



THE CITY OF WINNIPEG

TENDER

TENDER NO. 519-2026

GOULET-DOUCET WATER MAIN RIVER CROSSING REHABILITATION

TABLE OF CONTENTS

PART A - BID SUBMISSION

- Form A: Bid/Proposal
- Form B: Prices
- Form G1: Bid Bond and Agreement to Bond

PART B - BIDDING PROCEDURES

B1. Contract Title	1
B2. Submission Deadline	1
B3. Site Investigation	1
B4. Enquiries	1
B5. Confidentiality	1
B6. Addenda	2
B7. Substitutes	2
B8. Bid Components	3
B9. Bid	3
B10. Prices	4
B11. Disclosure	4
B12. Conflict of Interest and Good Faith	5
B13. Qualification	6
B14. Bid Security	7
B15. Opening of Bids and Release of Information	8
B16. Irrevocable Bid	8
B17. Withdrawal of Bids	9
B18. Evaluation of Bids	9
B19. Award of Contract	9

PART C - GENERAL CONDITIONS

C0. General Conditions	1
------------------------	---

PART D - SUPPLEMENTAL CONDITIONS

General

D1. General Conditions	1
D2. Scope of Work	1
D3. Definitions	1
D4. Contract Administrator	2
D5. Contractor's Supervisor	2
D6. Furnishing of Documents	2

Submissions

D7. Authority to Carry on Business	2
D8. Safe Work Plan	2
D9. Insurance	2
D10. Contract Security	3
D11. Subcontractor List	4
D12. Equipment List	5
D13. Detailed Work Schedule	5

Schedule of Work

D14. Commencement	5
D15. Schedule Restrictions	6
D16. Working Days	6
D17. Critical Stages	7
D18. Substantial Performance	7
D19. Total Performance	8
D20. Liquidated Damages	8

Control of Work

D21. Job Meetings	8
D22. Prime Contractor – The Workplace Safety and Health Act (Manitoba)	8
D23. The Workplace Safety and Health Act (Manitoba) – Qualifications	9

Measurement and Payment

D24. Payment	9
D25. Fuel Price Adjustment	9

Warranty

D26. Warranty	10
---------------	----

Indemnity

D27. Indemnity	10
Form J: Subcontractor List	11
Form K: Equipment	12

PART E - SPECIFICATIONS

General

E1. Applicable Specifications and Drawings	1
--	---

General Requirements

E2. Shop Drawings	1
E3. Office Facilities	2
E4. Environmental Protection	3
E5. Mobilization and Demobilization Payment	6
E6. Cash Allowance for Additional Work	7
E7. Traffic Control	7
E8. Seine River Water Levels	8
E9. Excavation, Shoring, and Backfill	9
E10. Protection of Existing Trees	10
E11. Hydro Excavation for Utility Exploration (Provisional)	11
E12. Operating Constraints for Work in Close Proximity to Critical Water Infrastructure	11
E13. Working Around Manitoba Hydro Gas Infrastructure	16
E14. Water Supply	17
E15. Pipeline Modifications	18
E16. Dewatering of Water main	21
E17. Pipeline Cleaning	21
E18. Pipeline Inspection	25
E19. Pulled in Place FFRP Liner	27
E20. Water Main Disinfection	32
E21. Work Practices on Asbestos Cement Pipe	33
E22. Temporary Surface Restoration	33
E23. Permanent Restoration	34

PART F - SECURITY CLEARANCE

F1. Security Clearance	1
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APPENDICES

Appendix A Record Drawings	
Appendix B PICA Inspection Report	

PART B - BIDDING PROCEDURES

B1. CONTRACT TITLE

B1.1 Goulet-Doucet Water Main River Crossing Rehabilitation

B2. SUBMISSION DEADLINE

B2.1 The Submission Deadline is 12:00 noon Winnipeg time, July 24, 2026.

B2.2 The Contract Administrator or the Manager of Purchasing may extend the Submission Deadline by issuing an addendum at any time prior to the time and date specified in B2.1.

B3. SITE INVESTIGATION

B3.1 Further to C3.1, the Bidder may view the Site without making an appointment.

B3.2 The Bidder is responsible for inspecting the Site, the nature of the Work to be done and all conditions that might affect their Bid or their performance of the Work, and shall assume all risk for conditions existing or arising in the course of the Work which have been or could have been determined through such inspection.

B4. ENQUIRIES

B4.1 All enquiries shall be directed to the Contract Administrator identified in D4.1.

B4.2 If the Bidder finds errors, discrepancies or omissions in the Tender, or is unsure of the meaning or intent of any provision therein, the Bidder shall notify the Contract Administrator of the error, discrepancy or omission, or request a clarification as to the meaning or intent of the provision at least five (5) Business Days prior to the Submission Deadline.

B4.3 Responses to enquiries which, in the sole judgment of the Contract Administrator, require a correction to or a clarification of the Tender will be provided by the Contract Administrator to all Bidders by issuing an addendum.

B4.4 Responses to enquiries which, in the sole judgment of the Contract Administrator, do not require a correction to or a clarification of the Tender will be provided by the Contract Administrator only to the Bidder who made the enquiry.

B4.5 The Bidder shall not be entitled to rely on any response or interpretation received pursuant to B4 unless that response or interpretation is provided by the Contract Administrator in writing.

B4.6 Any enquiries concerning submitting through MERX should be addressed to:
MERX Customer Support
Phone: 1-800-964-6379
Email: merx@merx.com

B5. CONFIDENTIALITY

B5.1 Information provided to a Bidder by the City or acquired by a Bidder by way of further enquiries or through investigation is confidential. Such information shall not be used or disclosed in any way without the prior written authorization of the Contract Administrator. The use and disclosure of the confidential information shall not apply to information which:

- (a) was known to the Bidder before receipt hereof; or
- (b) becomes publicly known other than through the Bidder; or
- (c) is disclosed pursuant to the requirements of a governmental authority or judicial order.

- B5.2 The Bidder shall not make any statement of fact or opinion regarding any aspect of the Tender to the media or any member of the public without the prior written authorization of the Contract Administrator.

B6. ADDENDA

- B6.1 The Contract Administrator may, at any time prior to the Submission Deadline, issue addenda correcting errors, discrepancies or omissions in the Tender, or clarifying the meaning or intent of any provision therein.
- B6.2 The Contract Administrator will issue each addendum at least two (2) Business Days prior to the Submission Deadline, or provide at least two (2) Business Days by extending the Submission Deadline.
- B6.3 Addenda will be available on the MERX website at www.merx.com.
- B6.4 The Bidder is responsible for ensuring that they have received all addenda and is advised to check the MERX website for addenda regularly and shortly before the Submission Deadline, as may be amended by addendum.
- B6.5 The Bidder shall acknowledge receipt of each addendum in Paragraph 10 of Form A: Bid/Proposal. Failure to acknowledge receipt of an addendum may render a Bid non-responsive.
- B6.6 Notwithstanding B4, enquiries related to an Addendum may be directed to the Contract Administrator indicated in D4.

B7. SUBSTITUTES

- B7.1 The Work is based on the Plant, Materials and methods specified in the Tender.
- B7.2 Substitutions shall not be allowed unless application has been made to and prior approval has been granted by the Contract Administrator in writing.
- B7.3 Requests for approval of a substitute will not be considered unless received in writing by the Contract Administrator at least five (5) Business Days prior to the Submission Deadline.
- B7.4 The Bidder shall ensure that any and all requests for approval of a substitute:
- (a) provide sufficient information and details to enable the Contract Administrator to determine the acceptability of the Plant, Material or method as either an approved equal or alternative;
 - (b) identify any and all changes required in the applicable Work, and all changes to any other Work, which would become necessary to accommodate the substitute;
 - (c) identify any anticipated cost or time savings that may be associated with the substitute;
 - (d) certify that, in the case of a request for approval as an approved equal, the substitute will fully perform the functions called for by the general design, be of equal or superior substance to that specified, is suited to the same use and capable of performing the same function as that specified and can be incorporated into the Work, strictly in accordance with the proposed work schedule and the dates specified in the Supplemental Conditions for Substantial Performance and Total Performance;
 - (e) certify that, in the case of a request for approval as an approved alternative, the substitute will adequately perform the functions called for by the general design, be similar in substance to that specified, is suited to the same use and capable of performing the same function as that specified and can be incorporated into the Work, strictly in accordance with the proposed work schedule and the dates specified in the Supplemental Conditions for Substantial Performance and Total Performance.

- B7.5 The Contract Administrator, after assessing the request for approval of a substitute, may in their sole discretion grant approval for the use of a substitute as an “approved equal” or as an “approved alternative”, or may refuse to grant approval of the substitute.
- B7.6 The Contract Administrator will provide a response in writing, at least two (2) Business Days prior to the Submission Deadline, to the Bidder who requested approval of the substitute.
- B7.6.1 The Contract Administrator will issue an Addendum, disclosing the approved materials, equipment, methods and products to all potential Bidders. The Bidder requesting and obtaining the approval of a substitute shall be responsible for disseminating information regarding the approval to any person or persons they wish to inform.
- B7.7 If the Contract Administrator approves a substitute as an “approved equal”, any Bidder may use the approved equal in place of the specified item.
- B7.8 If the Contract Administrator approves a substitute as an “approved alternative”, any Bidder bidding that approved alternative may base their Total Bid Price upon the specified item but may also indicate an alternative price based upon the approved alternative. Such alternatives will be evaluated in accordance with B18.
- B7.9 No later claim by the Contractor for an addition to the Total Bid Price because of any other changes in the Work necessitated by the use of an approved equal or an approved alternative will be considered.

B8. BID COMPONENTS

- B8.1 The Bid shall consist of the following components:
- (a) Form A: Bid/Proposal;
 - (b) Form B: Prices;
 - (c) Form G1: Bid Bond and Agreement to Bond.
- B8.2 All components of the Bid shall be fully completed or provided, and submitted by the Bidder no later than the Submission Deadline, with all required entries made clearly and completely.
- B8.3 The Bid shall be submitted electronically through MERX at www.merx.com.
- B8.3.1 Bids will **only** be accepted electronically through MERX.
- B8.4 Bidders are advised that inclusion of terms and conditions inconsistent with the Tender document, including the General Conditions, will be evaluated in accordance with B18.1(a).

B9. BID

- B9.1 The Bidder shall complete Form A: Bid/Proposal, making all required entries.
- B9.2 Paragraph 2 of Form A: Bid/Proposal shall be completed in accordance with the following requirements:
- (a) if the Bidder is a sole proprietor carrying on business in their own name, their name shall be inserted;
 - (b) if the Bidder is a partnership, the full name of the partnership shall be inserted;
 - (c) if the Bidder is a corporation, the full name of the corporation shall be inserted;
 - (d) if the Bidder is carrying on business under a name other than their own, the business name and the name of every partner or corporation who is the owner of such business name shall be inserted.
- B9.2.1 If a Bid is submitted jointly by two or more persons, each and all such persons shall identify themselves in accordance with B9.2.

- B9.3 In Paragraph 3 of Form A: Bid/Proposal, the Bidder shall identify a contact person who is authorized to represent the Bidder for purposes of the Bid.
- B9.4 Paragraph 13 of Form A: Bid/Proposal shall be signed in accordance with the following requirements:
- (a) if the Bidder is a sole proprietor carrying on business in their own name, it shall be signed by the Bidder;
 - (b) if the Bidder is a partnership, it shall be signed by the partner or partners who have authority to sign for the partnership;
 - (c) if the Bidder is a corporation, it shall be signed by their duly authorized officer or officers;
 - (d) if the Bidder is carrying on business under a name other than their own, it shall be signed by the registered owner of the business name, or by the registered owner's authorized officials if the owner is a partnership or a corporation.
- B9.4.1 The name and official capacity of all individuals signing Form A: Bid/Proposal should be entered below such signatures.
- B9.5 If a Bid is submitted jointly by two or more persons, the word "Bidder" shall mean each and all such persons, and the undertakings, covenants and obligations of such joint Bidders in the Bid and the Contract, when awarded, shall be both joint and several.

B10. PRICES

- B10.1 The Bidder shall state a price in Canadian funds for each item of the Work identified on Form B: Prices.
- B10.1.1 Prices stated on Form B: Prices shall not include any costs which may be incurred by the Contractor with respect to any applicable funding agreement obligations as outlined in C24. Any such costs shall be determined in accordance with C24.
- B10.2 The quantities listed on Form B: Prices are to be considered approximate only. The City will use said quantities for the purpose of comparing Bids.
- B10.3 The quantities for which payment will be made to the Contractor are to be determined by the Work actually performed and completed by the Contractor, to be measured as specified in the applicable Specifications.
- B10.4 Payments to Non-Resident Contractors are subject to Non-Resident Withholding Tax pursuant to the Income Tax Act (Canada).
- B10.5 The Bidder shall enter the Total Bid Price from Form B: Prices into the Total Bid Price field in MERX.
- B10.5.1 Bidders are advised that the calculation indicated in B18.4 will prevail over the Total Bid Price entered in MERX.

B11. DISCLOSURE

- B11.1 Various Persons provided information or services with respect to this Work. In the City's opinion, this relationship or association does not create a conflict of interest because of this full disclosure. Where applicable, additional material available as a result of contact with these Persons is listed below.
- B11.2 The Persons are:
- (a) Prima Pipe Solutions Ltd. – Constructability.

B12. CONFLICT OF INTEREST AND GOOD FAITH

- B12.1** Further to C3.3, Bidders, by responding to this Tender, declare that no Conflict of Interest currently exists, or is reasonably expected to exist in the future.
- B12.2** Conflict of Interest means any situation or circumstance where a Bidder or employee of the Bidder proposed for the Work has:
- (a) other commitments;
 - (b) relationships;
 - (c) financial interests; or
 - (d) involvement in ongoing litigation;
- that could or would be seen to:
- (i) exercise an improper influence over the objective, unbiased and impartial exercise of the independent judgment of the City with respect to the evaluation of Bids or award of the Contract; or
 - (ii) compromise, impair or be incompatible with the effective performance of a Bidder's obligations under the Contract;
- (e) has contractual or other obligations to the City that could or would be seen to have been compromised or impaired as a result of their participation in the Tender process or the Work; or
 - (f) has knowledge of confidential information (other than confidential information disclosed by the City in the normal course of the Tender process) of strategic and/or material relevance to the Tender process or to the Work that is not available to other bidders and that could or would be seen to give that Bidder an unfair competitive advantage.
- B12.3** In connection with their Bid, each entity identified in B12.2 shall:
- (a) avoid any perceived, potential or actual Conflict of Interest in relation to the procurement process and the Work;
 - (b) upon discovering any perceived, potential or actual Conflict of Interest at any time during the Tender process, promptly disclose a detailed description of the Conflict of Interest to the City in a written statement to the Contract Administrator; and
 - (c) provide the City with the proposed means to avoid or mitigate, to the greatest extent practicable, any perceived, potential or actual Conflict of Interest and shall submit any additional information to the City that the City considers necessary to properly assess the perceived, potential or actual Conflict of Interest.
- B12.4** Without limiting B12.3, the City may, in their sole discretion, waive any and all perceived, potential or actual Conflicts of Interest. The City's waiver may be based upon such terms and conditions as the City, in their sole discretion, requires to satisfy itself that the Conflict of Interest has been appropriately avoided or mitigated, including requiring the Bidder to put into place such policies, procedures, measures and other safeguards as may be required by and be acceptable to the City, in their sole discretion, to avoid or mitigate the impact of such Conflict of Interest.
- B12.5** Without limiting B12.3, and in addition to all contractual or other rights or rights at law or in equity or legislation that may be available to the City, the City may, in their sole discretion:
- (a) disqualify a Bidder that fails to disclose a perceived, potential or actual Conflict of Interest of the Bidder or any of their employees proposed for the Work;
 - (b) require the removal or replacement of any employees proposed for the Work that has a perceived, actual or potential Conflict of Interest that the City, in their sole discretion, determines cannot be avoided or mitigated;
 - (c) disqualify a Bidder or employees proposed for the Work that fails to comply with any requirements prescribed by the City pursuant to B12.4 to avoid or mitigate a Conflict of Interest; and

- (d) disqualify a Bidder if the Bidder, or one of their employees proposed for the Work, has a perceived, potential or actual Conflict of Interest that, in the City's sole discretion, cannot be avoided or mitigated, or otherwise resolved.

