsoil in a single distinct stripping procedure. Single lift procedure shall be consistent with the procedures and practices described in the Soil Reclamation Manual (Alberta Infrastructure and Transportation (2003) and the Standards and practices as set out in the Pipeline Code of Practice and the reclamation requirements as described in the Environmental Protection and Enhancement Act and it's associated codes and regulations. Handle topsoil and subsoil materials separately, keeping them separated at all times. If materials cannot be immediately redistributed, store them separately where they will not be disturbed, contaminated, or lost to erosion.

Soil salvaging operations should be scheduled to avoid handling wet and or frozen materials. Soil Stripping may be suspended by the Engineer if conditions are deemed unfavorable to successful quality control.

Strip and stockpile all topsoil from the cultivated land work area and equipment parking areas before installation of the water main. Salvage all topsoil from all new or widened haul, access and service roads before grading or surfacing. Soil materials should also be salvaged at least three meters (3m). (ten feet (10ft)) out from the edges of areas to be excavated but should not exceed the width of the Contract Work area. Stockpiles of different materials shall be maintained at all times and no traffic shall be allowed to cross the stockpiled materials. The practice of like for like (topsoil on topsoil and sub soil on sub soil) shall be used in the stripping procedure and storage practices.

Salvage all soil materials using a multi-lift soil handling method consisting of the handling topsoil in a single distinct stripping procedure with removal of a minimum of twenty centimeters (20cm) of subsoil (B horizon). The multi-lift procedure shall be consistent with the procedures and practices described in the Soil Reclamation Manual (Alberta Infrastructure and Transportation 2003) and the standards and practices as set out in the Pipeline Code of Practice and the reclamation requirements as described in the Environmental Protection and Enhancement Act and it's associated codes and regulations. Care must be exercised to ensure that topsoil and subsoil materials are stripped and stockpiled separately, ensuring that they are completely segregated at all times. If materials cannot be immediately redistributed, store them separately where they will not be disturbed, contaminated, or lost to erosion.

Soil salvaging operations should be scheduled to avoid handling wet and or frozen materials. Stripping may be suspended by the Engineer if conditions are deemed as unfavorable for quality control.

Locate, construct and maintain all access, haul, and other support roads in such a manner as to control and minimize channeling and other erosion. Avoid steep slopes, steep grades, drainage ways, and high erosion hazard areas. Minimize erosion by reducing widths and lengths, controlling runoff and sedimentation by using appropriate and accepted practices which can include: berms, water bars, using energy dissipaters such as rocks, logs, and straw bales, constructing small settling basins and use of sediment control devices such as silt fence or coir logs. Stabilize all temporary disturbances on either side of the access with an erosion control seed mix.

27.2.2.3 Notification

Notify the Engineer in writing, a minimum of three (3) working days prior to commencement of stripping.

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The Engineer, in the presence of the Contractor, will inspect the area to be stripped to establish specific requirements and to review procedures which will be confirmed in writing by the Contractor.

27.2.2.4 Stripping and Stockpiling

Load, haul and place in stockpiles in designated areas;

Stockpile in a manner that not endanger persons, the work or adjacent property;

Keep topsoil stockpiles separate and do not mix with common excavation;

Maintain a minimum of one-meter (1 m) separation between topsoil and common excavation material when stockpiling;

Leave openings in stockpiles so that fields are accessible to Land Owners.

27.2.2.5 Stripping and Disposal

Strip organic material that will not be used;

Strip unsuitable material;

Load, haul and dispose of stripped material.

27.2.2.6 Stripping of Frozen Topsoil

When topsoil is frozen, strip only the area over the trench and only other areas designated by the Engineer;

Frozen topsoil may be stripped by ripping provided a minimum of two (2) passes are made, the first of which shall not exceed fifty percent (50%) of the topsoil depth.

27.2.2.7 Mixing

If the topsoil and subsoil are mixed and the topsoil is adversely affected, the Contractor shall, at his expense, engage a soil specialist to determine the necessary remedial work, and shall perform the required work.

27.2.2.8 Mowing

Mowing of grass may be required prior to stripping. No extra payment shall be made for mowing, but considered incidental to topsoil removal. All efforts shall be made for removal of grass from cultivated lands to enable easier reclamation of pipeline rights-of-way. These methods can be done by mowing, at the discretion of the Engineer. No payment shall be made, but considered incidental to the Work.

27.2.2.9 Disposal Areas

Disposal areas shall be approved by the Engineer.

27.2.3 Common Excavation

Common Excavation is required to remove material from the existing road structure to allow for replacement with granular material.

The Contractor is responsible for any additional work or expenses incurred should any water enter the excavation.

Acceptable excavated material shall be used to replace any organic materials removed below the bottom of excavation, as directed by the Engineer.

Acceptable excavated material is to be used for grading to obtain positive drainage between the back of

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excavation and property lines.

27.2.4 Common Excavation Waste

All common excavation includes rock excavation deemed unsuitable for use in embankments, or other project items of work, or in excess of that required for embankment, shall be disposed at locations determined by the Contractor and approved by the Engineer.

All disposal areas shall be left in a neat and tidy condition satisfactory to the Engineer. Excavation materials shall be graded smooth to promote surface drainage and not to impede existing surface drainage by the Contractor, to the approval of the Engineer.

Excavate and grade all areas to levels, cross section lines and dimension as set out in the field.

Trim all surfaces and side slopes to conform to grade and cross section staked by the Engineer.

Common Excavation Waste is only considered for roadway construction. Excess material excavated during trench excavation that is not used in backfill operation will not be considered Common Excavation Waste and Incidental to the unit price bid for "Trench Excavation, Compaction & Backfill".

27.2.5 Rock Excavation

If, during excavation, material appearing to conform to classification for rock is encountered, notify Engineer in sufficient time to enable measurements to be made to determine volume of rock.

27.3 MEASUREMENT AND PAYMENT

27.3.1 Clearing and Grubbing

Removal of existing stumps and posts, trees, brush, fallen timber, logs and other vegetation on the site will be incidental and made at the unit price bid for "Trench Excavation, Compaction & Backfill ", which shall be considered full compensation for all labor, materials and equipment necessary for the removal and off-site disposal of existing stumps and posts and filling of holes with approved material, and including cutting, hauling and burial as necessary.

27.3.2 Topsoil Stripping

Payment for Topsoil Stripping will be incidental to the unit price bid for "Common Excavation - Waste". Such payment shall be considered full compensation for all labor, materials and equipment necessary for all stripping, loading, hauling, and stockpiling of topsoil on site, at a Municipal landfill site, or other locations designated by the Engineer. Stripping excavation shall be measured in cubic meters (m³) in place from the cross sections taken before and after stripping, and computed using the average end area method.

27.3.3 Common Excavation Waste

Payment for common excavation - waste shall be for the disposal at the Town of Edson Lagoon located on Hwy 748 (25th Street), and shall include all costs for excavating, loading, hauling, shaping and smoothing of disposal areas, constructing and maintaining of access roads, and clean up. Over-excavation, including in width and depth, unless ordered by the Engineer, will not be paid for. No allowance will be made in the measurement or payment for bulking or shrinkage.

Payment for excavation below design grade will be made only if the Contractor has been instructed to excavate below that elevation. Unauthorized over excavation shall be replaced with acceptable materials and compacted

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by the Contractor, at no cost to the Owner.

Payment will be made at the unit price bid per cubic metre for "Common Excavation - Waste". Such payment shall be full compensation for the excavating, loading, hauling, disposal, shaping and smoothing of disposal areas, constructing and maintaining of access roads, of all excavated waste materials.

No separate payment will be made for use of common excavation material on site to replace organic materials undercut below bottom of excavation.

27.3.4 Rock Excavation

Volume excavated from solid rock masses to be calculated from cross sections of original rock surface and design grade line for excavation. Excavated boulders and rock fragments to be measured by the Engineer, and volume determined by measuring three (3) maximum mutually perpendicular dimensions. The unit of payment shall be on a cubic meter (m³) basis.

END OF SECTION

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02315

TRENCHING AND BACKFILLING FOR UTILITIES

28. TRENCH EXCAVATION, COMPACTION & BACKFILL (02315)

28.1 GENERAL

Trenching and backfilling to be carried out in accordance with Alberta Occupational Health and Safety Regulations.

28.1.1 Work Included

Provide all labor, products and equipment for trenching and backfilling for utilities, including, but not limited to:

- water mains and appurtenances
- sanitary sewers and appurtenances
- storm sewers and appurtenances
- lot service connections
- saw cutting
- shoring, sheet piling
- de-watering

28.2 EXECUTION

28.2.1 Excavation

Excavate to design depths as shown, or as required by the Engineer, to provide satisfactory bearing. Excavate unsuitable soil from trench bottoms as required by the Engineer. Backfill with screened rock material specified, to the required level, and compact to provide uniform bearing.

Excavate trenches to widths not less than three hundred millimeter (300mm) greater than pipe diameter. Maximum width at top of pipe zone shall not exceed outside pipe diameter plus six hundred millimeter (600mm), plus allowance for timbering, if required.

Excavate below bottom of trench at pipe joints as required to provide working space. Body of pipe to rest on minimum one hundred millimeter (100mm) firmly compacted sand bedding throughout its length.

No additional compensation will be paid for any changes due to deterioration of excavations caused by activities or neglect of the Contractor.

Level and clean excavation bottoms free from loose material and debris.

Where excavation is made below depth shown through error, fill to required depth with 20 MPa compressive strength concrete or screened rock, at no additional cost to Owner.

Provide firm undisturbed earth or rock bearings for granular bedding below pipelines and structures.

Excavate for structures to widths sufficient for formwork construction. Place no concrete or masonry until Engineer has inspected excavation.

Where concrete is to be placed, thaw excavation bottom if frozen, and protect from further freezing.

Maximum lengths for open trenches are thirty meters (30m) ahead of pipe laying crew and two hundred meters (200m) behind, unless otherwise permitted by Engineer.

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TRENCHING AND BACKFILLING FOR UTILITIES

Where trenches are excavated in existing pavements, saw-cut the pavement to neat lines.

28.2.2 Rocks and Boulders

Boulders larger than point four cubic meters (.4m³), and material which cannot be removed with pick and bar, will be classified as rock by the Engineer. Notify Engineer when rock is encountered for classification and measurement.

Excavate rock to provide one hundred fifty millimeter (150mm) minimum clearance on each side and under pipes. Backfill with granular and compact at required level to provide suitable bearing. Rock excavation will be paid for as unclassified work, or at contract unit rates; no payment will be made if boulders are less than point four cubic meters (.4m³).

Prior to commencing blasting operations, obtain written approval from authorities having jurisdiction and from the Engineer. Employ licensed workers only.

28.2.3 Frost Removal

Remove frost as required and comply with local regulations when undertaking procedures to thaw the frozen ground.

28.2.4 Shoring, Bracing and Sheet Piling

Provide all shoring, bracing and sheet piling required for support and protection of earth banks at excavations.

Erect all shoring, bracing and sheet piling independent of utilities and structures.

Shore and brace sides of trenches and excavations in accordance with Workers' Compensation Board Regulations.

Maintain during backfilling, and remove in stages as backfilling progresses, or as approved by the Engineer.

Remove all shoring, bracing and sheet piling, unless otherwise permitted by the Engineer. If shoring is allowed to remain, cut off to a level at least six hundred millimeters (600mm) below finish grade.

Pre-fabricated cages or shields may be used, at the discretion of the Engineer, to supplement or replace conventional shoring, provided they conform with all applicable safety regulations, and permit the proper placing and tamping of bedding material under and around utility pipes.

28.2.5 Backfilling - General Requirements

Bedding of pipes and utilities, and backfill to three hundred millimeters (300mm) above top of pipes and utilities, is included in other sections.

Backfill trenches and excavations with excavated earth material. Remove all rocks larger than two hundred millimeters (200mm) in diameter from earth backfill.

Place and compact all backfill in maximum three hundred millimeters (300mm) deep loose layers.

Compact site material used as trench backfill in all areas, from three hundred millimeters (300mm) above top of pipe to three hundred millimeters (300mm) below bottom of granular base for roads, to a density not less than ninety five percent (95%) of Standard Proctor Density, as defined herein, and carried out at a moisture content within three percent (3%) of optimum moisture content. Remove any free water in the trench prior to placing additional lifts. Note that if moisture content is too high and densities not initially attainable the Contractor will

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TRENCHING AND BACKFILLING FOR UTILITIES

make every reasonable attempt to dry the material by whatever means available (i.e. discing, spreading, or similar means.). Should the Engineer deem the material to be "unworkable", the use of imported granular backfill may be required. Compact the final three hundred millimeters (300mm) below road or lane granular base to not less than one hundred percent (100%) of Standard Proctor Density.

Compaction results will be based on a minimum of one (1) density test per one hundred fifty (150) lineal meters of trench for each one point five meters (1.5m) of depth. If a density test indicates insufficient compaction at any depth, then two (2) more densities, proportionally representative of trench length, will be taken at that depth. Then, if the average of the three (3) tests is below the required density, the Contractor will re-excavate and re-compact to meet the specified density.

Place and compact evenly around structures to prevent damage or displacement. Grade surface to direct water away from trench and structures.

Stockpile, spread or remove excess excavated earth material where directed by the Engineer.

Remove and dispose of boulders off site at no additional cost.

Where additional pipes are to be, or have been, laid crossing the trench being backfilled and at a higher elevation, take special care to ensure the backfill is compacted to a minimum of ninety seven percent (97%) of Standard Proctor Density from the lower pipeline up to the obvert elevation of the higher pipeline.

Where imported material is called for by written direction of the Engineer, place the specified depth of granular material to the elevations provided and compact to specified Standard Proctor Densities.

Where filter fabric is called for by written direction of the Engineer, place fabric to the overall dimensions specified.

28.2.6 Settlement

The Contractor shall be responsible for all settlement of backfill that may take place during a period of two (2) years after date of completion certificate, or for the full term of the warranty period, whichever is greater.

When notified of any such settlement, promptly repair same, or make arrangement for others to do so at the Contractor's expense. Failure to do so will result in the Owner making appropriate arrangements at the Contractor's expense and at no cost to the Owner.

Pay the cost of all damages that may be caused by such settlements, including, but not limited to, repair and/or replacement of concrete sidewalks, curb and gutter and asphaltic concrete pavement.

28.3 MEASUREMENT AND PAYMENT

28.3.1 Trench Excavation, Compaction and Backfill

Payment will be made at unit price bid per horizontal meter (m) for "Trench Excavation, Compaction & Backfill (0.0m to 2.5m)" or "Trench Excavation, Compaction & Backfill (2.5m to 3.5m)" for the corresponding depth, as measured along center line of main for the depth categories indicated, with depths measured from existing ground to bottom of pipe bedding. Length shall be horizontal measurement with no allowance for slope or over excavation.

Unit price shall include trenching, backfilling, compacting, ground restoration required to restore the ground to the original conditions prior to the work being completed and all work performed and materials supplied that are not specifically itemized elsewhere and paid for separately in the Unit Price Schedule.

Measurement and Payment for trench excavation, compaction and backfill of catch basin leads and lot service

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TRENCHING AND BACKFILLING FOR UTILITIES

connections are to be included in "Trench Excavation, Compaction & Backfill (2.5m to 3.5m)" line items for corresponding depths. Trench excavation and backfill for "Perforated Drainage Pipe" shall be incidental to the work and no additional payment will be made.

The unit price shall also include the excavation of pit zones, shoring as required, dewatering, trench maintenance and installing of pipe including drilling and pulling of pipe, jointing, backfilling in the pit zones, and all incidental work for which payment is not specified elsewhere. Include for reconstruction of roadways and lanes to municipal authorities standards.

28.3.2 Imported Screened Rock

Supply and placement of screened rock will be incidental to the corresponding contract unit price per lineal meter (m) for the various type and size of pipe installed. Screened Rock Class B Bedding", based on a minimum depth of one hundred fifty millimetres (150mm) which will include the cost of obtaining, hauling, placing and compacting the granular material, and the removal and disposal of surplus excavation.

Payment will be made only for material placed for pipe bedding and will not be issued to cover material used for to support pipe at manholes and other structures, at pipes crossing other pipes, or to support pipes running parallel at different elevations. Measurement will be made by actual field measurement as herein defined.

28.3.3 Truck Measurement

Where material is supplied on a cubic meter (m³) basis, as measured on a truck load basis, the Engineer will determine the quantity by tallying a count of truck load deliveries. The Contractor will cooperate and assist the Engineer by levelling any loads that are to be measured. Measurement will not be made for material heaped above the water level capacity of the box, and deductions will be made in one tenth cubic meter (1/10m³) units from loads which do not contain full water level capacity.

END OF SECTION

**TOWN OF EDSON
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02321

HAULING AND HAUL ROADS

29. HAULING AND HAUL ROADS (02321)

29.1 GENERAL

This section specifies requirements for hauling and haul roads.

29.1.1 Definitions

Hauling: The process of transporting material from its point of loading to its designated delivery point.

Haul Roads: A route over which materials are hauled for the performance of the Work, conforming to the following:

An approved route from a designated source or waste disposal site.

A Contractor selected route from a Contractor supply or waste disposal site.

Free Haul: Distance excavated soil or granular material is hauled without additional compensation. Free haul distance to be unlimited.

Over Haul: Distance excavated soil or granular material is hauled beyond the limits of free haul.

29.1.2 Measurement for Payment

Unless otherwise stated, the material being hauled is incidental to the unit price bid for "Common Excavation - Waste". No additional compensation will be made for hauling.

29.1.3 Maintenance and Restoration of Haul Roads

The Contractor shall be responsible for all costs associated with the maintenance and restoration of haul roads.

29.2 EXECUTION

29.2.1 Hauling

Haul vehicles shall comply with the Alberta Highway Traffic Act and Public Services Vehicle Act, as well as all applicable safety standards.

The Contractor shall not haul when hauling operations cause serious hazards or difficulties to the travelling public. These conditions may occur at the following times:

- When spring thaw is taking place;
- During or after heavy rainfall; or
- During period of exceptionally heavy traffic.

The Contractor shall adhere by all load restrictions established by the road or bridge authority having jurisdiction.

29.2.2 Haul Routes

Haul roads and hauling equipment to be approved by the Engineer.

Prior to commencement of haul, haul roads shall be inspected by authorized representatives of the local road authorities, the Contractor, and the Engineer to establish and record the general road condition.



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HAULING AND HAUL ROADS

Haul roads shall be maintained in a condition satisfactory to the Engineer throughout the period in which haul is underway. In the event of dispute as to the degree of maintenance required, the Engineer will be the final authority.

Provide adequate traffic control and warning signs along haul route to ensure public safety.

Upon completion of haul, the road shall be restored to a condition equivalent to, or better than, that which was evident at the time haul commenced. Another inspection will then be carried out by authorized representatives of the local road authorities, the Contractor, and the Engineer. The Engineer will be the final authority in assessing the restoration required.

END OF SECTION

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02335

SUBGRADE PREPARATION

30. SUBGRADE PREPARATION (02335)

30.1 GENERAL

30.1.1 Work Included

The work described in this section pertains to the preparation and construction of the subgrade.

30.2 DEFINITIONS

30.2.1 Subgrade

Subgrade is that material immediately beneath the compacted Granular Sub-Base material as detailed on the drawings.

Granular material to be free from rubbish, rubble, organic material, vegetation, excessive moisture, and clay lumps and stones in excess of two hundred-millimeter (200 mm) diameter.

30.3 EXECUTION

30.3.1 Scarify and Compact

In excavation areas, the top one hundred fifty-millimeter (150 mm) of the subgrade shall be scarified and compacted to ninety five percent (95%) Standard Proctor Density at optimum moisture content.

No stones or boulders larger than one hundred millimeter (100mm) in diameter shall be left within the top two hundred-millimeter (200 mm) of the subgrade, unless otherwise directed by the Engineer.

30.3.2 Over-excavation

Notify the Engineer whenever unsuitable materials are encountered.

Materials that cannot be compacted to the specified density due to high or low moisture content shall be dried or watered by the Contractor to their optimum moisture content in order to achieve the specified compaction.

All common excavation materials below subgrade elevation that, in the opinion of the Engineer, are considered unsuitable shall be removed and disposed of in a site located by the Contractor and approved by the Engineer.

30.3.3 Stockpiling of Material

To facilitate the Work, the Contractor may stockpile embankment material. Such material shall be piled at a location determined by the Contractor, approved by the Engineer, and in such a manner that it will not endanger persons, the Work, or adjacent properties, and will ensure proper drainage is maintained. If the construction site does not facilitate stockpiling, the Contractor shall haul material to an approved location.

30.3.4 Shaping and Finishing

The finished compacted subgrade shall be constructed to within thirty millimeter (30mm) of the design section. Localized soft spots that develop in the finished subgrade due to poor work shall be corrected by excavating the material to a depth approved by the Engineer and replacing it with suitable subgrade material compacted in

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SUBGRADE PREPARATION

place.

Subgrade shall be true to the design cross sections.

Maintain and keep ditches open and free from debris, to permit ready flow of surface water, and until final acceptance of the Work.

30.4 TESTS

Field density and moisture content tests shall be carried out by a representative approved by the Engineer, in accordance with the following ASTM standards:

- Standard Proctor Compaction Test: ASTM D698, Methods (A) and (B) ASTM D1556
- In-Place Density Test: ASTM D2167 or ASTM D2922, and D3017

The frequency of field density and moisture content tests shall be a minimum of one (1) test per one hundred meters (100m) of constructed roadway and at various locations left and right of centre line, or as directed by the Engineer.

30.5 PROOF ROLLING

Before approval by the Engineer, the subgrade shall conform to the compaction requirements specified, and shall show no visible subsidence or deflection under the wheels of a loaded gravel truck. Such trucks shall be provided by the Contractor, as the Engineer requires, for proof rolling of the subgrade.

The frequency of field density and moisture content tests shall be a minimum of one (1) test per one hundred meters (100m) of constructed roadway and at various locations left and right of centre line, or as directed by the Engineer.

There shall not be any discernable rutting during the proof roll. Rutting of not more than 100 mm, shall be considered a failure and require the subgrade to be reworked and compacted.

Rutting and/or deflection in excess of 100 mm must be reviewed by a Geotechnical Engineer who is to provide recommendations as to how to meet density and performance requirements.

30.6 MEASUREMENT AND PAYMENT

30.6.1 Subgrade Preparation

Payment for Subgrade Preparation, scarifying, moisture conditioning, compacting and disposal of oversize materials will be incidental to the unit price bid for "Common Excavation - Waste". The price will be for full compensation for all labour material and equipment necessary to complete the Work.

END OF SECTION

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02342

GEOTEXTILE

31. GEOTEXTILE (02342)

31.1 GENERAL

This Section specifies requirements for the supply and installation of non-woven and woven geotextile filter fabric.

Non-woven geotextile filter fabric shall be used as a separate membrane for rip-rap, or hydraulic filter for drainage systems.

Woven geotextile filter fabric shall be used when, in the opinion of the Engineer, the foundation conditions are considered soft and unstable.

31.1.1 Mill Certificates

At least one (1) week prior to the commencement of Work, the Contractor shall submit a sample of the geotextile filter fabric to be used in the Work, along with copies of mill test data and Manufacturer's Certificate of Compliance that the geotextile filter material delivered to the job site meets the requirements of this section.

31.1.2 Approval

The Contractor shall obtain written approval of the Engineer for the geotextile filter fabric material to be used in the Work.

31.1.3 Delivery and Storage

During delivery and storage, protect the geotextile filter fabric from direct sunlight, ultraviolet rays, mud, dirt, dust, moisture, debris and rodents.

31.2 PRODUCTS

31.2.1 Material

The geotextile filter fabric shall be rot-proof, unaffected by the actions of oil or salt water and not subject to attacks by insects or rodents.

The geotextile filter fabric shall be supplied in rolls of minimum width of three meters (3m) and minimum fifty meter (50m) lengths.

31.2.2 Physical Properties

The non-woven and woven geotextile filter fabric shall meet the specifications and physical properties in accordance with the following table of minimum average roll value properties (MARV's) for each.

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GEOTEXTILE

Specifications and Physical Properties		
	Non- Woven	Woven
Grab Strength	650 N	1275 N
Elongation (Failure)	50%	15%
Puncture Strength	275 N	275 N
Burst Strength	2.1 MPa	3.6 MPa
Trapezoidal Tear	250 N	475 N
Minimum Fabric Lap to be	300mm	1000mm

31.3 EXECUTION

Where geotextile fabric is specified, the sloped or horizontal surface shall be graded to provide a smooth, uniform surface. All stumps, large rocks, brush, or other debris that could damage the fabric shall be removed. All holes and depressions shall be filled so that the fabric does not bridge them. Loose soils shall be replaced.

The fabric shall be laid parallel to the slope direction, in one continuous length from toe of slope to upper extent of fabric. It shall be placed in a loose fashion; however, creases, folds, wrinkles and tensile stresses shall be avoided. Adjacent strips of fabric shall be overlapped as specified. Except where placed underwater, the minimum lap width shall be one meter (1 m). Overlaps shall be pinned using six-millimeter (6 mm) diameter steel pins fitted with washers and spaced at one-meter (1 m) intervals along the overlaps.

The top edge of the filter fabric shall be anchored by digging a three hundred millimeter (300mm) deep trench, inserting the top edge of the fabric and backfilling with compacted soil.

Rip-rap placement shall commence at the base of the filter fabric area and proceed up the slope. The height of drop of rip-rap shall be limited to one-meter (1 m) or less, and the rip-rap shall not be allowed to roll down the slope. See the rip-rap section of this specification for additional rip-rap placement requirements.

31.4 PROTECTION

After installation, the filter fabric shall be covered with overlaying layer within three (3) days of placement.

Do not permit passage of any vehicle or equipment directly on geotextile at any time.

Protect geotextile material from displacement and damage until, and during, placement of the rip-rap, granular material or the gabion mat.

Care shall be taken to prevent puncturing or tearing the geotextile. Any damage shall be repaired by use of patches that extend at least one-meter (1 m) beyond the perimeter of the tear or puncture.

Remove and replace damaged or deteriorated geotextile, as directed by the Engineer.

31.5 MEASUREMENT AND PAYMENT

Payment for geotextile filter fabric will be made at the unit price bid per square meter (m²) of geotextile used in the Work. The unit price shall include all costs for supply, installation, labour, equipment, tools and incidentals required to complete the Work.



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GEOTEXTILE

The geotextile filter fabric will be measured in square meters (m²) of subgrade covered in place plus the sidewall excavation of the trench, as determined by field measurement. No additional measurement or payment will be made for overlap, seams or repairs.