B12.6 The final determination of whether a perceived, potential or actual Conflict of Interest exists shall be made by the City, in their sole discretion.

B13. QUALIFICATION

B13.1 The Bidder shall:

- (a) undertake to be in good standing under The Corporations Act (Manitoba), or properly registered under The Business Names Registration Act (Manitoba), or otherwise properly registered, licensed or permitted by law to carry on business in Manitoba; and
- (b) be financially capable of carrying out the terms of the Contract; and
- (c) have all the necessary experience, capital, organization, and equipment to perform the Work in strict accordance with the terms and provisions of the Contract.

B13.2 The Bidder and any proposed Subcontractor (for the portion of the Work proposed to be subcontracted to them) shall:

- (a) be responsible and not be suspended, debarred or in default of any obligations to the City. A list of suspended or debarred individuals and companies is available on the Information Connection page at The City of Winnipeg, Corporate Finance, Purchasing Division website at <https://www.winnipeg.ca/matmgt/Templates/files/debar.pdf>

B13.3 The Bidder and/or any proposed Subcontractor (for the portion of the Work proposed to be subcontracted to them) shall:

- (a) have successfully carried out work similar in nature, scope and value to the Work;
- (b) be fully capable of performing the Work required to be in strict accordance with the terms and provisions of the Contract;
- (c) have a written workplace safety and health program if required pursuant to The Workplace Safety and Health Act (Manitoba);
- (d) have completed the Accessible Customer Service online training required by the Accessibility for Manitobans Act (AMA) (see B13.9 and C6.19); and
- (e) upon request of the Contract Administrator, provide the Security Clearances in accordance with PART F - Security Clearances.

B13.4 Further to B13.3(a) upon request the Bidder and/or any proposed Subcontractor completing supply and installation of the Pulled in Place Liner shall demonstrate the following specific qualifications in accordance with B13.10:

- (a) Three (3) examples of successful Flexible Fabric Reinforced Pipe (FFRP) water Liner installations, with a minimum nominal diameter of 300 millimeters in the past five (5) years.
- (b) One (1) example of a potable water (NSF-61) FFRP Flexible Liner installation.

B13.5 Further to B13.3(a) upon request the Bidder shall demonstrate the following specific qualifications for key project personnel (proposed project manager and site superintendent) in accordance with B13.10:

- (a) Three (3) examples of successful FFRP Liner installations with a minimum nominal diameter of 300 millimeters in the past five (5) years.

B13.6 Further to B13.4 and B13.5 pipeline cleaning and preparation shall be undertaken by or under the direct supervision of the qualified pulled in place liner installer and pre-qualified key project personnel as defined in B13.3 and B13.4.

- B13.7 The Bidder shall submit, within five (5) Business Days of a request by the Contract Administrator, proof satisfactory to the Contract Administrator of the following for the lining systems proposed for use on this project:
- (a) Provide the following for the proposed FFRP Liner system:
 - (i) Manufacturer;
 - (ii) Proposed liner variant or product classification; and
 - (iii) Proposed design material properties and dimensions.
 - (b) For the proposed lining system demonstrate the following:
 - (i) A minimum of three (3) successful projects, one (1) of which for potable water (NSF-61), within the last 5 years.
- B13.8 Further to B13.3(c), the Bidder shall, within five (5) Business Days of a request by the Contract Administrator, provide proof satisfactory to the Contract Administrator that the Bidder/Subcontractor has a workplace safety and health program meeting the requirements of The Workplace Safety and Health Act (Manitoba), by providing:
- (a) Written confirmation of a safety and health certification meeting SAFE Work Manitoba's SAFE Work Certified Standard (e.g., COR™ and SECOR™) in the form of:
 - (i) a copy of their valid Manitoba COR certificate and Letter of Good Standing (or Manitoba equivalency) as issued under the Certificate of Recognition (COR) Program administered by the Construction Safety Association of Manitoba or by the Manitoba Heavy Construction Association's WORKSAFELY™ COR™ Program; or
 - (ii) a copy of their valid Manitoba SECOR™ certificate and Letter of Good Standing (or Manitoba equivalency) as issued under the Small Employer Certificate of Recognition Program (SECOR™) administered by the Construction Safety Association of Manitoba or by the Manitoba Heavy Construction Association's WORKSAFELY™ COR™ Program; or
 - (b) a report or letter to that effect from an independent reviewer acceptable to the City. A list of acceptable reviewers and the review template are available at <http://www.winnipeg.ca/matmgt/Safety/default.stm>.
- B13.9 Further to B13.3(d), the Bidder acknowledges that they and all Subcontractors have obtained training required by the Accessibility for Manitobans Act (AMA) available at <https://accessibilitymb.ca/resources-events-and-training/online-training.html> for anyone that may have any interaction with the public on behalf of the City of Winnipeg.
- B13.10 The Bidder shall submit, within three (3) Business Days of a request by the Contract Administrator, proof satisfactory to the Contract Administrator of the qualifications of the Bidder and of any proposed Subcontractor and key project personnel. The Bidder shall utilize Form L: Contractor Experience or provide similar project sheets containing all information identified in Form L: Contractor Experience. Experience provided for key project personnel must be accompanied by a project specific submission for each referenced project, complete with all identified reference contact information.
- B13.11 The Bidder shall provide, on the request of the Contract Administrator, full access to any of the Bidder's equipment and facilities to confirm, to the Contract Administrator's satisfaction, that the Bidder's equipment and facilities are adequate to perform the Work.
- B14. BID SECURITY**
- B14.1 The Bidder shall include in their Bid Submission bid security in the form of a digital bid bond, in the amount of at least ten percent (10%) of the Total Bid Price, and agreement to bond of a company registered to conduct the business of a surety in Manitoba, in Form G1: Bid Bond and Agreement to Bond, available: <https://www.winnipeg.ca/media/4929/>.
- B14.2 Bid security shall be submitted in a digital format meeting the following criteria:
- (a) The version submitted by the Bidder must have valid digital signatures and seals.

- (b) The version submitted by the Bidder must be verifiable by the City with respect to the totality and wholeness of the bond form, including: the content; all digital signatures and digital seals; with the surety company, or an approved verification service provider of the surety company.
- (c) The version submitted must be viewable, printable and storable in standard electronic file formats compatible with the City, and in a single file. Allowable formats include pdf.
- (d) The verification may be conducted by the City immediately or at any time during the life of the bond and at the discretion of the City with no requirement for passwords or fees.
- (e) The results of the verification must provide a clear, immediate and printable indication of pass or fail regarding B14.2(a).

B14.3 Bonds failing the verification process will not be considered to be valid and the bid shall be determined to be non-responsive in accordance with B18.1(a).

B14.4 Bonds passing the verification process will be treated as original and authentic.

B14.4.1 If the Bidder submits alternative bids, the bid security shall be in the amount of the specified percentage of the highest Total Bid Price submitted.

B14.5 The bid security of the successful Bidder and the next two lowest evaluated responsive and responsible Bidders will be released by the City when a Contract for the Work has been duly formed with the successful Bidder and the contract securities are furnished as provided herein. The bid securities of all other Bidders will be released when a Contract is awarded.

B14.6 The bid securities of all Bidders will be released by the City as soon as practicable following notification by the Contract Administrator to the Bidders that no award of Contract will be made pursuant to the Tender.

B15. OPENING OF BIDS AND RELEASE OF INFORMATION

B15.1 Bids will not be opened publicly.

B15.2 Following the Submission Deadline, the names of the Bidders and their Total Bid Prices (unevaluated and pending review and verification of conformance with requirements) will be available on the MERX website at www.merx.com.

B15.3 After award of Contract, the name(s) of the successful Bidder(s) and their Contract amount(s) will be available on the MERX website at www.merx.com.

B15.4 The Bidder is advised that any information contained in any Bid may be released if required by The Freedom of Information and Protection of Privacy Act (Manitoba), by other authorities having jurisdiction, or by law or by City policy or procedures (which may include access by members of City Council).

B15.4.1 To the extent permitted, the City shall treat as confidential information, those aspects of a Bid Submission identified by the Bidder as such in accordance with and by reference to Part 2, Section 17 or Section 18 or Section 26 of The Freedom of Information and Protection of Privacy Act (Manitoba), as amended.

B16. IRREVOCABLE BID

B16.1 The Bid(s) submitted by the Bidder shall be irrevocable for the time period specified in Paragraph 11 of Form A: Bid/Proposal.

B16.2 The acceptance by the City of any Bid shall not release the Bids of the next two lowest evaluated responsive Bidders and these Bidders shall be bound by their Bids on such Work until a Contract for the Work has been duly formed and the contract securities have been furnished as herein provided, but any Bid shall be deemed to have lapsed unless accepted within the time period specified in Paragraph 11 of Form A: Bid/Proposal.

B17. WITHDRAWAL OF BIDS

B17.1 A Bidder may withdraw their Bid without penalty at any time prior to the Submission Deadline.

B18. EVALUATION OF BIDS

B18.1 Award of the Contract shall be based on the following bid evaluation criteria:

- (a) compliance by the Bidder with the requirements of the Tender, or acceptable deviation therefrom (pass/fail);
- (b) qualifications of the Bidder and the Subcontractors, if any, pursuant to B13 (pass/fail);
- (c) Total Bid Price;
- (d) economic analysis of any approved alternative pursuant to B7.

B18.2 Further to B18.1(a), the Award Authority may reject a Bid as being non-responsive if the Bid is incomplete, obscure or conditional, or contains additions, deletions, alterations or other irregularities. The Award Authority may reject all or any part of any Bid, or waive technical requirements or minor informalities or irregularities, if the interests of the City so require.

B18.3 Further to B18.1(b), the Award Authority shall reject any Bid submitted by a Bidder who does not demonstrate, in their Bid or in other information required to be submitted, that they are qualified.

B18.4 Further to B18.1(c), the Total Bid Price shall be the sum of the quantities multiplied by the unit prices for each item shown on Form B: Prices.

B18.4.1 Further to B18.1(a), in the event that a unit price is not provided on Form B: Prices, the City may determine the unit price by dividing the Amount (extended price) by the approximate quantity, for the purposes of evaluation and payment.

B18.4.2 Where MRST is shown on Form B as a separate line item, if that Line item is not completed, the MRST shall be considered to be included in the Total Bid Price.

B18.4.3 Bidders are advised that the calculation indicated in B18.4 will prevail over the Total Bid Price entered in MERX.

B19. AWARD OF CONTRACT

B19.1 The City will give notice of the award of the Contract or will give notice that no award will be made.

B19.2 The City will have no obligation to award a Contract to a Bidder, even though one or all of the Bidders are determined to be qualified, and the Bids are determined to be responsive.

B19.2.1 Without limiting the generality of B19.2, the City will have no obligation to award a Contract where:

- (a) the prices exceed the available City funds for the Work;
- (b) the prices are materially in excess of the prices received for similar work in the past;
- (c) the prices are materially in excess of the City's cost to perform the Work, or a significant portion thereof, with their own forces;
- (d) only one Bid is received; or
- (e) in the judgment of the Award Authority, the interests of the City would best be served by not awarding a Contract.

B19.3 If funding for the Work is provided to the City of Winnipeg by the Government of Manitoba and/or the Government of Canada, Bidders are advised that the terms of C24 shall immediately take effect upon confirmation of such funding, regardless of when funding is confirmed.

- B19.4 Where an award of Contract is made by the City, the award shall be made to the qualified Bidder submitting the lowest evaluated responsive Bid, in accordance with B18.
- B19.4.1 Following the award of contract, a Bidder will be provided with information related to the evaluation of their Bid upon written request to the Contract Administrator.

PART C - GENERAL CONDITIONS

C0. GENERAL CONDITIONS

- C0.1 The *General Conditions for Construction* (Revision 2025-11-01) are applicable to the Work of the Contract.
- C0.1.1 The *General Conditions for Construction* are available on the Information Connection page at The City of Winnipeg, Corporate Finance, Purchasing Division website at http://www.winnipeg.ca/matmgt/gen_cond.stm
- C0.2 A reference in the Tender to a section, clause or subclause with the prefix “C” designates a section, clause or subclause in the *General Conditions for Construction*.

PART D - SUPPLEMENTAL CONDITIONS

GENERAL

D1. GENERAL CONDITIONS

- D1.1 In addition to the *General Conditions for Construction*, these Supplemental Conditions are applicable to the Work of the Contract.

D2. SCOPE OF WORK

- D2.1 The Work to be done under the Contract shall consist of the rehabilitation of the Goulet-Doucet water main river crossing under the Seine River using a pulled-in-place Flexible Fabric Reinforced Pipe (FFRP) liner.

- D2.2 The major components of the Work are as follows:

- (a) Mobilization and site access;
- (b) Pipeline and inspection launch wye access excavations;
- (c) Disassembly and removal of launch wye and transition couplings;
- (d) Pipe dewatering as required to complete the work;
- (e) Pipeline cleaning, preparation, and inspection;
- (f) Rehabilitation of the pipeline using a FFRP liner;
- (g) Post lining inspection and pressure testing;
- (h) Installation of end seals and termination couplers at both access pits; and
- (i) Site restoration.

- D2.3 The following shall apply to the Work:

- (a) City of Winnipeg Green Building Policy: New City-Owned Buildings and major additions;
<http://clkapps.winnipeg.ca/DMIS/DocExt/ViewDoc.asp?DocumentTypeId=2&DocId=5989>
- (b) Universal Design Policy;
<http://clkapps.winnipeg.ca/DMIS/DocExt/ViewDoc.asp?DocumentTypeId=2&DocId=3604>

D3. DEFINITIONS

- D3.1 When used in this Tender:

- (a) “**ANSI**” means American National Standards Institute.
- (b) “**ASTM**” means American Society for Testing and Materials.
- (c) “**AWWA**” means American Water Works Association.
- (d) “**CSA**” means Canadian Standards Association.
- (e) “**FFRP**” means Flexible Fabric-Reinforced Pipe, as defined as “Pulled in Place Liner”.
- (f) “**Host Pipe**” means the existing sewer or water main intended for rehabilitation through the installation of a pulled in place flexible liner.
- (g) “**ISO**” means International Organization for Standardization.
- (h) “**NSF**” means NSF International.
- (i) “**Pulled in Place Liner**” means a reinforced flexible tube capable of supporting all internal pressures, which is installed within an existing water main.

D4. CONTRACT ADMINISTRATOR

- D4.1 The Contract Administrator is AECOM Canada ULC, represented by:
Matthew Krentz, C.E.T.
Municipal Technologist

Telephone No. 431 336 5586
Email Address matthew.krentz@aecom.com

- D4.2 At the pre-construction meeting, Mr. Krentz will identify additional personnel representing the Contract Administrator and their respective roles and responsibilities for the Work.

D5. CONTRACTOR'S SUPERVISOR

- D5.1 At the pre-construction meeting, the Contractor shall identify their designated supervisor and any additional personnel representing the Contractor and their respective roles and responsibilities for the Work.

D6. FURNISHING OF DOCUMENTS

- D6.1 Upon award of the Contract, the Contractor will be provided with 'issued for construction' Contract Documents electronically, including Drawings in PDF format only.

SUBMISSIONS

D7. AUTHORITY TO CARRY ON BUSINESS

- D7.1 The Contractor shall be in good standing under The Corporations Act (Manitoba), or properly registered under The Business Names Registration Act (Manitoba), or otherwise properly registered, licensed or permitted by law to carry on business in Manitoba, or if the Contractor does not carry on business in Manitoba, in the jurisdiction where the Contractor does carry on business, throughout the term of the Contract, and shall provide the Contract Administrator with evidence thereof upon request.

D8. SAFE WORK PLAN

- D8.1 The Contractor shall provide the Contract Administrator with a Safe Work Plan at least five (5) Business Days prior to the commencement of any Work on the Site.
- D8.2 The Safe Work Plan should be prepared and submitted in the format shown in the City's template which is available on the Information Connection page at The City of Winnipeg, Corporate Finance, Purchasing Division website at <http://www.winnipeg.ca/matmgt/Safety/default.stm>
- D8.3 Notwithstanding B13.4 at any time during the term of the Contract, the City may, at their sole discretion and acting reasonably, require an updated COR Certificate or Annual Letter of good Standing. A Contractor, who fails to provide a satisfactory COR Certificate or Annual Letter of good Standing, will not be permitted to continue to perform any Work.

D9. INSURANCE

- D9.1 The Contractor shall provide and maintain the insurance coverage:
- (a) commercial general liability insurance, in the amount of at least two million dollars (\$2,000,000.00) inclusive, with The City of Winnipeg added as an additional insured, with a cross-liability clause, contractual liability, unlicensed motor vehicle liability (contractor's equipment), non-owned automobile liability and products and completed operations

endorsement, to remain in place at all times during the performance of the Work and throughout the Warranty period.

- (b) if applicable, Automobile Liability Insurance covering all motor vehicles, owned and operated and used or to be used by the Contractor directly or indirectly in the performance of the Work. The Limit of Liability shall not be less than \$2,000,000 inclusive for loss or damage including personal injuries and death resulting from any one accident or occurrence.
- (c) an all risks Installation Floater carrying adequate limits to cover all machinery, equipment, supplies and/or materials intended to enter into and form part of any installation.

D9.2 Deductibles shall be borne by the Contractor.

D9.3 All policies shall be taken out with insurers licensed to carry on business in the Province of Manitoba.

D9.4 The Contractor shall provide:

- (a) The certificate of insurance, in a form satisfactory to the Supervisor of Insurance, to:

The City of Winnipeg
Risk Management
Insurance Section
185 King Street, 3rd Floor
Winnipeg, MB R3B 1J1

- (b) The Contract Administrator with a copy of the certificate of insurance.

At least two (2) Business Days of notification of the award of the Contract prior to the commencement of any Work on the Site.

D9.5 The Contractor shall not cancel, materially alter, or cause each policy to lapse without providing at least thirty (30) Calendar Days prior written notice to the Supervisor of Insurance.

D10. CONTRACT SECURITY

D10.1 The Contractor shall provide and maintain the performance bond and the labour and material payment bond until the expiration of the warranty period in the form of:

- (a) a performance bond of a company registered to conduct the business of a surety in Manitoba, in the amount of fifty percent (50%) of the Contract Price; and
- (b) labour and material payment bond of a company registered to conduct the business of a surety in Manitoba, in an amount equal to fifty percent (50%) of the Contract Price.

D10.1.1 Bonds are available at:

- (a) Performance Bond <https://www.winnipeg.ca/media/4928/>
 - (i) Performance Bond – Schedule A - Form of Notice
<https://www.winnipeg.ca/media/4831/>
 - (ii) Performance Bond – Schedule B – Surety's Acknowledgement
<https://www.winnipeg.ca/media/4832/>
 - (iii) Performance Bond – Schedule C – Surety's Position
<https://www.winnipeg.ca/media/4833/>
- (b) Labour & Material Payment Bond <https://www.winnipeg.ca/media/4930/>
 - (i) L&M Bond – Schedule A – Notice of Claim
<https://www.winnipeg.ca/media/4834/>
 - (ii) L&M Bond – Schedule B – Acknowledgement of a Notice
<https://www.winnipeg.ca/media/4835/>

(iii) L&M Bond – Schedule C – Surety's Position

<https://www.winnipeg.ca/media/4836/>

- D10.1.2 Where the contract security is a performance bond, it may be submitted in hard copy or digital format. If submitted in digital format the contract security must meet the following criteria:
- (a) the version submitted by the Contractor must have valid digital signatures and seals.
 - (b) the version submitted by the Contractor must be verifiable by the City with respect to the totality and wholeness of the bond form, including: the content; all digital signatures and digital seals; with the surety company, or an approved verification service provider of the surety company.
 - (c) the version submitted must be viewable, printable and storable in standard electronic file formats compatible with the City, and in a single file. Allowable formats include pdf.
 - (d) the verification may be conducted by the City immediately or at any time during the life of the bond and at the discretion of the City with no requirement for passwords or fees.
 - (e) the results of the verification must provide a clear, immediate and printable indication of pass or fail regarding D10.1(b).
- D10.1.3 Digital bonds failing the verification process will not be considered to be valid and may be determined to be an event of default in accordance with C18.1. If a digital bond fails the verification process, the Contractor may provide a replacement bond (in hard copy or digital format) within seven (7) Calendar Days of the City's request or within such greater period of time as the City in their discretion, exercised reasonably, allows.
- D10.1.4 Digital bonds passing the verification process will be treated as original and authentic.
- D10.2 The Contractor shall provide:
- (a) the required Contract Security to:

The City of Winnipeg
Legal Services Department
185 King Street, 3rd Floor
Winnipeg, MB R3B 1J1
 - (b) The Contract Administrator with copies of the required Contract Security.

within seven (7) Calendar Days of notification of the award of the Contract and prior to the commencement of any Work on the Site.
- D10.3 The Contractor shall, as soon as practicable after entering into a contract with a Subcontractor:
- (a) give the Subcontractor written notice of the existence of the labour and material payment bond in D10.1(b); and
 - (b) post a notice of the bond and/or a copy of that bond in a conspicuous location at the Site of the Work.
- D11. SUBCONTRACTOR LIST**
- D11.1 The Contractor shall provide the Contract Administrator with a complete list of the Subcontractors whom the Contractor proposes to engage (Form J: Subcontractor List) at least two (2) Business Days prior to the commencement of any Work on the Site.

D12. EQUIPMENT LIST

- D12.1 The Contractor shall provide the Contract Administrator with a complete list of the equipment which the Contractor proposes to utilize (Form K: Equipment List) at least two (2) Business Days prior to the commencement of any Work on the Site but in no event later than the date specified in C4.1 for the return of the executed Contract Documents, if applicable.

D13. DETAILED WORK SCHEDULE

- D13.1 The Contractor shall provide the Contract Administrator with a detailed work schedule at least two (2) Business Days prior to the commencement of any Work on the Site but in no event later than the date specified in C4.1 for the return of the executed Contract Documents if applicable.
- D13.2 The detailed work schedule shall consist of the following:
- (a) a critical path method (C.P.M.) schedule for the Work; and
 - (b) a Gantt chart for the Work based on the C.P.M. schedule;
- all acceptable to the Contract Administrator.
- D13.3 Further to D13.2(a), the C.P.M. schedule shall clearly identify the start and completion dates of all of the following activities/tasks making up the Work as well as showing those activities/tasks on the critical path.
- (a) Mobilization(s) to site;
 - (b) Launch wye disassembly;
 - (c) Water main cleaning and prep work;
 - (d) Installation of FFRP liner;
 - (e) Launch wye reassembly;
 - (f) Chamber pipe rehabilitation;
 - (g) Leakage testing;
 - (h) Pipeline disinfection;
 - (i) Restoration;
 - (j) Substantial Performance;
 - (k) Total Performance; and
 - (l) Planned breaks in the performed work pursuant to D16.7.
- D13.4 Further to D13.2(b), the Gantt chart shall show the time on a weekly basis, required to carry out the Work of each trade, or specification division. The time shall be on the horizontal axis, and the type of trade shall be on the vertical axis.

SCHEDULE OF WORK

D14. COMMENCEMENT

- D14.1 The Contractor shall not commence any Work until they are in receipt of an award letter from the Award Authority authorizing the commencement of the Work.
- D14.2 The Contractor shall not commence any Work on the Site until:
- (a) the Contract Administrator has confirmed receipt and approval of:
 - (i) evidence of authority to carry on business specified in D7;
 - (ii) evidence of the workers compensation coverage specified in C6.17;
 - (iii) the Safe Work Plan specified in D8;
 - (iv) evidence of the insurance specified in D9;

- (v) evidence of the contract security specified in D10;
 - (vi) the Subcontractor list specified in D11;
 - (vii) the equipment list specified in D12;
 - (viii) the detailed work schedule specified in D13, and
 - (ix) the direct deposit application form specified in C12.20.
- (b) the Contractor has attended a pre-construction meeting with the Contract Administrator, or the Contract Administrator has waived the requirement for a pre-construction meeting.

D14.3 The City intends to award this Contract by August 21, 2026.

D14.3.1 If the actual date of award is later than the intended date, the dates specified for Critical Stages, Substantial Performance, and Total Performance will be adjusted by the difference between the aforementioned intended and actual dates.

D15. SCHEDULE RESTRICTIONS

D15.1 Water Main Shutdowns

- D15.1.1 Water main shutdowns will be scheduled based on a number of factors including routine maintenance and repair work, water demand, weather and other factors. The City shall endeavour to make the specified time periods available to the Contractor to schedule their Work requiring isolation and draining of various water mains, without limiting the City's control over the operation of the regional water system to complete other work, maintain adequate system service and maintain the integrity of the infrastructure. The City shall reserve the right to cancel and/or delay these schedule dates at any time, due to any circumstances that could adversely affect water supply system operation, including but not limited to high water demand, abnormal weather, failures of related water system components and/or security concerns.
- D15.1.2 The Contractor shall provide notice to the Contract Administrator in writing, a minimum of ten (10) Business Days prior to requiring the shutdown. The City will endeavour to schedule the shutdown as requested, pursuant to D15.1.1.
- D15.1.3 Water main shutdowns and disassembly of water main components will not be permitted until all required submissions and protocols have been reviewed and accepted by the Contract Administrator and City. The Contractor should allow for a ten (10) Business Day review period by the City once accepted by the Contract Administrator.
- D15.1.4 The water main shutdown will only be permitted between the September Long Weekend and the May Long Weekend of a given year (September 8, 2026 to May 21, 2027).
- D15.1.5 The Goulet-Doucet water main shall be handed over to the City ready for return to service within thirty (35) Calendar Days of shutdown and upon commencement of the Work. Calendar Days will be counted starting the next Calendar Day after isolation by City forces and notification for the Contractor to commence with draining and work.

D16. WORKING DAYS

- D16.1 Further to C1.1(xx), the Contract Administrator's determination of whether or not atmospheric and Site conditions are such that a Working Day is deemed to have elapsed may be based at one time on one type of work while at another time a Working Day may be based on another type of work. When more than one type of major work is involved, the quantity of equipment that must be able to work in order to meet the requirements of a Working Day may vary considerably from that specified in the General Conditions.
- D16.2 In the event that incidental work is behind schedule which, in the opinion of the Contract Administrator, should have been or could have been carried out by the Contractor in conjunction with or immediately following work of a major type, the City hereby reserves the right to charge Working Days on the incidental work until such time as it is up to schedule.

- D16.3 When the major type of work involves restoration of the site to the condition it was prior to rainfall, Working Days shall not be charged.
- D16.4 The Contract Administrator will furnish the Contractor with a daily record for each major type of work showing various information concerning the equipment, the time it worked, could have worked and Working Days charged. This report is to be signed each day by an authorized representative of the Contractor.
- D16.5 Notwithstanding C1.1(tt) if the Contractor chooses to work on a Saturday, Sunday, or statutory or civic holiday and is able to complete at least seven (7) hours of work during the period between 7:00 a.m. Winnipeg time or the time the Contractor's operations normally commence, whichever is earlier, and 7:00 p.m. Winnipeg time the day shall be considered a Working Day.
- D16.6 Working Days shall be incurred by the Contractor for every Working Day as defined herein. Working days shall be incurred starting on the date the Contractor commences work on site, or the date of commencement identified on the Contractors submitted schedule (D13), whichever occurs first.
- D16.7 Planned Breaks in Construction
- (a) The Contractor will be permitted planned suspensions of on-site construction to facilitate crew breaks and seasonal weather breaks where contract work is not completed. Working Days will not be incurred during these periods.
 - (b) All planned breaks in on-site construction activity must be clearly identified in the Contractors detailed construction schedule (D13) and notice must be provided in writing a minimum of two (2) Business Days prior to the planned suspension of work. Failure of the Contractor to provide adequate notice, in the opinion of the Contract Administrator, may result in Working Days being incurred.
 - (c) During these periods, the Site must be made secure, roadways completely operational, and all existing facilities and work in progress be protected from weather or other potentially harmful effects.
 - (d) Upon recommencement of site activities after long breaks (greater than 1 month), the Contractor shall provide an updated schedule and notification to the Contract Administrator a minimum of five (5) Business Days prior to recommencement of work.
 - (e) No changes to the Contract completion dates resulting from suspension of contract time as described herein will be considered.
- D16.8 No additional costs associated with demobilization and remobilization resulting from suspension of contract time will be considered.

D17. CRITICAL STAGES

- D17.1 The Contractor shall achieve critical stages of the Work in accordance with the following requirements:
- (a) Water main Shutdown – Shutdown for rehabilitation of the crossing shall be completed within thirty (35) Calendar Days as measured in D15.

D18. SUBSTANTIAL PERFORMANCE

- D18.1 The Contractor shall achieve Substantial Performance within thirty (30) consecutive Working Days of the commencement of the Work as specified in D14, or by November 30, 2026, whichever comes first.
- D18.2 When the Contractor considers the Work to be substantially performed, the Contractor shall arrange, attend and assist in the inspection of the Work with the Contract Administrator for purposes of verifying Substantial Performance. Any defects or deficiencies in the Work noted during that inspection shall be remedied by the Contractor at the earliest possible instance and the Contract Administrator notified so that the Work can be reinspected.

- D18.3 The date on which the Work has been certified by the Contract Administrator as being substantially performed to the requirements of the Contract through the issue of a certificate of Substantial Performance is the date on which Substantial Performance has been achieved.

D19. TOTAL PERFORMANCE

- D19.1 The Contractor shall achieve Total Performance within forty (40) consecutive Working Days of the commencement of the Work as specified in D14, or by June 25, 2027.
- D19.2 When the Contractor or the Contract Administrator considers the Work to be totally performed, the Contractor shall arrange, attend and assist in the inspection of the Work with the Contract Administrator for purposes of verifying Total Performance. Any defects or deficiencies in the Work noted during that inspection shall be remedied by the Contractor at the earliest possible instance and the Contract Administrator notified so that the Work can be reinspected.
- D19.3 The date on which the Work has been certified by the Contract Administrator as being totally performed to the requirements of the Contract through the issue of a certificate of Total Performance is the date on which Total Performance has been achieved.

D20. LIQUIDATED DAMAGES

- D20.1 If the Contractor fails to achieve, Critical Stages, Substantial Performance or Total Performance in accordance with the Contract by the days fixed herein for same, the Contractor shall pay the City the following amounts per Working Day for each and every Working Day following the days fixed herein for same during which such failure continues:
- (a) Substantial Performance – Two Thousand Three Hundred dollars (\$2300);
 - (b) Total Performance – One Thousand One Hundred dollars (\$1100).
- D20.2 The amounts specified for liquidated damages in D20.1 are based on a genuine pre-estimate of the City's losses in the event that the Contractor does not achieve, Critical Stages, Substantial Performance or Total Performance by the days fixed herein for same.
- D20.3 The City may reduce any payment to the Contractor by the amount of any liquidated damages assessed.

CONTROL OF WORK

D21. JOB MEETINGS

- D21.1 Regular weekly job meetings will be held at the Site. These meetings shall be attended by a minimum of one representative of the Contract Administrator, one representative of the City and one representative of the Contractor. Each representative shall be a responsible person capable of expressing the position of the Contract Administrator, the City and the Contractor respectively on any matter discussed at the meeting including the Work schedule and the need to make any revisions to the Work schedule. The progress of the Work will be reviewed at each of these meetings.
- D21.2 The Contract Administrator reserves the right to cancel any job meeting or call additional job meetings whenever they deem it necessary.

D22. PRIME CONTRACTOR – THE WORKPLACE SAFETY AND HEALTH ACT (MANITOBA)

- D22.1 Further to C6.27, the Contractor shall be the Prime Contractor and shall serve as, and have the duties of the Prime Contractor in accordance with The Workplace Safety and Health Act (Manitoba).