END OF SECTION

**TOWN OF EDSON
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02511

WATER MAINS

32. WATER MAINS (02511)

32.1 GENERAL

32.1.1 Work Included

Provide all labor, products and equipment required for the work, including, but not limited to:

- saw-cutting existing ACP if required
- removal and disposal of existing Watermain
- bedding under and over pipe
- trench excavation, backfill and compaction
- water mains and appurtenances
- testing water mains
- flushing and disinfecting water mains
- connection to existing systems
- thrust blocks
- ground restoration

32.2 PRODUCTS

32.2.1 Polyvinyl Chloride (PVC) Water Pipe

Polyvinyl chloride water pipe shall be equivalent to cast iron pipe outside diameter, meeting CAN3-B.137.3 M86 (AWWA C900).

Pipe shall be Class 150 (dimension ratio 18) and pipe must be blue in color.

Pipe joints shall be integral gasketed bell ends. Couplings shall be permitted only for closures or special connections.

Gaskets shall conform to AWWA C111.

An affidavit of compliance shall be provided if requested.

32.2.2 High Density Polyethylene (HDPE) Water Pipe

HDPE pipe shall be conformed to the following standards:

- CGSB-41-GP-25M: Pipe, Polyethylene for the transport of liquids.
- B137.0: General Requirements and Methods of Testing for Thermoplastic Pipe.
- CSA-B137.1: Polyethylene Plastic Pipe (SDR-PR) based on Controlled Outside Diameter.
- ASTM-D1248: Polyethylene Plastic Modeling and Extrusion Materials.
- ASTM-D2837: Polyethylene (PE) Plastic Pipe (SDR-PR) based on outside diameter.
- Raw material designation: ASTM-D1248 Type III, Class C, Category5, Grade P34.

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WATER MAINS

- Pipe designation CGSB-41-GP-25M – PE4710.

32.2.3 Water Pipe Fitting

Cast iron or ductile iron fittings shall meet the requirements of AWWA Specification C110-77. Pressure rating shall be 1.1 MPa.

Joints on fittings shall be the same as specified for pipe.

Fittings shall be externally and internally coated with bituminous material approved by the Engineer or the municipal waterworks service.

PVC fittings shall be to CAN3-B.137.3, pressure Class 150, which are designed to accommodate the pipe for which they are used.

PVC fittings shall be gasketed bell end type similar to pipe, except where adaptors are required, in which case flanged or threaded joints may be permitted subject to approval by the Engineer. Gaskets must conform to AWWA C111.

HDPE pipe flange assemblies shall meet the following requirements unless otherwise specified by the Engineer:

- Solid HDPE stub ends or flanges adapters shall be made from the same resin grade (PE3408) and shall be formed using extrusion or modeling methods.
- Flange rings shall be ductile iron (ASTM A536-84) made to Class 300, ANSI B16.1 / B16.5 dimensional standards with exceptions.
- Flange assembly gaskets shall be one eighth inch (1/8") (ninety three millimeter (93 mm)) thickness and made from material suitable for the intended.

Fittings shall be designed and manufactured to operate at not less than the design working pressure of the pipe system for which it is to be installed.

HDPE Fittings shall be the type of "Equivalent Dimension Ratio – Fittings". They shall have the fitting body constructed using a greater wall thickness. The fitting body shall have a wall thickness not less than twenty five percent (25%) greater than that of the pipe to which it is to be joined.

Outlet ends that are to be thermally butt fused in the field shall be mechanically prepared to match the dimensions of the pipe to which it is to be joined.

32.2.4 Gate Valves (NRS)

Valves shall be iron body, bronze mounted, double disc or solid-wedge, with full three hundred sixty degree (360°) rubber to cast iron resilient seat gate valves, approved for potable water use, meeting AWWA Specification C509-80 and the following:

- Valve ends shall be consistent with the type of joint used for pipe and fittings, except where otherwise detailed.
- Valves to be supplied with either bronze or type 304 stainless steel stems.
- Working pressure 1035 kPa.
- Valve interior to be epoxy coated for corrosion protection.
- Valves shall close by turning clockwise and be a non-rising stem type, and be equipped with a 50 mm square operating nut. Valve stem shall be equipped with "O-Ring" type seals.

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WATER MAINS

- Exterior to be factory coated.
- All exterior bolts and nuts must be T304 stainless steel.

32.2.5 Valve Boxes

Valve boxes shall be Norwood Foundry Type A Sliding Adjustable, or equal. Valve box shall consist of a PVC bonnet of sufficient size to fit over the valve, and an adjustable cast top box with lid.

Valve boxes shall be of suitable length for depth of bury specified for mains, with possible adjustment of three hundred millimeter (300mm) up or down from this length.

Valve box extensions shall be cast iron, suitable for use with the valve box to be installed.

All cast iron surfaces to have a bituminous coating for corrosion resistance.

Set valves accurately to within 15mm of correct grade.

32.2.6 Hydrants

Hydrants are to be of the post type, dry barrel hydrant with compression shut-off, conforming to AWWA Specification C502-80, having the following features:

- Canada Valve Darling - Century
- Working pressure of 1035 kPa.
- Two hose connections at 180 deg., 63mm ID and 75mm OD, with threads to Alberta Mutual Standard.
- One pumper connection, 100mm OD, outlet nozzles to be fastened with a Storz connection.
- 150 mm riser barrel, 125 mm bottom valve.
- Minimum distance from flange to bonnet will be 600mm.
- Main connection to be 150 mm ductile iron size rubber gasketed bell end joint.
- Self Draining hydrants, unless otherwise requested by the engineer to be plugged as determined by site conditions.
- Number 6 operating nut with five sides.
- Hydrant to open counter clockwise.
- All hydrants will be painted Tremclad Yellow (No. 270-97X).
- Ground line breakaway system: 3.10m from invert to flange, including a 300mm minimum top extension spool section or, as required to meet, surface grading requirements with hydrant rod coupled at extension.
- Minimum 710 mm from top of operating nut to bottom of base flange.
- All exposed nuts and bolts to be T304 or type 3145.5 stainless steel.
- Interface between removable parts of main valve and hydrant body shall be bronze to bronze.
- Hydrants shall be of the same type and make as presently used in Town of Edson (Canada Valve, Century, Terminal Owner) or approved equal.
- Set hydrants and valves accurately within 15mm of correct grade.

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32.2.7 Watermain Plugs

Watermain plugs shall be of standard manufacture to suit type of pipe and pipe joint specified.

32.2.8 Air Relief Valve and Flushing Chamber

Valve and chamber shall conform to the detail drawing referenced or attached.

32.3 EXECUTION

32.4 WATERMAIN INSTALLATION/TRENCHING

32.4.1 General

This section includes the installation of the Polyethylene pipe by the open trench method.

32.4.1.1 Excavate Trench

Excavate trench to the required alignment and grade.

Check Trench bottom for stability and notify the Engineer for inspection.

Remove unstable soil and replace with compacted pit run gravel or washed rock, if ordered by the Engineer in writing.

Trench Width

- Widths of trenches shall be such that pipes can be laid and joined properly and backfill placed and compacted properly;
- Trench walls shall be vertical to three hundred millimeter (300mm) above the top of the pipe and the width at this section shall not exceed the maximum;

Trench Width – Single Pipe

- Minimum = nominal pipe diameter plus four hundred millimeters (400mm)
- Maximum = nominal pipe diameter plus six hundred millimeters (600mm)

Trench Width – More than one (1) pipe

- Minimum and maximum – in accordance with drawings.

32.4.1.2 Backfill in the Pipe Zone

The pipe zone is defined as that part of the trench from the pipe bedding to three hundred millimeter (300mm) above the top of the pipe, or above the highest pipe above the top of the highest pipe in a combined trench.

Backfilling in the pipe zone shall be in accordance with the drawings and the following specifications:

- Backfill with sand uniformly in the trench, at both sides of the pipe for the full width of the trench.
- Compact in layers to ninety five percent (95%) of the maximum density as determined by the Standard Proctor Compaction.
- Test, until the compacted sand is three hundred millimeter (300mm) over the top of the pipe.
- Compact under and around pipe joints.

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32.4.1.3 Backfill above the Pipe Zone

Backfill above the pipe zone with native soil.

Compact in layers not to exceed three hundred millimeter (300mm) to ninety five percent (95%) of the maximum density as determined by the Standard Proctor Compaction.

32.5 WATERMAIN INSTALLATION/HDD

32.5.1 General

This section specifies the requirements for the installation of pipes or conduits utilizing horizontal directional drilling methods.

32.5.1.1 Definitions

A horizontal directional drilling rig:

- A horizontal directional drilling rig is a mechanical drilling device used to create a horizontal borehole through which a pipe or conduit is installed.

Return and spoils:

- Return and spoils are the drilling mud and cuttings collected in the entry and exit pits as well as any fluid which escapes from the borehole to the surface.

Directional drilling:

- Directional drilling is the installation of a pipe by drilling a pilot bore from the entry pit to a predetermined exit location. The drilling head is then replaced with the reamer and the drilling string is pulled back to the entry hole, enlarging the hole while simultaneously pulling the pipeline product into place.

32.5.1.2 Submittal

Submit, within five (5) days of the award of the Contract, the following to Engineer for approval according to Section 01300 – “Shop Drawings” of the Submittals section.

Methodology and schedule, specific to each crossing, complete with design and construction details for the proposed directional boring operation. Methodology shall include:

- Work Schedule;
- Equipment specifications and capabilities;
- Size of pilot hole;
- Number and size of pre-reams;
- Use of rollers, baskets and side booms to suspend and direct pipe during pull back;
- Type and capabilities of tracking system;
- The number of sections in which the project is to be installed; and
- Methods to control, collect, transport and dispose of drilling fluids and spoils.

Drawing of work site, including location and footprints of equipment, and the locations of the entry, exist and slurry containment pits.

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Drawing of pullback installation showing partial or full closure of roadways and their approximate duration.

Drilling fluid management plan, including drilling fluid containment, recycling/transport and approve disposal site.

Emergency procedures for inadvertently boring into a live power line, natural gas line, water line, sewer line, of fibre optic cables. Procedures must comply with regulations.

Method of dealing with inadvertent returns of surface seepage of drilling fluids and spoils

At least two (2) weeks prior to commencing work submit data from the manufacturer regarding the tensile strength and recommended minimum bending radius of the pipe.

32.5.1.3 Permit and Authorization

Obtain all necessary permits or authorizations to carry construction activities near or across all buried pipelines and conduits.

32.5.1.4 Submittal of Drawings of Records

The Contractor shall provide a set of drawings of records including both alignment and profile according to Section 02020 – “Drawings of Records” of the Special Provisions. Drawings should be prepared from actual field readings. Raw data should be submitted at any time upon the Engineers request.

32.5.1.5 Equipment Capabilities

The Contractor shall be responsible for the directional drilling method and equipment. The Contractor shall confirm that the drilling rig and mud mixing system have the capacity required to successfully complete the installation knowing the length of the crossing and product type and diameter, and considering ground and groundwater conditions that can be reasonably foreseen.

Operating range and degree of accuracy of proposed tracking system shall be adequate to meet project conditions. Tracking/steering equipment shall allow for continuous monitoring of the drilling head along the entire proposed alignment. If a poor contact with sound is expected to occur at any section, this should be communicated to the Engineer prior to commencement of construction.

The drilling unit must be equipped with an electrical strike safety package. The package should include warning sound alarm, grounding mats and protective gear.

32.5.1.6 Preparation

Locate utilities along and on either side of the proposed drill path.

Notify owners of subsurface utilities and on either side of the proposed drill path of the impending work through the One-Call program.

All utility crossings shall be exposed using hydro-excavation, hand excavation or another approved method to confirm depth.

The proposed drill path shall be determined and documented, including its horizontal and vertical alignments and the location of buried utilities and substructures along the path.

Excavation for entrance and exit pits is to be of sufficient size to avoid a sudden radius change of the pipe and resultant excessive deformation.

32.5.2 Execution

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32.5.2.1 Pipe Jointing

Butt Fusion Joining

Butt fusion joining of pipe and fittings shall be performed in accordance with the procedures qualified and established by the pipe manufacturer or fusion equipment manufacturer.

Butt fusion joining shall be performed by qualified technicians trained by the fusion equipment manufacturer.

HDPE pipe subjected to direct sunlight or warm ambient air temperature may become warmer than the ground temperature. When placed in a trench, the pipe will contract in length as it cools to the soil temperature. If the pipe is connected to subsurface structures before it has cooled sufficiently, excessive pull-out forces could develop. Allow the pipe to cool prior to making a connection to an anchored joint, flange, or a fitting that requires protection against pull-out forces. Soil embedment can be placed around the pipe and up to 6 inches over the top of the pipe to facilitate cooling.

Cold (Field) Bending

Polyethylene pipe may be cold bent in the in the field without the affecting the working pressure rating. The minimum permissible long-term bend radius is determined by pipe diameter and dimension ratio unless a fitting or a flange connection is either present or will be installed in the bend.

Pipe DR	Minimum Cold Bending Radius
≤ 9	20 times pipe OD
> 9 – 13.5	25 times pipe OD
>13.5 – 21	27 times pipe OD
>21	30 times pipe OD
Fitting or flange present or to be installed in bend	100 times pipe OD

Cast ductile iron couplings to be robar couplings or approved equal, complete with ANSI 303 stainless steel nuts and bolts compatible with outside diameters of pipes to be joined, in locations approved or specified by the Engineer.

Pullout Prevention Techniques

When Polyethylene piping is connected in-line to unrestrained joint piping or components such as bell and spigot joint PVC or ductile iron, unrestrained joints in the transition area should be protected against pullout disjoining with external mechanical restraint, or in-line anchoring, or a combination of restraint and in line anchoring.

Controlling Shear and Bending Loads at Transition Areas

Polyethylene pipes that enter or exit a casing or pass through a structure wall, such as a building wall, vault, or a manhole, or land-marine transition areas, should be protected against shear and bending loads that can develop from settlement and embedment consolidation waves, currents, or tidal flow.

Tapes and Wires Pipe Locator

The Contractor shall supply and install two-millimeter (2 mm), twelve (12) gauge) insulated tracer wire, waterproof connections, splices, electrical junction boxes, connection points, and continuity testing.

For HDPE pipelines, twelve (12) gauge metallic tracer wire shall be installed in the ditch immediately adjacent to the pipe for the length of the pipeline, and shall be attached to the pipeline when the pipeline is going through any bores, punches, or horizontal directional drills. The tracer wire shall be carried to the surface in suitable

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protective conduit (provided by the Owner) and secured at a suitable point. Tracer wire shall be checked for electrical continuity immediately following installation, and if there is not evidence of electrical continuity, it shall be at the Contractor's cost to find and fix the break in the tracer wire. If the tracer wire does not come through with the pipe while using a trenchless crossing method, the Contractor must redo the crossing at their cost. It is usually good practice to run multiple tracer wire with the pipe for trenchless crossings. The Owner will supply one (1) high tensile and two (2) regular strength twelve (12) gauge tracer wires for trenchless crossings. The Contractor may wish to check electrical continuity throughout pipeline installation.

32.5.2.2 Installation Procedures

General

Use trained operators and follow manufacturer's instructions and safety practice.

Drilling mud pressure in the borehole should not exceed that which can be supported by the overburden to prevent heaving or hydraulic fracturing of the soil ("Frac-out").

Entrance and exit angles of the drill string should range between eight degrees to twenty-nine degrees (8° - 29°) and five degrees to nineteen degrees (5° - 19°) respectively. Any deviation from these values shall first be approved by the Engineer.

If a drilled hole beneath an artificial surface must be abandoned the hole shall be filled with grout or bentonite to prevent future subsidence.

Pipe installation should be performed in a manner that minimizes the over-stressing and straining of the pipe.

Drilling and back-reaming

Drilling mud may be used during drilling and back-reaming operations, pending the approval of a fluids management plan.

A sufficient number of pre-reams shall be utilized as to avoid heaving while enlarging the hole to the desired diameter.

During back-reaming the conduit must be sealed at either end with a cap or lug to prevent water, drilling fluids and other foreign materials from entering the pipe.

Pipe rollers, skates or other protective devices should be used in the installation of product one hundred fifty millimeter (150mm) outside diameter or larger.

Where possible and unless otherwise approved by the Engineer, the product pipeline will be fused, welded or connected into one (1) string prior to commencement of the pull-back operation.

The pilot hole shall be back-reamed to accommodate and permit free sliding of the product inside the borehole according to the following specifications:

Nominal Pipe Diameter	Back-Reamed Hole Diameter
50	75 to 100
75	100 to 150
100	150 to 200
150	250 to 300
200	300 to 350
250	350 to 400

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>300 Minimum of 1.5 times product pipe outside diameter

32.5.2.3 Drilling Fluids – Collection and Disposal Practices

Excess drilling mud slurry shall be contained in a lined pit or containment pond at exit and entry points until recycled or removed from the site. Entrance and exit pits shall be of sufficient size to contain the expected return of drilling mud and spoils.

When working in an area of contaminated ground, the slurry shall be tested for contamination and disposed of in a manner that meets government requirements.

Precautions shall be taken to keep drilling fluids out of the streets, manholes, sanitary and storm sewers, and other drainage systems including streams and rivers.

Recycling drilling fluids is an acceptable alternative to disposal.

The Contractor shall make a diligent effort to minimize the amount of drilling fluids and cuttings spilled during the drilling operation and shall clean up all drilling mud overflows or spills.

32.5.2.4 Pipe Installation

Install pipeline product within the pre-specified alignment and grade tolerance as shown on the drawings and provided in the project specifications.

32.5.2.5 Surface Tolerances

Ensure that the possibility of ground settlement is reduced to a minimum underneath the roadway. Surface settlements shall not exceed ten millimeters (10mm) over a ten meter (10m) straight edge for the period from construction start to end of warranty period.

Ensure that the possibility of ground bulging is reduced to a minimum underneath the roadway. Surface bulging shall not exceed ten millimeters (10mm) of a ten meter (10m) straight edge for the period from construction start to end of warranty period.

Should settlement or bulging exceed the specified tolerance, the Contractor shall make the necessary surface grade correction.

32.5.3 Bedding Pipes

Place sand bedding for PVC pipe as per Class B granular surround, as detailed in the detail drawing attached. If site material meets bedding sand specification requirements, it may be used to replace the top two hundred millimeter (200mm) of bedding sand.

For trench in rock, bed pipe on minimum of one hundred fifty millimeter (150mm) of compacted sand.

32.5.4 Laying and Jointing Pipe

Carefully lower pipe and appurtenances into trench using proper appliances. While suspended, inspect for defects. Remove foreign materials from inside of pipe. Unless otherwise directed, lay pipe from lower end of line upward.

Lay pipe true to line and establish grading using laser level or measurement rod and sight rails.

Cut pipe accurately to bring valves, fittings and hydrants to correct position.

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At all hydrants, plugs, tees, crosses, bends of more than twenty-two degrees (22°) and all other points of concentrated thrust, provide reaction blocking, as detailed, to prevent movement. Place reaction blocking against solid undisturbed ground. Details provided herein are intended to be general and are based on soil load values of seven thousand three hundred kilograms per square meter (7,300kg/m²), or more. Where soil will not provide this load value, provide bands and clamps to take reaction. Refer also to special thrust block details. Place blocking to provide access to pipe and fittings for repairs or extensions of line.

Install turned wood or plastic plugs, properly sized, in pipe and fittings to prevent ingress of water, mud, dirt and debris at all times. Do not use rags, clothing or other means.

Install slip type rubber gasket joints to manufacturer's directions. If requested, provide copies of manufacturer's directions on site for reference, and obtain technical assistance from manufacturer or representative.

Ensure that valve box can be adjusted up or down at least three hundred millimeters (300mm). It is intended that valve boxes installed to finished crushed gravel elevation will be raised at the time of paving without having to supply a new upper extension.

Inspect pipe for defects immediately before lowering into the trench.

Clean pipes and fittings before installation.

Inspect insulation coating and repair any damage using heat shrink sleeves.

Inspect pipe for ovality and gouges or cuts and reject any pipe having cuts deeper than ten percent (10%) of the pipe wall thickness.

Lay pipe to the required alignment and grade, with fittings and all other appurtenances at their required locations.

Acceptable tolerances are as follows:

- Alignment – the centerline of the pipe shall not be more than one hundred-millimeter (100 mm) of the given line;
- Elevation – the pipe inverts shall not be more than ten-millimeter (10 mm) of the given elevation.

32.5.5 Setting and Jointing Valves

Check and ensure stuffing glands on valves are properly packed before installation.

Set valves accurately in position; set valve box carefully over hood with shaft vertical and cap at proper level, plus or minus fifty millimeters (+/- 50mm) from elevations provided by the Engineer.

Anchor and pipe restraint valves to prevent movement under unbalanced pressure conditions, when recommended by pipe manufacturer. Include cost of anchorage and pipe restraints in unit price for valves.

Check operation of valves in presence of Engineer, before testing and after testing.

32.5.6 Setting and Jointing Hydrants

Set hydrants and hydrant valves on pressure treated timber blocking, as per the details. Ensure hydrant stock and valve box are truly vertical.

Locate hydrants and valves as per the drawings within the following tolerances: fifty millimeter (50mm) horizontal, fifteen millimeter (15mm) vertical.

Face pumper nozzles to roadway, with hose nozzles parallel to roadway. No portion of the hydrant or nozzle cap shall be within one hundred fifty-millimeter (150 mm) of the sidewalk.

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Concrete thrust blocks will be required at hydrants and hydrant valves as detailed.

Ensure that regular maintenance of hydrants is carried out for the duration of the maintenance period. Pay all costs for maintenance, such as repainting, draining prior to freeze up, and similar tasks.

32.5.7 Thrust Blocks

Do concrete work in accordance with Section 03300 – Cast-in-Place-Concrete.

Cement to be sulfate resistant Portland Cement.

Place concrete thrust blocks between undisturbed ground, tees, plugs, caps, bends, reducers, hydrants, and fittings.

Keep joints and couplings free of concrete.

Do not backfill over concrete within twenty-four (24) hours after placing.

Polyethylene pressure piping systems that are joined by heat fusion, electrofusion, flanges, and MJ adapters are fully restrained and do not require external joint restraints or thrust block joint anchors.

32.5.8 Testing Water Mains

32.5.8.1 General

The Contractor is totally responsible for the quality of Material and Product which he provides and for the Work.

During the progress of the Work, a sufficient number of tests shall be performed by the Contractor to determine that Material, Product and installation meet the specified requirement.

Testing shall be in accordance with pertinent codes and regulations, and with selected standards of the American Society for Testing and Material (ASTM) and Canadian Standards Association (CSA).

Procedure

Notify appropriate agency and Engineer in advance for tests in order that attendance arrangement can be made.

Submit samples and materials required for testing, as specifically requested in the Contract Documents. Submit with reasonable promptness and in orderly sequence so as not to cause delay in Work.

Submit four (4) copies of inspection and test to Engineer.

Provide copies to Subcontractor of work being inspected/manufacturer or fabricator of material being inspected or tested.

Rejected Work

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 Engineer as failing to conform to Contract Documents.

Replace or re-execute in accordance with Contract Document.

Make good other Contractor's work damaged by such removals or replacement promptly.

If in the opinion of Engineer, it is not expedient to correct defective Work or Work not performed in accordance with Contract Documents, Owner may deduct from Contract Price the difference in value between Work performed and that called by the Contract Documents. Amount shall be determined by Engineer.

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32.5.8.2 Quality Assurance – Testing by the Owner

The Owner may retain and pay for the services of an independent testing agency for testing for quality assurance, for the Owner's purposes.

The Owner's testing agency and the Engineer may inspect and test Material, Product and the Work for conformance with the requirements of the Contract Documents; however, they do not undertake to check the quality of the Work on behalf of the Contractor or to provide quality control.

Inspections and tests by the Owner's testing agency and by the Engineer do not relieve the Contractor of his responsibility to supply Material and Product and to perform the Work in accordance with the requirements of the Contract Documents.

The Engineer, at his discretion, may order or perform any additional inspections and tests for purposes of his own or for the purposes of the Owner.

The Contractor shall coordinate with the Engineer the scheduling of testing and inspection by the Owner's testing agencies or by the Engineer, to enable testing to be done as necessary without delay.

32.5.8.3 Code Compliance Testing

Inspections and tests required by codes or ordinances, or by a plan approval authority, shall be the responsibility of and shall be paid by the Contractor.

Copies of reports resulting from such inspections shall be submitted in a timely manner by the Contractor to the Owner.

32.5.8.4 Retesting

When tests on Product, Material or completed portions of the Work carried out by the Contractor or the Contractor's testing agency or by the Owner's testing agency yield results not meeting the requirements of the Contract Documents, the Contractor, in addition to carrying out remedial work or replacement of the Product or Material shall provide for retesting of the remedied work and the replacement Product and Material.

Retesting, including retesting by the Owner's testing agency, shall be paid by the Contractor.

In every case where the Contractor has submitted test results which fail to meet the requirements of the Contract Documents, the Contractor shall submit, within a practical and reasonable time, results showing that the results are in accordance with the requirements of the Contract Documents

If the Contractor fails or refuses to do remedial work or replace unacceptable Material or Product, the Engineer may refuse to certify payment and the Owner may refuse to make payment, in addition to any other remedies the Owner may have.

32.5.8.5 Marking

All pipes shall be marked as follows:

- Manufacture name
- Nominal pipe size
- Pressure rating
- Polyethylene type and category
- Hydraulic design basis
- Manufacturing standards reference – CGSB / CSA

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- Production code for date of manufacture and date of insulation

Pipe to be stamped "Potable CSA B 137-0"

32.5.8.6 Product Delivery, Storage and Handling

The pipes shall unload and handled by the manufacturer and Contractor with care to prevent damage.

The Contractor shall submit for the Engineer review and comment complete information regarding pipe transportation and pipe protection procedures from the pipe plant to the site.

Lift pipe with fabric slings or manually.

Do not use hooks in pipe ends.

Handle and store pipe and materials in accordance with the manufacturer's recommendations.

32.5.8.7 Butt Fusion Joining - Qualifications

Personnel performing HDPE fusion joining must be trained and competent in the implementation of the heat-fusion joining procedure and must be qualified by either the pipe manufacturer or the manufacturer's representative.

Individuals performing heat fusion joining shall make sample joints, according to approved procedures, that passes the following inspections and tests:

- The joints shall be visually examined during and after joining and found to have the same appearance as control joints or photographs of acceptable joints;
- Pipe shall be tested or examined by one (1) of the following methods by the Contractor's testing agency:
 - Pressure and tensile test as described in 49 CFR #192.283;
 - Ultrasonic inspection to prove that the joint is free of flaws that would cause failure.
- Cut a joint into three (3) longitudinal straps and examine each strap for:
 - Voids or unbounded surfaces;
 - Deform the samples by bending, torque or impact to demonstrate that failure does not occur in the joint.

The Contractor shall provide the Engineer a pipe joint for inspection and testing, if requested.

Watermain testing may be carried out when all the following conditions have been met:

- A section of Watermain not exceeding three hundred sixty-five meters (365 m) in length has been completed.
- The section has been carefully filled with water and allowed to sit for at least twenty four (24) hours.
- Reaction or thrust blocking within the section has reached 15.0 MPa design strength.

Test water and disinfect services with mains.

If all the conditions have been met, apply a constant pressure of 1035 KPa for a minimum of two (2) hours to mains, hydrants, valves and services. Make good all defects, at no additional cost to Owner. Ensure all water service connections are turned off at curb stops to avoid damage to private plumbing.

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Conduct leakage tests after completion of pressure testing. Conduct leakage tests at 1035 Kpa, in accordance with AWWA C600-82 procedures. Allowable leakage will be calculated using the following formula:

$$\text{Allowable leakage} = N \times D \times P^{0.5} \div 128320 = \text{Liters per hour}$$

Where N = Number of joints; D = nominal diameter of pipes (mm); and P = average test pressure (kPa).

If test leakage in any section is greater than permitted by AWWA Standards, locate and repair defective pipe joints, at no additional cost, until leakage is within permitted allowance. Test pipelines in sections not exceeding three hundred sixty five meters (365m) in length.

Provide all equipment and labor for tests and include costs in prices for water mains.

32.5.9 Flushing and Disinfecting Water Mains

After completing satisfactory hydrostatic tests, and before placing into service, flush all mains to remove as much foreign matter as possible from system. Flush at minimum velocity of point eight meters per second (.8m/s), as required by AWWA C651-99 procedures (two hundred fifty-millimeter (250 mm) line requires two (2) fifty-millimeter (50 mm) openings to provide the required flushing velocity.

The Contractor shall notify the Municipality's Public Works Department prior to flushing or disinfecting water mains.

After flushing, disinfect mains by pumping chlorine solution into mains through a special main cock at beginning of line near source of water. Do not use hydrants at point of application for disinfectant.

Introduce disinfectant according to AWWA C651-99, and to approval of Engineer and Provincial Ministry of Health.

Conform to AWWA C651-99 for quantity of disinfectant, method of distribution throughout system and final flushing.

After final flushing, and before placing Watermain in service, the Engineer will collect samples in sterile bottles from an approved sampling point. The sampling is to be witnessed by local authorities as necessary. Samples will be submitted to Provincial Ministry of Health for testing, and test results forwarded to Local Authorities. Heterotrophic plate counts will be provided.

If initial disinfection fails to produce satisfactory results, repeat disinfection until satisfactory samples are obtained.

Include costs for flushing, disinfecting and testing, including any necessary repetitions, in the prices for water mains.

32.5.10 Connections to Existing System

Connect to existing pipes, manholes and structures as shown on drawings. Perform all excavation, backfilling, pipe cutting, jointing, demolition, repair and other work required. Supply all materials. Unless specifically itemized in unit prices, include cost of this work in price for mains, at no additional cost to Owner for extra work or materials.

In special case connections, expose existing utilities in order to determine the appropriate connection option. Do not proceed until authorization by the Engineer has been given. Connection options include excavation, backfilling, removal and salvage, pipe cutting, jointing, demolition, repair, and any other work required.

Give ample notice to the municipal authority and fire department before having water turned off. The municipal authority will operate all existing valves, as required. The Contractor shall not operate existing valves. Finish

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connection in order to restore service in shortest possible time. Prior to service interruption, notify all affected customers according to a schedule approved by the Engineer. Work continuously until service is restored.

Schedule connections to reduce interruptions in service as much as possible.

Include all cutting of existing work, connection and making good existing work in unit prices.

32.5.11 Salvaged or Abandoned Utilities

Remove abandoned valve manholes, service and valve boxes to a depth of six hundred millimeters (600mm) below finished grade. Plug abandoned pipe lines at valve manholes and open ends. Place and compact pit-run gravel in one hundred fifty-millimeter (150 mm) layers to fill remaining portions of manholes.

Existing manhole frames, covers, hydrants, valves, and other appurtenances removed during construction may be incorporated in new work if quality is acceptable to Engineer. Surplus material suitable for reuse remains the property of the Owner. Stockpile as directed. Dispose of all unsuitable material and material not claimed by Owner.

32.5.12 Adjustment of Existing Valves and Service Boxes

Adjust all existing valve and service boxes within contract limits, shown to remain in service, to finished grade as directed by the Engineer. Repair or replace defective parts.

Payment for adjusting and/or for replacing defective existing appurtenances will be made as Changes in the Work, unless specifically itemized in the Unit Price Schedule.

32.5.13 Markers

A fifty millimeter by one hundred-millimeter (50mm x 100mm) marker stake, from six hundred millimeter (600mm) below ground to six hundred millimeter (600mm) above ground level, shall be placed at each water valve, the top six hundred millimeter (600mm) to be painted blue.

32.6 MEASUREMENT AND PAYMENT

32.6.1 Water Mains

Payment will be made at the unit price bid per horizontal meter (m) for respective pipe sizes, measured along center line of main for the regardless of depth; for hydrant leads, measured from center of main to center of hydrant. Length shall be horizontal measurement with no allowance for slope. Unit price shall include supply and installation of pipe, fittings for pipe type conversion, pipe cutting and removal and disposal of existing pipe, bedding, flushing, chlorinating and testing, ground restoration required to restore the ground to the original conditions prior to the work being completed and all work performed and materials supplied that are not specifically itemized elsewhere and paid for separately in the Unit Price Schedule.

The unit price shall also include the excavation of pit zones, shoring as required, dewatering, trench maintenance and installing of pipe including drilling and pulling of pipe, jointing, backfilling in the pit zones, thrust blocks, anchor blocks, cleaning, testing, and all incidental work for which payment is not specified elsewhere.

The length of water main is measured horizontally.

Where new water mains and hydrant leads are to be installed in existing roads, lanes or other established areas, include the cost of all remedial work in the unit price for water mains/hydrant leads. Leave work area in an as new condition. Include for reconstruction of roadways and lanes to municipal authorities standards. No separate

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payment will be made for sawcutting, granular base course, or asphalt concrete pavement patching.

32.6.2 Valves

Payment for main valves will be made at the unit price bid for each respective size of valve, which shall include supply and installation of valve, field applied wrapping, bedding or thrust blocking, backfilling, compaction, valve box, risers, fittings for pipe type conversion, caps and markers. No separate payment will be made for adjusting new valves to final grade.

Payment for air relief valves will be made at the unit price bid, which shall include all materials, labor and machinery required for supply and installation of the valve, valve chamber and all appurtenances necessary for a "complete" installation.

Where new valves are to be installed in existing roads, lanes or other established areas, include the cost of all remedial work in the unit price for valves. Leave work area in an as new condition. Include for reconstruction of roadways and lanes to municipal authorities standards. No separate payment will be made for sawcutting, granular base course, or asphalt concrete pavement patching.

32.6.3 Fittings

Payment for fittings shall be made at the unit price bid for the respective bid item and shall, include supply and installation of associated fittings; all work in setting, including excavation and backfill; field applied wrapping and supply and installation of all materials required necessary to complete the Work.

32.6.4 Hydrant Assembly

Payment for hydrants shall be made at the unit price bid for hydrants, which price shall include supply and installation of hydrant, associated fittings; all work in setting, excluding excavation and backfill; field applied wrapping and supply and installation of all materials required (including 10m of 150mm diameter - AWWA C900 piping, gravel base, polyethylene sheet and thrust blocking and blocking required fittings and bracing). No separate payment will be made for adjusting new hydrants to final grade.

Where new hydrants are to be installed in existing roads, lanes or other established areas, include the cost of all remedial work in the unit price for hydrants. Leave work area in an as new condition. Include for reconstruction of roadways and lanes to municipal authorities standards. Unless otherwise specified in the Unit Price Schedule, no separate payment will be made for sawcutting, granular base course, or asphalt concrete pavement patching.

32.6.5 Connections to Existing Mains

Where connections to existing mains are at existing tees, crosses or stubs, no payment will be made for such connections. All labor and materials for the connection, including, but not limited, to removal of existing plugs and thrust restraints, installation of new restraints as required, and all costs associated with protecting or maintaining the existing line fittings and appurtenances in service during the work will be considered incidental to the other work of this section.

Connections and tie-ins to HDPE pipe shall only be made after a suitable time period in order to allow the pipe to recover and rebound from the insertion forces. Recovery period shall be equal to at least twice the pull-back time.

Connections to existing mains, payment will only be made at the contract lump sum price bid for each if specified in the Unit Price Schedule. Other wise no payment will be made for connections to existing mains and will be consider incidental to the unit price bid per lineal meter for "Water Main – PVC CAN3-B.137.3 M86 (AWWAc900)



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WATER MAINS

Class 150 DR18 (200mm)” or “Water Main – PVC CAN3-B.137.3 M86 (AWWAc900) Class 150 DR18 (250mm)”
In addition to items above, payment shall also include all materials and labour to remove any existing surface or subsurface appurtenances that may hinder the work, or access to the work, modify existing lines, install new fittings, remove abandoned stubs, reconstruct fences, and restore lanes, streets, grassed areas, or other surface features to original or better condition (include for 250 mm new crushed gravel in lanes/300 mm in streets). Re-grade and make good all appurtenances or areas disturbed as a result of the work. Remove from site any materials not to be incorporated into the work.

END OF SECTION

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SANITARY SEWER MAINS

33. SANITARY SEWER MAINS (02520)

33.1 GENERAL

33.1.1 Work Included

Provide all labor, products and equipment required for the work, including but not limited to:

- saw cutting existing ACP if required
- remove and dispose existing sanitary sewer pipe
- bedding under and over piping
- sanitary sewers and appurtenances
- cleaning sewers
- testing and inspection sewers
- connection to existing systems

33.2 PRODUCTS

33.2.1 Sewer Pipe

To be type called for in the Unit Price Schedule, or shown on drawings, and meet the requirements noted in subsequent clauses of this section.

Non-reinforced pipe and fittings to CAN/CSA-A257.1 Class 3, designated for flexible rubber gasket joints to CAN/CSA-A257.3.

Reinforced concrete pipe meeting ASTM Specification C76 and CSA A 257.2-M92.

PVC pipe and fittings: DR 35 meeting ASTM Specification D3034, CSA B182.2 and CSA B182.1 may be utilized for mains up to and including three hundred seventy-five millimeter (375 mm) diameter, with prior approval of the Engineer.

Cement - sulfate resisting Portland for all concrete pipe, meeting Type 50 CSA-A5.

33.2.2 Pipe Joints

For all sewers: as recommended by pipe manufacturer, to produce watertight joints with infiltration within specified limits.

Concrete pipe - rubber gasket to ASTM C443.

PVC - rubber gasket to ASTM 03212 or ASTM F477.

33.2.3 Precast Concrete Manhole Units

To meet requirements of ASTM C478 to dimensions shown on drawings.

Cement - sulfate resisting Portland, CSA A5, Type 50.

Manhole steps shall be nineteen-millimeter (19 mm) diameter, galvanized iron safety rungs, spaced at a maximum distance of four hundred millimeter (400mm) center to center for full height.

Precast bases to be minimum 20.7 MPa concrete.

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SANITARY SEWER MAINS

33.2.4 Concrete Blocks and Bricks

Solid concrete, conforming to CSA A165.1 and 165.2 and ASTM C139, not less than one hundred twenty eight millimeter (128mm) thick for block, standard dimensions for brick, true to shape, free from cracks and surface defects, compressive strength not less than 17.2 MPa, absorbing not more than eight percent (8%) water by weight during twenty four (24) hours immersion test performed after drying.

Cement - sulfate resisting Portland CSA A5, Type 50.

33.2.5 Mortar

For pipe joints and all other parts of the work, one (1) part sulfate resisting Portland cement to two (2) parts clean sand, by volume.

33.2.6 Cast Iron Frame, Covers and Grates

For manholes, close grained grey cast iron, meeting ASTM A48, Class 20, true in form and dimension, free from faults, sponginess, cracks, blowholes and other defects. Cast steel to conform to ASTM A27, grade 70-36. Substitution of ductile iron meeting ASTM A445 for cast iron or cast steel shall be subject to approval of Engineer.

Machine or grind frames, covers and grates to even non-rocking bearing surfaces.

Hot dip in asphaltic varnish.

Manhole covers and frames.

Sanitary - Model TYPE-39 or approved equal.

33.2.7 Manhole Steps

Safety type, nineteen-millimeter (19 mm) diameter solid steel bar, hot dip galvanized after fabrication.

33.2.8 Safety Platforms

Safety platforms shall be aluminium grates to MSU Mississauga or approved equal.

To be installed, according to manufacturer's recommendations, on manholes greater than five meter (5m) in depth, when measured from the top of the frame to the lowest invert.

33.2.9 Concrete

Ready-mixed concrete, sulfate resisting, Portland cement CSA A5, Type 50, 20 MPa compressive strength at twenty eight (28) days of age, to CSA A23.1

33.2.10 Reinforcing Steel

CSA G30.12 or G30.13, 34.5 MPa minimum yield, Grade 50, all deformed except where noted otherwise. Use Grade 40 for ties.

33.2.11 Sewer Pipe Tests and Rejection

Include all costs for testing, supply and delivery of specimens to testing laboratory, and replacing defective material.

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SANITARY SEWER MAINS

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The Engineer reserves the right to select, either on site or at the manufacturer's stockpile, point five percent (.5%) of total length of each category of pipe for testing, minimum number of lengths as follows:

- for each category of over one hundred (100) lineal meters – four (4) lengths
- for each category of over fifty (50) lineal meters and less than one hundred (100) lineal meters – two (2) lengths
- for each category of less than fifty (50) lineal meters – one (1) length.

Where the Engineer has selected full sized pipe specimens for load tests, deliver these specimens to an approved testing laboratory. Results of the tests shall be mailed directly to Engineer in triplicate. Pipe will be accepted, based on certified factory tests, provided they are done under supervision of an independent testing agency. All pipe tests shall be performed in accordance with ASTM Specifications.

Should any specimens fail to meet test requirements, test two (2) additional selected specimens for each failure. Pipe will be acceptable only if all retest specimens meet requirements. Should test results be unsatisfactory, all or part of pipe supplied may be rejected and payment withheld until satisfactory tests of pipe in place are conducted. Cost of retesting will be the responsibility of the Contractor.

Inspect pipe on delivery and reject any that fails to meet specified requirements. Replace rejected pipe with satisfactory pipe without delay. Mark all rejected pipe plainly as "Rejected" and immediately remove from site.

The Engineer may require submission of a manufacturer's report verifying satisfactory random testing of the pipe designated for this project.

33.3 EXECUTION

33.3.1 Bedding Sewers

Bed pipe as per trench bedding and initial backfill Class "B" granular surround conditions for plastic pipe and Granular Foundation for concrete pipe, as detailed in the standard drawings attached.

Obtain Engineers approval for all materials to be used in the pipe bedding zone.

33.3.2 Laying and Jointing Pipe

Commence laying at lower end of line, lay pipes and specials true to line and grade, socket ends up grade, joints close and evenly butted all around pipe. Take special care to prevent sagging of spigot end in hub, and provide true, even invert surface throughout entire length of sewer. Excavate at end of each pipe to provide rest for socket, sufficient to permit proper jointing. Clean pipe interior; remove all dirt, mud and other extraneous materials.

33.3.3 Cleaning Sewer Mains

On completion of construction of mains and services, flush and string, in readiness for TV inspection, all mains until all deposits of earth or other material are removed. If new system connects to an existing system, plug outgoing line at manhole at junction and remove dirt and debris at that manhole. Do not permit debris from new construction to enter existing system. Pay all costs for repairs where damages occur due to negligence. Pay all costs of water from the municipal authority.

During flushing operations, check all manholes. If depth of flow in any manhole is greater than should be anticipated, bucket main and remove obstructions in pipe line. Pay all costs for required repairs.

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SANITARY SEWER MAINS

Whenever practicable, flush out in runs not over two hundred fifty meters (250m). Remove all foreign material from each run before proceeding with next.

33.3.4 Inspection and Testing

If required by the Engineer, perform pill test after cleaning sewer mains. Through each section of main, pull wood or metal ball with diameter fifty millimeter (50mm) less than inside pipe diameter. If pill does not readily pull through, uncover pipe and make good defects at no cost to Owner.

Pill test is not required on lines two hundred sixteen-millimeter (216 mm) diameter and larger, if they are visually inspected in a satisfactory manner.

The Contractor shall perform closed circuit television inspection, at his cost, of all sections of the sanitary sewer mains. All defects identified by the TV inspection shall be corrected by the Contractor at the Contractor's expense. The Contractor shall be responsible for the cost of flushing and stringing the mains prior to TV inspection. If additional TV inspection is required to verify correction of defective work, it will be at the Contractor's cost. The Contractor shall provide a copy of the video tape recordings and a written report to the Owner for their approval and record purposes. The closed-circuit television inspection shall be conducted prior to the issuance of the Construction Completion Certificate and prior to the issuance of the Final Acceptance Certificate.

33.3.5 Manholes

Construct manholes as shown on drawings, unless otherwise permitted in writing by Engineer. Submit full details of any proposed alternative construction with Tender.

For cast-in-place concrete for manholes, conform to CSA A23.1.

Place manholes accurately, plumb, in alignment and at exact plan location.

Construct manholes watertight and complete, including finishing flow bottoms, as work proceeds. Do not lay pipe in advance more than two (2) manholes ahead of last completed manholes.

Shape bottoms accurately for necessary flows, as shown on drawings or as directed by Engineer. On manholes with sewers six hundred ten-millimeter (610 mm) diameter and smaller, form invert through manhole with half round pipe. At manholes containing lot services, shape bottoms to provide slopes required to ensure no build up of sewage occurs in manholes.

Place stubs for future lines accurately and plug watertight. Shape flow bottoms to suit future lines.

At all bends through manholes, provide fifty millimeter (50mm) drop in invert from inlet to outlet.

Support pipes at manholes to prevent shearing or settlement. Where not detailed, use concrete fill, concrete or suitable timber beam, or suitably compacted gravel.

During construction, plug pipes at manholes to prevent entry of concrete and mortar. Remove plugs immediately after construction is completed.

Set covers accurately within fifteen millimeter (15mm) of correct grade. On sloping streets, set covers to match slopes.

Set all precast concrete sections, bricks, blocks and frames in mortar. Tool joints smooth and point all voids after setting.

Sanitary manhole shall have all joints made watertight, utilizing rubber gaskets conforming to the requirements of CSA-A257.3 and ASTM C443, preformed bituminous gasket (Rub-R-Nec) or other approved sealant.

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SANITARY SEWER MAINS

Set all precast concrete manholes shall be set on 100mm thickness of HI40 rigid board insulation on minimum of 400 mm thickness of compacted wash rock.

All precast manholes shall be wrapped on site with 2 layers of 6 MIL poly wrap.

33.3.6 Connection to Existing System

Connect to existing pipes, manholes and structures as shown on drawings. Perform all excavation, backfilling, pipe cutting, jointing, demolition, repair and other work required. Supply all materials. Unless specifically itemized as a separate bid item in the Unit Price Schedule, include all costs of this work in the bid price for mains, no additional cost to the Owner for this work or materials will be considered.

Schedule connections to reduce interruptions in service as much as possible. Give adequate notice to Owner before making connections. If instructed by the Engineer, provide alternate disposal for existing sewage during the connection time.

33.4 MEASUREMENT AND PAYMENT

33.4.1 Sewers

Payment for sewer and drain pipe will be made at the contract unit price per lineal meter for respective sizes and classes of pipe, measured from center to center of manholes, along center line of pipe, regardless of depth. Length shall be horizontal measurement with no allowance for slope. Unit price shall include pipe and fitting, pipe cutting, removal and disposal of existing pipe, bedding, laying, jointing, flushing and testing, TV video recording and report, ground restoration required to restore the ground to the original conditions prior to the work being completed and all other work performed and all products supplied that are not specifically itemized in Unit Price Schedule.

Where new sewer and drain pipe are to be installed in existing roads, lanes or other established areas, include the cost of all remedial work in the unit price for sewer and drain pipe. Leave work area in an as new condition. Include for reconstruction of roadways and lanes to municipal authorities standards. No separate payment will be made for saw-cutting, granular base course, or asphalt concrete pavement patching.

33.4.2 Manholes

Payment for sanitary manholes will be made at the contract unit price for each manhole, including from frame rim to invert of outgoing pipe. Include costs for removal and disposal of existing manholes, steps, stubs, plugs, frame and cover, and all other labour and products required for complete work. No separate payment will be made for adjusting new manholes to final grade.

Where new sanitary manholes are to be installed in existing roads, lanes or other established areas, include the cost of all remedial work in the unit price for sewer manholes. Leave work area in an as new condition. Include for reconstruction of roadways and lanes to municipal authorities standards. No separate payment will be made for saw cutting, granular base course, or asphalt concrete pavement patching.

33.4.3 Fittings

Unless otherwise specified with the Unit Price Schedule, payment for fittings shall be incidental to contract unit price for pipe and shall, include supply and installation of associated fittings; all work in setting, including excavation and backfill; and supply and installation of all materials required necessary to complete the Work.

33.4.4 Connections



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Payment for connection will be incidental to the unit price bid for pipe. Include costs for pipe fittings and products required for work and disposal of existing stubs as required.

Where itemized in Unit Price Schedule, special connections will be paid for at contract lump sum price for each connection. Include costs for pipe fittings, rebar or other connections, and all other labor and products required for complete work, in lump sum price, including breaking into existing mains, cutting and plugging of abandoned mains, disposal of materials as required, restoring all disturbed appurtenances (i.e. catch basins and valves), reconstructing landscaped areas and lanes to "as new" condition (include for full depth crushed gravel subgrade in lanes and streets), and all other work resulting from construction which is not specifically identified elsewhere.

END OF SECTION

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STORM SEWER MAINS

34. STORM SEWER MAINS (02560)

34.1 GENERAL

34.1.1 Work Included

Provide all labor, products and equipment required for the work, including but not limited to:

- sawcutting existing ACP if required
- bedding under and over piping
- removal of existing storm sewer mains
- storm sewers and appurtenances
- culverts
- cleaning sewers
- testing sewers
- connection to existing systems

34.2 PRODUCTS

34.2.1 Sewer Pipe

To be type called for in the Unit Price Schedule, or shown on drawings, and meet the requirements noted in subsequent clauses of this section.

Non-reinforced pipe and fittings to CAN/CSA-A257.1 Class 3, designated for flexible rubber gasket joints to CAN/CSA-A257.3.

Reinforced concrete pipe meeting ASTM Specification C76 and CSA A 257.2-M92.

PVC pipe and fittings: DR 35 meeting ASTM Specification D3034, CSA B182.2 and CSA B182.1 may be utilized for mains up to and including three hundred seventy-five-millimeter (375 mm) diameter with prior approval of the Engineer.

Ribbed PVC pipe and fittings to meet CSA B182.4 and ASTM F794, with pipe stiffness of 320kPa as measured in accordance with ASTM D2412.

Cement - sulfate resisting Portland for all concrete pipe, meeting Type 50 CSA-A5.

34.2.2 Pipe Joints

For all sewers: as recommended by pipe manufacturer, to produce watertight joints with infiltration within specified limits.

Concrete pipe - rubber gasket to ASTM C443 and CSA A257.3

PVC - rubber gasket to ASTM 03212 or ASTM F477

34.2.3 Precast Concrete Manhole Units

To meet requirements of ASTM C478 and CSA A257.4 to dimensions shown on drawings.

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STORM SEWER MAINS

Cement - sulfate resisting Portland, CSA A5, Type 50.

Manhole steps shall be nineteen-millimeter (19 mm) diameter, galvanized iron safety rungs spaced at a maximum distance of four hundred-millimeter (400 mm) center to center for full height.

Precast bases to be minimum 20.7 MPa concrete.

34.2.4 Concrete Blocks and Bricks

Solid concrete, conforming to CSA A165.1 and 165.2 and ASTM C139, not less than one hundred twenty eight millimeter (128mm) thick for block, standard dimensions for brick, true to shape, free from cracks and surface defects, compressive strength not less than 17.2 MPa, absorbing not more than eight percent (8%) water by weight during twenty four (24) hours immersion test performed after drying.

34.2.5 Catch Basins

To meet requirements of ASTM C478, CSA A257.2, nine hundred ten-millimeter (910 mm) diameter reinforced concrete riser, reinforced precast concrete base slab, to details shown on drawings.

Cement - sulfate resisting portland CSA A5, Type 50.

34.2.6 Catch Basin Lead Pipes

Catch basin lead pipes shall be:

- a) Ribbed PVC pipe and fittings meeting CSA B182.4, ASTM F794 with pipe stiffness of 320 kPa as measured in accordance with ASTM D2412.
- b) PVC pipe DR 35 to meet ASTM D3034 or approved equivalent.
- c) Corrugated Steel Pipe (CSP) conforming to the latest revision of CSPI Specification #501, having a wall thickness of sixteen (16) gauge (one point six millimetre (1.6mm)) standard galvanized coating complying with CSA G401 with corrugations profile of sixty-eight millimetre to thirteen millimetre (68mm x 13mm).

Pipe diameter shall be two hundred-fifty millimetre (250 mm) diameter for single catch basins and three hundred millimetre (300mm) diameter for twinned catch basins, with a minimum grade of two percent (2%).

Catch basin lead pipe shall conform to the approved material for the municipality in which it is being installed.

34.2.7 Mortar

For pipe joints and all other parts of the work, one (1) part sulfate resisting portland cement to two (2) parts clean sand, by volume.

34.2.8 Cast Iron Frame, Covers and Grates

For manholes and catch basins, close-grained grey cast iron, meeting ASTM A48, Class 20, true in form and dimension, free from faults, sponginess, cracks, blowholes and other defects. Cast steel to conform to ASTM A27, grade 70-36. Substitution of ductile iron meeting ASTM A445 for cast iron or cast steel shall be subject to approval of Engineer.

Machine or grind frames, covers and grates to even non-rocking bearing surfaces.

Hot dip in asphaltic varnish.