D23. THE WORKPLACE SAFETY AND HEALTH ACT (MANITOBA) – QUALIFICATIONS

- D23.1 Further to B13.4, the Contractor/Subcontractor must, throughout the term of the Contract, have a Workplace Safety and Health Program meeting the requirements of The Workplace Safety and Health Act (Manitoba). At any time during the term of the Contract, the City may, at their sole discretion and acting reasonably, require updated proof of compliance, as set out in B13.4.

MEASUREMENT AND PAYMENT

D24. PAYMENT

- D24.1 Further to C12, the City shall make payments to the Contractor by direct deposit to the Contractor's banking institution, and by no other means. Payments will not be made until the Contractor has made satisfactory direct deposit arrangements with the City. Direct deposit application forms are at https://winnipeg.ca/finance/files/Direct_Deposit_Form.pdf.
- D24.2 Further to E6, no payment will be made for Cash Allowances other than as set out in E6.4.

D25. FUEL PRICE ADJUSTMENT

- D25.1 The Contract is subject to a fuel price adjustment which will be calculated monthly based on eligible Work completed utilizing the following mathematical formulas;
- (a) where the price of fuel has increased - $((CFI/BFI)-1.15) \times Q \times FF$; and
 - (b) where the price of fuel has decreased - $((CFI/BFI)-0.85) \times Q \times FF$; where
 - (i) BFI = base fuel index
 - (ii) CFI = current fuel index
 - (iii) FF = fuel factor
 - (iv) Q = monetary value of Work applied in the calculation.
- D25.1.1 Eligible Work will be determined in accordance with D25.5.
- D25.1.2 The base fuel index (BFI) will be the retail price of fuel identified on the Submission Deadline based on latest published "Monthly average retail prices for gasoline and fuel by geography" for Winnipeg, published by [Statistics Canada, Table 18-10-0001-01](#). The BFI is a blended rate based on 15% regular unleaded gasoline at self-service filling stations and 85% diesel fuel at self-service filling stations.
- D25.1.3 The current fuel index (CFI) based on the above blended rate will be determined for each monthly progress estimate and applied on the following progress estimate as a change order once rates are published by Statistics Canada.
- D25.1.4 A Fuel Factor (FF) rate of the monetary value of all eligible Work completed that month based on the Contract unit prices will be used to calculate the assumed apportioned cost of fuel.
- D25.2 Fuel cost adjustments may result in additional payment to the Contractor or credit to the City within the Contract by way of a monthly change order.
- D25.3 The fuel escalation or de-escalation adjustment will not be applied if the CFI is within $\pm 15\%$ of the BFI.
- D25.4 Fuel escalation adjustments will not be considered beyond the Substantial Performance/Critical Stages except where those dates/Working Days are adjusted by change order. Fuel de-escalation adjustments will apply for Work that extends beyond the dates/Working Days specified for Substantial Performance/Critical Stages.
- D25.5 The Fuel Factor (FF) rates will be set as follows:
- (a) The Fuel Factor rate shall be set at 1.2% of the monetary value of all Work based on unit prices.

WARRANTY

D26. WARRANTY

D26.1 Warranty is as stated in C13.

INDEMNITY

D27. INDEMNITY

D27.1 Indemnity shall be as stated in C17.

(See D11)

GOULET-DOUCET WATER MAIN RIVER CROSSING REHABILITATION

[illegible]

FORM K: EQUIPMENT
(See D12)

GOULET-DOUCET WATER MAIN RIVER CROSSING REHABILITATION

1. Category/type:	
Make/Model/Year: _____	Serial No.: _____
Registered owner: _____	
Make/Model/Year: _____	Serial No.: _____
Registered owner: _____	
Make/Model/Year: _____	Serial No.: _____
Registered owner: _____	
2. Category/type:	
Make/Model/Year: _____	Serial No.: _____
Registered owner: _____	
Make/Model/Year: _____	Serial No.: _____
Registered owner: _____	
Make/Model/Year: _____	Serial No.: _____
Registered owner: _____	
3. Category/type:	
Make/Model/Year: _____	Serial No.: _____
Registered owner: _____	
Make/Model/Year: _____	Serial No.: _____
Registered owner: _____	
Make/Model/Year: _____	Serial No.: _____
Registered owner: _____	

FORM K: EQUIPMENT
(See D12)

GOULET-DOUCET WATER MAIN RIVER CROSSING REHABILITATION

4. Category/type:	
Make/Model/Year: _____	Serial No.: _____
Registered owner: _____	
Make/Model/Year: _____	Serial No.: _____
Registered owner: _____	
Make/Model/Year: _____	Serial No.: _____
Registered owner: _____	
5. Category/type:	
Make/Model/Year: _____	Serial No.: _____
Registered owner: _____	
Make/Model/Year: _____	Serial No.: _____
Registered owner: _____	
Make/Model/Year: _____	Serial No.: _____
Registered owner: _____	
6. Category/type:	
Make/Model/Year: _____	Serial No.: _____
Registered owner: _____	
Make/Model/Year: _____	Serial No.: _____
Registered owner: _____	
Make/Model/Year: _____	Serial No.: _____
Registered owner: _____	

PART E - SPECIFICATIONS

GENERAL

E1. APPLICABLE SPECIFICATIONS AND DRAWINGS

- E1.1 These Specifications shall apply to the Work.
- E1.2 *The City of Winnipeg Standard Construction Specifications* in their entirety, whether or not specifically listed on Form B: Prices, shall apply to the Work.
- E1.2.1 *The City of Winnipeg Standard Construction Specifications* is available on the Information Connection page at The City of Winnipeg, Corporate Finance, Purchasing Division website at <http://www.winnipeg.ca/matmgt/Spec/Default.stm>
- E1.2.2 The version in effect three (3) Business Days before the Submission Deadline shall apply.
- E1.2.3 Further to C2.4(d), Specifications included in the Tender shall govern over *The City of Winnipeg Standard Construction Specifications*.
- E1.3 Bidders are reminded that requests for approval of substitutes as an approved equal or an approved alternative shall be made in accordance with B7. In every instance where a brand name or design specification is used, the City will also consider approved equals and/or approved alternatives in accordance with B7.
- E1.4 The following are applicable to the Work:

<u>Appendix No.</u>	<u>Appendix Title</u>
A	Record Drawings
B	PICA Inspection Report

<u>Drawing No.</u>	<u>Drawing Name/Title</u>
1-0798E-D0007-001	Cover Sheet
1-0798E-D0008-001	Index Page
1-0798E-C0013-001	Plan/Profile
1-0798E-C0014-001	Details

GENERAL REQUIREMENTS

E2. SHOP DRAWINGS

- E2.1 Description
- (a) This Specification shall revise, amend, and supplement the requirements of CW 1110 of the City of Winnipeg's Standard Construction Specifications.
 - (b) The term "Shop Drawings: means drawings, diagrams, illustrations, schedules, performance charts, brochures, and other data, which are to be provided by the Contractor to illustrate details of a portion of the Work.
- E2.2 Submit all Shop Drawings in accordance with CW 1110 except as modified herein.
- E2.3 The Contractor shall submit specified Shop Drawings to the Contract Administrator for review. All submissions must be in metric units. Where data is in imperial units, the correct metric equivalent shall also be shown on all submissions for engineering review.
- E2.4 Submit Shop Drawing submissions within five (5) Business Days of a request or receipt of Notice of Award in accordance with B19, whichever is earlier.

- E2.5 Allow for a five (5) Business Days period for review by the Contract Administrator of each individual submission and re-submission, unless noted otherwise in the Contract Documents.
- E2.6 Shop Drawings not meeting the requirements of CW 1100 or the requirements specified herein will be returned to the Contractor without review for resubmission.
- E2.7 Shop drawing submissions will be limited to 2 reviews per shop drawing. This shall include a review of the initial submission and a review of the revised submission. Costs associated with subsequent reviews will be charged to the Contractor.
- E2.8 Expedited Shop Drawings
- E2.8.1 Further to CW 1110, in order to expedite Shop Drawings with critical timelines, the lowest responsive Bidder, as outlined in B18, will be required, after receiving a written request from the Contract Administrator, to arrange for the preparation of Shop Drawings for the following items with critical timelines:
- (a) Pipeline cleaning protocols;
 - (b) FFRP design submission; and
 - (c) FFRP liner termination submission.
- E2.8.2 Schedule to submit Shop Drawings listed in E2.8.1 within five (5) Business Days of a request as indicated in E2.4 or receipt of Notice of Award in accordance with B19.
- E2.9 Measurement and Payment
- (a) If Award is made to the lowest responsive Bidder, then the provision of Shop Drawings will be considered incidental to the Work and no separate payment will be made.
 - (b) If no Contract is awarded, then the City of Winnipeg will pay the requested Bidder for each of the requested submissions listed in E2 for the preparation and delivery of Shop Drawings. Payment will be based on an agreed upon valuation of the actual costs associated with the preparation and delivery of the Shop Drawings in general accordance with the terms provided in C7.4. Delivery of the Shop Drawings to the City and payment of the above amounts will constitute full and final consideration of each party to the other and neither party will have any further liability to the other with respect to this Tender.

E3. OFFICE FACILITIES

- E3.1 The Contractor shall supply office facilities meeting the following requirements:
- (a) the field office shall be for the exclusive use of the Contract Administrator;
 - (b) the building shall be conveniently located near the Site of the Work at a location approved by the Contract Administrator;
 - (c) the building shall have a minimum floor area of 25 m², a height of 2.4 m with two (2) windows for cross ventilation and a door entrance with a suitable lock;
 - (d) the building shall be suitable for all weather use. It shall be equipped with an electric heater and air conditioner so that the room temperature can be maintained between either 16-18 or 24-25 degrees Celsius;
 - (e) the building shall be adequately lighted with fluorescent fixtures and have a minimum of three (3) wall outlets;
 - (f) the building shall be furnished with one desk, one drafting table, one meeting table, one filing cabinet, and a minimum of 12 chairs;
 - (g) a portable toilet shall be located near the field office building. The toilet shall have a locking door; and
 - (h) the field office building and the portable toilet shall be cleaned on a weekly basis immediately prior to each Site meeting. The Contract Administrator may request additional cleaning when he/she deems it necessary.

E3.2 The office facilities will be provided from the date of the commencement of the Work to the date of Substantial Performance.

E3.3 Measurement and Payment

- (a) The work specified herein will be considered incidental to the Work and will not be measured for payment. No additional payment will be made.

E4. ENVIRONMENTAL PROTECTION

E4.1 The Contractor shall be aware that feeder mains, water mains, and associated infrastructure is for potable water and no contamination by fuel, chemicals, etc. shall be permitted at any time. Fuels or chemicals shall not be stored within 30 m of the existing chambers, excavations, etc.

E4.2 The Contractor shall plan and implement the Work of this Contract strictly in accordance with the requirements of the environmental protection measures as herein specified.

E4.3 The Contractor is advised that at least the following Acts, Regulations, and By-laws apply to the Work:

E4.3.1 Federal

- (a) Canadian Environmental Protection Act (CEPA) c.16;
- (b) Canadian Environmental Assessment Act (CEAA) c.37;
- (c) Transportation of Dangerous Goods Act and Regulations c.34; and
- (d) Migratory Birds Convention Act, 1994.

E4.3.2 Provincial

- (a) The Dangerous Goods Handling and Transportation Act D12;
- (b) The Endangered Species Act E111;
- (c) The Environment Act c.E125;
- (d) The Fire Prevention Act F80;
- (e) The Manitoba Heritage Resources Act H39.1;
- (f) The Manitoba Noxious Weeds Act N110;
- (g) The Manitoba Nuisance Act N120;
- (h) The Public Health Act c.P210;
- (i) The Workplace Safety and Health Act W210; and
- (j) And current applicable associated regulations.

E4.3.3 Municipal

- (a) The City of Winnipeg By-law no. 1/2008;
- (b) The City of Winnipeg Waterway By-Law no. 5888/92; and
- (c) Other applicable Acts, Regulations and By-laws.

E4.4 The Contractor is advised that the following environmental protection measures apply to the Work.

E4.4.1 Materials Handling and Storage

- (a) Construction materials and debris shall be prevented from entering drainage pipes or channels.
- (b) Construction materials and debris shall also be prevented from accumulating on local roadways and sidewalks when tracked out of the Site by trucks hauling excavated materials.

- (c) The Contractor shall provide on-Site measures to mitigate the tracking of sediment off-Site and therefore reduce the amount of street cleaning required. These measures may take the form of a truck wheel wash (automated or manually operated) or other measures as approved by the Contract Administrator.

E4.4.2 Fuel Handling and Storage

- (a) The Contractor shall obtain all necessary permits from Manitoba Conservation for the handling and storage of fuel products and shall provide copies to the Contract Administrator.
- (b) All fuel handling and storage facilities shall comply with The Dangerous Goods and Transportation Act Storage and Handling of Petroleum Products Regulation and any local land use permits.
- (c) Fuels, lubricants, and other potentially hazardous materials as defined in The Dangerous Goods and Transportation Act shall be stored and handled within the approved storage areas.
- (d) The Contractor shall ensure that all fuel storage containers are inspected daily for leaks and spillage.
- (e) Products transferred from the fuel storage area(s) to specific Work Sites shall not exceed the daily usage requirement.
- (f) When servicing requires the drainage or pumping of fuels, lubricating oils or other fluids from equipment, a groundsheet of suitable material (such as HDPE) and size shall be spread on the ground to catch the fluid in the event of a leak or spill.
- (g) Refuelling of mobile equipment and vehicles shall take place at least 100 m from a watercourse.
- (h) The area around storage Sites and fuel lines shall be distinctly marked and kept clear of snow and debris to allow for routine inspection and leak detection.
- (i) A sufficient supply of materials, such as absorbent material and plastic oil booms to clean up minor spills shall be stores nearby on-site. The Contractor shall ensure that additional material can be made available on short notice.

E4.4.3 Waste Handling and Disposal

- (a) The construction area shall be kept clean and orderly at all times during and at completion of construction.
- (b) At no time during construction shall personal or construction waste be permitted to accumulate for more than one day at any location on the construction site, other than at a dedicated storage area as may be approved by the Contract Administrator.
- (c) All resulting debris shall be deposited at a Waste Disposal Ground operating under the authority of Manitoba Regulation #150/91. Exceptions are liquid industrial and hazardous wastes which may require special disposal methods (see SC:21.4 D).
- (d) Indiscriminate dumping, littering, or abandonment shall not take place.
- (e) No on-site burning of waste is permitted.
- (f) Waste storage areas shall not be located so as to block natural drainage.
- (g) Run-off from a waste storage area shall not be allowed to cause siltation of a watercourse.
- (h) Waste storage areas shall be left in a neat and finished appearance and/or restored to their original condition to the satisfaction of the Contract Administrator.
- (i) Equipment shall not be cleaned near watercourses; contaminated water from onshore cleaning operations shall not be permitted to enter watercourses.

E4.4.4 Dangerous Goods/Hazardous Waste Handling and Disposal

- (a) Dangerous goods/hazardous waste are identified by, and shall be handled according to, The Dangerous Goods Handling and Transportation Act and Regulations.

- (b) The Contractor shall be familiar with The Dangerous Goods Handling and Transportation Act and Regulations.
- (c) The Contractor shall have on-site staff that is trained and certified in the handling of the dangerous/hazardous goods, when said dangerous/hazardous goods are being utilized on-site for the performance of the Work.
- (d) Different waste streams shall not be mixed.
- (e) Disposal of dangerous goods/hazardous wastes shall be at approved hazardous waste facilities.
- (f) Liquid hydrocarbons shall not be stored or disposed of in earthen pits on-site.
- (g) Used oils shall be stored in appropriate drums, or tankage, until shipment to waste oil recycling centres, incinerators, or secure disposal facilities approved for such wastes.
- (h) Used oil filters shall be drained, placed in suitable storage containers, and buried or incinerated at approved hazardous waste treatment and disposal facilities.
- (i) Dangerous goods/hazardous waste storage areas shall be located at least 100 m away from the high water line and be diked.
- (j) Dangerous goods/hazardous waste storage areas shall not be located so as to block natural drainage.
- (k) Run-off from a dangerous goods/hazardous waste storage area shall not be allowed to cause siltation of a watercourse.
- (l) Dangerous goods/hazardous waste storage areas shall be left in a neat and finished appearance and/or restored to their original condition to the satisfaction of the Contract Administrator.