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STORM SEWER MAINS

Manhole covers and frames:

- Storm - Model TYPE-39, or approved equal
- Catch basin covers and frames
 - Rolled monolithic curb and gutter – Norwood Foundry Model K7
 - Round Top Catch Basin - Norwood Foundry Model F-39
 - Side inlet – Norwood Foundry Model K1/F-51

34.2.9 Manhole Steps

Safety type, nineteen-millimeter (19 mm) diameter solid steel bar, hot dip galvanized after fabrication.

34.2.10 Safety Platforms

Safety platforms shall be aluminium grates to MSU Mississauga or approved equal.

To be installed, according to manufacturer's recommendations, on manholes greater than five meters (5m) in depth when measured from the top of the frame to the lowest invert.

34.2.11 Concrete

Ready-mixed concrete, sulfate resisting, Portland cement CSA A5, Type 50, 20 MPa compressive strength at twenty eight (28) days of age, to CSA A23.1

34.2.12 Reinforcing Steel

CSA G30.12 or G30.13, 34.5 MPa minimum yield, Grade 50 all deformed except where noted otherwise. Use Grade 40 for ties.

34.2.13 Sewer Pipe Tests and Rejection

Include all costs for testing, supply and delivery of specimens to testing laboratory and replacing defective material.

The Engineer reserves the right to select, either on site or at the manufacturer's stockpile, point five percent (.5%) of total length of each category of pipe for testing, minimum number of lengths as follows:

- for each category of over one hundred (100) lineal meters – four (4) lengths
- for each category of over fifty (50) lineal meters and less than one hundred (100) lineal meters – two (2) lengths
- for each category of less than fifty (50) lineal meters – one (1) length.

Where the Engineer has selected full sized pipe specimens for load tests, deliver these specimens to an approved testing laboratory. Results of the tests shall be mailed directly to Engineer in triplicate. Pipe will be accepted, based on certified factory tests, provided they are done under supervision of an independent testing agency. All pipe tests shall be performed in accordance with ASTM Specifications.

Should any specimens fail to meet test requirements, test two (2) additional selected specimens for each failure. Pipe will be acceptable only if all retest specimens meet requirements. Should test results be unsatisfactory, all or part of pipe supplied may be rejected and payment withheld until satisfactory tests of pipe in place are

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STORM SEWER MAINS

conducted. Cost of retesting will be the responsibility of the Contractor.

Inspect pipe on delivery and reject any that fails to meet specified requirements. Replace rejected pipe with satisfactory pipe without delay. Mark all rejected pipe plainly as "Rejected" and immediately remove from site.

The Engineer may require submission of a manufacturer's report verifying satisfactory random testing of the pipe designated for this project.

34.3 EXECUTION

34.3.1 Bedding Sewers

Excavate trenches to widths not less than three hundred millimeter (300mm) greater than pipe diameter. Maximum width at top shall not exceed outside pipe diameter plus six hundred millimeter (600mm).

Bed pipe per trench bedding and initial backfill Class "B" granular surround conditions for plastic pipe and Granular Foundation for concrete pipe, as detailed in the standard drawings attached.

Obtain Engineers approval for all materials to be used in the pipe bedding zone.

34.3.2 Laying and Jointing Pipe

Commence laying at lower end of line, lay pipes and specials true to line and grade, socket ends up grade, joints close and evenly butted all around pipe. Take special care to prevent sagging of spigot end in hub and provide true, even invert surface throughout entire length of sewer. Excavate at end of each pipe to provide rest for socket, sufficient to permit proper jointing. Clean pipe interior; remove all dirt, mud and other extraneous materials.

34.3.3 Infiltration/Exfiltration Testing

Total infiltration of groundwater into whole of system or exfiltration, shall not exceed five liters per millimeter (5l/mm) of internal pipe diameter per kilometer per day, including manholes, for PVC pipe, and twenty liters per millimeter (20l/mm) of internal pipe diameter per km per day, including manholes, for concrete pipe. Where such leakage is exceeded, repair sewer mains, at no additional cost to Owner, so total infiltration is within specified limits.

During construction and immediately on completion of a manhole, measure infiltration at new manhole. If amount exceeds specified limit, make necessary repairs immediately to reduce infiltration to allowable limit. Failure to comply with this requirement will be sufficient cause for Engineer to stop sewer laying work until repairs have been made.

34.3.4 Cleaning Sewer Mains

On completion of construction of mains and services, flush and string in readiness for TV inspection, all mains until all deposits of earth or other material are removed. If new system connects to an existing system, plug outgoing line at manhole at junction and remove dirt and debris at that manhole. Do not permit debris from new construction to enter existing system. Pay all costs for repairs where damages occur due to negligence. Pay all costs of water from the municipal authority.

During flushing operations, check all manholes. If depth of flow in any manhole is greater than should be anticipated, bucket main and remove obstructions in pipe line. Pay all costs for required repairs.

Whenever practicable, flush out in runs not over two hundred fifty meters (250m). Remove all foreign material

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from each run before proceeding with next.

34.3.5 Inspection and Testing

If required by the Engineer, perform pill test after cleaning sewer mains. Through each section of main, pull wood or metal ball with diameter fifty millimeter (50mm) less than inside pipe diameter. If pill does not readily pull through, uncover pipe and make good defects at no cost to Owner.

Pill test is not required on lines two hundred sixteen millimeter (216mm) diameter and larger if they are visually inspected in a satisfactory manner.

The Contractor shall perform closed circuit television inspection at his cost, of all sections of storm sewer mains. All defects identified by the TV inspection shall be corrected by the Contractor at the Contractor's expense. The Contractor shall be responsible for the cost of flushing and stringing the mains prior to TV inspection. If additional TV inspection is required to verify correction of defective work, it will be at the Contractor's cost. The Contractor shall provide a copy of the video tape recordings and a written report to the Owner for their approval and record purposes. The closed-circuit television inspection shall be conducted prior to the issuance of the Construction Completion Certificate and prior to the issuance of the Final Acceptance Certificate.

34.3.6 Manholes

Construct manholes as shown on drawings, unless otherwise permitted in writing by Engineer. Submit full details of any proposed alternative construction with Tender.

For cast-in-place concrete for manholes, conform to CSA A23.1.

Place manholes accurately, plumb, in alignment and at exact plan location.

Construct manholes watertight and complete, including finishing flow bottoms, as work proceeds. Do not lay pipe in advance more than two (2) manholes ahead of last completed manholes.

Shape bottoms accurately for necessary flows, as shown on drawings or as directed by Engineer. On manholes with sewers six hundred ten millimeter (610mm) diameter and smaller, form invert through manhole with half round pipe. At manholes containing lot services, shape bottoms to provide slopes required to ensure no build-up of deposits occurs in manholes.

Place stubs for future lines accurately and plug watertight. Shape flow bottoms to suit future lines.

At all bends through manholes, provide fifty millimeter (50mm) drop in invert from inlet to outlet.

Support pipes at manholes to prevent shearing or settlement. Where not detailed, use concrete fill, concrete or timber beam, or suitably compacted gravel.

During construction, plug pipes at manholes to prevent entry of concrete and mortar. Remove plugs immediately after construction is completed.

Set covers accurately within fifteen millimeter (15mm) of correct grade. On sloping streets, set covers to match slopes.

Set all precast concrete sections, bricks, blocks and frames in mortar. Tool joints smooth and point all voids after setting.

Storm manhole and catch basins barrel section joints may be left unparged. Joints between slab top, concrete adjusting rings, and frame shall be made watertight utilizing preformed bituminous gasket (Rub-R-Nec) or other approved sealant. Gaskets for storm manholes only, may be omitted at the discretion of the Engineer.

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Set all precast concrete manholes shall be set on 100mm thickness of HI-40 rigid board insulation on minimum of 400 mm thickness of compacted wash rock.

All precast manholes shall be wrapped on site with 2 layers of 6 MIL poly wrap.

34.3.7 Connection to Existing System

Connect to existing pipes, manholes and structures as shown on drawings. Perform all excavation, backfilling, pipe cutting, jointing, demolition, repair and other work required. Unless specifically itemized as a separate bid item in the Unit Price Schedule, all costs of this work shall be incidental to the unit price bid for pipe bid price for mains and at no additional cost to the Owner for this work or materials will be considered.

Schedule connections to reduce interruptions in service as much as possible. Give adequate notice to Owner before making connections. If instructed by the Engineer, provide alternate disposal for existing sewage during the connection time.

34.3.8 Adjustment of Existing Manholes

Adjust all existing manholes within contract limits, shown to remain in service, to finished grade as directed by the Engineer. Repair or replace defective parts.

34.4 MEASUREMENT AND PAYMENT

34.4.1 Sewers

Payment for sewer and drain pipe will be made at the unit price bid per lineal meter for respective sizes and classes of pipe, measured from center to center of manholes, or catch basins, along center line of pipe, regardless of depth. Length shall be horizontal measurement with no allowance for slope. Unit price shall include pipe and fitting, pipe cutting, remove and dispose existing pipe, bedding, laying, jointing, flushing and testing, TV video recording and report, and all other work performed and all products supplied that are not specifically itemized in Unit Price Schedule.

34.4.2 Manholes

Payment for storm manholes will be made at the unit price bid for each manhole, including from frame rim to invert of outgoing pipe. Include costs for steps, stubs, plugs, frame and cover, removal and disposal of existing manholes, and all other labour and products required for complete work. In the case of catch basin manholes, include cost for alternate top as per drawings to replace standard cover. No separate payment will be made for adjusting new manholes to final grade.

Where new storm manholes are to be installed in existing roads, lanes or other established areas, include the cost of all remedial work in the unit price for storm manholes. Leave work area in an as new condition. Include for reconstruction of roadways and lanes to municipal authorities standards. No separate payment will be made for saw cutting, granular base course, or asphalt concrete pavement patching.

34.4.3 Fittings

Payment for fittings will be made at the unit price bid for the respective bid item and shall, include supply and installation of associated fittings; all work in setting, including excavation and backfill; and supply and installation of all materials required necessary to complete the Work.

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34.4.4 Connections

Include the cost of each connection in the unit price bid for pipe. Include costs for pipe fittings and products required for work and disposal of existing stubs as required.

Where itemized in Unit Price Schedule, special connections will be paid for at contract lump sum price for each connection. Include costs for pipe fittings, rebar or other connections, and all other labor and products required for complete work in lump sum price, including breaking into existing mains, cutting and plugging of abandoned mains, and disposal of materials as required, restoring all disturbed appurtenances (ie: catch basins and valves) reconstructing landscaped areas and lanes to "as new" condition (include for full depth crushed gravel subgrade in lanes and streets), and all other work resulting from construction which is not specifically identified elsewhere.

34.4.5 Adjustment of Existing Manholes

Payment for adjustments of **existing** manholes will be made at the unit price bid for "Adjustment of Appurtenances" and shall be considered full compensation for supply of all material, labour and equipment to raise or lower the appurtenances to the required grade. Replacement of defective existing manholes will be made as Changes in the Work.

34.4.6 Catch Basin

Payment for supply and installation of catch basins shall be made at the unit price bid for "Storm – 900mm Catch Basin c/w Frame & Cover (K-1/F-51 with Side Inlet)" in the unit price schedule which price shall include frame and grate, removal and disposal of existing catch basins, and all material, labour and equipment required for installing the new catch basin. No separate payment will be made for adjusting new catch basins to final grade.

Payment for catch basin leads shall be made at the unit price bid per meter for "Storm Catch Basin Leads – PVC SDR35 (250mm)" which shall include all excavation, backfilling, material, labour, equipment and connections to existing manholes and catch basins.

Where new catch basins or leads are to be installed in existing roads, lanes or other established areas, include the cost of all remedial work in the unit price for catch basins and leads. Leave work area in an as new condition. Include for reconstruction of roadways and lanes to municipal authorities standards. No separate payment will be made for sawcutting, granular base course, or asphalt concrete pavement patching.

END OF SECTION

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LOT SERVICE CONNECTIONS

35. LOT SERVICE CONNECTIONS (02564)

35.1 GENERAL

35.1.1 Work Included

Provide all labor, products and equipment required for the lot service connections, including but not limited to:

- sawcutting existing ACP or concrete if required
- removal of existing lot service connections
- water service piping
- sewer service piping
- corporation main stops, connection to main
- curb stops, service boxes, service markers

35.2 PRODUCTS

35.2.1 Water Service Connections

- 1) Copper tubing to ASTM B88M, Type K, annealed.
- 2) Copper pipe joints to be of compression type suitable for 1035 kPa working pressure.
- 3) Brass corporation stops: red brass to ASTM B62, having inlet threads to AWWA C800 and compression outlet. Cambridge Brass E17072 or Mueller H-15008.
- 4) Brass-curb stops: red brass to ASTM B62 compression type. Mueller H-15209 or Cambridge E17402. To be supplied complete with compatible curb stop chair. Inlet and outlet to have compression joint fittings for use with plastic or copper tubing.
- 5) Water service saddles: AWWA C800 thread, nylon coated, ductile iron body, single stainless steel strap for 20 mm and double stainless steel strap for 38mm 50mm.
- 6) Service box for 25.4 mm or smaller curb stops:
 - Adjustable sliding top section, standard black iron pipe, with threaded top.
 - Top section to be six hundred ten-millimeter (610 mm) in length, have a minimum thirty five point one millimeter (35.1mm) I.D., and a ten millimeter (10mm) set screw.
 - Two point four four meter (2.44m) to two point seven four meter (2.74m) bury.
 - Threaded steel cap with slotted top, nineteen-millimeter (19mm) pentagon brass plug.
 - Casing: standard black iron pipe, thirty-three point four millimeter (33.4mm) O.D.
 - T-304 stainless steel rod, twelve point seven millimeter (12.7mm) diameter by two point one five meter (2.15m) long, complete with standard pig tail for twenty five millimeter (25mm) I.D. pipe and welded bottom bracket with an eight millimeter (8mm) cored hole.
 - Rod to be complete with a six millimeter (6mm) diameter cotter pin of sufficient length.

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- Box bottom boot is to be cast or ductile iron, factory coated, with a clear opening, to allow curb stop access.
- The boot is to attach to the casing by means of a threaded joint.

35.2.2 Sanitary and Storm Service Connections

- 1) Polyvinyl chloride SDR28 to CSA B182.1 with push-on joints wyes or tees. Sanitary services shall be any color except blue.
- 2) Polyvinyl chloride Inserta Tees: P.V.C Hub to CAN-B182.1, rubber sleeve and gasket to ASTM F477 for storm sewers larger than 300mm.

35.2.3 Sand Bags

Bags to be new material and in a condition acceptable to the Engineer. Sand to be clean and free from debris, conforming to imported sand requirements as specified in Section 02315 Trenching and Backfilling for Utilities.

35.3 EXECUTION

35.3.1 Water Services

Use tapping machine to drill, tap and thread corporation main stop into main. Use special care to prevent cuttings falling into main. Wherever possible, tap main under pressure or obtain written approval from the Engineer to do otherwise.

Lay service pipe to designated location and connect to existing service lines. Service connections shall be tapped into the upper portion of the Water main at an angle of at least forty-five degrees (45°) from the horizontal. Tappings shall have a minimum spacing of at least three hundred millimeter (300mm). Attach curb stop and set service box to grade where required.

Brace boxes securely to keep plumb during backfilling. Test for operation both before and after pressure test.

Where curb stop is located under sidewalk, concrete slab or other structure, set top of extension service box flush with surface and fill hole around pipe neatly with concrete.

Use service clamps on all services tapped into one hundred fifty-millimeter (150 mm) AC mains and on twenty five millimeter (25mm) and larger services tapped into two hundred millimeter (200mm) to three hundred millimeter (300mm) AC lines. In all other cases, use service clamps where size of main cock is larger than recommended for size of main.

Place water service lines at least two point seven meter (2.7m) below final finished grade elevations, unless otherwise directed.

Lay water service lines in same trench with sewer service line. Install sanitary services on left side of water service as viewed from main towards property line. Install storm sewer service on right side of water service as viewed from main towards property line. Paint last one meter (1m) sanitary service pipe red. Paint last one meter (1m) storm service pipe green. Make all connections to existing services using appropriate couplings.

Lot service connections to residential lots shall be installed according to the local municipal standards as shown on the drawings.

The Engineer may require the delivery of curb stop risers to the public works yard. The Contractor shall confirm this requirement with the Engineer and shall provide evidence of a receipt signed by the Public Works employee

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accordingly.

35.3.2 Sewer Services

Connect services to mains with manufactured tee or wye fittings placed in mains, or by cutting into mains and installing manufactured tee saddles or wye saddles and forty five degree (45°) bends. A one hundred fifty millimeter by one hundred millimeter (150mm x 100mm) reducer shall be installed at the main to transition from the one hundred fifty millimeter (150mm) connection at the main to the one hundred millimeter (100mm) Lot Service Pipe. Take care to avoid cracking pipe, and remove all cuttings from pipe. Secure joint between saddle and main with mortar or other means acceptable to Engineer.

Do not allow spigots or other obstructions to project into main. Lay service pipe to an even gradient as directed.

Install service lines as detailed, at locations and to grade designated by grade sheet provided in field. Install services at right angle to main, unless otherwise specified.

Bends permitted only at three (3) locations – forty five degree bend (45°) bend with wye or twenty two and one half degree (22 ½°) bend with tee connection at main, forty five degree (45°) bend at top of riser and twenty two and one half degree (22 ½°) bend maximum at property line for house service connection between these points.

Support service lines adequately to prevent dislocation, buckling or settlement. When water lines must be laid below sewer lines, ensure that backfill over water lines is adequately compacted to prevent settlement or dislocation of sewers.

When a connection cannot be made directly to a house service line, plug end of sewer service to prevent entry of water and dirt.

Install service risers only where noted on the lot grading plan. Ensure adequate support for the riser section utilizing sandbags or screened rock.

35.3.3 Markers

A fifty millimeter by one hundred millimeter (50mm x 100mm) marker stake, from invert elevation to six hundred millimeter (600mm) above ground level, shall be placed at the end of each water service line, the top six hundred millimeter (600mm) to be painted blue. Place a one hundred millimeter (100mm) diameter white PVC pipe over the water service box from six hundred millimeter (600mm) below ground to six hundred millimeter (600mm) above ground.

35.4 MEASUREMENT AND PAYMENT

35.4.1 Water Service Pipe

Payment for water service pipes will be made at the unit price bid per lineal meter installed, with measurement taken horizontally from center line of mains to designated end of water service, and shall include all necessary work including, but not limited to, trenching, removal and disposal of existing water service pipe, bedding and compaction, the supply and installation of all materials and markers, and all labour, equipment, tools and incidentals necessary to complete the Work.

35.4.2 Main Stops

Tapping services and supply and installation of main stops will be paid for at the unit price bid per main stops in place and shall include removal and disposal of existing main stops, and all labour and materials necessary, including service clamps.

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LOT SERVICE CONNECTIONS

35.4.3 Curb Stops

Curb stops, including extension service box, will be paid for at the unit price bid per curb stop and shall include removal and disposal of existing curb stops, and all labour and materials necessary, including any extensions required to install to finished grade as required on the drawings. No separate payment will be made for adjusting new curb stops to final grade.

35.4.4 Sewer Service Pipe

Payment for sewer service pipes will be made at the unit price bid per lineal meter installed, with measurement taken horizontally from center line of main to designated end of service. Price shall include trenching, removal and disposal of existing sewer service pipe, connection to the main, saddles, risers, reducers, plugs, fittings, (as required), sand bags, washed rock, granular bedding material, service markers, all labour, materials, equipment, tools and incidentals necessary to complete the Work.

35.4.5 Insulation

Payment of pipe insulation ordered by the Engineer shall be made at the unit price bid per square meter bid for "Hi-40 Board Insulation" as measured by the Engineer along the center line of the main line. Price shall include supply and installation of insulation, and all materials and labour associated with the work.

In the case of services requiring insulation, the insulation width should be sufficient to completely cover both water and sanitary service lines, as well as provide a minimum of 150 mm of overlap on each side. Place insulation on sand bedding a maximum of 150 mm over the line being insulated

35.4.6 Trenching and Backfilling

Payment for Trenching and Backfilling will be at the unit price bid per linear metre for "Trench Excavation, Compaction & Backfill (2.5m to 3.5m)" for common trench of both water and sewer service lines. The unit price bid shall be full compensation for excavation, backfill, compaction and all equipment, labour, material, tools and incidentals required to complete the Work.

END OF SECTION

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ADJUSTMENT OF APPURTENANCES

02565

36. ADJUSTMENT OF APPURTENANCES (02565)

36.1 GENERAL

36.1.1 Work Included

The work described in this section pertains to the adjustments of existing appurtenances.

36.2 EXECUTION

36.2.1 Valve and Curb Boxes Adjustments

Valve box tops and curb box tops shall be adjusted so that the top of the box is set exactly to the required elevation. The Contractor shall shorten or lengthen the boxes and stems as required, and block the boxes to prevent any settlement. The adjustments shall be made so that the boxes are plumb and the valves operate effectively. The rock guard and operating nut are to be located no closer than three hundred millimeter (300mm) below the proposed finished grade.

36.2.2 Manhole and Catch Basin Adjustments

Manhole and catch basin frames shall be adjusted so that the top of the cover is set exactly to the required elevation.

Where it is necessary to raise manhole frames, it shall be done with approved precast rings or blocks meeting the requirements of the current issue of ASTM C478. Joints between slab top blocks and frame shall be mortared, and the joints finished flush and smooth. Joints between slab top, precast rings, and frame shall be made watertight utilizing preformed bituminous gaskets or other approved sealant. Under no circumstances shall the depth from the rim of the manhole to the first ladder rung be more than eight hundred millimeter (800mm).

36.2.3 Damaged Appurtenances

The Contractor shall replace any appurtenances damaged by his work or forces. Any existing damaged appurtenances found within the proposed work zone shall be replaced by the Contractor, as approved by the Engineer, at an agreed lump sum price or alternatively according to the General Conditions Clause 8.2

36.2.4 Final Adjustment Elevations

The tops of valve boxes, manholes, and catch basins shall be set to the design elevations, or as approved by the Engineer. Generally, the following shall apply for setting the final elevations of the tops of the appurtenances:

- in asphaltic pavement, twenty five millimeter (25mm) below the finished surface elevation for manhole frames.
- in concrete curb and gutter, twenty five millimeter (25mm) below gutter elevation for catch basin frames.
- in gravel roadways/lanes, fifty millimeter (50mm) below the surface.
- in landscape areas, fifty millimeter (50mm) above the final surface, providing a smooth transition to match the surrounding areas.



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ADJUSTMENT OF APPURTENANCES**

36.3 MEASUREMENT AND PAYMENT

Payment for adjustment of existing appurtenances shall be made at the unit price bid per each item, and shall be considered full compensation for supply of all material, labor and equipment to raise or lower the appurtenances to the required grade. An adjustment is defined, for the purposes of payment, as an adjustment of less than three hundred millimeter (300mm). Resetting disturbed grouting is not considered an adjustment and no reimbursement may be claimed.

Adjustment of appurtenances shall be measured for payment as the number of units adjusted. Payment shall include all labor and material necessary to perform the work indicated.

Manholes that cannot be adequately adjusted, or the adjustment required is greater than three hundred millimeter (300mm), unless otherwise specified elsewhere in the Contract, shall be reconstructed as per written approval and directions of the Engineer. Payment for reconstructing manholes shall be made at force account rates. Payment shall include all labor and material necessary for the work indicated.

Payment for adjustment of new appurtenances shall be considered incidental to the unit price bid per each respective item, and shall be considered full compensation for supply of all material, labor and equipment to raise or lower the new appurtenances to the required grade.

END OF SECTION

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8TH AVENUE - 2025 REHABILITATION**

GRANULAR SUB BASE

37. GRANULAR SUB-BASE (02721)

37.1 GENERAL

37.1.1 Work Included

The work described in this section pertains to granular sub base material as detailed on the drawings.

37.2 PRODUCTS

37.2.1 Granular Sub-Base

Granular sub base is the material lying above the subgrade and below the base course. The gradation to be utilized shall be as designated by the Engineer.

37.2.2 Gradation

The granular sub base material shall consist of rock, gravel, and sand consisting of hard, clean, durable material, free from coatings of silt, clay or other deleterious materials, and contain no organic matter.

The following gradation shall apply to pit run granular sub base courses:

Sieve Size (mm)	% Passing by Mass
80	100
50	55 – 100
20	32 - 85
5	25 – 65
0.08	2 – 10
Sieve Size (mm)	% Passing by Mass

37.2.3 Approval

Preliminary approval of the material as represented in the test results shall not constitute general acceptance of all material in the deposit or source of supply, and acceptance shall be subject to confirming field tests taken at the discretion of the Engineer. Materials may be considered unsuitable, even though particle sizes are within the limits of the gradation sizes required, if any characteristic precludes satisfactory compaction or if the material fails to provide a roadway suitable for traffic. The acceptability of the final material will be determined by the Engineer.

37.2.4 Quality

The material shall consist of durable rock or gravel. The granular sub base shall not contain any organic or other deleterious materials. The material shall have a minimum California Bearing Ratio of fifty five percent (55%) at the specified compaction, as determined by the current issue of ASTM D1883.

37.3 EXECUTION

37.3.1 Placement

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GRANULAR SUB BASE

The granular sub-base material shall not be placed until the underlying subgrade has been inspected and approved by the Engineer.

Unless otherwise specified, the granular material shall be placed in uniform layers not exceeding two hundred millimeter (200mm) in thickness before compaction. The material shall be placed by mechanical spreaders or deposited in windrows and leveled with a suitable motor grader.

37.3.2 **Compaction**

The material shall be compacted by rolling with a pneumatic-tired or vibrating roller of a type approved by the Engineer. The material shall be compacted near optimum moisture content to ninety eight percent (98%) Standard Proctor Density.

If the moisture content exceeds the optimum during compaction, the material shall be aerated by mechanical means until the material has been dried sufficiently to obtain the specified density.

If the moisture content is below optimum, water shall be added by an acceptable applicator, and in such quantities, to achieve specified compaction.

37.3.3 **Shaping and Finishing**

A motor grader shall be used in conjunction with the compaction equipment to keep the finished surface of each layer even and uniform. The finished surface of the granular sub base shall conform to the required cross section and grades as shown on the drawings, or as directed by the Engineer, within a tolerance of twenty millimeter (20mm). The sub base material shall be uniform and show no signs of segregation.

37.3.4 **Tests**

Field density, moisture content and sieve analysis tests will be carried out by the representative of the Engineer to ensure that the material is satisfactory.

The frequency of field density and moisture content tests shall be approximately one (1) test per one hundred meters (100m) of constructed roadway, and at various locations offset left and right of centre line, or as directed by the Engineer.

All sieve tests should comply with the gradation limits as stated in above.

The Contractor will, as the Engineer requires, provide a loaded gravel truck with operator for visual checks of soft spots.

37.4 MEASUREMENT AND PAYMENT

37.4.1 **Granular Sub-Base**

Measurement will be field measured based on the dimensions indicated on the drawing and as satisfactorily installed and approved by the Engineer, in writing, in its final compacted position. Measurements will be made on the finished top surface of the Granular Sub-Base as shown on the drawings.

No payment will be made for unsatisfactory material based on gradation, compaction, or other failures. No allowance will be made for shrinkage, swelling, or waste of the sub-base material, or for loss of material into yielding underlying soil. No payment will be made for granular sub-base used to fill over-excavation beyond the design width.

Payment for Granular Sub-Base will be made at the unit price bid per square meter (m²) for "Granular Sub-Base

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GRANULAR SUB BASE

(600mm Thickness)". Such payment shall be full compensation for the supply, crushing, loading, hauling, placing, moisture conditioning, shaping, compacting and clean up. The price bid will be considered full compensation for all labour, materials and equipment necessary to complete the Work.

37.4.2 Granular Sub-Base – Soft Spots

Payment for granular sub-base course for soft spots will be made when approved by the Engineer in writing. The Quantity to be paid shall be by the volume in cubic meters (m³) of compacted in-place backfill, based upon field measurements of the depth, width and length of areas satisfactorily completed. Work shall include all costs associated with supplying, crushing, hauling, placing, moisture conditioning, shaping, compaction, excavation and disposal of excavated material and clean up.

END OF SECTION

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02723

GRANULAR BASE COURSE

38. GRANULAR BASE COURSE (02723)

38.1 GENERAL

38.1.1 Work Included

The work described in this section pertains to base course gravel as detailed on the drawings.

38.2 PRODUCTS

38.2.1 Gradation

Granular base material shall consist of crushed rock and/or crushed gravel and sand, consisting of hard, clean, durable material, free from coatings of silt, clay or other deleterious materials, and containing no organic matter. The base course aggregate shall meet the following gradation requirements when tested to ASTM C136 and C117, (AASHTO T11 and T27):

Sieve Size (mm)	% Passing by Mass
20.000	100
16.000	80-95
12,500	60-90
10.000	50-84
5.000	37-62
2,000	26-50
1.250	19-43
630	14-34
400	11-28
315	10-25
160	6-18
80	2-10

A minimum of sixty percent (60%) by weight of the material retained on the five thousand (5,000) sieve shall have at least two (2) fractured faces. Other properties shall be as follows:

Liquid Limit:	maximum 25, ASTM D423-66
PlastiOwner Index:	maximum 6, ASTM D424-59
Los Angeles Abrasion Gradation "B":	35% maximum loss by mass, ASTM C131-76
Sand Equivalent:	minimum of 35%, ASTM D2419-74

38.2.2 Approval

Preliminary approval of the material as represented in the test results shall not constitute general acceptance of all material in the deposit or source of supply, and acceptance shall be subject to confirming field tests taken at

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GRANULAR BASE COURSE

the discretion of the Engineer. Materials may be considered unsuitable even though particle sizes are within the limits of the gradation sizes required, if particle shapes are thin or elongated, if any other characteristic precludes satisfactory compaction or if the material fails to provide a roadway suitable for traffic.

The acceptability of the final material will be determined by the Engineer.

38.2.3 Quality

The material shall consist of durable rock or gravel. The base course shall not contain any organic or other deleterious materials. The material shall have a minimum California Bearing Ratio of fifty five percent (55%), as determined by the current issue of ASTM D1883, at the specified compaction.

38.3 EXECUTION

38.3.1 Placement

The granular base course material shall not be placed until the underlying subgrade or granular sub base course has been inspected and approved by the Engineer. The subgrade or sub base shall be shaped to cross section shown on the drawings, or as directed by the Engineer, and shall be maintained free of ruts, waves, and undulations by whatever means are necessary.

Unless otherwise specified, the granular material shall be placed in uniform layers not exceeding a two hundred millimeter (200mm) compacted depth. The material shall be placed by mechanical spreaders or deposited in windrows and leveled with a suitable motor grader.

When required in the contract, temporary material shall be placed from the granular base course level to the lip of gutter, with a one percent (1%) crown. The following year this material shall be excavated, reshaped and recompacted prior to paving. Any additional material shall be used as sub base material in lanes or as directed by the Engineer.

38.3.2 Compaction

The material shall be compacted by rolling with a pneumatic-tired or vibrating roller of a type approved by the Engineer. The material shall be compacted near the optimum moisture content to one hundred percent (100%) Standard Proctor Density.

For temporary material, compaction shall be ninety eight (98%) Standard Proctor Density.

If the moisture content exceeds the optimum during compaction, the material shall be aerated by mechanical means until it has dried sufficiently to obtain the specified compaction.

If the moisture content is below the optimum, water shall be added by an acceptable applicator, and in such quantities, to achieve the specified moisture content.

38.3.3 Shaping and Finishing

A motor grader shall be used in conjunction with compaction equipment to keep the finished surface of each layer even and uniform. The finished surface of the granular base course shall conform to the required cross section and grade as shown on the drawings, or as directed by the Engineer, within a tolerance of plus or minus twenty millimeter (+/- 20mm).

The granular base course shall be uniform and show no signs of segregation of the material placed.

38.3.4 Tests

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Field density, moisture content and sieve analysis tests will be carried out by the representative of the Engineer to ensure that the material is satisfactory.

The frequency of field density and moisture content tests shall be approximately one (1) test per one hundred meters (100m) of constructed roadway, and at various locations offset left and right of centre line, or as directed by the Engineer.

The Contractor will, as the Engineer requires, provide a loaded water truck with operator for visual proof rolling. The granular surface course shall show no visible subsidence of deflection under the wheels of the truck.

38.4 MEASUREMENT AND PAYMENT

Granular Base Course work shall include all costs associated with supply, crushing, hauling, placing, moisture conditioning, shaping, compaction, testing and clean-up. Payment will be at the unit price bid per square meter for "Granular Base Course – Des 2 Class 20 (150mm Thick)" and "Granular Base Course – Des 2 Class 20 (300mm Thick)". Measurement will be based on the area as measured in the field. Additional payment will not be made for excavation beyond the design width. No payment will be made for unsatisfactory material based on gradation, compaction, or other failures. No allowance will be made for shrinkage, swelling, or waste of the sub-base material, or for loss of material into yielding underlying soil.

Reshaping and reconstructing the existing material shall include excavation, moisture conditioning, shaping, compacting and clean-up. Payment shall be at the unit price bid per square meter (m²). Measurement shall be field measured in its final compacted position.

When requested and approved by the Engineer in writing, the Contractor shall supply and place additional granular base material required in the reshaping of existing granular surfaces that are deficient in material.

Payment for additional granular base material will be made at the unit price bid per cubic meter (m³) of additional granular base material ordered by the Engineer, which price shall be full compensation for supply, crushing, hauling, placing, moisture conditioning, shaping, compacting and all equipment, labour, tools, and incidentals required. Where material is supplied on a cubic meter basis, as measured on a truck load basis, the Engineer will determine the quantity by tallying a count of truck load deliveries. The Contractor will co-operate and assist the Engineer by leveling any loads that are to be measured. Measurement will be made in one-tenth cubic meter units from loads that do not contain full water level capacity.

END OF SECTION

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8TH AVENUE - 2025 REHABILITATION
HOT MIX ASPHALTIC CONCRETE

02741

39. HOT MIX ASPHALTIC CONCRETE (02741)

39.1 GENERAL

39.1.1 Work Included

The work described in this section is that required for construction of a hot-mix asphaltic concrete surface course. The Project requires Type M1 (12.5mm Aggregate) (PG 52-34) mix for the ACP. Asphalt Concrete Pavement on the road surface for 8th Avenue will be placed in two 50mm lifts for a total thickness of 100 mm. All other area patches of Asphalt Concrete Pavement shall be placed in one lift of 75mm lift for a total thickness.

NO "Recycled Asphalt Product" will be permitted to be used within the design mix for Hot Mix Asphalt Concrete Paving. All mix material used for Hot Asphalt Concrete Pavement shall be of new material prepared in accordance with the design specifications.

39.2 PRODUCTS

39.2.1 Aggregates

The Contractor shall submit to the Engineer, at least ten (10) working days before start of paving, a mix design using the Marshall Method and performed by an independent testing laboratory acceptable to the Engineer. The Contractor shall submit a separate mix design for each change in the supplier or source of materials. No mixing of asphaltic concrete shall proceed until the job mix formula, or any subsequent change, is approved by the Engineer.

Preliminary approval of the aggregate, as represented by the samples, shall not constitute general acceptance of all material in the deposits or source of supply; acceptance shall be subject to field tests taken at the discretion of the Engineer.

Materials may be considered unsuitable even though particle sizes are within the limits of the gradation sizes required, if particle shapes are thin or elongated or any other characteristic precludes satisfactory compaction, or if the material fails to provide a pavement suitable for traffic. The acceptability of the final material will be determined by the Engineer.

Use of Recycled Asphalt Product (R.A.P.) will not be permitted as acceptable material to be used within the hot mix for asphaltic concrete.

39.2.2 Gradation

Aggregate shall consist of hard, durable, uniformly graded, crushed gravel, free of coatings of silt or clay, and shall not contain organic or soft materials that break up when alternately frozen and thawed, or wetted and dried, nor other deleterious materials.

Coarse aggregate is aggregate retained on the 5 000 μm sieve. Fine aggregate is aggregate passing the 5 000 μm sieve.

The combined aggregates shall meet the following gradation requirements when tested to ASTM C136 and C117.

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 HOT MIX ASPHALTIC CONCRETE

Mix Type H2, M1, L1 6	Sieve Size (µm)	% Passing by Mass
	12 500	100
	10 000	75-90
	5 000	55 – 70
	1 250	25-40
	630	20-30
	315	14-23
	160	7-14
	80	4 – 8

Additional properties that shall be met are as follows:

PlastiOwner Index:	Non Plastic, ASTM D424-59
Los Angeles Abrasion Gradation "B":	40% maximum loss by mass, ASTM C131-76

39.2.3 Asphalt Cement

The asphalt cement shall be uniform in character, free of water, and shall not foam when heated to 175 degrees Celsius, and it shall have a penetration value of 200-300 dmm at 25°C and shall meet all specifications as to viscosity, flash point, thin film oven test and solubility, as established by Alberta Transportation for the Premium Grade 200-300 (A) Asphalt Cement.

39.2.4 Design Mix

A qualified testing laboratory engaged by the Contractor shall be employed to prepare a mix design and job mix formula for the aggregate on which the Tender is based. The mix design and job mix formula shall be submitted to the Engineer for approval a minimum of 10 days prior to paving. No paving shall commence before the Engineer's approval is given for the mix design or job mix formula.

The laboratory mix design shall be based on the Marshall Method. Absorption of asphalt into the aggregate shall be taken into account, using the ASTM bulk specific gravity of the aggregate, in calculating optimum asphalt content.

The mix design shall meet the following specifications:

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	Arterial / Industrial H2	Collector M1	Local Residential L1
Number of compaction blows each face of specimen:	75	75	50
Min. Stability (kN) at 60 degrees Celsius:	11.5	8	5.3
Flow (mm):	2 to 3.5	2 to 3.5	2 to 4
% Air Voids total mix:	3.5 to 4	3.5 to 4	3.5 to 4
% Voids in Mineral Aggregate (min):			
at 3.5% air voids	13.5	13.5	13.5
at 4% air voids	14	14	14
% aggregate Voids Filled with Asphalt:	65 to 75	65 to 75	65 to 78
Retained Stability (%)(min):	70	70	70
Minimum Theoretical Film Thickness (µm):			
Design Air Voids (%)			
4.0 and 3.9	6.0	6.0	6.5
3.7 and 3.8	6.1	6.1	6.6
3.5 and 3.6	6.2	6.2	6.7
Crushed Fragments: minimum material retained on the 5000 µm with two crushed faces:	80	60	60
Manufactured fines content as a percentage of fine aggregate mass (minimum):	70	50	Note 1

Note 1 – All fines manufactured by the process shall be incorporated into the mix.

The mix produced shall conform to the job mix formula approved by the Engineer and to the following tolerances:

- (1) The percent of asphalt in the mix shall not vary by more than 0.3% from the percentage indicated in the approved mix design.
- (2) The mixing temperature for asphaltic materials shall not vary from those specified in the job mix formula by more than 9 degree Celsius. In no case shall the mixing temperature exceed the maximum mix temperature indicated from the asphalt temperature-viscosity curve data.

39.2.5 Data

The Contract shall make available to the Engineer any of the following upon request:

Temperature-viscosity data or curves, as obtained from the refineries, for the various grades and types of asphaltic material.

All test data performed by the testing company. Test companies must be licensed to practice in the

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Province of Alberta.

39.2.6 Changes

The Contractor shall notify the Engineer of all proposed changes in the mix proportions. No changes shall be made until a representative of the Engineer is there to witness the change.

39.3 EXECUTION

39.3.1 Transportation

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 the box may be lubricated with a light coating of soap or detergent solution; petroleum derivatives shall not be permitted. Any accumulation of asphaltic material that has collected in the box shall be thoroughly removed and the box cleaned before loading with hot mix. Trucks shall be clean of mud or any substance that could contaminate the working area.

39.3.2 Preparation of Existing Surface

39.3.2.1 General

Before the asphalt mix is placed, dirt and other objectionable material shall be removed from the surface to be paved, by brooming or other methods, and a tack coat shall be applied.

Contact edges of existing mats and contact faces of curb, gutters, manholes, sidewalks and other structures shall be coated with a film of liquid asphalt material before placing the asphalt mix.

39.3.2.2 Preliminary Levelling

Areas that require preliminary levelling will be identified. Generally areas that show depressions, rutting or other deformations, to a depth of 15 mm or greater, will be designated for preliminary levelling and all the following shall apply for acceptance:

- 1) asphalt mix for preliminary levelling shall be spread by means of a motor grader or other approved method.
- 2) only pneumatic tired rollers will be allowed for compaction, and a minimum density of 95.0% of the Marshall density is required.
- 3) preliminary levelling is intended to be a separate operation and shall not be done as part of the construction of the subsequent lift of asphaltic concrete pavement.

39.3.3 Placing

Unless otherwise permitted by the Engineer, the mixture shall be spread by a mechanical self-powered paver, with an automatic leveling device and automatic grade control capable of spreading the mix without segregation or tearing, in thicknesses varying from 45 mm to 75 mm and in widths greater than 3.0m, and to true line, grade and cross-section as shown on the plans.

The mixture shall be laid at a temperature not lower than 120 degrees Celsius or higher than 140 degrees Celsius. The air temperature shall not be less than 2 degrees Celsius and rising; no frost shall be present and

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the roads dry.

Where the asphaltic surface course is to be placed in 2 lifts, the first lift shall be placed, finished and compacted for the full width as shown on the drawings, prior to commencing on the second lift. The maximum lift thickness is 75 mm.

In placing the second lift, the individual mixture spreads shall be aligned in a manner such that the longitudinal joints in each layer will not coincide.

In narrow areas, deep or irregular sections, intersections, turnouts or driveways, where it is impractical to spread with a paver, the Contractor may use hand methods as directed by the Engineer.

39.3.4 Weather Limitations

The mixture shall not be placed:

- 1) during periods of rain or when there is an imminent danger of rain;
- 2) during excessive winds; or
- 3) when air temperature is 2 degrees Celsius or cooler, or frost is present on the surface.

39.3.5 Joints

Longitudinal joints will not be permitted between the edges of driving lanes in the final lift of ACP. Longitudinal joints shall be offset a minimum of 150 mm from one lift to the next.

Longitudinal and transverse joints shall be vertical butt type, well bonded and sealed, and finished to provide a continuous, smooth profile across the joints. Surplus material at longitudinal joints shall be disposed of in a manner acceptable to the Engineer. Broadcasting surplus material across the mat will not be permitted.

All longitudinal joints shall be straight and uniform with no lateral waviness. Any mat contact that is not straight or uniform as determined by the Engineer shall be trimmed by saw-cutting or using some other method acceptable to the Engineer prior to placing the adjacent mat. The material removed shall be disposed of to the satisfaction of the Engineer.

Any mat with a contact edge that has deteriorated, cracked or slumped due to improper rolling or vehicle traffic shall be trimmed by saw-cutting or some other method acceptable to the Engineer prior to placing the adjacent mat. The length of contact edge to be trimmed, removed and disposed of will be as determined by the Engineer.

If required by the Engineer the contact edge of any mat placed by the Contractor shall be coated with a thin film of liquid asphalt before placing the adjacent mat.

When paving is discontinued in any lane or in any lift, the mat shall be tapered to a slope of 10 horizontal to 1 vertical. The taper may be placed on tar paper and shall be removed when paving is resumed. The transverse joint shall be straight and have a vertical face when the taper is removed.

Transverse construction joints from one lift to the next shall be separated by at least 2 metres.

Where the construction of a top lift of pavement next to a concrete curb section or curb and gutter section will be delayed, the Contractor shall construct a temporary asphalt concrete fillet next to the concrete section in accordance with the plans or as directed by the Engineer. These fillets shall be removed when paving is resumed.

All concrete or metal structures, such as gutters, manholes, etc., shall be painted with an approved bituminous material prior to placing the asphalt.

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39.3.6 Tolerance and Penalties

The pavement shall have the thickness specified on the Engineer’s drawings. Areas suspected to be deficient shall be cored, as directed by the Engineer, on the basis of 1 core for every 1000 square metres of pavement. At least 1 core shall be taken at the designated Marshall location.

Should the asphalt be found to be deficient in thickness, the Contractor will be permitted to take 2 additional cores in an effort to isolate and confirm the deficient areas. The location of the two additional cores shall be located no further than half way between the deficient core and the next adjacent core or contract boundary.

The exact location of the core locations are to be determined by the Contractor, and approved by the Engineer. The Contractor shall be responsible for all costs associated with the re-coring of the asphalt.

A deficiency penalty shall be assessed according to the following:

Thickness Deficiency (mm)	Payment Reduction Factor %
0 to 5	0
6 to 9	10
10 to 12	25
13 to 15	50
Over 15	Remove and Replace

Thickness deficiencies apply to each lift individually, and payment reduction factors will be applied to the area (square metres) of asphalt in the lot corresponding to the inadequate thickness. No additional payment will be made to the Contractor for greater thicknesses.

The Contractor shall fill all core holes within a maximum period of 24 hours.

39.3.7 Densities

Densities shall be based on core samples, each of which shall represent approximately 1000 square metres per constructed lift (one lot) or as directed by the Engineer. Asphalt densities are specified as 97% of the standard laboratory Marshall, based on loose mix material obtained at the same date and time for each lift of paving. Marshall densities based on core samples obtain from each lift, will not be permitted to be used as acceptable standard laboratory test results. A minimum of 1 Marshall per day shall be performed, with 1 core sample taken at a designated Marshall location.

If any core fails to meet the density specified, no more than 2 additional cores may be taken by the Contractor within 1 metre of the first core sample, and the average density of the three cores shall represent the area. No additional rolling to achieve a more favourable density shall be allowed WITHOUT THE WRITTEN CONSENT of the Engineer. The Contractor shall be responsible for all costs associated with the re-coring of the asphalt.

The re-cored densities will be based on the average of all Marshal densities taken during the same date and time of the actual paving (per lot). If no Marshals were completed during the date or time of paving the laboratory Marshal Mix Design Density will be used for calculating compaction for each lot.

If the densities are less than specified, a deficiency penalty shall be assessed according to the following:

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Field Density	Payment Reduction Factor (%)
97.0 to 96.6	0
96.59 to 96.1	10
96.09 to 95.6	24
95.59 to 95.0	50
<95.0	Remove and Replace

All asphalt below 95% standard Marshall Density shall be removed and replaced at the Contractor's expense. Density deficiencies shall be applied to each lifts individually, and payment reduction factors will be applied to the area (square metres) of asphalt in each lot with the lowest average corresponding to the inadequate density. No adjustment to the unit price is to be made for areas with a density higher than that specified.

39.3.8 Asphalt Content

Asphalt content shall be based on samples, each of which shall represent approximately 1000 square metres per constructed lift. Asphalt contents are specified in the approved asphalt mix design and job mix formula. At least 1 sample will be taken at the designated Marshall location.

A deficiency penalty shall be assessed according to the following:

Deviation of the Actual Asphalt Content from the Approved Asphalt Content	Unit Price Adjustment for Asphalt Content (\$ per m ²)			
	Top Lift		Lower Lift	
	Below	Above	Below	Above
From 0 to 0.30	0.0	0.0	0.0	0.0
From 0.31 to 0.35	-0.7	-0.2	-0.7	-0.2
From 0.36 to 0.40	-1.0	-0.5	-1.0	-0.5
From 0.41 to 0.45	-1.3	-0.7	-1.3	-0.7
From 0.46 to 0.50	-1.6	-1.0	-1.6	-1.0
From 0.51 to 0.55			-1.9	-1.2
From 0.56 to 0.60			-2.2	-1.4
From 0.61 to 0.65			-2.5	-1.7

- Notes: 1. For top lift deviations of more than 0.50% the Contractor shall either overlay or remove and replace the previously placed mix.
2. For lower lift deviations of more than 0.65%, the Department will determine whether removal and replacement is necessary. For material that is allowed to stay in place, payment will be at 50% of the unit price bid.

Asphalt content deficiencies apply to each lot individually, and payment reduction factors will be applied to the area (square metres) of asphalt in the lot corresponding to the inadequate asphalt content.

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No additional payment will be made to the Contractor for areas with an asphalt content higher than that specified.

39.3.9 Smoothness

The surface of the compacted pavement shall be true to the required grade and cross-section with a smooth riding quality acceptable to the Engineer.

In addition to the above, when checked with a 3.0 metre straight-edge held in successive positions parallel or perpendicular to the center line and in contact with the surface, the pavement surface shall not deviate from the straight-edge by more than 3mm.

If, in the opinion of the Engineer, an objectionable riding surface exists, the Contractor shall either grind and resurface with an asphalt overlay or remove and replace the asphalt surface.

39.3.10 Texture

The completed pavement shall have a tightly knit texture and shall be free from segregation and surface cracking. Mixes that are excessively tender, or difficult to roll, shall be redesigned by the Contractor's Engineer in order to remedy the situation. The new design shall meet all of the requirements of this section, and shall be submitted to the Engineer for approval at least three (3) working days prior to its use.

39.3.11 Traffic

No traffic shall be allowed on the finished surface until it has cooled to atmospheric temperature.

39.4 MEASUREMENT AND PAYMENT

39.4.1 Hot Mix Asphaltic Pavement

Payment for Hot-Mix Asphaltic Concrete shall be full compensation for the furnishing, mixing, transportation, priming, gutter and appurtenance tacking, fog coat, placing, rolling, compacting and all other labour and materials required to complete the work in accordance with these specifications.

Payment will be made at the unit price bid per square meter (m²) for the final thickness of asphalt specified. Measurement will be by field measured area.

39.4.2 Removal of Hot Mix Asphaltic Concrete

This item includes excavation, jack-hammering, breaking up, loading, haul to the municipal landfill site as approved by the Engineer, and stockpiled in designated areas (no asphalt is to be dumped at on-site disposal areas), protection of abutting asphalt pavement and utilities and appurtenances, and any other work for which payment is not specified elsewhere.

No Payment will be made for Removal of Hot Mix Asphaltic Concrete and shall be considered incidental to the unit price bid for "Asphalt Concrete Pavement (EPS) Mix M1 (200-300A) (100mm Thickness)" and shall be full compensation for all equipment, labour and materials required to complete the work in accordance with these specifications.

39.4.3 Saw-Cutting

Payment for Saw-cutting asphalt, shall be incidental to the unit price bid per linear meter (m) for '. Measurement will be by field measurement.



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39.4.4 Levelling Course

No Payment will be made for Leveling Course and shall be considered incidental to the unit price bid for “Asphalt Concrete Pavement Tie-Ins - Type M1 (12.5mm Aggregate) (PG 52-34) (75mm Thickness)” or “Asphalt Concrete Pavement (EPS) - Type M1 (12.5mm Aggregate) (PG 52-34) (100mm Thickness)” and shall be full compensation for all equipment, labour and materials required to complete the work in accordance with these specifications.

END OF SECTION

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PRIME, TACK AND FOG COATS

40. PRIME, TACK AND FOG COATS (02746)

40.1 GENERAL

40.1.1 Definitions

Prime Coat:

Prime coat shall be the application of bituminous material to previously prepared granular base course, prior to placing bituminous surfacing materials.

Tack Coat:

Tack coat shall be the application of bituminous material to a previously constructed paving surface of any type, in preparation of placing bituminous surfacing materials, and against curb and gutter faces, manholes, valves and other appurtenances in the street to be paved.

Fog Coat:

Fog coat shall be the application of bituminous material to seal small cracks and surface voids on surface materials. Fog coat shall only be required if, in the opinion of the Engineer, the asphalt is open in texture.

40.2 MEASUREMENT FOR PAYMENT

Payment for prime coat, tack coat, and fog coat shall be considered incidental to the unit price bid for "Asphalt Concrete Pavement Tie-Ins - Type M1 (12.5mm Aggregate) (PG 52-34) (75mm Thickness)" and "Asphalt Concrete Pavement (EPS) - Type M1 (12.5mm Aggregate) (PG 52-34) (100mm Thickness)" bid items. Payment shall include the supply of materials, preparation of the surface, brooming or sweeping the surface, application, sand blotting (including supply of sand), maintaining the treated surface and the supply of all tools and incidentals to complete the work.

40.3 PRODUCTS

40.3.1 Prime Coat

The bituminous material for priming the base course shall be liquid asphalt. The asphalt types may vary from medium curing (MC) type MC-30 to MC-250, slow setting (SS) type SS-1 to SS-1H, or a special emulsified asphalt primer S.E.P. to suit the condition of the base.

40.3.2 Tack Coat

The bituminous material for tacking the existing asphalt surface shall be liquid asphalt. The asphalt types may vary from rapid curing (RC) type RC-30 to RC-250 to slow setting (SS) type SS-1 to SS-1H, depending on conditions to suit the base. The SS emulsion shall be diluted by adding an equal amount of water prior to application.

40.3.3 Fog Coat

The bituminous material for sealing the surface course, if specified, shall be liquid asphalt. The asphalt types may be slow setting (SS) type SS-1 or medium curing (MC) type MC-30, depending on the surface material to be sealed.

40.3.4 Sand Blotter

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The materials for sand cover shall consist of clean granular mineral material approved by the Engineer, all of which shall pass a five thousand (5,000) sieve.