E4.4.5 Emergency Response

- (a) The Contractor shall ensure that due care and caution is taken to prevent spills.
- (b) The Contractor shall report all major spills of petroleum products or other hazardous substances with the potential for impacting the environment and threat to human health and safety to the Contract Administrator and Manitoba Environment, immediately after occurrence of the environmental accident, by calling the 24-hour emergency telephone phone number (204) 945-4888. The Contract Administrator shall also be notified.
- (c) The Contractor shall designate a qualified supervisor as the on-site emergency response coordinator for the project. The emergency response coordinator shall have the authority to redirect manpower in order to respond in the event of a spill.
- (d) The following actions shall be taken by the person in charge of the spilled material or the first person(s) arriving at the scene of a hazardous material accident or the on-site emergency response coordinator:
 - (i) Notify emergency-response coordinator of the accident:
 - identify exact location and time of accident;
 - indicate injuries, if any; and
 - request assistance as required by magnitude of accident (Manitoba Environment 24-hour Spill Response Line (204) 945-4888, Police, Fire Department, Ambulance, company backup).
 - (ii) Attend to public safety:
 - ◆ stop traffic, roadblock/cordon off the immediate danger area;
 - ◆ eliminate ignition sources; and
 - ◆ initiate evacuation procedures if necessary.
 - (iii) Assess situation and gather information on the status of the situation, noting:
 - personnel on site;
 - cause and effect of spill;
 - estimated extent of damage;

- amount and type of material involved; and
 - proximity to waterways and the Aqueduct.
- (iv) If safe to do so, try to stop the dispersion or flow of spill material:
- approach from upwind;
 - stop or reduce leak if safe to do so;
 - dike spill material with dry, inert sorbent material or dry clay soil or sand;
 - prevent spill material from entering waterways and utilities by diking; and
 - prevent spill material from entering Aqueduct manholes and other openings by covering with rubber spill mats or diking.
- (v) Resume any effective action to contain, clean up, or stop the flow of the spilled product.
- (e) The emergency response coordinator shall ensure that all environmental accidents involving contaminants shall be documented and reported to the Manitoba Environment according to The Dangerous Goods Handling and Transportation Act Environmental Accident Report Regulation 439/87.
- (f) When dangerous goods are used on-site, materials for containment and cleanup of spill material (e.g. absorbent materials, plastic oil booms, and oversized recovery drums) shall be available on-site.
- (g) Minor spills of such substances that may be contained on land with no significant impact on the environment may be responded to with in-house resources without formal notification to Manitoba Environment.
- (h) City emergency response, 9-1-1, shall be used if other means are not available.

E4.5 Vegetation

- (a) Vegetation shall not be disturbed without written permission of the Contract Administrator. The Contractor shall protect plants which may be at risk of accidental damage. Such measures may include protective fencing or signage.
- (b) Herbicides and pesticides shall not be used adjacent to any surface watercourses.
- (c) All landowners adjacent to the area of application of herbicides or pesticides shall be notified prior to the Work.
- (d) Trees and shrubs shall not be felled into watercourses.
- (e) Areas where vegetation is removed during clearing, construction, and decommissioning activities, shall be revegetated as soon as possible in accordance the requirements outlined herein, or as directed by the Contract Administrator.

E4.6 Measurement and Payment

- (a) The work covered in this section will be considered incidental to the Work and will not be measured for payment. No additional payment will be made.

E5. MOBILIZATION AND DEMOBILIZATION PAYMENT

E5.1 Description

- (a) This Specification shall govern mobilization and demobilization from site.

E5.2 Measurement and Payment

E5.2.1 Mobilization and Demobilization

- (a) Mobilization and demobilization will be measured on a lump sum basis and paid for at the Contract Lump Sum Price for "Mobilization and Demobilization". Payment for Mobilization and demobilization shall include all costs associated with mobilization and demobilization, site set up, and cleanup. The Bid Price for Mobilization and Demobilization shall not exceed fifteen percent (15%) of the total Bid Price. Payment will be made on the following schedule:

- (i) 50% payment of the Mobilization and Demobilization lump sum price will be paid once lining crews arrive on site to commence cleaning and host pipe preparation works.
- (ii) The remaining 50% of the Mobilization and Demobilization lump sum price will be paid subsequent to handover of the water main to the City for return to service, completion of surface works (restoration excluded), and site cleanup.

E6. CASH ALLOWANCE FOR ADDITIONAL WORK

- E6.1 Additional Work may be necessitated due to unforeseen circumstances that may arise during the course of the project due to:
- (a) Additions to the scope of Work by the Contract Administrator, beyond that defined herein.
- E6.2 A cash allowance has been included on Form B: Prices.
- E6.3 The City reserves the right to delete any or all of the Cash Allowance from the Contract if the Work intended to be covered by the Cash Allowance is not required, or if the Works intended are found to be more extensive than the provisional Cash Allowance.
- E6.4 Cost of additional work shall be evaluated by the methods outlined in C7.4, and a Change Order prepared by the Contract Administrator. Cost of the Change Order will be paid on the Progress Estimate and deducted from the Cash Allowance. If the valuation of the authorized work exceeds the Value of the Cash Allowance, the Contract Value will be adjusted by the shortfall.
- E6.5 Additional services and/or Work will not be initiated for:
- (a) Reasons of lack of performance or errors in execution.
 - (b) Scheduling changes initiated by the City, where at least 24 hours' notice is given prior to the Contractors schedule time to be on Site.
- E6.6 Should it be determined that additional material or services are required, the Contract Administrator shall approve the Work, prior to commencement of the additional Work.
- E6.7 Material Mark-Up Factors in accordance with C7:
- (a) The base cost is to be the wholesale cost of the material, regardless of the Contractor or Subcontractor supplying the material.
 - (b) In general, the party (Contractor or Subcontractor) supplying the material is the party that purchases the material from a supplier who does not perform any work on Site, unless otherwise determined by the Contract Administrator.
 - (c) Where the Contractor is supplying the material, the mark-up on the material is limited to fifteen percent (15%).
 - (d) Where the Contractor's immediate Subcontractor is supplying the material the total mark-up on the material including all Subcontractors and the Contractor is limited to twenty-five percent (25%):
 - (i) The Subcontractor's mark-up on the material is limited to fifteen percent (15%).
 - (ii) The Contractor's mark-up on the material is limited to ten percent (10%).
 - (e) A Third-Level Subcontractor is a Subcontractor of a Subcontractor of the Contractor.
 - (i) No Third-Level Subcontractors on this project are approved for additional mark-up.
 - (ii) In the event that a Third-Level Subcontractor is utilized, that is not approved for additional mark-up, the Contractor is responsible for coordinating the split of the maximum approved mark-up between the Contractor and Subcontractors.

E7. TRAFFIC CONTROL

- E7.1 In accordance with the Manual of Temporary Traffic Control on City Streets (MTTC), the Contract Administrator shall make arrangements with the Traffic Services Branch of the City of

Winnipeg to place, maintain, and remove all regulatory signs and traffic control devices authorized and/or required by the Traffic Management Branch in the following situations:

- (a) Parking restrictions,
- (b) Stopping restrictions,
- (c) Turn restrictions,
- (d) Diamond lane removal,
- (e) Full or directional closures on a Regional Street,
- (f) Traffic routed across a median,
- (g) Full or directional closure of a non-regional street where there is a requirement for regulatory signs (turn restrictions, bus stop relocations, etc.) to implement the closure, and
- (h) Approved Designated Construction Zones with a temporary posted speed limit reduction. Traffic Services will be responsible for placing all of the advance signs and 'Construction Ends' (TC-4) signs. The Contractor is still responsible for all other temporary traffic control including but not limited to barricades, barrels and tall cones.

- E7.2 Further to (c), the Contractor shall make arrangement with the Traffic Services Branch of the City of Winnipeg to supply regulatory signs as required.
- E7.3 Upon request from the Contract Administrator, the Contractor shall provide records demonstrating that the Site has been maintained.
- E7.4 Further to E7.1(c) and E7.1(d) the Contractor shall make arrangements with the Traffic Services Branch of the City of Winnipeg to reinstall the permanent regulatory signs after the Contract Work is complete. At this time the Contractor shall make arrangements to drop off the stockpiled materials to Traffic Services at 495 Archibald Street.
- E7.5 Any changes to the approved traffic management plan must be submitted to the Contract Administrator a minimum of (five) 5 Working Days prior to the required change for approval.
- E7.6 If the Contract Administrator determines that the Contractor is not performing Traffic Control in accordance with this specification, Traffic Services Branch may be engaged to perform the Traffic Control. In this event the Contractor shall bear the costs associated charged to the project by the Traffic Services Branch of the City of Winnipeg in connection with the required Works undertaken by the Contractor.

E8. SEINE RIVER WATER LEVELS

- E8.1 The Seine River can have elevated water levels, particularly during Spring freshet. Elevated river levels may impact work at the site, including but not limited to;
- (a) Access to site;
 - (b) Increased leakage into subterranean structures; and
 - (c) Increased infiltration into pipelines.
- E8.2 The Contractor shall consider potential river elevations in his work plan.
- E8.3 Historic Spring Flood Levels and dates that peak flood levels occurred, back to 1996, can be viewed at <https://winnipeg.ca/waterandwaste/flood/floodHistory.stm>. The elevations shown are in imperial measurement and are referenced to "James Avenue Datum" which is elevation 221.76 m (727.57 ft) geodetic. Note, river elevations shown are on the Red River at the James Avenue gauge and levels along the Seine River are generally higher.
- E8.4 Seine River water levels rise considerably in the spring (typically mid March) due to ice break-up and snow melt. River crest elevations of 229.00 geodetic or higher are not unusual.

- E8.5 River elevation may also increase in the summer due to heavy rainfall in the areas south of Winnipeg. Summer river crests are usually lower and of shorter duration than spring crests.
- E8.6 No work on riverbanks or areas potentially in flood plain shall be scheduled after March 15 of a given year. The Contractors shall be prepared at all times to evacuate the work area due to sudden changes in river elevations and flows.
- E8.7 Measurement and Payment
- (a) No measurement of payment shall be made for protection of the site from river levels.

E9. EXCAVATION, SHORING, AND BACKFILL

- E9.1 Description
- (a) This Specification covers the requirements for excavations and backfilling of trenches, pipelines, and structures.
- E9.2 Submittals
- (a) Shop Drawings for all excavation shoring (where required) shall be prepared and submitted a minimum of five (5) Business Days prior to undertaking the excavation and shoring installation. Where required by Workplace Safety and Health Regulation, shoring Shop Drawings shall be sealed by a Professional Engineer, registered in the Province of Manitoba, experienced in the design of excavation shoring systems.
- E9.3 Approvals
- (a) City of Winnipeg Waterways approvals will be in place prior to the start of construction.
- E9.4 Shoring Design
- (a) Shoring shall be provided for excavations in accordance with CW 2030.
- (b) Excavation shoring shall be designed to accommodate the installation of all pipe and fittings.
- (c) Where long term shoring for excavations is required provide stamped Shop Drawings in accordance with E9.2.
- (d) All shoring systems shall comply with Manitoba Workplace Safety and Health requirements.
- E9.5 Excavation
- (a) Material from excavations shall not be stockpiled on the riverbank, or within 30 m of the top of the riverbank.
- (b) Granular materials, pipe bedding, and other materials shall not be stockpiled on the riverbank, or within 30 m of the top of the riverbank.
- (c) Materials shall not be stockpiled over pipelines.
- (d) Excess excavation material from excavations shall be disposed of off-site.
- (e) Granular bedding in the vicinity of existing pipelines shall be dewatered and stabilized prior to undermining pipes to prevent loss of granular pipe foundation.
- (f) Carefully excavate to expose existing pipelines. Excavation within 1.0 m of the pipe shall be done using soft dig or hand excavation methods to prevent damage to the pipe.
- (g) The Contractor shall undertake all efforts to prevent freezing of soils underlying existing pipelines, bedding and backfilling will not be permitted overtop of frozen soils. Excavations left open when nighttime atmospheric temperatures are expected to drop below 0°C shall be horded and heated as required to keep soils and pipelines from freezing.
- (h) See E12 for additional restrictions when working in close proximity to critical water infrastructure.

- (i) Provide heating and hoarding around the lower portion of the excavation and pipe during freezing conditions.

E9.6 Backfill

- (a) Backfill within 1 m of existing and proposed pavements shall be completed to CW 2030, Class 2 standards.
- (b) Backfill under paths and walkways shall be completed to CW 2030, Class 2 standards.
- (c) Backfill within 1 m of existing concrete structures shall be completed with free draining pit run granular material to CW 2030, Class 2 standards. The top 600 mm of the backfill adjacent to concrete structures shall be insitu clay material completed to CW 2030, Class 4 standards.
- (d) All other areas shall be backfilled with a Class 4 backfill unless otherwise noted on the Drawings.
- (e) The Contractor shall undertake all efforts to prevent excavated material intended for backfilling from freezing. Backfilling with frozen materials will not be permitted.

E9.7 Measurement and Payment

- (a) Excavation, shoring, and backfilling for excavations will be considered incidental to "Pipeline Modifications" and will not be measured for payment. No separate payment will be made.

E10. PROTECTION OF EXISTING TREES

E10.1 The Contractor shall take the following precautionary steps to prevent damage from construction activities to existing boulevard trees within the limits of the construction area:

- (a) The Contractor shall not stockpile materials and soil or park vehicles and equipment on boulevards within 2 m of trees.
- (b) Trees identified to be at risk by the Contract Administrator are to be strapped with 25 x 100 x 2400 mm wood planks, or suitably protected as approved by the Contract Administrator.
- (c) Excavation shall be performed in a manner that minimizes damage to the existing root systems. Where possible, excavation shall be carried out such that the edge of the excavation shall be a minimum of 1.5 times the diameter (measured in inches), with the outcome read in feet, from the closest edge of the trunk. Where roots must be cut to facilitate excavation, they shall be pruned neatly at the face of excavation. They must be properly trimmed with sharp tools to prevent crushing or being pulled by construction equipment. No paint is required. All exposed roots must be mulched until the excavated area is filled with clean earth to avoid exposure to sunlight and desiccation.
- (d) Operation of equipment within the dripline of the trees shall be kept to the minimum required to perform the work required. The dripline of a tree shall be considered to be the ground surface directly beneath the tips of its outermost branches.
- (e) Work on-site shall be carried out in such a manner so as to minimize damage to existing tree branches. Where damage to branches does occur, they shall be neatly pruned.

E10.2 All damage to existing trees caused by the Contractor's activities shall be repaired to the requirements and satisfaction of the Contract Administrator and the City Forester or his designate.

E10.3 Elm trees shall not be pruned at any time between April 1 and July 31 of any year under provisions of The Forest Health Protection Act and The Forest Health Protection Regulations.

E10.4 Measurement and Payment

- (a) No separate measurement or payment will be made for the protection of trees.

E11. HYDRO EXCAVATION FOR UTILITY EXPLORATION (PROVISIONAL)

E11.1 Description

E11.1.1 General

- (a) This Specification covers all operations relating to the removal of earthen material immediately adjacent to underground utilities infrastructure by means of high pressure water spray, and the recovery of evacuated material by vacuum type means or equivalent method as approved by the Contract Administrator in accordance with B7.
- (b) The Work to be done by the Contractor under this Specification shall include the furnishing of all superintendence, overhead, labour, materials, equipment, tools, supplies, and all things necessary for and incidental to the satisfactory performance and completion of all Works as hereinafter specified.