40.4 EXECUTION

40.4.1 Equipment

Cleaning equipment shall consist of power brooms, flushers, and whatever hand scrapers may be necessary to remove all foreign material.

The pressure distributor used for applying asphalt material shall distribute the asphalt material at an even temperature, uniformly on variable widths of surface up to five meters (5m). Uniform spray without atomization shall be determined and controlled from point two to five point four liters per minute (0.2 - 5.4 l/m) with uniform pressure, and with an allowable variation from any specified rate not exceeding point one liter per minute (0.1 l/m).

Suitable means for accurately indicating the temperature of the asphalt material shall be provided at all times. The thermometer well shall be so placed as not to be in contact with a heating tube.

If provided with heating attachments, the distributor shall be so equipped and operated that the asphalt material shall be circulated or agitated throughout the entire heating process.

40.4.2 Preparation

Immediately prior to applying the asphalt primer, tack or fog coat, the surface shall be brought to uniform cross-section by patching all depressions and defective areas using an approved patching material, and by removing all bumps and irregularities.

All loose and foreign material shall be removed by light sweeping.

40.4.3 Application

Obtain Engineer's approval of existing surface before applying asphalt prime, tack or fog coats. Clean surface as required.

Upon the prepared surface the asphalt shall be applied uniformly at a rate of from point five to one point five liters per square meter (0.50 - 1.50 l/m²) for asphalt primer, and at a rate of from point two five to point nine liters per square meter (0.25 - 0.90 l/m²) for tack coat. The asphalt primer, tack or fog coat shall be applied only when the surface is dry or slightly damp, unless otherwise allowed by the Engineer in writing, or only when the air temperature in the shade is above five degrees Celsius (5°C).

The application temperature of the asphalt primer, tack or fog coat shall be as follows:

Rapid Curing Asphalt:

RC-30	51 – 68°C
RC-70	74 – 88°C
RC-250	100 – 110°C

Medium Curing Asphalt:

MC-30	51 – 68°C
MC-70	74 – 88°C

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PRIME, TACK AND FOG COATS

MC-250	100 – 110°C
Emulsified Asphalt:	
SS-1	20 – 50°C
SS-1H	20 – 50°C
Special Emulsified Primer Asphalt	
S.E.P.	15 – 50°C

Coat contact surfaces of curbs, gutters, headers, manholes and like structures with a thin uniform coat of asphalt material. Do not prime or tack surfaces that will be visible when paving is complete. Work adjacent to the roadway shall be completely protected from the application operation by a suitable covering. Any unnecessary splashing of the concrete shall be cleaned.

Do not apply asphalt coat when air temperature is less than five degrees Celsius (5°C) or when rain is forecast within two (2) hours.

The Contractor shall maintain the primed surface until the surface course has been placed. Maintenance shall include spreading any additional sand and patching any breaks in the primed surface with additional asphalt material.

The asphalt primer should be entirely absorbed by the base course and therefore require no sand cover. If, however, the asphalt has not been completely absorbed twenty four (24) hours after application, just sufficient sand shall be spread over the surface to blot up excess asphalt and prevent it from being picked up by any traffic.

Traffic shall not be permitted to travel on tack or fog coat until cured. The Contractor shall use flagmen, if required, and signage to control traffic until the tack or fog coat has cured.

Traffic shall not be permitted to travel on prime coat until six (6) hours after application or until it has cured. After this period of time, excess asphalt material remaining on the surface shall be blotted by sand before traffic is permitted to travel on the surface.

END OF SECTION

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CURB, GUTTER AND SIDEWALK

41. CURB, GUTTER AND SIDEWALKS (02761)

41.1 GENERAL

Products, Concrete Materials, Execution and Methods of Concrete Construction shall be in accordance with CSA CAN3-A23.1-00 or as modified in this section.

41.1.1 Work Included

The work described in this section pertains to the construction of concrete curbs, gutters, sidewalks, crossings and paving stones.

41.2 PRODUCTS

41.2.1 Portland Cement

Portland cement shall meet the requirements of CSA Standard Portland A5-M cement and shall be Type 10 normal.

41.2.2 Aggregates

The fine and coarse aggregate used in the concrete mix shall conform to the following specifications:

- 1) Fine Aggregate: CSA CAN3-A23.1-00, Clause 5.3.
- 2) Coarse Aggregate: CSA CAN3-A23.1-00, Clause 5.4. Table 2 Group 1 (28-5)

Sieve Size	% Passing by Weight
40 mm	100
28 mm	95-100
14 mm	30-65
5 mm	1-10
2.5 mm	0-5

41.2.3 Admixtures

All admixtures used to enhance the concrete shall conform to the following specifications:

- 1) Air Entrainment: ASTM C260
- 2) Chemical: ASTM C494
- 3) Calcium Chloride: ASTM C494

The use of calcium chloride shall only be used when approved by the Engineer, but in no case will the amount added be greater than two percent (2%) of the cement weight. It shall not be used when the air temperature is above four degrees Celsius (4°C).

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- 4) Fly ash shall be Type C, shall not exceed ten percent (10%) by weight of cement, and it shall conform to the requirements of CAN/CSA-A23.5. Only approved compatible superplasticizing admixtures and air entraining agents shall be used with the fly ash. The Engineer may require characteristic data for fly ash to prove conformance to the standards. After September 1st no portion of the specified cement content may be replaced with fly ash unless approved in writing.

41.2.4 Reinforcing Steel

Reinforcing bars shall be deformed bars in accordance with CSA Standard Specification G30.12-M1977.

Cold drawn wire or welded wire fabric for concrete reinforcement shall be one hundred and fifty millimeters by one hundred and fifty millimeters (150 mm x 150 mm) and conform to the requirements of CSA Standard Specification G30.3-1972.

41.2.5 Expansion Joint Filler

Joint filler shall conform to CGSB Standard Specification for polyurethane sealing compound #19-GP-15 or ASTM Standard Specification for SIKAFLEX 1A.

41.2.6 Membrane Curing Compound

Resin-base impervious curing compound shall conform to ASTM Standard Specification C309 Type 1D-Type B. The curing compound shall contain white fugitive dye.

41.2.7 Preformed Expansion Joint Filler

Preformed expansion joint filler shall conform to ASTM Standard Specification D-1752.

41.2.8 Concrete

Concrete mixes shall be designed by a qualified testing laboratory engaged by the Contractor. The mix design shall be submitted to the Engineer for approval a minimum of ten (10) days prior to delivery of any concrete to the site. The specified compressive strength at twenty-eight (28) days shall be 30Mpa. The strength level of each class of concrete shall be considered satisfactory if the averages of all sets of three (3) consecutive strength tests for that class at one (1) age equal or exceed the specified strength, and no individual strength test is more than 3.5 Mpa below the specified strength. These requirements shall not apply to field-cured specimens.

The concrete shall contain not less than three hundred fifteen kilograms (315 kg) of Portland Cement per cubic meter (m³) of concrete produced.

The air content of the concrete shall be maintained between the limits of six percent to eight percent (6% - 8%).

The minimum slump permissible will be that which will allow the concrete to be placed efficiently and provide a homogeneous mass. The maximum allowable slump shall be seventy millimeters plus or minus ten millimeters (70 mm +/- 10 mm) for all hand-poured concrete and forty millimeters plus or minus ten millimeters (40 mm +/- 10 mm) for all machine-poured concrete.

When it is desired to reduce the curing period by developing the required level of strength within a shorter period, permission of the Owner shall be obtained.

41.2.9 Retempering With Air

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If, due to a low air entrainment percentage, as specified, the Engineer feels it is necessary to add an approved air-entraining agent on site, placement of concrete shall stop to allow the concrete truck's drum to turn at mixing speed for a minimum of three (3) minutes. Should the air content of the concrete not conform to specifications after retempering, then the concrete shall be rejected.

The Engineer has the right to withdraw permission to add an air-entraining agent to the mix and reject the concrete if this practice is being abused.

41.2.10 Retempering With Water

If, due to a low slump as specified, the Engineer feels it is necessary to add water to the mix, it shall be injected into the drum under such pressure and direction of flow that it conforms to the specifications in ASTM C-94, Appendix XI. Placement of concrete shall stop at that point to allow the concrete truck's drum to turn at mixing speed for a minimum of three (3) minutes. Should the slump of the concrete not conform to specifications after retempering, then the concrete shall be rejected.

The Engineer has the right to withdraw permission to add water to the mix and reject the concrete if this practice is being abused.

41.3 EXECUTION

41.3.1 Placing Concrete

Concrete shall not be placed until the subgrade, sub-base and base course materials have been completed and approved by the Engineer. The base shall be sufficiently moist to prevent absorption of water from the concrete, and free from mud or water pondage.

The concrete shall be placed within ninety (90) minutes of initial mixing at the plant, or before the drum on the concrete truck has turned three hundred (300) revolutions. Complete discharge of concrete shall not exceed two (2) hours. The concrete shall be transported by methods that will prevent segregation, and deposited on the subgrade so that as little handling as possible is required.

Concrete shall be placed continuously until a complete section between expansion joints has been poured.

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.

Concrete shall be handled from the mixer to the place of final deposit as rapidly as practicable by methods that shall prevent the separation or loss of the ingredients. It shall be deposited in the forms as near as practicable to its final position to avoid rehandling.

The sequence of concrete placement shall be arranged so that concrete that has partially hardened shall not be subjected to injurious vibration.

The vertical free fall height of concrete shall not exceed one meter (1 m). For falls greater than one meter (1 m), chutes or tremies shall be used.

During placement, concrete shall be sufficiently tamped or vibrated with suitable equipment to secure a close bond with the reinforcement, eliminate entrapped air voids and ensure a homogeneous structure with adequate consolidation.

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The rate of delivery of mixed concrete shall be such that the interval between the placing of successive truck loads shall not exceed thirty (30) minutes. If the time exceeds thirty (30) minutes, then a construction joint shall be formed.

After the initial set of the concrete, neither the forms nor the concrete structure shall be jarred, and no strain shall be placed on the ends of projecting reinforcement.

Construct all para ramps and crossings monolithically to the dimensions and at locations specified.

41.3.2 Joints

Curb, gutter and sidewalk contraction joints shall be constructed at three meter (3 m) intervals and as detailed on the standard drawings, and shall not be less than fifty millimeter (50 mm) deep. Contraction joint widths shall not be greater than five-millimeter (5 mm).

Midway between each contraction joint on the sidewalk, a surface joint, thirty-eight millimeter (38 mm) deep, shall be constructed. These joints shall not extend into curb and gutter.

A surface joint shall be constructed longitudinally at the location shown on the standard drawings, and shall continue through all driveways and lane crossings.

A construction joint shall be formed at the end of every pour. This joint shall be constructed in a "V" shape, as directed by the Engineer, and using ten (10) M rebar six hundred-millimeter (600 mm) long, spaced every five hundred-millimeter (500 mm).

Ten (10) M bars at five hundred millimeters (500 mm) on center shall be dowelled and epoxied into the back of the existing curb prior to placing concrete.

41.3.3 Finishing

Sidewalk surfaces, either separate or monolithic with curb and gutter, shall be struck off and screeded to the slope, cross-section and elevation shown on the drawings or as directed by the Engineer. The surface shall be consolidated and smoothed using a wood float. Light-steel trowelling shall be used followed by a uniform brush finish. Sidewalk shall be edged at all joints to prevent chipping of the concrete.

The exposed surfaces of concrete curbs and gutters, either separate or monolithic with sidewalks, shall be finished by means of a wood floating, light-steel trowelling and uniform brushing, and all edges shall be rounded to the required radius. No patching will be allowed.

Wheelchair/Bike Ramps and crossings to lanes and private property, shall be struck off and screeded to the required slope and cross-section. The finished surface shall be brushed as specified above.

All edges, including contraction or surface joints, shall be tooled for a width of fifty millimeters (50 mm) and rounded to a radius of six millimeters (6 mm). The brush grooves shall be transverse on the sidewalk and longitudinal on the curb and gutter. The finished surface shall have no exposed aggregate or honeycomb.

If there is evidence of excess water on the concrete surface, finishing shall be delayed until the excess water has evaporated.

Surface grooves made by the broom shall not be more than three millimeters (3 mm) deep. Before brushing, all surplus water shall be removed from the brush.

41.3.4 Curing

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Immediately after finishing, the concrete surface shall be protected by applying a membrane curing compound. After finishing and removal of forms if necessary, all exposed surfaces shall be wetted with water and then thoroughly sprayed with membrane curing compound. The membrane curing compound shall be applied in accordance with the manufacturer's instructions, with an approved pressurized spray.

The curing compound shall be applied in such a manner as to cover the entire surface thoroughly and completely, with a uniform film at a rate that shall depend on the roughness of the surface of the concrete, but in no case at less than point two five liters per square meter (.25 l/m²) of concrete surface.

41.3.5 Backfilling

Unless otherwise directed by the Engineer, the Contractor shall backfill along the back of the curb edges, to the top of the concrete, within three (3) to seven (7) days of the placing of the concrete. The backfill shall be mechanically tamped in maximum lifts of one hundred fifty millimeter (150 mm), to a minimum of ninety five percent (95%) Standard Proctor Density and to a distance of three hundred millimeters (300 mm) from the back of the walk or curb.

Where landscaping is to be carried out immediately after completion of the walks or curbs and gutters, the backfilling shall be left one hundred-millimeter (100 mm) low to allow for the topsoil.

41.3.6 Forming

Forms shall be 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 until hydration has occurred, or longer if the Engineer considers it necessary. The Contractor shall remove all face forms to allow for a smooth brush finish. The use of bent, twisted, battered or worn-out forms will not be permitted. Forms will be checked for alignment and elevation by the Engineer before concrete is poured, and shall be cleaned and oiled before each use.

Where required, reinforcement shall be secured in the location shown on the standard drawings and shall be free from mill scale, grease and rust prior to placing concrete. Forms shall be held securely by approved methods to prevent movement and bulging when the concrete is placed. Forms must be approved by the Engineer before concrete is poured.

Curbs having a radius of less than forty meter (40 m) shall be constructed with flexible forms. A sufficient length of form (not less than fifty meters (50 m)) shall be placed and checked before concrete is poured to ensure true line and grade. The forms shall be well staked, braced or otherwise held rigidly true to the established line and grade. The Engineer may, at any time, reject the use of any forms considered unsatisfactory.

41.3.7 Mechanical Extruding Machines

Slip-form paving machines or concrete extruding machines may be used for placing concrete, provided they have received the approval of the Engineer prior to commencement of the work and meet the following requirements:

- (1) The vibrators on the equipment shall be capable of producing a dense mass with a smooth surface, free of honeycombing.
- (2) The equipment shall include automatic grade and line controls that shall be used at all times.

Commence placement of concrete only after the subgrade has been prepared and approved by the Engineer.

Any special grading or preparation of the base, required by the Contractor to accommodate equipment shall be the responsibility of the Contractor, and who shall restore the roadway and boulevards to their original condition within three (3) to seven (7) days of the initial disturbance.

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The extruded concrete shall be checked for alignment and elevation by the Engineer while the concrete is being placed, in accordance with Section on "Joints", above. All incorrectly placed or misaligned work shall be immediately removed while the concrete is still wet, and the work redone to the proper specifications using whatever means are required.

Whenever possible, the forming and placing of concrete by conventional hand pouring methods (as may be required at corners, crossings and catch basins) shall be carried out in conjunction with the extruding machine operation. Where this procedure is not practical, the "tie-ins" shall be completed within three (3) days of construction of the adjacent extruded section, using ten (10) M rebar at all joints, as specified in Section on "Joints" above. All "tie-ins" shall be completed in one (1) continuous pour.

41.3.8 Consolidation

The concrete shall be consolidated by means of an approved vibrating screed or, in the case of curb and gutter only, by means of a poker or pencil vibrator not exceeding fifty-millimeter (50 mm) in diameter.

Particular care shall be given to placing and tamping along the faces of the forms to ensure a dense, smooth surface.

Vibrations shall be of sufficient duration to thoroughly compact the concrete, but not long enough to cause segregation. Vibrators shall not be used for moving concrete.

41.3.9 Inspection

All exposed concrete surfaces shall be checked by the Contractor with a three meter (3 m) straight-edge, and any water pockets or deviations in line or grade exceeding a total of six millimeter (6 mm) shall be corrected immediately.

Differences in elevation at any given point from that given by the design shall not exceed thirteen-millimeter (13 mm), and the maximum variation shall not be greater than thirteen-millimeter (13 mm).

Deviations in horizontal alignment at any given point from that given by the design shall not exceed twenty-five millimeter (25 mm), and the fluctuations in the horizontal alignment shall not be greater than twenty-five millimeter (25 mm).

Concrete not meeting the above criteria shall be replaced.

41.3.10 Field Tests

Testing shall be performed by a qualified CSA testing laboratory in accordance with the following:

- 1) Samples of concrete shall be obtained in accordance with CSA Test Method A23.2-1C for sampling plastic concrete.
- 2) Test cylinders shall be made and stored in accordance with CSA Test Method A23.2-3C. No less than one (1) strength test shall be made from samples from each one hundred fifty cubic meters (150 m³) of concrete placed, and in no case shall there be less than one (1) test from each day's pour. Each strength test shall consist of four (4) test cylinders, one (1) tested at seven (7) days and two (2) at twenty eight (28) days. One (1) test cylinder shall be kept for further testing, depending on the results of other tests.
- 3) Air content determinations shall be made in accordance with CSA Test Method A23.2-7C, air content of plastic concrete by the volumetric method.

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During construction start-up, every load or batch of concrete shall be tested until such time as satisfactory control of the air content has been established. Air content tests taken with the test cylinders will be sufficient once satisfactory control has been established. Whenever a test falls outside the specified limits, the testing frequency shall revert to one (1) test per load or batch until satisfactory control is re-established. Any concrete that falls outside specified air control levels shall be rejected from use.

Slump tests made in accordance with CSA Test Method A23.2-5C, Slump of Concrete, shall be made in conjunction with each strength test.

41.3.11 Cleanup

As the work progresses, the Contractor shall 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 that have been blocked as a result of the Contractor's operation shall be restored or repaired.

The Contractor shall dispose of all surplus excavated material, organic soil, rock, boulders and pieces of concrete and masonry at an approved location.

41.3.12 Protection

The Contractor shall be responsible for keeping all animals and pedestrians off the newly constructed sidewalks or curb until completely set. The Contractor shall also be responsible for keeping all vehicles off the work for a period of three (3) days after the concrete has been finished.

41.3.13 Deficiency Penalty

Where there are variations from specified design strength, the following Deficiency penalty shall be assessed, based on the twenty eight (28) day laboratory cured cylinders.

- 1) When the concrete strength of any set exceeds one hundred percent (100%) of design strength, no bonus payment will be administered.
- 2) When the concrete strength of any set is greater than ninety percent (90%) but less than one hundred percent (100%) of design strength, the deficiency penalty will be administered as follows:

CYLINDER STRENGTH (% of Specified Strength)	PAY FACTOR (% of Contract Price)
Over 100.0	100
100.0-99.0	99
99.0-98.0	98
98.0-97.0	97
97.0-96.0	96
96.0-95.0	95
95.0-94.0	94
94.0-93.0	93

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93.0-92.0	92
92.0-91.0	91
91.0-90.0	90
Under 90.0	No Payment (Remove and Replace)

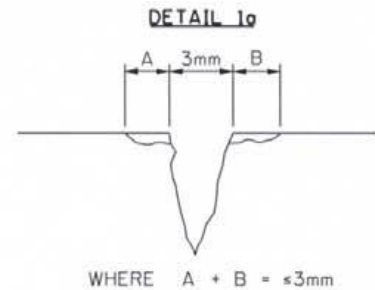
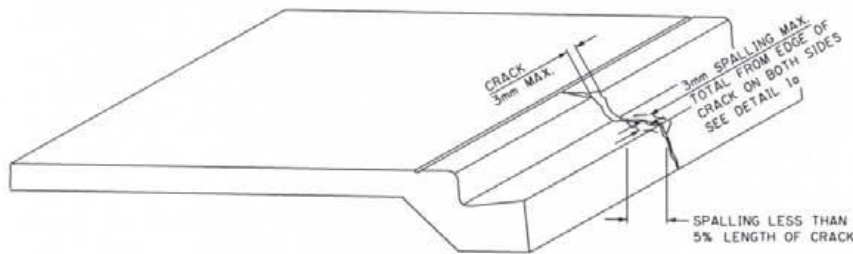
3) If the concrete strength of any set is less than ninety percent (90%) of design strength, the work represented by that set of cylinders will be rejected and replaced by the Contractor.

41.3.14 Liquidated Damages

Replacement or Liquidated Damages shall be applied at the time of Final Acceptance Inspection to all sidewalks, curb, gutter and related concrete work and based on the following criteria:

41.3.15 Crack greater than 3 mm in width in Curb and Gutter

- Excluding expansion joints
- No vertical displacement
- No chipping greater than 3 mm

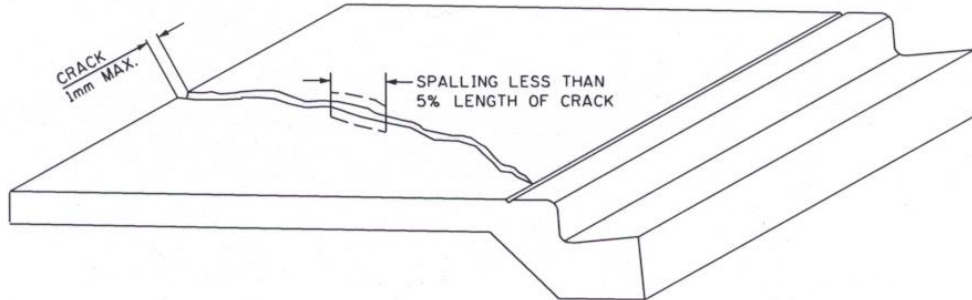


41.3.16 Crack greater than 1 mm in width on sidewalk

- Excluding expansion joints
- No vertical displacement
- No chipping greater than 3 mm

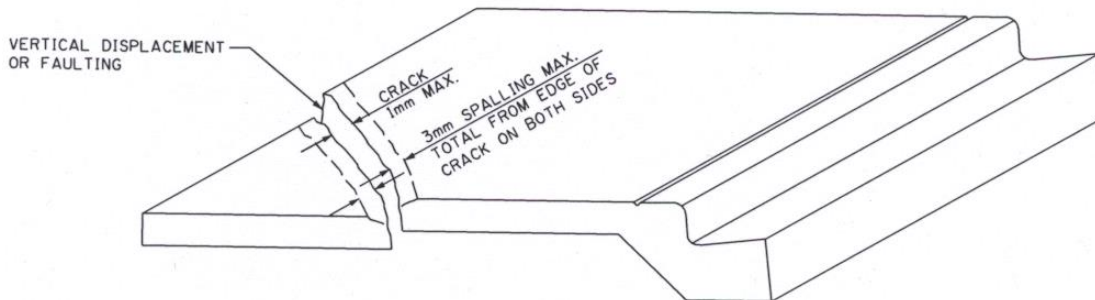
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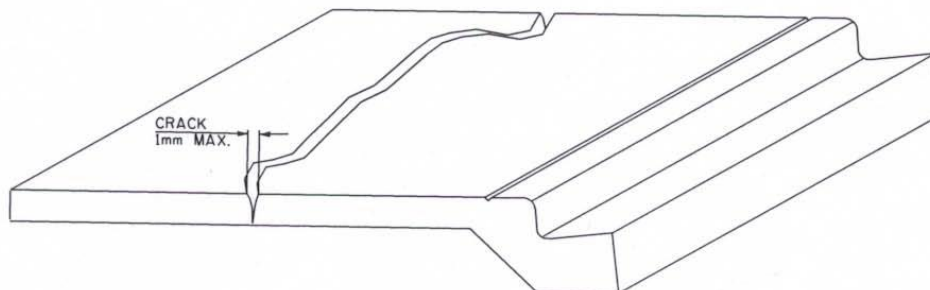
41.3.17 Vertical Displacement Cracks

- Any vertical displacement or faulting greater than 1 mm



41.3.18 Longitudinal Cracks

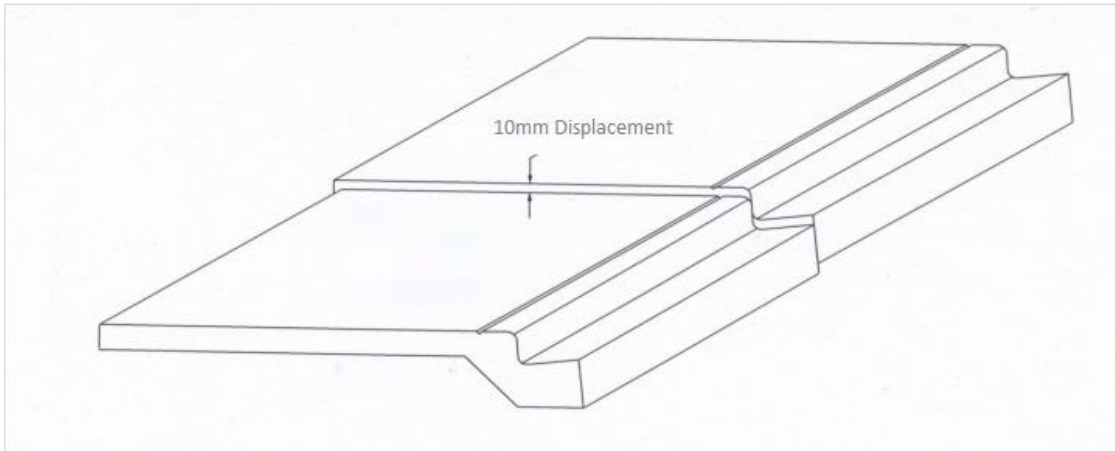
- Greater than 1 mm in width



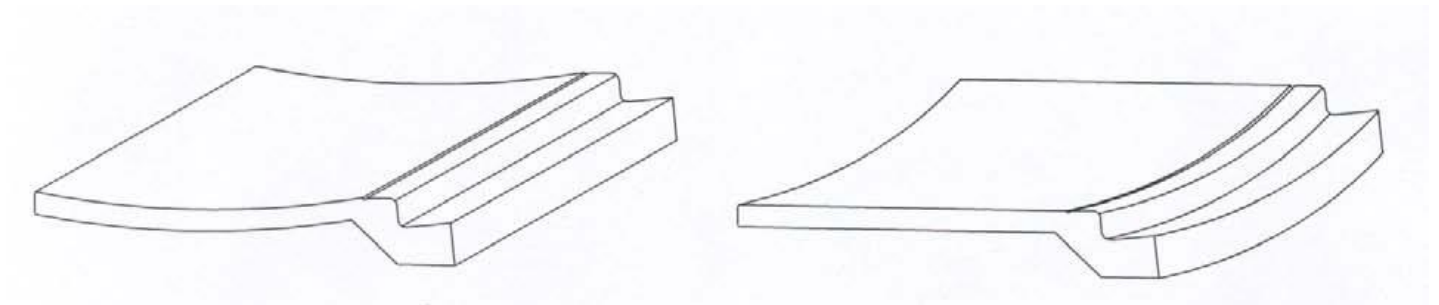
41.3.19 Joint Displacement or Settlement

- At a joint greater than 10 mm
- Any part of a sidewalk settlement greater than 15mm over a length of 6m of sidewalk.