E11.2 Equipment

E11.2.1 Hydro excavation unit shall be capable of maintaining a minimum working pressure of 10,000 psi, at a rate of flow of 10 to 12 gallons per minute. The unit should be adjustable, so as to provide adequate pressure to remove earthen material.

E11.2.2 Spray head shall be equipped with a rotating type nozzle, in order to provide a wider path of cut.

E11.3 Construction Methods

E11.3.1 Hydro-Removal of Earthen Material

- (a) Earthen material adjacent to utility entity shall be sprayed with high pressure water so as to remove all such material.

E11.3.2 Recovery of Excavated Material

- (a) The recovery of excavated material shall be done using vacuum type method, or other type method as approved by the Contract Administrator.
- (b) The recovery of material shall follow immediately behind the excavation, to avoid excavated areas from filling with excavated material.
- (c) The use of mechanical sweepers will not be allowed.
- (d) Dispose of material in accordance with Section 3.4 of CW 1130.

E11.3.3 Backfill of Hydro Excavated Hole

- (a) The Contractor shall be responsible for the backfill of the hydro excavated hole with flowable cement-stabilized fill or sand backfill upon completion of the work described herein, to the approval of the Contract Administrator.

E11.4 Measurement and Payment (Provisional Item)

E11.4.1 Hydro Excavation for Utility Exploration as specified herein will be measured on unit price basis as listed in Form B: Prices. Payment will be made at the Contract Price for "Hydro Excavation for Utility Exploration".

E12. OPERATING CONSTRAINTS FOR WORK IN CLOSE PROXIMITY TO CRITICAL WATER INFRASTRUCTURE

E12.1 Description

E12.1.1 This Section details operating constraints for all work to be carried out in close proximity to the City feeder mains and other critical water infrastructure. Close proximity shall be deemed to be any construction activity within a 5 m horizontal offset from the centerline of the feeder main, within 5 m of valve chambers and other appurtenances, and any other infrastructure identified below.

E12.2 Critical Water Infrastructure

- E12.2.1 The following shall be considered critical pipelines and water infrastructure for this project:
- (a) 400 mm Goulet Doucet Water Main Crossing

E12.3 General Considerations for Work in Close Proximity to Feeder Mains

- E12.3.1 Feeder mains are a critical component of the City of Winnipeg Regional Water Supply System and work in close proximity to feeder mains shall be undertaken with an abundance of caution. Feeder mains cannot typically be taken out of service for extended periods to facilitate construction and inadvertent damage caused to the pipe would likely have catastrophic consequences.
- E12.3.2 Work around feeder mains shall be planned and implemented to minimize the time period that work is carried out in close proximity to the pipe and to ensure that the pipeline is not subjected to excessive construction related loads, including excessive vibrations and/or concentrated or asymmetrical lateral loads during backfill placement.
- E12.3.3 Large diameter pressure pipe generally has limited ability to withstand increased earth and live loading. Therefore, every precaution must be undertaken to ensure that applied loading during all phases of construction is within accepted loading parameters. Some pipe materials can fail in a non-ductile mode and has the potential to cause extensive consequential damage to infrastructure if failure should occur.
- E12.3.4 Construction in close proximity to critical infrastructure shall not commence until both the equipment and construction method statements have been submitted, reviewed, and accepted by the Contract Administrator.

E12.4 Submittals

- E12.4.1 Submit proposed construction equipment specifications to the Contract Administrator for review a minimum of five (5) Business Days prior to construction. The equipment submission shall include:
- (a) equipment operating and payload weights;
 - (b) equipment dimensions, including wheel or track base, track length or axle spacing, track widths or wheel configurations; and
 - (c) load distributions in the intended operating configuration.
- E12.4.2 Submit a construction method statement to the Contract Administrator a minimum of five (5) business days prior to construction. The construction method statement shall contain the following minimum information:
- (a) proposed construction plan including excavation locations, haul routes, excavation equipment locations, and loading positions.
 - (b) excavation plans, including shoring designs, for excavations occurring in close proximity to feeder mains (within 5 m horizontal of the pipe's centerline) where the excavation to be extended below the top of the feeder mains embedment zone (150 mm above the pipe).
 - (c) any other pertinent information required to accurately describe the construction activities in close proximity to the feeder main and permit the Contract Administrator to review the proposed construction plans.
- E12.4.3 Submit the following documentation for inclusion in the City's feeder main shutdown protocol for each planned feeder main shutdown a minimum of fifteen (15) Business Days prior to the proposed shutdown and the Contractor should allow for a ten (10) Business Day review period by the City once accepted by the Contract Administrator:
- (a) A detailed schedule for the work, including a step by step list of a tasks to be undertaken during the shutdown.

- (b) A contingency plan for any problems, issues, or unforeseen circumstance that might occur. The contingency plan shall include a detailed procedure and schedule for putting the feeder main back into service on an emergency basis.
- (c) Check list of equipment, materials, tools required to complete the work that need to be on site prior to undertaking the shutdown.

E12.5 Feeder Main Shutdowns

- (a) Isolation of the feeder main crossings will be completed by City forces using mainline valves and secondary valves wherever possible.
- (b) The Contractor shall be responsible for dewatering the feeder main.
- (c) Refer to D15.1 for feeder main shutdown restrictions. Work shall be scheduled to minimize the duration of all shutdowns.

E12.6 Lock-out and Tag-out Procedures

E12.6.1 The City of Winnipeg will endeavor to provide redundant valve closures (double blocking) of pressurized pipelines that enter the work space where possible. However, there are locations within the system where it is impractical to provide double blocking without widespread service disruption. Where regional water system network does not allow double blocking, non-redundant valve closures (single blocking) will be provided.

E12.6.2 At locations where only single valve blocking is practical, additional safety measures and monitoring will be required in order to provide a safe work environment for employees. Development of adequate safety plans in accordance to the Workplace Safety and Health Act and Regulation 217/06 are the responsibility of the Contractor, but as a minimum shall include:

- (a) Provision of adequate egress from confined spaces including removal of removable roof slabs and manhole covers, and provision of ladders and other means of site exit.
- (b) Use of body harnesses and safety hoisting equipment at all times when pressurized systems are disassembled and protected only by single block valves.
- (c) Monitor and assess water leakage in closed system prior to disassembly of system. Monitor water leakage rate and advise Contract Administrator immediately of change in inflow rates. Evacuate confined space if necessary.

E12.6.3 The Contractor, City of Winnipeg Water and Waste Department, and Contract Administrator will all be required to lock out all valves closed in order to facilitate this work. Where site access and lockout space on system valves is limited, the following lockout/tag out procedures will be implemented;

- (a) Lockout locations for valves will be identified by the City.
- (b) City of Winnipeg will provide a single lock, chains and other devices to adequately secure valves within pits and chambers. The Contractor has the right to inspect the installation and satisfy that the lockout system is adequate. All locks utilized will be commonly keyed.
- (c) Key(s) for single locked valves will be placed in secure lock box at the site. City staff, Contractors, and Contract Administrator will place personal/company locks complete with identification and tag out information on this lock box.
- (d) Key(s) placed within the secure lock box will not be removed until all City staff, Contractor, and Contract Administrator locks have been removed from the lock box, and verified that the work is completed.
- (e) City staff will then unlock all valves, and will commence with restoration of the systems to service.

E12.7 Pre-Work, Planning and General Execution

E12.7.1 No work shall commence in close proximity to feeder mains, chambers, and critical infrastructure until the equipment specifications and construction method statement have

been submitted and accepted, and feeder main locations have been clearly delineated in the field. Work over feeder mains shall only be carried out with equipment that has been reviewed and quantified in terms of its loading implications on the pipe.

- E12.7.2 Contact the City of Winnipeg Water and Waste Department, Construction Services Coordinator prior to construction.
 - E12.7.3 Locate feeder mains and confirm their position horizontally and vertically at the proposed the following locations prior to undertaking work in close proximity to the identified feeder mains. Note, exact locations to be identified in the field.
 - E12.7.4 Visually delineate all critical infrastructure identified herein on Site by use of paint, staking/flagging, construction fencing, snow fencing, or other suitable methods.
 - E12.7.5 Only utilize construction practices and procedures that do not impart excessive vibratory loads on feeder mains and chambers or that would cause settlement of the subgrade below feeder mains and critical pipelines.
 - E12.7.6 Where the existing road structure must be removed, crossing of critical infrastructure shall be prohibited from the time the existing roadway structure is removed until the completion of granular base construction. At all times prior to completion of final paving; reduce equipment speeds to levels that minimize the effects of impact loading to the critical infrastructure.
 - E12.7.7 Only equipment and construction practices stipulated in the accepted construction method statement and the supplemental requirements noted herein may be utilized in close proximity to feeder mains, chambers, and other critical infrastructure identified herein.
 - E12.7.8 Construction operations should be staged in such a manner as to limit multiple construction loads at one time, (e.g., offset crossings sufficiently from each other, rollers should remain a sufficient distance behind spreaders to limit loads. A reasonable offset distance is 3 m between loads).
 - E12.7.9 Granular material, construction material, soil, and/or other material shall not be stockpiled on the pipelines or within 5 m of any feeder main, valve chamber, or other critical infrastructure identified herein.
 - E12.7.10 The Contractor shall ensure that all crew members understand and observe the requirements of working near feeder mains, valve chambers, and critical infrastructure. Prior to commencement of on-Site work, the Contractor shall jointly conduct an orientation meeting with the Contract Administrator, all superintendents, foreman, and heavy equipment operators to make all workers on the Site fully cognizant of the limitations of altered loading on, the ramifications of inadvertent damage to, and the constraints associated with work in close proximity to feeder mains and critical pipelines. New personnel introduced after commencement of the Project need to be formally orientated as outlined herein. It is recommended that restrictions associated with the crossing, consistent with the Contractor's submitted method statement be posted on Site and near the crossing.
- E12.8 Demolition, Excavation, and Shoring
- E12.8.1 Use of pneumatic concrete breakers within 3 m of a feeder main, valve chamber, or critical pipeline is prohibited. Pavement shall be full depth sawcut and carefully removed. Use of hand held jackhammers for pavement removal will be allowed.
 - E12.8.2 Offset excavation equipment a minimum of 3 m from the centerline of critical pipelines when undertaking excavations where there is less than 2.4 m of earth cover over the pipeline.
 - E12.8.3 Utilize only smooth edged excavation buckets, soft excavation, or hand excavation techniques where there is less than 1.5 m of earth cover over the pipeline. Where there is less than 1.0 m of soil cover above the pipeline, provide full time supervision and complete the excavation utilizing hand excavation or soft excavation methods.

- E12.8.4 Equipment should not be allowed to operate while positioned directly over a feeder main or critical pipeline except were permitted herein, outlined in the reviewed and accepted construction method statement.
- E12.8.5 Excavations within 3 m of the outside edge of a feeder main (hydrovac holes for confirming trenchless installations excluded) and which extend below obvert of the feeder main shall utilize shoring methods that precludes the movement of native in-situ soils (i.e. a tight shoring system).
- E12.8.6 Pre-bore all piles to below the invert of critical infrastructure within 5 m (horizontally) of the pipeline's outside edge.
- E12.8.7 Offset pile driving equipment a minimum of 3 m (horizontally) from the centerline of the pipeline during piling operations.
- E12.9 Backfill and Subgrade Construction
- E12.9.1 Embedment of existing pipelines shall be completed with bedding sand meeting the requirements of CW 2030. Bedding sand shall be placed to a minimum of 150 mm above the pipe and 300 mm beyond the outer edges of the pipe.
- E12.9.2 Subgrade and backfill compaction within 3 m (horizontal) of a critical pipeline or valve chamber shall be limited to non-vibratory methods only. Small walk behind vibratory packers will be permitted.
- E12.9.3 Subgrade, sub-base and base course construction shall be kept in a rut free condition at all times. Construction equipment is prohibited from crossing pipelines if the grade is insufficient to support the equipment without rutting.
- E12.9.4 Subgrade conditions should be inspected by personnel with competent geotechnical experience (e.g. ability to adequately visually classify soils and competency of subgrade, subbase, and base course materials). In the event of encountering unsuitable subgrade materials above the feeder main, proposed design revisions shall be submitted to this office for review to obtain approval from the Water and Waste Department relative to any change in conditions.
- E12.9.5 Fill material shall not be dumped directly on pipelines but shall be stockpiled outside the limits noted in these recommendations and shall be carefully bladed in-place.
- E12.9.6 Only use compaction equipment approved by the contract administrator to compact fill materials above critical pipelines. Compaction of fill materials shall be completed using static methods only, no vibratory compaction will be allowed within the limits noted in these recommendations.
- E12.9.7 Construction operations shall be staged to minimize the time period between excavation to subgrade and placement of granular subbase materials. Should bare subgrade be left overnight, measures shall be implemented to protect the subgrade against inadvertent travel over it and to minimize the impact of wet weather.
- E12.10 Subbase and Base Course Construction
- E12.10.1 Subbase or base course materials shall not be dumped directly on pipelines but shall be stockpiled outside limits noted in these recommendations and shall be carefully bladed in-place.
- E12.10.2 Subbase compaction within 3 m horizontal of the centerline of a critical pipeline shall be either carried out by static methods (without vibration) or with smaller approved equipment such as hand held plate packers or smaller roller equipment.
- E12.11 Paving
- E12.11.1 When constructing asphalt pavements only non-vibratory compaction should be used within 3 m (horizontal) of the center of critical pipelines.
- E12.12 Measurement and Payment

- (a) Work covered in this section will be considered incidental to the Work and will not be measured for payment. No separate payment will be made.

E13. WORKING AROUND MANITOBA HYDRO GAS INFRASTRUCTURE

E13.1 Further to CW1120, be advised that the Work will be completed in the vicinity of Manitoba Hydro high pressure natural gas mains. The approximate locations of the natural gas mains are provided on the Drawings. This Section details operating constraints for all work to be carried out in close proximity to Manitoba Hydro high pressure natural gas mains.

E13.2 General Requirements

E13.2.1 The following general requirements for work around natural gas mains or services shall be adhered to, unless modified in following sections where the most stringent requirements shall apply or as directed otherwise by the Contract Administrator:

- (a) all requirements of Manitoba Hydro's Safe Excavation and Safety Watch guidelines shall apply. All natural gas mains and services must be properly located and marked by Manitoba Hydro personnel. This can be arranged by visiting ClickBeforeYouDigMB.com or call 1-800-940-3447. Construction operations are not to commence unless these conditions are adhered to;
- (b) all excavations within 1.0 m of any natural gas main or service must be completed by hand or hydro-excavated;
- (c) a minimum vertical separation of 300 mm from natural gas mains and 100 mm from natural gas services lines must be maintained between any Manitoba Hydro facility and any new installations;
- (d) a minimum 600 mm of cover shall be maintained in all areas where equipment will be crossing, traveling, or compacting over natural gas mains. Vibratory compaction cannot be used over or within 1.0 m of a main;
- (e) a minimum 450 mm of cover shall be maintained in all areas where equipment will be crossing, traveling, or compacting over the gas service lines. Vibratory compaction cannot be used over or within 1.0 m of a service;
- (f) less than the minimum depth of cover, earth bridging, or steel plates shall be placed over the main and extend a minimum of 1.0 m on either side at each crossing location;
- (g) All construction operations within the vicinity of natural gas mains or services are to take place in a manner so as not to damage or cause detriment to the integrity of the natural gas pipeline. Any damages to the coating must be reported to and repaired at no cost by Manitoba Hydro prior to backfilling.

E13.3 High Pressure Natural Gas Mains

E13.3.1 The following requirements for work around high pressure natural gas mains shall be adhered to, unless modified in following sections where the most stringent requirements shall apply or as directed otherwise by the Contract Administrator.

- (a) Approximate locations of the existing high pressure natural gas mains are as follows:
 - (i) 300 mm main crossing the Seine River between Goulet Street and Doucet Street.
- (b) A Manitoba Hydro High Pressure Safety Watch is required for all construction activities within 3.0 m of the high pressure natural gas mains.
- (c) Contact "Click before you dig" a minimum of 2 weeks prior to any Work commencing within 3.0 m of the high pressure natural gas main to arrange for the main to be properly located and marked by Manitoba Hydro personnel at ClickBeforeYouDigMB.com or Call 1-800-940-3447. Upon receiving clearances, the excavator will be provided with the phone number of the appropriate District in order to coordinate a Manitoba Hydro High Pressure Safety Watch.

- (d) Prior to construction at these locations, the Contractor shall expose the main by hand or hydro-excavation in order to confirm elevation of the pipe. The Contractor shall provide a minimum of five (5) Calendar Days notice to the Contract Administrator of conducting utility exposures, such that the Contract Administrator can measure depths of the exposed utility.
- (e) A minimum 900 mm of cover shall be maintained in all areas where equipment will be crossing, traveling or compacting over the high pressure natural gas mains. Vibratory compaction cannot be used over or within 3.0 m of a high pressure natural gas main.
- (f) If equipment must cross, travel, or compact over the gas main with less than the minimum depth of cover, earth bridging or steel plates shall be placed over the main and extend a minimum of 1.0 m on either side at each crossing location.
- (g) A smooth edged bucket shall be used for any excavations within 3.0 m of a high pressure natural gas main.
- (h) Caution must be used to ensure the integrity of the pipeline coating. Any damages to the coating must be reported to and repaired at no cost by Manitoba Hydro prior to backfilling.

E13.4 Measurement and Payment

- (a) Work covered in this section will be considered incidental to the Work and will not be measured for payment. No separate payment will be made.

E14. WATER SUPPLY

E14.1 Further to Section 3.14 of CW 2140 and Section 3.7 of CW 1120 of the General Requirements water supply for the Work may be taken from City of Winnipeg hydrants.

E14.2 The Contractor shall make the following arrangements for hydrant turn on and turn off.

- (a) Contact City of Winnipeg Water Services Division (WSD) for hydrant turn on and turn off required between 0800 hours and 1500 hours Monday to Friday. Notice for turn on and turn off shall be provided a minimum of 24 hours in advance.
- (b) Contact Emergency Services Branch (204-986-2626) with a minimum of 2 hours notice for hydrant turn on and turn off required outside of the above hours.
- (c) The Contractor shall wait at the hydrant from the requested turn on or turn off time until City staff arrives to turn on or turn off the hydrant.

E14.3 Hydrants shall be considered to be "in the Contractor's control" from the time the City has turned the hydrant on until the City has turned the hydrant off.

E14.4 Between November 1 and April 30 of any year, or whenever freezing temperatures are occurring or anticipated the Contractor shall take all necessary precautions to prevent freezing of hydrants and related appurtenances for hydrants in their control and shall be responsible to pump out hydrants turned off by Emergency Services.

E14.5 If a hydrant or appurtenance is damaged due to freezing or improper turn on or turn off procedures while in the Contractor's control, WSD will assess the damage and determine if WSD will repair the damage or if the Contractor will be responsible to repair the damage. Costs for repairs completed by WSD will be deducted from payments owing the Contractor. Repairs completed by the Contractor will be at the Contractor's expense.

E14.6 The Contractor shall provide a traffic ramp for hydrant connection hoses that cross roadways. The ramp shall be designed and constructed to not present a hazard to vehicles travelling over it and to ensure that no part of the hose is run over by a motor vehicle.

E14.7 Measurement and Payment

- (a) The supply of the Backflow Protection Arrangement or rental of same from WSD will be considered incidental to the Work and will not be measured for payment. No additional payment will be made.
- (b) All costs associated with heating and hoarding will be considered incidental to the Work and will not be measured for payment. No additional payment will be made.
- (c) Further to Section 3.7 of CW 1120, charges incurred for the permit and water meters shall be paid for by the Contractor when taken out. The Contractor shall forward the invoice to the Contract Administrator for reimbursement. The billing for water usage sent to the Contractor shall be forwarded to the Contract Administrator for payment. The Bid Opportunity number shall be noted on each permit.
- (d) Charges incurred for the permits and water meters shall be paid for by the Contractor when the permit is taken out. The Contractor shall forward the invoice to the Contract Administrator for reimbursement. The billing for water usage sent to the Contractor shall be forwarded to the Contract Administrator for payment. The Bid Opportunity number shall be noted on each permit.
- (e) All other costs associated with sourcing construction water will be considered incidental to the Work and will not be measured for payment. No additional payment will be made.

E15. PIPELINE MODIFICATIONS

E15.1 Description

- (a) This Specification shall cover the modification of the water main as required for cleaning, inspection, and lining of the water main.

E15.2 Description of Work:

E15.2.1 Pipeline Modifications:

- (a) See Drawings for details on pipeline modifications to facilitate pipeline rehabilitation.
- (b) Dismantle and remove existing launch wye assemblies, as required, to facilitate lining work.
- (c) Install 400 dismantling joint and flange coupling adaptor to facilitate lining work.
- (d) Reinstall launch wye assemblies and install corrosion protection measures upon completion of the lining work.

E15.3 Submissions:

- E15.3.1 Submit Shop Drawings for all permanent and temporarily installed fittings, valves, piping and couplings in accordance with E2.

E15.4 Products

E15.4.1 Fasteners

- (a) Bolts for all direct bury flange connections shall be ASTM A307 or ASTM F568M, grade B.
- (b) Nuts for all direct bury flange connections shall be ASTM A563 or ASTM A563M, grade B.
- (c) Bolts for all fittings, sleeve style couplings and/or restraints shall be ASTM F593 or ASTM F738M, type 316 stainless steel.
- (d) Nuts for all fittings, sleeve style couplings and/or restraints shall be ASTM F594 or ASTM F836M, type 316 stainless steel.
- (e) Anti-seize compound shall be used on all bolts.
- (f) Dielectric washers and sleeves meeting the requirements of E15.4.5 shall be used wherever stainless-steel hardware is used on ferrous metal fittings.

- (g) For flanged connections, bolt size, type and diameter shall be in accordance with AWWA C207. Bolt length suitable for coupling AWWA C207 Class D flange.
- (h) All buried flanged connections shall be wrapped in a petrolatum tape coating system in accordance with E15.5.2.

E15.4.2 Flange Gaskets

- (a) 3 mm, full-faced, SBR rubber gaskets or neoprene in accordance with AWWA C207.
- (b) Gaskets shall be one piece construction where possible.
- (c) Segmented gaskets shall be constructed of a minimum number of segments and joints shall be of dovetailed construction, or other jointing methods approved by the Contract Administrator.

E15.4.3 Flanges for Pipe and Fittings

- (a) Steel flanges shall conform to AWWA C207, minimum Class D Flange.
- (b) Threaded ductile iron flanges shall conform to AWWA C115 ASME/ANSI B16.1 Class 125.

E15.4.4 Pipe Couplings, Dismantling Couplings, and Flange Coupling Adaptors

- (a) Pipe couplings shall conform to AWWA C219.
- (b) Minimum requirements for sleeve couplings are:
 - (i) Center sleeve length: 250 mm;
 - (ii) Center sleeve thickness for steel couplings: 9.5 mm;
 - (iii) Couplings capable of accommodating up to 2 degrees deflection; and
 - (iv) Design pressure 150 psi.
- (c) Minimum requirements for flange adaptors:
 - (i) Flanges shall conform to AWWA C207, Class D or ASME/ANSI B16.1, Class 125.
- (d) Restraining end rings shall be supplied where axial thrust restraint is specified on the Drawings. Restraint rings shall be specifically designed for the material type of the pipes being joined.
- (e) All hardware shall be type 316 stainless steel in accordance with E15.4.1 and shall utilize di-electric insulating boots in accordance with E15.4.5.
- (f) Couplings to be fusion bonded epoxy coated in accordance with AWWA C213.
- (g) Buried pipe couplings shall be further protected against corrosion by wrapping the assembled coupler with petrolatum tape coating system in accordance with AWWA C217.
- (h) Approved Dismantling Joint Flange Coupling Adaptor Products:
 - (i) As manufactured by Romac Industries Ltd.,
 - (ii) As manufactured by Robar Industries Ltd.,
 - (iii) Or approved equal in accordance with B7.

E15.4.5 Flange Isolation Kits

- (a) Flange isolation kits shall be used where noted, where dissimilar metal piping or fittings are joined.
- (b) Flange isolation kits shall be to City of Winnipeg specification except as modified below.
- (c) Each kit shall be double flange isolation kit with insulating sleeves and washers for each flange of the bolted connection.
- (d) Bolt sleeves shall be comprised of G10 or G11 epoxy glass.

E15.4.6 Continuity Bonding

- (a) Wires for continuity bonding shall be No.10 American Wire Gauge (AWG) 7-strand copper conductor with black TWU insulation.
- (b) Thermite weld products shall be properly selected based on the wire size, pipe size and material.
- (c) Thermite weld caps shall be constructed from 20 mil high-density polyethylene and may be either pre filled or field filled with a bituminous mastic coating or approved equal.

E15.4.7 Galvanic Anodes

- (a) Galvanic anodes for cathodic protection of buried ferrous pipes and fittings shall be 10.9 kg pre-packaged zinc anodes to City of Winnipeg specification.

E15.5 Methods

E15.5.1 Installation of Lead Wires, Continuity Bonding and Galvanic Anodes

- (a) Anodes and continuity bonding shall be installed on new and existing pipes and fittings where shown on the Drawings or as directed by the Contract Administrator.

E15.5.2 Installation of Petrolatum Tape Corrosion Protection Systems

- (a) Install in accordance with AWWA C217 and the manufactures recommendations.
- (b) For all surfaces to be wrapped with the corrosion protection system, remove loose rust, paint and foreign matter by hand and/or power tool cleaning in accordance with SSPC-SP-2 or SSPC-SP-3.
- (c) Apply a thin uniform coat of petrolatum paste primer, using a glove or brush, to all surfaces to be wrapped with the corrosion protection system.
- (d) Apply void-filling mastic filler, by hand, to all flanges designated to be wrapped with the corrosion protection system. Mold the mastic to a rounded configuration around the flange, filling all spaces around fasteners and eliminating sharp edges and irregular shapes.
- (e) Spirally wrap the petrolatum tape, using a minimum 25mm overlap, over the primed and mastic-filled pipe and flange surfaces. While wrapping, press out all air pockets and smooth all lap seams.
- (f) Spirally wrap clear outerwrap, using sufficient tension to make a tight-fitting cover, over the petrolatum tape.

E15.5.3 Bedding

- (a) All pipes shall be installed in accordance with CW2030, utilizing a Class B bedding.

E15.5.4 Backfill

- (a) In accordance with E9.

E15.5.5 Disassembly of Existing Launch Wyes

- (a) Carefully excavate to expose existing launch wye assemblies in accordance with E9.5.
- (b) Carefully remove existing flange connections and cathodic protection as required to facilitate the work.
- (c) Upon completion of work, reinstall all existing corrosion protection and wye assemblies back to original positions.

E15.5.6 Assembly of Flanged Piping Systems

- (a) All flanges shall be assembled in accordance with AWWA M11 and AWWA C604.

E15.6 Measurement and Payment

E15.6.1 Pipeline Modifications

- (a) "Pipeline Modifications" shall be measured and paid on a Lump Sum basis as listed in Form B: Prices.
- (b) Payment for "Pipeline Modifications" shall include the supply of all materials and equipment required to complete the Work, including excavation, shoring, disassembly and reassembly of piping, installation of couplings and fittings, installation of corrosion protection systems, and backfilling as specified herein.
- (c) Payment for Pipeline Modifications will be as follows:
 - (i) 50% payment of the Pipeline Modifications lump sum price upon completion of excavations and commencement of cleaning operations.
 - (ii) The remaining 50% payment of the Pipeline Modifications lump sum price upon turn over of the water main for return to service and the closure, sealing, and backfill of existing chambers.

E16. DEWATERING OF WATER MAIN

E16.1 Description

- (a) This Specification shall outline requirements and restrictions for dewatering of the water main crossing.

E16.2 General

- (a) The Goulet-Doucet River Crossing consists of asbestos cement and steel pipes installed below the ground surface underneath the river.
- (b) Based on the configuration of the crossing, dewatering of the 400 mm crossing (to be lined) is permitted to facilitate pipeline rehabilitation.
- (c) The pipeline shall be dewatered by use of pigs or vacuum removal.
- (d) See E17 for allowable pigging materials, equipment, and methodology.
- (e) Vacuum removal equipment must be clean and sanitized prior to use. Equipment used for sewer works is not permitted.

E16.3 Submittals

- (a) Submit a written dewatering plan for review by the Contract Administrator in accordance with E2, a minimum of ten (10) Business Days prior to undertaking the work. The dewatering plan shall include the following:
 - (i) Proposed means and methods for dewatering the siphon.
 - (ii) A description and sketch detailing the arrangement of the proposed dewatering methods.
 - (iii) A list of key components and equipment required to complete the work, including:
 - (i) Pigs, winches, and winch lines in accordance with E17.
 - (iv) Detailed procedure for implementation of the proposed plan.

E16.4 Measurement and Payment

- (a) Any Work resulting from the requirements of E16 will be considered incidental to the Work and will not be measured for payment. No additional payment will be made.

E17. PIPELINE CLEANING

E17.1 Description

- (a) This Specification shall cover the cleaning of the pipelines to be rehabilitated under this Contract.

E17.2 General

E17.2.1 Cleaning Objectives and Methods

- (a) Proper cleaning of the host pipe is critical to ensure proper liner installation and operation in accordance with long term design objectives.
- (b) The interior surfaces of the pipe to be lined shall be cleaned by methods to remove sediment, tuberculation, and corrosion products sufficient to install the pulled in place liner without damage. The host pipe prior to lining shall be free of defects that would cause defects and stress concentrations in the pulled in place liner.
 - (i) The existing water main crossing was constructed with an interior coal tar epoxy lining. It is understood that the internal coating is widely disbonded. The Contractor shall select appropriate cleaning methods and undertake reasonable efforts to preserve the existing interior pipe coatings wherever it is possible and practical to do so.
- (c) The contractor may employ a combination of high-pressure flushing, pigging, mechanical cleaning, or other methods to ensure the host pipes are cleaned sufficiently to meet the stated design objectives.

E17.2.2 Existing Conditions

- (a) The existing water main was inspected in 2015 and found to have no corrosion related defects. However, the loss of the pipes internal coating exposes the steel pipe to accelerated corrosion potential. Corrosion defects may be aggravated by aggressive cleaning methods, resulting in additional challenges for cleaning and inspection of the crossing. The Contractor shall be aware that while the water main is not currently known to be leaking or have corrosion defects, a cleaning method shall be selected to suit the configuration and condition of the pipeline and minimise the potential to aggravate existing defects.
- (b) The inspection report for the advanced electromagnetic inspection undertaken by PICA in 2015 can be found in Appendix B.

E17.2.3 Internal pipeline diameters based on the best available record information. The Contractor is responsible to confirm the inner pipe diameters prior to undertaking cleaning work:

Nominal Diameter (mm)	Estimated Internal Diameter (mm)
400	387.34

E17.3 Submittals

E17.3.1 Cleaning Plan

- (a) The Contractor shall submit in writing a detailed cleaning plan for review by the Contract Administrator. The cleaning plan at a minimum shall include the following:
 - (i) Method(s) of cleaning.
 - (ii) Tools and equipment required.
 - (iii) Sizes and densities of foam pigs to be used.
 - (iv) Means of debris collection and disposal.
 - (v) Shop drawings as identified herein.
- (b) Provide examples of the previous use of the proposed cleaning methods for pulled in place water main rehabilitation projects. The Contract Administrator may require the submission of additional information, including pre and post inspection videos/photos to demonstrate the suitability of the proposed cleaning methods.
- (c) The pipeline cleaning plan must be submitted a minimum of twenty (20) Business Days prior to undertaking cleaning operations.
- (d) No cleaning operations shall be undertaken prior to review of the cleaning plan by the Contract Administrator.

E17.3.2 Shop Drawings

- (a) Where towed cleaning equipment is proposed, the Contractor shall submit Shop Drawings for the proposed winch line (or flusher hose), complete with the safe pull strength as recommended by the manufacturer.
- (b) The Contractor shall submit Shop Drawings for all foam cleaning pigs and mechanical cleaning tools proposed for use.