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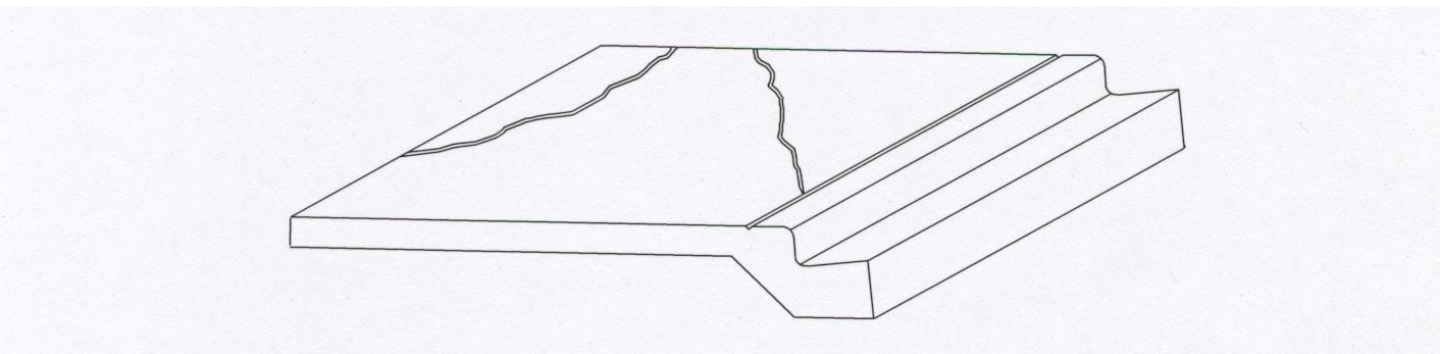


41.3.20 Dished curb and gutter or sidewalk



41.3.21 Random Cracking

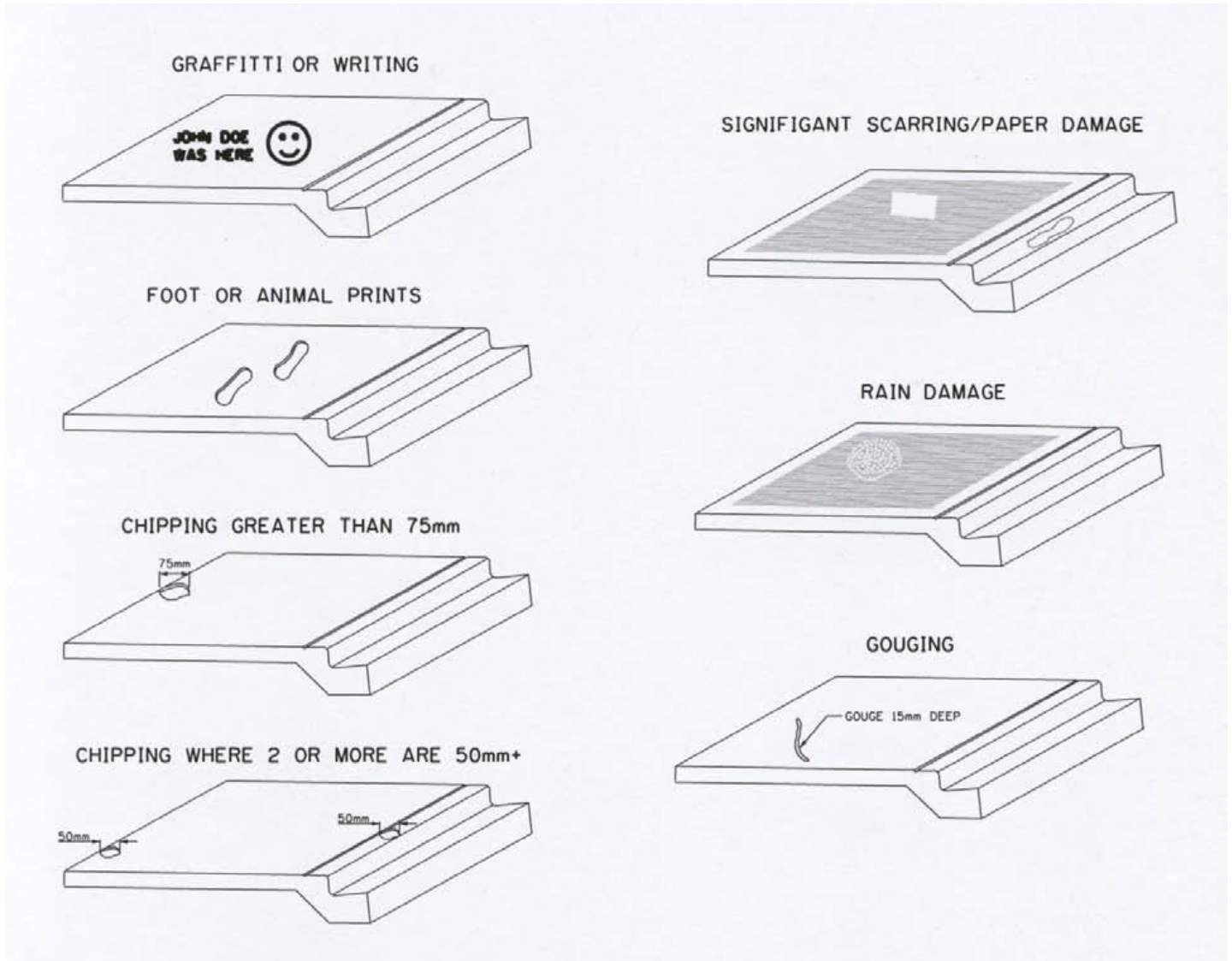
- Two or more cracks between edges regardless of width



41.3.22 Deficiencies considered detrimental to pedestrian safety or appearance, including but not limited to the following:

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41.3.23 Grout Repairs

No grouting of cracks shall be permitted:

41.3.24 Sealants

The use of sealants shall be used in joints that have expanded in a range of width between 5mm and 10mm as a means of repair. For expansion joints that are greater than 10 mm in width, the entire section of concrete shall be removed and replaced.

41.4 MEASUREMENT AND PAYMENT

Unless it is identified separately in the schedule of unit prices, the cost of excavation, sub grade preparation, supply, placement, leveling, and compacting of granular sub base and base course materials will be incidental

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to the installation of the various concrete elements, and no separate or additional payment for this incidental work will be made.

41.4.1 Concrete Curb and Gutters

The unit price bid for the specified type of concrete curb and gutter, including normal and reverse, shall be full compensation for forming, supplying, placing and vibrating concrete, reinforcing steel, dowels, jointing material, finishing, curing, stripping forms, and backfilling as specified, shown on the drawings or directed by the Engineer. Section of reverse curb and gutter less than five meters (5 m) shall be paid at normal curb and gutter unit rate. Separate rate for reverse curb and gutter shall be applied for lengths longer than five meters (5 m), if separate unit rates are contained in the Contract.

Payment will be at the bid unit per lineal meter (m). Measurement will be field measured along back of curb.

41.4.2 Concrete Monolithic Sidewalk, Curb and Gutter

The unit price bid for the monolithic sidewalk, curb, and gutter shall be full compensation for forming, supplying, placing and vibrating concrete, jointing, jointing material, finishing, curing, stripping forms and backfill as specified, shown on the drawings or directed by the Engineer.

Payment will be at the unit price bid per lineal metre (m). Measurement will be a field measured along back of curb. Lane crossings and wheelchair ramps will be paid for separately.

41.4.3 Separate Concrete Sidewalk

The unit price bid for the separate concrete sidewalk shall be full compensation for forming, supplying, placing and vibrating concrete, jointing, jointing material, finishing, curing, stripping forms and backfill as specified, shown on the drawings or directed by the Engineer.

Payment will be at the unit price bid per square metre (m²). Measurement will be a field measured along back of walk. Lane crossings and wheelchair ramps will be paid for separately.

41.4.4 Monolithic Lane and Driveway Crossing

This item shall include the supply and placing of concrete and reinforcing steel to the cross-section and location as shown on the contract drawings, forming, supplying, placing and vibrating concrete, jointing, finishing, curing, sealing, backfilling as specified and any incidental work for which payment is not specified elsewhere.

Payment will be made at the unit price bid per lineal metre (m). Measurement will be field measured along the back of the curb.

41.4.5 Concrete Laneway Curb and Gutter Crossing

This item shall include the supply and placing of concrete and reinforcing steel to the cross-section and location as shown on the contract drawings, forming, supplying, placing and vibrating concrete, jointing, finishing, curing, sealing, backfilling as specified and any incidental work for which payment is not specified elsewhere.

Payment will be made at the unit price bid per lineal metre (m). Measurement will be field measured along the back of the curb.

41.4.6 Concrete Wheelchair/Bike Ramp

The unit price bid for the ramp shall be full compensation for forming, supplying, placing and vibrating the

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concrete, reinforcing steel, dowels, jointing, jointing material, tooling and finishing, curing, stripping forms and backfill as specified, shown on the drawings or directed by the Engineer as per the unit price schedule for each shown in tender forms.

Payment will be made at the unit price bid per ramp installed to the satisfaction of the Engineer.

41.4.7 Removal of Concrete Curb and Gutter

This item includes saw-cutting curb and gutter where necessary, jackhammering, breaking up, loading, hauling to a disposal site approved by the Engineer, protection of abutting asphalt pavement and utilities, and any other work for which payment is not specified elsewhere.

Payment will be made at the unit price bid per lineal metre (m) of curb & gutter removed. Measurement will be field measured, along the back of the curb.

41.4.8 Removal of Concrete Surface

Removal of existing concrete surface, sidewalks and sidewalk crossings shall be paid for at the unit price bid per square metre. The unit price shall be compensation in full for saw-cutting, jack-hammering, breaking-up, loading, haul and the removal of the concrete off site to a disposal site approved by the Engineer, protection of abutting asphalt pavement and utilities, and any other work for which payment is not specified elsewhere.

Payment will be made at the unit price bid per square meter (m²). Measurement will be field measured.

END OF SECTION

TOWN OF EDSON
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REGULATORY ROADWAY SIGNS

02891

42. REGULATORY ROADWAY SIGNS (02891)

42.1 GENERAL

42.1.1 Design Requirements

Sign supports and appurtenances to be capable of withstanding summation of following loads:

- 1) Wind and ice loading specified to be consistent with anticipated loads in locality of installation. Refer to National Building Code of Canada and/or applicable provincial building code.
- 2) Dead load of signboards, sign supports and appurtenances.
- 3) Ice load on one face of signboards and around surface of all structural members and appurtenances.
- 4) Structural deflections and vibration in accordance with American Association of State Highway and Transportation Officials (AASHTO), "Specifications for the Design and Construction of Structural Supports for Highway Signs".

42.1.2 Shop Drawings

Submit shop drawings for signage structures, indicating product data and design.

42.2 MEASUREMENT AND PAYMENT

Remove Salvage and Replacement of Traffic signs shall be measured for the unit price bid for each "Removal Salvage and Replace Signs and Post" for various sizes of signs. A unit will consist of one (1) or more signs, tabs, street address sign and one (1) or more post, breakaway signpost, bolts, nuts washers. Payment for signage shall be compensation in removal, salvage and replacement existing sign, installation of existing post and piles, all miscellaneous hardware, excavation, backfilling, labour, equipment and all other incidentals necessary to complete the Work.

42.3 PRODUCTS

42.3.1 Sign Supports

Steel posts: to CAN-G40.21, three point one meter (3.1m) long, flanged "U" shaped in cross section, measuring sixty five millimeter (65mm) wide by thirty millimeter (30mm) deep. Metal thickness: four point five millimeter (4.5mm). Hot dipped galvanized: to CAN/CSA-G164

Base plates for mounted signs: to ASTM B209M.

Fasteners: bolts, nuts, washers and other hardware for roadside signs to be cast aluminum alloy, or galvanized steel.

42.3.2 Signboards

Aluminum sheets shall be tension aluminum, sign grade aluminum and conform to ASTM B209M, Alloys 6061-T6 or 5052-H38 pre-cut to required dimensions. Minimum thickness to be one point six millimeter (1.6mm) for signboards up to seven hundred fifty millimeter (750mm) wide. Minimum thickness to be two millimeter (2mm) for signboards seven hundred fifty millimetres to one thousand two hundred millimeter (750mm - 1200mm) wide.

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REGULATORY ROADWAY SIGNS

Connecting straps and brackets to ASTM B209M.

Reflective sheeting shall meet or exceed the minimum requirements specified in ASTM-D4956 Performance Requirements Type III, High Intensity Retro reflective Sheeting.

42.3.3 Fabrication

Aluminum blanks: Degrease, etch and bonderize with chemical conversion coating. Clean surfaces with xylene thinner. Dry. Aluminum signboards are to be painted before installation. Spray and bake face of signboards with two (2) coats of enamel in accordance with CAN/CGSB-1.104.

Sign identification:

Apply sign number and date of installation with twenty five millimeter (25mm) high stencil painted black letters on lower left back face of each signboard.

42.4 EXECUTION

42.4.1 Installation

Sign Support:

- 1) Erect supports as indicated. Where separate concrete footings have been placed, erect posts with base plates resting on levelling nuts and restrained with nuts and washers.
- 2) Coat underside of base plate with corrosion protective paint before installation.
- 3) Close open aluminum tubes and posts with aluminum cap.
- 4) Erect posts plumb and square to details as indicated.
- 5) Single channel steel posts are to be driven to required depth without damage to posts. If rock or concrete is encountered, auger hole to required depth and set post in sand.
- 6) In finished concrete or asphalt surfaces, backfill with concrete or grout. Protect from adverse conditions until cured.
- 7) Wooden post installations are to be excavated with an auger. Compact bottom of hole to provide firm foundation. Set post and backfill in one hundred fifty millimetre (150mm) layers with excavated material. Compact each layer before placing each subsequent layer.
- 8) Permissible tolerance is plus or minus twelve millimetre (± 12 mm) departure from vertical.

Signboard:

- 1) Fasten signboards to supporting posts and brackets as indicated.
- 2) Use strapping with crimped or bolted connections where signs fastened to utility poles.

42.4.2 Protection

Place temporary covering on signboards where required. Covering to be capable of withstanding rain, snow and wind, and be non injurious to signboard. Replace deteriorated covering and remove covers as reviewed by Engineer.



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REGULATORY ROADWAY SIGNS

42.4.3 Correcting Defects

Correct defects, identified by Engineer, consistency of reflectivity, color or illumination.

END OF SECTION

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8TH AVENUE - 2025 REHABILITATION**

02910

TOPSOIL

43. TOPSOIL (02910)

43.1 GENERAL

This section pertains to the preparing of sub grade and placement of topsoil.

43.1.1 Definitions

Weeds: Includes but not limited to dandelions, jimsonweed, quackgrass, horsetail, morning glory, rush grass , mustard, lambs quarter, chickweed, crabgrass, Canadian thistle, tansy, ragwort, bermuda grass bindweed, bent grass, perennial sorrel, brome grass, red root, pigweed, buckweed, scentless chamomile, toadflax, foxtail and perennial sow thistle.

43.2 PRODUCTS

43.2.1 Topsoil Mixtures

The following topsoil mixes will be utilized:

- No. 1 Mix costing of 1 part Class B topsoil, 1 part sand, 1 part peat moss.
- Native Soil Mix consisting of: 1 part Class B topsoil, 1 part sand, 3 parts native soil or as directed by the Owner.
- Peat Moss shall be horticultural quality, free of any foreign material, lumps, ice, clay, soil, stumps, rocks, quack grass and noxious weeds. Peat moss shall be pulverized and shall pass through a 33 mm screen. Peat moss when tested by an accredited testing laboratory shall meet with the following limits:

Soil reaction (pH)	4.5 - 6.0
Conductivity (mm hos)	maximum 2.0
Sulphates max.	200 maximum ppm
Free of lime	Nil

- Nitrogen, phosphorous and potassium will be evaluated on available nutrients
- Sand for horticulture use: When tested by means of laboratory sieves, the sand shall meet the following grading requirements and be uniformly graded between the limits given:

<u>Passing</u>	<u>Cumulative % by Weight</u>
2.5 mm (No. 8)	100
1.25 mm (No. 16)	90 - 100
0.8 mm (No. 20)	80 - 90
0.315 mm (No. 50)	30 - 60
0.16 mm (No. 100)	2 - 10

- Sand shall be natural and coarse, except for the removal of very fine particles and gravel, and conform to the above specifications. Sand shall be free from vegetation, clay balls, or other

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TOPSOIL

extraneous material. Reasonable care in the selection of material in a pit shall be used to produce a uniform product.

- Lime: shall be dry, free-flowing, ground limestone containing not less than 85% of total combined carbonates, to the following gradation:

<u>Sieve Size (mm)</u>	<u>Minimum % Passing, by Mass</u>
800	90
160	50

43.2.2 Textural Classes for Topsoil (Loams)

Topsoil shall fall within an allowance of Sand $\pm 5\%$, Silt $\pm 10\%$ and Clay $\pm 10\%$, of the values stated in the table below.

<u>Soil</u>	<u>Sand (%)</u>	<u>Silt (%)</u>	<u>Clay (%)</u>	<u>Class</u>
*Topsoil A	60	30	10	Sandy Loam
Topsoil B	35	35	30	Loam
Topsoil C	25	40	35	Clay Loam

***TYPE A FOR CONTRACT SPEC**

43.2.3 Analysis

The Contractor shall submit representative samples of the topsoil to be used for the intended project to a professional Agrologist for analysis and recommendations. A copy of the report shall be submitted to the Owner for approval.

The Owner shall provide written approval to the Contractor.

The soil analysis report will include the topsoil source and the recommendations for correction to meet the nutritional growing requirements of specified plant materials. Recommendations will clearly state the type and quantity of soil additives and application procedure to be used. Only accredited testing companies accepted by the Owner's Quality Assurance Services will be retained.

Topsoil analysis to be submitted to the Owner prior to construction. Such analysis shall be performed on representative samples from each topsoil source and shall determine nitrogen, phosphorus, potash, soluble salt content, electrical conductivity, pH value and percentage sodium absorption ratio values of sand, clay and organic matter, conforming to the following:

Sand:	25% ($\pm 5\%$) by dry mass
Clay:	35% ($\pm 10\%$) by dry mass*
Silt:	40% ($\pm 10\%$) by dry mass*
Organic Matter:	5% - 10% by dry mass
Toxic Chemicals:	None
Electrical Conductivity:	Maximum 1.5 dS/m
pH Value (saturated paste):	6.0 to 7.5
Sodium Absorption	less than 6

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TOPSOIL

Note: *All soils must fall within the Clay Loam Classification
*Total fine grain component (silt and clay) must not exceed 65%

43.2.4 Equipment

Cultivators capable of scarifying, discing or harrowing with rollers of suitable size and mass and any other equipment the Owner may determine necessary to complete the topsoil installation.

43.3 EXECUTION

43.3.1 Delivery Storage and Handling

If topsoil is to be stockpiled on public lands, locations must be designated by the Owner.

No stockpiling of topsoil by the Contractor on future Municipal Reserve lands shall occur unless written permission is granted by the Director of Infrastructure. Such permission will not be unreasonably withheld.

43.3.2 Placing Topsoil

The Owner shall approve the subgrade prior to placing topsoil and approve finished grade before the Contractor proceeds with the next phase of work. Do not place topsoil when either topsoil or subgrade is frozen, excessively wet, extremely dry, or in a condition inhibiting proper grading, cultivation, or compaction.

Spread topsoil uniformly on prepared subsoil to achieve a minimum compacted or settled depth of 100 mm for sodded areas unless otherwise stated.

Cultivate topsoil to a depth of 75mm, breaking down lumps. Remove stones larger than 50 mm, weeds, roots and other foreign matter.

Manually spread topsoil around trees and plants to prevent damage by grading and levelling equipment.

Float the area until surface is smooth. Cut smooth and flush areas adjacent to catch basin rims. Remove all lumps, rocks, roots and other debris from the finished material and from the site. Fine grade to eliminate rough or low areas and to ensure positive drainage.

Compact topsoil with suitable rollers to the satisfaction of the Owner.

Final topsoil grades for sodded areas shall be flush to finished grade at surface structures, i.e. manholes, sidewalks and curbs.

For sodding, the final grade of compacted topsoil shall be 25 mm below finished grade of adjacent work such as walk, curb and manhole and 25 mm below crown of adjacent turfed area.

When abutting an existing turfed area, cut the existing turf so as to form a straight or non-jagged joint with the new sodded area.

The Owner shall approve topsoil preparation prior to sodding.

43.3.3 Clean-up

Clean soil and debris resulting from work done under this section off roadway, walkway and surrounding areas at the end of each working day or as directed by the Owner.



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TOPSOIL

43.4 MEASUREMENT AND PAYMENT

Payment for topsoil shall be made at the unit price bid per square meters regardless of depth. The price will be for full compensation for all labour, supervision, materials, and equipment necessary to complete the work.

END OF SECTION

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SOD

44. SOD (02920)

44.1 GENERAL

44.1.1 Product Deliver, Storage and Handling

Protect sod during transportation with tarpaulin to prevent sun scalding and drying out and to ensure its arrival at the site in a healthy condition.

Sod must be installed on the day of arrival at site. If delays in installation occur due to weather, protect sod on site from sun, keep sod moist and store in a cool place until installation. Sod that is dried out and not in a healthy growing condition will be rejected.

All sod material shall be free of weeds which includes but not limited to dandelions, jimsonweed, quack grass, horsetail, morning glory, rush grass, mustard, lambs quarter, chickweed, crabgrass, Canadian thistle, tansy, ragwort, bermuda grass, bindweed, bent grass, perennial sorrel, brome grass, red root, pigweed, buckweed, scentless chamomile, toadflax, foxtail and perennial sow thistle

44.1.2 Substitution

The Owner will review all requests by the Contractor for substitution of sod.

44.2 INSPECTION

Inspection of sod at source of supply, at the site or during the course of construction will not impair the right of the Owner to reject sod which has been damaged or which, in any way, does not conform to the specifications.

The Owner will inspect all sod installations.

Remove all rejected materials from site immediately.

44.3 PRODUCTS

44.3.1 Sod

Certified No. 1 cultivated turf sod; with strong fibrous root system, thick and healthy growth and delivered 24 hours from the time of cutting. Sod showing signs of deterioration due to age or lack of moisture will be rejected. Sod must be free of stones, burns, dry or bare spots, tears and delivered moist, cut in strips of uniform width and thickness and of the following mix or approved equal:

70-80% Kentucky Bluegrass

10-20% Creeping Red Fescue

0-10% Perennial Ryegrass

44.4 FERTILIZER

Prior to application, the Contractor is to obtain written permission from the Owner.

Use standard commercial fertilizers, with guaranteed chemical analysis at a rate of 11-51-0.

Fertilizers shall be clearly labelled and furnished in unopened moisture-proof containers.

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Fertilizer requirements are:

Type 1 – Rate 3.5 kg/100 m²

- 19% Total Nitrogen
- 19% Available Phosphoric Acid
- 19% Potash

Type 2 – Rate 3.5 kg/100 m²

- 10% Total Nitrogen
- 30% Available Phosphoric Acid
- 10% Potash

Type 3 – Rate 3.5 kg/100 m²

- 12% Ammonia
- 51% Phosphate
- 0% Sulphate

Fertilizer shall be granular water-soluble type.

The Owner may order changes to the fertilizer feed rates above if an analysis of the topsoil shows this to be necessary.

44.5 WATER

Clean and free of any substance that may inhibit vigorous growth of grass. Contractor is responsible for continual watering of sod until grass has established

44.6 EQUIPMENT

Cultivators shall be capable of scarifying, discing or harrowing.

Rollers shall be of suitable size and mass.

44.7 EXECUTION

44.7.1 Planting Season

Sod Laying Recommended season May 1 to September 30.

44.8 PREPARATION

Remove weeds and debris from topsoil already in place.

Firm sod-bed by rolling before application.

Examine the site, verify the grades and check that the topsoil has been placed as specified.

Notify the Owner prior to the start of sodding operations.

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SOD

Cultivate existing topsoil and apply additional topsoil as required to obtain minimum required depths of topsoil. Additional topsoil shall be spread evenly and lightly compacted.

Apply fertilizer (after obtaining permission from the Owner) according to manufacturer's instructions or as directed by the Owner.

Apply fertilizer (after obtaining permission from the Owner) with spreader at designated rate and mix thoroughly into the upper portions of topsoil. Float and level out the finished topsoil surface.

44.8.1 **Cutting Sod**

Cut sod by approved methods in accordance with the recommendations of the Canadian Standards for Nursery Stock by the Canadian Nursery Landscape Association (C.N.L.A.).

Handle sod carefully when loading and installing to prevent tearing or breaking.

44.8.2 **Sodding on Slopes 3 Horizontal to 1 Vertical and Flatter**

Lay sod evenly in staggered row, with edges and ends butted tightly. Blend edges of sod with existing grass or cultivated areas.

Where sod butt joins surface paving, i.e. manhole, sidewalk or curb, position sod turf crown flush with finished hard surface.

Top dress seams as required with No. 1 mix topsoil. Water the sod and upper 100 mm of topsoil with water spray. Do not cause erosion.

Let sod and soil dry out sufficiently to prevent damage, then roll sod with a roller to ensure good bond between sod and soil and to smooth out humps and depressions.

Immediately after rolling, saturate sod and upper 100 mm of soil with fine spray. To prevent grass and soil from drying out, continue adequate watering for 8 to 10 days after laying or until roots are well established.

Four weeks after laying and following initial cutting apply organic supplementary fertilizer 27-14-0, at a rate determined by topsoil analysis or such other fertilizer as may be determined by the Owner.

44.8.3 **Sodding on Slopes 3 Horizontal to 1 Vertical and Steeper**

If sodding occurs on any slope steeper than 3 Horizontal to 1 Vertical, sod may be pegged, 25 per 10 m², with short wooden pegs to prevent sod from slipping. Pegs to be pounded flush with ground.

44.8.4 **Warranty**

All grass sodded shall have a one-year warranty period from issuance of the Construction Completion Certificate. Areas showing deterioration, bare spots or thin areas shall be re-sodded at the Contractor's expense.

44.8.5 **Maintenance**

Maintenance shall include all measures necessary to establish and maintain sodded areas in an acceptable, vigorous and healthy growing condition. The maintenance will be from a period of one year from the issuance of a Construction Completion Certificate and until the issuance of the Final Acceptance Certificate. Maintenance shall include:

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SOD

- Mowing at regular intervals to maintain a minimum height of 60 mm and a maximum height of 75 mm. Do not cut more than 1/3 of blade height at any one mowing. Remove heavy clippings immediately.
- Replacing areas that show root growth failure, deterioration, bare or thin spots or which have been damaged by any means.
- Removing and replacing dead sod.
- Top dressing and rolling to repair ruts or erosion.

The Owner may direct the use of herbicides for weed control. They shall be applied in accordance with manufacturer's recommendations by a licensed applicator. Damage resulting from the Contractor's improper use of herbicides shall be remedied at the Contractor's own expense. The Contractor must keep the areas free of weeds between CCC and FAC.

The two full growing season Maintenance Period commences upon issuance of the landscape CCC and shall terminate upon the approval of the landscape work by the Engineer and the issue of a FAC.

44.8.6 Final Inspection

Final inspection of sodded areas will be made prior to the end of the warranty period.

At the time of inspection all the areas shall be alive and in a healthy satisfactory growing condition and free from weeds.

44.8.7 Clean-up

Clean roadway, walkway and surrounding areas of soil, sod, clippings and other debris resulting from work done under this section at the end of each working day or as directed by the Owner.

44.9 MEASUREMENT AND PAYMENT

Payment for supply, haul, storage and place sod shall be made at the unit price bid per square meters. The price will be for full compensation for all labour, supervision, materials, and equipment necessary to complete the work.

END OF SECTION

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02921

SEED

45. SEED (02921)

45.1 GENERAL

45.1.1 Product Deliver, Storage and Handling

Fertilizer shall be delivered in sealed packages, clearly marked with contents, weight, analysis and name of manufacturer.

Grass seed shall be delivered in original package and stored in dry location, protected from the elements and rodents. Each seed package to contain suppliers label indicating:

- Analysis of seed mixture
- Percent of pure seed by weight
- Year of Production
- Net Mass
- Date tagged and location of seed supplier

45.1.2 Substitution

The Owner will review all requests by the Contractor for substitution of seed.

45.2 INSPECTION

The Owner will inspect all seed installations.

Remove all rejected materials from site immediately.

Owner may appoint and pay for services of testing laboratory to verify seed conformance to specified requirements.

45.3 PRODUCTS

45.3.1 Grass Seed Mixture

Seed mixture to be of the following mix or approved equal:

- 35% Kentucky Bluegrass
- 40% Creeping Red Fescue
- 15% Chewing Red Fescue
- 10% Perennial Ryegrass

Substitutions to specified seed species and variety require approval of the Owner before sowing. Contractor shall submit documentation from seed supplier verifying unavailability of any specified seed specie and variety with recommendations. Owner may adjust specified seed mixture after topsoil test analysis results are received, with no change in Contract Price.

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SEED

45.3.2 Erosion Control Blanket

Coconut blanket: made from natural coconut fibers, stitch-bonded between two photodegradable natural organic fiber nettings shall be on areas as directed by the Engineer or as identified on the Drawings. Payment will be made at the contract unit price bid for square metre (m²).

45.4 FERTILIZER

Prior to application, the Contractor is to obtain written permission from the Owner.

Use standard commercial fertilizers, with guaranteed chemical analysis at a rate of 12-51-0.

Fertilizers shall be clearly labelled and furnished in unopened moisture-proof containers.

Fertilizer requirements are:

Type 1 – Rate 3.5 kg/100 m²

19% Total Nitrogen

19% Available Phosphoric Acid

19% Potash

Type 2 – Rate 3.5 kg/100 m²

10% Total Nitrogen

30% Available Phosphoric Acid

10% Potash

Type 3 – Rate 3.5 kg/100 m²

12% Ammonia

51% Phosphate

0% Sulphate

Fertilizer shall be granular water-soluble Type-1.

The Owner may order changes to the fertilizer feed rates above if an analysis of the topsoil shows this to be necessary.

45.5 WATER

Water: clean, fresh, and free of substances or matter that would inhibit vigorous and healthy growth of grass.

Contractor shall supply clean water, equipment, methods of transportation, water tanker, hoses, attachments, and other accessories as necessary for all seeding requirements, maintenance and other related work.

All costs for supply of water incurred during the contract period shall be borne by Contractor.

45.6 EQUIPMENT

Cultivators shall be capable of scarifying, discing or harrowing.

Rollers shall be of suitable size and mass.

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SEED

45.7 EXECUTION**45.7.1 Planting Season**

Seed Laying Recommended season May 1 to September 30.

45.8 PREPARATION

Remove weeds and debris from topsoil already in place.

Firm sod-bed by rolling before application.

Examine the site, verify the grades and check that the topsoil has been placed as specified.

Notify the Owner prior to the start of sodding operations.

Cultivate existing topsoil and apply additional topsoil as required to obtain minimum required depths of topsoil. Additional topsoil shall be spread evenly and lightly compacted.

Apply fertilizer (after obtaining permission from the Owner) according to manufacturer's instructions or as directed by the Owner.

Apply fertilizer (after obtaining permission from the Owner) with spreader at designated rate and mix thoroughly into the upper portions of topsoil. Float and level out the finished topsoil surface.

45.8.1 Mechanical Seeding

Obtain Owner's approval of seedbed finish grades, final tilth, surface flatness and fertilizer application before seeding.

No seeding shall be done on frozen soil or when conditions are not favourable for successful seed germination.

Sow at minimum rate of 3 kg/100 m², during calm weather and when soil moisture content is adequate for germination.

Drill Seeding: apply seed using a mechanical dry spread "Brillion Seeder" that places seed at specified depth and rate and rolls in a single operation.

Broadcast Seeding: use manually operated broadcast seeder only for small specific locations and areas inaccessible to brillion seeding.

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

Cover broadcasted seed by raking and chain harrowing.

Roll seeded grass with roller not exceeding 50 kg where uneven soil conditions warrant.

Water entire area with fine spray after each area has been sown. Apply water where application of water is practical and will not interfere with other work.

Apply enough water to ensure penetration of at least 50 mm, avoid washing out seeds.

45.8.2 Protection of Seeded Areas

Contractor shall provide adequate protection to protect seeded areas from all damage, disturbance, or other construction activity after seeding operations are complete. Remove protection after seed areas are properly established or as directed by the Owner.

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Damaged seed areas resulting from inadequate protection shall be promptly repaired with topsoil, fertilizer and seed at Contractor's expense. All damages shall be repaired prior to final acceptance.

Keep site well drained and landscape excavations dry.

45.8.3 Seed Protection on Slopes and Ditches

Cover all prepared and seeded slopes 3:1 or steeper with erosion control blanket.

Unroll blanket either horizontally or vertically to the slope without stretching or pulling.

Lay blanket smoothly on soil surface. Overlap adjacent sections of blanket minimum 100 mm and staple.

Secure blanket to ground with staples in accordance with erosion control blanket manufacturer's instructions.

Minimize damage to seedbed during installation of blanket. Regrade by hand raking as required, to correct any damage.

In ditches and swales, unroll blanket in direction of flow. Overlap adjacent sections of blanket minimum 100 mm with upstream section on top and stapled. Follow manufacturer's installation recommendations.

45.8.4 Warranty

All grass sodded shall have a one-year warranty period from issuance of the Construction Completion Certificate.

Areas showing deterioration, bare spots or thin areas shall be re-sodded at the Contractor's expense.

45.8.5 Maintenance

Work of maintenance period shall be performed each week and as frequently during the week to enable the proper establishment of all new seed and other landscaping installed to ensure that required services and tasks are satisfactorily completed and sustainable.

Watering: apply water with sufficient frequency to maintain adequate soil moisture, promote seed germination and development and for continued healthy growth of grass during maintenance/establishment period. During hot dry weather increase frequency of watering to maintain seed and turf health. Promptly repair and reseed any damage that occurs through washout of soil.

Provide clean water, equipment, water tanker, methods of transportation, hoses, sprinklers, and labour necessary to adequately and efficiently apply water to all seeded areas as necessary. Record quantity of water applied on site in maintenance log.

Provide weed control in newly seeded areas. Mow, cultivate, or physically remove weeds. Use approved chemical methods once seed areas are fully established. Maintain all weed growth to maximum height of 100 mm. Ensure all weed seed heads are removed before maturity. Remove all weed clippings from site.

Control and eliminate turf damaging pests that appear in newly seeded areas.

Cut lawn grass at regular intervals and maintain minimum height of 70 mm. Cut forage or native type grass no lower than 125 mm and only when necessary or directed by the Owner. Do not cut more than 30% of blade at any one mowing. Remove excessive clippings from site.

Repair seeded areas which show root growth failure, deterioration, bare or thin spots, or which have been damaged by any means or cause, including replacement operations. Overseed areas that show inadequate or improper sowing of seed from billion or other methods.

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Correct any erosion and settlement that results from faulty workmanship and/or material. Restore areas by placing topsoil as necessary and spreading new seed. Repair ruts resulting from maintenance equipment and personnel. Maintain a uniformly smooth seed bed surface.

Apply second application of 20 5 10, or similar slow release granular turf fertilizer five to six weeks after seeding. Spread evenly at rate of 3 kg/100 m² and water in well after application. Postpone fertilizing until spring if application will occur after August 15th.

Maintenance Inspections: during progress of the maintenance period, the Contractor and the Owner will conduct site inspections every 30 days or less to determine whether ongoing maintenance activities have been performed in accordance with specifications. Any maintenance not performed by Contractor in a satisfactory manner shall be immediately completed to Owner's satisfaction.

45.8.6 Final Inspection

Final inspection of seeded areas will be made prior to the end of the warranty period.

At the time of inspection all the areas shall be alive and in a healthy satisfactory growing condition and free from weeds.

45.8.7 Clean-up

Clean roadway, walkway and surrounding areas of soil, seed, clippings and other debris resulting from work done under this section at the end of each working day or as directed by the Owner. Repair all damages resulting from Work.

45.9 MEASUREMENT AND PAYMENT

Payment for supply, haul, storage and place seed shall be made at the unit price bid per square meters. The price will be for full compensation for all labour, supervision, materials, and equipment necessary to complete the work.

END OF SECTION

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02961

ASPHALTIC CONCRETE PAVEMENT MILLING

46. ASPHALTIC CONCRETE PAVEMENT MILLING (02961)

46.1 GENERAL

This section specifies requirements for milling or grinding existing asphalt pavement to lines, grades, and typical cross sections indicated on plans or as established by the Engineer.

46.1.1 Protection

Protect existing pavement, utility appurtenances, traffic detector loops, home runs, light units, and structures from damages. In event of damage, immediately replace or make repairs to approval of the Engineer and at no additional cost to the Owner.

46.2 EXECUTION

46.2.1 Preparation

Inspect site and verify with the Engineer areas designated for milling.

Arrange for temporary traffic control in areas where signal light traffic detector loops and home runs are to be removed.

46.2.2 Equipment

Use cold milling or grinding equipment capable of removing part of asphalt pavement surface to depths or grades indicated, with a tolerance of plus or minus ten millimeter (+/-10mm) within areas designated.

Sweeping and collecting equipment to be capable of removing all residue from milling operation.

Apply water as necessary during milling operation to suppress dust.

46.2.3 Asphalt Removal

Mill asphalt pavement to grade and cross section dimensions indicated or as directed by the Engineer.

Exercise care to avoid disturbance to pavement or other work designated to remain.

Keep drainage system clear of loose and waste materials.

Asphalt is to be removed to a uniform level, including areas surrounding valves, manholes or other appurtenances.

Remove all residue materials resulting from milling operation.

Milling may be restricted on designated roads and streets, with particular time frames throughout the week. The Contractor shall abide by these restrictions.

Surface to be left in a condition that can be reopened to traffic following removal of grindings.

46.2.4 Disposal of Materials

All milled pavement material shall be removed from the site only after obtaining permission from the Owner, who shall have first refusal on material removed.



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ASPHALTIC CONCRETE PAVEMENT MILLING

46.2.5 Finish Tolerances

Milled surfaces to be within (+/- 15 mm) of specified grade but not uniformly high or low.

46.3 MEASUREMENT FOR PAYMENT

Milling of existing asphalt pavements to be made at the unit price bid per square meter (m²) for "Cold Milling Asphalt Pavement (600mm width, 50mm depth)" as specified on unit price table.

Payment under this item will include operations involved in removing, hauling, and stockpiling designated pavement in a designated location and cleaning of remaining pavement surfaces.

END OF SECTION

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03300

CAST-IN-PLACE-CONCRETE

47. CAST-IN-PLACE-CONCRETE (03300)

47.1 GENERAL

Products, Concrete Materials, Execution and Methods of concrete construction shall be in accordance with CSA CAN3-A23.1-00 and CSA A23.2.

47.1.1 Work Included

Supply, place and finish all Cast-in-place Concrete required for this Work as indicated on the Drawings or as specified herein.

47.1.2 Inspection Testing

Inspection and testing of concrete work will be carried out by an independent inspection firm appointed by the Engineer and paid for by the Owner.

Three test cylinders will be taken in accordance with CSA A23.2 from each (60 m³), or less, of concrete placed. Provide sufficient concrete as directed to laboratory for testing.

One additional test cylinder will be taken during cold weather concreting. Cure cylinder on jobsite under same conditions as concrete it represents.

At least one slump test and air content test will be taken in accordance with CSA A23.2 for each set of test cylinders taken.

Samples of fine and coarse aggregate, and testing for conformity to specifications and standards, will be required. Provide sufficient quantities as directed.

Supply any additional testing required as a result of original tests failing to meet the requirements of CSA A23.2.

47.1.3 Submittals

Before any concrete is delivered to the jobsite, submit to the Engineer, in accordance with Section 01300 of these Specifications, a complete list of materials proposed to be furnished and installed under this portion of the Work, showing manufacturer's name and catalogue number of all items, such as admixture and the name and address of transit mix concrete supplier.

Keep a record at the jobsite showing time and place of each pour of concrete, together with transit mix delivery slip certifying contents of the pour. Make the record available to the Engineer for his inspection upon request.

47.1.4 Product Handling

Use all means necessary to protect cast-in-place concrete material before, during, and after installation, and to protect the installed work and materials of all other trades.

In the event of damage, immediately make all repairs and replacements necessary to the approval of the Engineer and at no additional cost to Owner.

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CAST-IN-PLACE-CONCRETE

47.2 PRODUCTS

47.2.1 Materials

Cement: Portland, conforming to CAN/CSA-A5.

Water, fine aggregate, normal density coarse aggregates: conforming to CSA A23.1.

Air Entraining Admixtures: conforming to CSA CAN3-A266.1.

Chemical Admixtures: conforming to CSA CAN3-A266.2.

Supplementary cementing materials and their use to CAN3-A23.5.

All reinforced concrete to contain an approved water reducing agent meeting ASTM C494, Master Builders "Pozzolith" or equivalent.

Non-Shrink Grout: premixed compound consisting of non-ferrous aggregate, cement, water reducing and plasticizing agents, capable of developing minimum compressive strength of; 16.5 MPa at 2 days and 48 MPa at 28 days, Elsro "In-Pakt" or equal.

Curing Compound: non-membrane, non-toxic, colourless, non-yellowing chemical liquid curing compound conforming to ASTM C309.

Floor Hardener: Non-metallic, natural aggregate surface hardener Master Builders "Mastercron" or equal.

Bonding Agent: Two component, epoxy resin, Elsro #720, or equal.

Cement Mortar: Portland cement, clean sand and water mixed in proportions as specified.

Epoxy Mortar: fine aggregate and an epoxy adhesive, Sika "Colma-Dur" or equal mixed in accordance with the manufacturer's recommendations.

Waterstops: 150 mm x 6 mm steel plate to CSA G40.21 , 300W or 316 stainless steel where indicated.

Joint Fillers and Sealers:

Fillers:

-Type "A" -Bituminous, non-extruding type, conforming to ASTM D1751, Sternson "Sternboard" or equal.

-Type "B" -Non-bituminous, non-extruding type, PVC foam conforming to ASTM D1752, Type I, Sternson "Rodofam" PR grade or equal.

-Type "C" -Non-bituminous conforming to ASTM D1752, Type II, Sternson "Rodofam" GR grade or equal.

Sealers:

-Type "A" -Hot poured rubberized asphalt conforming to ASTM D1190.

-Type "B" -Two component polysulphide, polymer sealant conforming to CGSB 19-GP-3m Sika "2C/SL" or equal for horizontal joints and Sika "2C" for vertical joints.

-Type "C" -Two component polymer sealant Sternson "Loadflex" or equal. Primer -as recommended by the sealant manufacturer for compatibility with sealant.

All other materials, not specifically described but required for a complete and proper installation of all cast-in-place concrete, shall be as selected by the Contractor subject to the approval of the, Engineer.

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CAST-IN-PLACE-CONCRETE

47.2.2 Mixes

Proportion normal density concrete to CSA A23.1, to give the following mix for all structural concrete: Use Type 50 cement to give minimum cylinder strength of 30 MPa in 28 days, with 20 mm nominal size of coarse aggregate, maximum slump at point and time of discharge 80 mm, air content 5 to 7%. Water cementing material ratio: 0.5 maximum.

Proportion normal density concrete to CSA A23.1, to give the following mix for all exterior concrete slabs: Use Type 50 cement to give minimum cylinder strength of 30 MPa in 28 days, with 20 mm nominal size of coarse aggregate, maximum slump at point of discharge 80 mm, air content 6 to 8%. Water cementing material ratio: .45 maximum.

Proportion normal density concrete to CSA A23.1 to give the following mix for all fill concrete: Use Type 50 cement to give minimum cylinder strength of 15 MPa in 28 days, with 20 mm nominal size of coarse aggregate, maximum slump at point and time of discharge 100 mm.

Proportion normal density concrete to CSA A23.1 to give the following mix for all Fillcrete: Use Type 10 cement to give minimum cylinder strength of 0.3 to 0.6 MPa in 28 days, with 20 mm nominal size of coarse aggregate, maximum slump at point and time of discharge 100 mm, air content 4 to 6%.

Use 40 mm nominal size aggregate where the concrete thickness is 400 mm or more.

Minimum air content may be reduced to 3% on slabs and floors requiring an integral floor hardener.

Maximum supplementary cement to total cementing material ratio to be 0.25.

Accelerating admixtures: may be used in cold weather, subject to approval of the Engineer. If approved, the use of admixture will not relax the cold weather placement requirements. Use of calcium chloride shall not be permitted.

Set retarding admixtures may be used during hot weather to allow for proper finishing of concrete, subject to approval of the Engineer.

47.3 EXECUTION

47.3.1 Workmanship

Prior to all Work of this Section, carefully inspect the installed work of all other trades and verify that all such work is complete to the point where this Work may properly commence.

Obtain the Engineer's approval before placing concrete. Provide 48 hours notice prior to the placing operation.

Maintain accurate records of poured concrete items. Record date, time, location and quantity of pour, air temperatures, test samples taken and method of placing.

Ensure that reinforcement and formwork are thoroughly clean and wetted before placing concrete.

Ensure that reinforcement, formwork, inserts or accessories are securely fastened and will not be disturbed during concrete placement.

Verify that all items to be embedded in concrete are in place.

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Verify that concrete may be placed to the lines and elevations indicated on the Drawings, with all required clearance from reinforcement.

In the event of discrepancy, immediately notify the Engineer.

Do not proceed with installation in areas of discrepancy until all such discrepancies have been fully resolved.

Do hot and cold weather concrete to CSA A23.1. Ensure procedures used are approved by the Engineer.

Do not place concrete when, in the opinion of the Engineer, the weather is not suitable.

Do not place concrete on or against any surface that has a temperature less than 5°C.

Advise the Engineer to inspect formwork and reinforcement prior to placing concrete.

Prepare previously placed concrete by cleaning and removing all concrete debris and excess with steel brush and applying bonding agent.

Pour concrete continuously and as rapidly as possible between pre-determined construction joints to approval of the Engineer.

Pour concrete in a checkerboard pattern, allowing 7 days before placing adjoining sections. Limit the length of any single pour to a maximum of 18 metres.

Locate construction joints as specified in Section 03100 -"Concrete Formwork and Falsework".

Slush all horizontal joint surfaces to a depth of 30 mm, with mortar consisting of one part Portland Cement by volume and two parts sand, immediately prior to placing of concrete.

Consolidate concrete in accordance with CSA A23.1.

Concrete cover over reinforcing steel is to CSA A23.1 or as indicated.

47.3.2 Inserts

Set sleeves, ties, anchor bolts, pipe hangers and other inserts, openings and sleeves, in concrete floors and walls, as required by other trades. Sleeves, openings, or similar features, greater than 100 x 100 mm, not indicated on Drawings, must be approved by Engineer.

No sleeves, ducts, pipes or other openings shall pass through joists, beams or columns, except where expressly detailed on the Drawings or approved by Engineer.

Do not eliminate or displace reinforcement to accommodate hardware. If inserts cannot be located as specified, obtain approval of all modifications from Engineer before placing of concrete.

Check locations and sizes of sleeves, openings, and other features, shown on the Drawings with architectural, mechanical and electrical drawings.

47.3.3 Curing

Cure all concrete in accordance with CSA A23.1.

Loosen wall forms within 24 hours, as outlined in Section 03100 -"Concrete Formwork and Falsework" and saturate concrete walls.

Initial curing: ensure the concrete surface is kept continuously moist until the temperature produced by the heat of hydration of the cement has peaked and dropped several degrees.

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CAST-IN-PLACE-CONCRETE

Final Curing: immediately after initial curing, additional curing shall be applied and maintained for a period of 7 days, to ensure that the specified concrete strength and quality has been obtained.

47.3.4 Concrete Finishes

Grade 1 Finish: All surfaces to be backfilled, remove all ties, bolts, nails and other metal to a depth of 25 mm and fill holes as specified herein under Clause 3.06 "Repairing Concrete."

Grade 2 Finish: All surfaces to receive a furred or channelled interior finish grade, finish while concrete is still green, rub all surfaces with carborundum brick, wetting surface with clean water. Rub until all hollows, lines, form marks have been removed. Leave surface uniform and smooth. Wash clean.

Grade 3 Finish: All surfaces normally adjacent to water grade 2 finish plus, fill all voids larger than 5 mm with cement mortar.

Grade 4 Finish: All exposed concrete surfaces grade 2 finish plus, a sack-rubbed finish with mortar mix applied and cured as specified in CSA A23.1.

Refer to requirements "Integral Waterproofing"

Floor Finishes: Finish and protect the top surface of all concrete as indicated on the Drawings or as specified herein by:

1. Plain Floor Finish (all covered floors)
Finish concrete floors to CSA A23.1 and as specified.
Use two passes of steel trowelling to produce smooth burnished surface to within 5 mm tolerance when measured in any direction using 3 m straight edge.
At areas with floor drains, maintain floors level at walls, pitch floor uniformly to drains at a minimum rate of one half of one percent (5 mm per metre) or as shown on the Drawings.
2. Hardened Floor Finish (all exposed floors including tanks and reservoir floors)
Finish concrete floors as per Clause 3.05, paragraph A, and apply hardener at rate of 5.0 kg/m² to manufacturer's instructions.
3. Textured Non-Slip Finish (all exterior fiatwork):
Immediately after first trowelling of the "Plain Floor Finish", swirl-trowel, brush or broom the surface to a uniformly textured non-slip finish, as described in CSA CAN3-A23.1.
4. Control Joints
Saw-cut control joints in the location and details as shown on the Drawings in accordance with CSA A23.1 , within 18 hours of concrete placement.

47.3.5 Repairing Concrete

Cut back metal form ties and voids not less than 20 mm from surface and fill with non-shrink grout.

Cut back honeycombed or defective areas perpendicular to the surface to a depth of 20 mm. Brush on 1:1 cement sand grout over a saturated surface then patch with a 1:2 cement sand mortar with 10% hydrated lime.

Where honeycombing or defective areas require cut backs deeper than 50 mm, use non-shrink grout.

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47.3.6 Grouting

Grout the underside of all equipment base plates, structural steel base plates and/or beam bearing plates with non-shrink grout in accordance with the manufacturer's recommendations.

47.3.7 Bonding New Concrete To Old Concrete

Thoroughly clean old concrete surface and all protruding reinforcing steel for a distance of 36 bar diameters.

Roughen cleaned surfaces to expose the coarse aggregate of the existing concrete.

Immediately prior to placing new concrete, apply a coating of bonding agent to the existing surface, in strict accordance with the manufacturer's recommendation.

In locations where new concrete is dowelled to existing work, drill holes in existing concrete and insert steel dowels and pack solidly with non-shrink grout to positively position and anchor dowels.

47.3.8 Waterstops

Install waterstops in all construction joints subject to water pressure or located below finished grade level. Weld all joints and splices. Waterstops are required in joint between ozone contactor roof and perimeter walls.

47.3.9 Joint Fillers And Sealers

Locate and form all isolation or expansion joints as indicated on the Drawing. Install joint filler, sealer and primer to manufacturer's instructions.

Unless otherwise indicated, use 12 mm thick Type joint filler for isolation joints or to separate slabs-on-grade from vertical surfaces. Seal joint with 12 mm Type "B" joint sealer for interior applications and Type "A" for exterior.

Do not allow reinforcing steel to run through expansion joints or isolation joints unless otherwise indicated.

Seal all control joints with Type "C" sealant unless otherwise indicated.

Install a polyethylene strip over joint filler to prevent bonding to joint sealer

47.4 MEASUREMENT AND PAYMENT

47.4.1 Cast In-Place Concrete

Payment for Cast-In-Place Concrete will not be made directly but will be included in the contract unit bid price for Concrete Work in the Unit Price Schedule, and shall be considered full compensation for supply of all labour, supervision, equipment and materials necessary to complete the Work, including concrete formwork, concrete reinforcement, concrete manufacture and supply, placing, finishing, curing, and all Work incidental thereto as shown on the Drawings and as specified herein.

END OF SECTION



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SUPPLEMENTAL INFORMATION**

48. SUPPLEMENTAL INFORMATION