E17.4 Products

E17.4.1 All pipeline cleaning products shall be equipment dedicated for use in potable water pipelines and shall not have any prior use in sewer or storm sewer applications.

E17.4.2 Foam Cleaning Pigs

- (a) Material: One piece moulded open-cell polyurethane.
- (b) Density: up to a standard medium density cleaning pig (80 to 112 kg/m³).
- (c) Pigs shall be new and packaged for shipping.
- (d) Pigs shall be supplied complete with a factory installed steel pulling cable. The cable and loops shall be rated for a tensile force equal to 1.5 times the capacity of the proposed winch. Pigs shall be supplied complete with a steel support disc on both ends suitable for towing pigs. The steel disk shall have a minimum diameter of 100 mm.
- (e) Foam cores for pigs shall be of equal or greater density than foam body.
- (f) Pigs to be sized for the internal diameter of the pipeline or as recommended by the manufacturer for the intended purposes.
- (g) Bristled pigs may use synthetic plastic or steel brushes.

E17.5 Equipment

E17.5.1 All pipeline cleaning equipment shall be equipment dedicated for use in potable water pipelines and shall not have any prior use in sewer or storm sewer applications.

E17.5.2 High velocity flushing equipment shall be specially designed for the purposes of cleaning water mains for rehabilitation.

E17.5.3 Winch and Winch Line

- (a) Winch lines shall be one of the following:
 - (i) synthetic winch lines;
 - (ii) steel cable; or
 - (iii) braided flusher hose.
- (b) Proposed winch lines and hoses must have a third party verified tensile load rating. Minimum tensile strength for the winch line shall be 60 kN (13,490 lb) or as required to facilitate the cleaning operations, whichever is greater. Winch lines should have a minimum tensile capacity of 1.5 times the maximum or limited capacity of the winch as noted below.
- (c) Winches used for cleaning purposes shall have sufficient load capacity to facilitate pipeline cleaning.
- (d) Winches used for cleaning purposes shall be fitted with gauges capable of monitoring winching loads. Winch loads shall be monitored at all times to ensure the load rating of the winch lines and cleaning pigs is not exceeded. Winch capacity shall not exceed 66% of the rating of the cable. Where winches exceed these limits, hard controls on winch output shall be implemented to limit their capacity to 66% of the tensile capacity of the winch line.

E17.5.4 Scrapers shall be specially designed for cleaning water mains of this diameter and capable of navigating the geometry of the pipeline.

E17.5.5 All towed pipeline cleaning equipment must be capable of being towed in both directions for retrieval.

E17.6 Methods

E17.6.1 All equipment being used within a potable water pipeline shall be spray or swab disinfected using a 200 mg/L free chlorine solution prior to entering or coming in contact with the pipe.

E17.6.2 The Contractor shall not deviate from the submitted and accepted cleaning plan without notification to and acceptance by the Contract Administrator.

E17.6.3 Cleaning pigs and scrappers shall be tethered on each end and capable of being winched back to their deployment location in the event they are prevented from traversing the entirety of the crossing.

E17.6.4 Pigging

- (a) Where applicable, provide pig launch tubes, pipe and fittings, including valves.
- (b) Winch lines shall be inserted into the pipelines for cleaning purposes. Winch lines may be inserted by high pressure flusher nozzle, flow drone or other accepted method.
- (c) Foam cleaning pigs shall be tethered on each end and be capable of being winched in either direction.
- (d) Pigging shall be completed in a progressive manner, commencing with undersized soft pigs before proceeding to more aggressing cleaning pigs.

E17.6.5 Mechanical Cleaning

- (a) Mechanical cleaning (chain flails, scrapers) may be employed for the removal of hard debris and other features or pipe defects that may be detrimental to the liner during installation. Setup and operation of mechanical cleaning methods shall be undertaken with an abundance of caution to not aggravate existing defects or otherwise damage the pipe prior to lining.

E17.6.6 Flushing of Pipelines Using Traditional Flushing Equipment

- (a) Flushing equipment shall conform to CW2140 and may be utilized for removal of debris from pipelines.
- (b) Nozzle pressure when utilizing flushing equipment within pipelines shall be limited to 10,350 kPa.

E17.6.7 Alternative Cleaning Methods

- (a) Alternative cleaning methods other than those noted herein may be utilized upon review and acceptance by the Contract Administrator.

E17.6.8 Retrieval of Cleaning Equipment

- (a) The Contractor shall be responsible for the retrieval of any cleaning equipment which becomes lodged within the host pipe and the repair of any damage to the host pipe caused by the work or the retrieval process.

E17.7 Disposal of Solid Debris

- (a) Where hydrovacating of cleaning debris is required, the liquid may be decanted into a nearby wastewater or combined sewer manhole at rates shown on the Drawings and as approved by the Contract Administrator.
- (b) Solid debris shall be hauled off site as per CW 2140.

E17.8 Measurement and Payment

E17.8.1 Pipeline Cleaning

- (a) For the purposes of payment, Pipeline Cleaning shall be considered any and all efforts to remove loose or accumulated debris, encrustation, and tuberculation from

the pipeline. These methods may include high pressure flushing, pigging, and/or scraping of the pipeline.

- (b) Pipeline Cleaning shall be measured and paid on an hourly basis (up to 10 hours per day) with an hourly overtime rate for time spent beyond 10 hours of cleaning per day, at the respective unit rates for “400 mm Water Main Cleaning and Lining Preparation Work” as listed in Form B: Prices.
- (c) Time measured will be based on on-site availability of the Contractor's crews, from the time crews are present on site until work is completed and the site is secured at the end of the shift, as observed and certified by the Contract Administrator.
- (d) Flushing of the pipe for the purposes of debris removal will be considered incidental to the Work and included in the time-based measurement and payment for Pipeline Cleaning.
- (e) Payment for “Cleaning Rate (Up to 10 Hours Per Day)” and “Overtime Cleaning Rate (Beyond 10 Hours of Cleaning Per Day)” shall include the supply of all labour, equipment and materials required to complete the work as specified herein.
- (f) Payment for “Cleaning Rate (Up to 10 Hours Per Day)” and “Overtime Cleaning Rate (Beyond 10 Hours of Cleaning Per Day)” will be made upon acceptance of the cleaning works based on review of the pre-lining video by the Contract Administrator.

E17.8.2 Mechanical Cleaning and Pipeline Preparation

- (a) For the purposes of payment, Mechanical Cleaning and Pipeline Preparation shall be considered any efforts beyond those defined as Pipeline Cleaning, including mechanical cleaning or robotic grinding of the interior pipe wall to remove hard protrusions, weld materials, or other defects deemed necessary for removal by the liner manufacturer.
- (b) Mechanical Cleaning and Pipeline Preparation will be measured and paid on an hourly basis at the respective unit rate for “Mechanical Cleaning and Pipeline Preparation” as listed in Form B: Prices.
- (c) Time measured will be based on on-site availability of the Contractor's crews, from the time crews are present on site until work is completed and the site is secured at the end of the shift, as observed and certified by the Contract Administrator.
- (d) Payment for “Mechanical Cleaning and Pipeline Preparation” shall include the supply of all labour, equipment and materials required to complete the work as specified herein.
- (e) Efforts required to remove water and debris introduced into the pipe crossing during the Work is considered incidental to the Work and included in the time-based measurement and payment for “Mechanical Cleaning and Pipeline Preparation”.
- (f) Payment for “Mechanical Cleaning and Pipeline Preparation” will be made upon acceptance of the cleaning works based on review of the pre-lining CCTV inspection by the Contract Administrator.

E18. PIPELINE INSPECTION

E18.1 Description:

- (a) This Specification describes the requirements for obtaining water main measurements and inspections required to facilitate the specified rehabilitation work.

E18.2 Equipment

- (a) Equipment shall meet the requirements CW 2145 and those identified herein.
- (b) All CCTV inspection equipment shall be equipment dedicated for use in potable water pipelines and shall not have any prior use in sewer or storm sewer applications.

E18.3 Methods

- E18.3.1 All equipment being used within a potable water pipeline shall be spray or swab disinfected using a 200 mg/L free chlorine solution prior to entering or coming in contact with the pipe.
- E18.3.2 Verification of Existing Host Pipe Dimensions
- (a) Verify dimensions and depths prior to installation as follows:
 - (i) Length of host pipe to confirm the liner length prior to installation.
 - (b) Confirm measurements and suitability of the manufactured liner with the Contract Administrator prior to lining.
- E18.3.3 Perform the following pipeline inspections in accordance with CW 2145 and as outlined herein:
- (a) For all CCTV inspections, the host pipe shall be fully dewatered to permit full inspection of the pipeline.
 - (b) Pre-Cleaning Inspection:
 - (i) Perform prior to undertaking pipe cleaning and preparation.
 - (ii) No coding of the CCTV submission will be required.
 - (c) Pre-Lining Inspection:
 - (i) Perform after host pipe cleaning and preparation.
 - (ii) The Pre-Lining Inspection shall confirm:
 - ◆ Necessary cleaning and pipe preparation work, including internal and external host pipe repairs, have been satisfactorily completed.
 - ◆ Condition of the host pipe is consistent with the design conditions and the Specifications. The Contractor shall advise the Contract Administrator of any condition that is contrary to the design conditions or assumptions made that may affect either long or short term performance of the liner prior to commencing lining.
 - (iii) Pre-Lining CCTV shall be reviewed on site or provided to the Contract Administrator to review. Provide to the Contract Administrator a minimum of one (1) Business Day prior to lining for review and acceptance prior to proceeding with the liner installation.
 - (iv) No coding of the submission will be required.
 - (d) Post-Lining Inspection:
 - (i) Post-Lining Inspection is not required for FFRP liners.
 - (e) Warranty Inspection:
 - (i) Warranty Inspection not required for FFRP liners.
- E18.3.4 Submit all inspection videos to the Contractor Administrator for review in accordance with CW 2145 and as specified herein.
- E18.4 Amendments and Supplements to CW 2145:
- E18.4.1 Replace Section 3.5 with:
- (a) Coding not required.
- E18.5 Pipeline Inspection Equipment
- E18.5.1 Notwithstanding CW 2145, CCTV equipment meet the following requirements:
- (a) Minimum requirements of the in-line inspection platform include:
 - (i) Independently controlled drive tracks that enable the platform to manoeuvre around bends and climb over debris 300 mm in height.
 - (ii) Operable under partially or fully submerged flow conditions, for distances up to 500 m upstream or downstream from a single access point.
 - (iii) Operable in pipes constructed of standard pipe materials including concrete, AC, PVC, HDPE, and steel.

- (iv) Tethered to facilitate extraction of the platform from the pipeline, without causing damage to the existing infrastructure, in the event the equipment fails or otherwise becomes uncontrollable within the pipeline.
- (v) Equipped with sufficient high intensity lighting to illuminate the pipeline for visual inspection.
- (vi) Equipment shall be capable of continuously capturing digital video from first generation recordings with no frame loss, regardless of the progression of the inspection.
- (vii) Equipment shall be used to acquire continuous digital video images of the pipeline for the entire length being inspected.

E18.5.2 Retrieval of Inspection Equipment

- (a) Notwithstanding CW2145, the Contractor shall be responsible for the retrieval of any inspection equipment which becomes lodged within the host pipe and the repair of any damage to the host pipe caused by the work or the retrieval process.

E18.6 Measurement and Payment

E18.6.1 Verification of Host Pipe Dimensions:

- (a) Verification of existing host pipe lengths, depths, and dimensions will be considered incidental to the Work and will not be measured for payment. No separate payment will be made.

E18.6.2 Pipeline Inspections:

- (a) The total length of inspection to be paid will be the total length of water main inspected using CCTV to the satisfaction of the Contract Administrator for each identified inspection. Measurement will be made along the centerline of the host pipe as determined from the pre-cleaning and pre-lining CCTV inspections.
- (b) Payment will not be made for inspections re-performed where the Contract Administrator has determined the requirements of the specification have not been satisfied.
- (c) Water main dewatering and other efforts to facilitate CCTV inspections will be considered incidental to "400 mm Water Main Inspection" and will not be measured for payment. No additional payment will be made.

E18.6.3 Inspection Reports

- (a) CCTV inspection reports will be considered incidental to the inspection and will not be measured for payment. No additional payment will be made.

E19. PULLED IN PLACE FFRP LINER

E19.1 Description

- (a) This specification covers the supply and installation of Pulled in Place FFRP Liners for the rehabilitation of potable water mains and other pressure pipelines.

E19.2 Definitions

- (a) Pulled in place FFRP liners consist of a reinforced flexible tube capable of supporting all internal pressures, which is installed within an existing water main. The liner is secured at each end through the use of termination rings, providing a hydrostatically integral connection to the adjacent water main.
- (b) Acceptance Test – A test or a series of tests conducted under actual or simulated field conditions to determine whether a material system or component conforms to specified requirements in a construction or procurement document.
- (c) Type Tests – Tests carried out under controlled laboratory conditions to demonstrate representative short or long term structural properties of a product or one of its components.

- (d) Demonstration Test – A Type or Acceptance Test carried out to demonstrate cause and effect by specified methods; used to establish the relationship between a specific set of procedures to prepare and apply a product and a desired outcome in terms of achieving target mechanical or other properties. For example, building a test panel to illustrate what combination of surface preparation and application technique/procedures are required to achieve target adhesion values.
- (e) Maximum Allowable Pressure (MAP) – The maximum combination of internal pressures that a pipe or lining system is anticipated to be exposed to including sustained, occasional surge and/or test pressure.
- (f) Maximum Allowable Operating Pressure (MAOP) – The maximum anticipated sustained internal operating pressure that a pipe system or liner is anticipated to be exposed to.
- (g) Occasional Surge (emergency or transient) Pressure – Short-term internal pressure events usually caused by emergency operations of the pipe network system (e.g. a rapid valve closure) or malfunction (e.g. power failure, component failure, etc.)

E19.3 Reference Standards

E19.3.1 The following reference standards may be applicable to this specification:

- (a) AWWA Manual of Water Supply Practice M28 – Rehabilitation of Water Mains.
- (b) AWWA Report – Structural Classifications of Pressure Pipe Linings, Suggest Protocol for Product Classifications.
- (c) NSF/ANSI Standard 61: Drinking Water System Components – Health Effects.
- (d) ISO 11295 Classification and information on design and applications of plastics piping systems used for renovation and replacement.
- (e) ISO 9080 Plastics piping and ducting systems — Determination of the long-term hydrostatic strength of thermoplastics materials in pipe form by extrapolation.
- (f) DVGW VP 643 Flexible fabric-reinforced plastic liners and associated connectors for gas lines with operating pressures over 16 bar.

E19.3.2 All reference standards shall be inferred to be the latest revision of the specific reference standard, unless a specific year is specified.

E19.4 Submittals Before Starting Work

E19.4.1 Provide the required submittals to the Contract Administrator a minimum of ten (10) Business Days before starting pre-work at each site or as noted below, whichever is sooner.

E19.4.2 Submit shop drawings for the proposed liner. Shop drawings shall demonstrate the suitability of the proposed liner system (and diameter) to meet the requirements of the contract.

E19.4.3 Submit a site planning and operations protocol that provides information on the following.

- (a) An excavation, staging, and sampling plan that details:
 - (i) All required shaft locations, shaft sizes and shoring/excavation safety requirements.
 - (ii) Temporary water system layout (if required).
 - (iii) Required storage and staging area.
- (b) Traffic management to accommodate the full construction footprint at each site. See E7.
- (c) Details of the host pipe preparation requirements. See cleaning protocol submission (E17.4.1) for cleaning requirements. Identify any additional preparation works required prior to lining.
- (d) Liner installation plan, including:
 - (i) All equipment and operations required to install the liner.

- (ii) Provide the maximum allowable axial and longitudinal tensile stress for the liner and the arrangement for monitoring pull-in forces during installation.

E19.4.4 Liner design, qualification testing and Quality Control Certificate

- (a) Long term hydrostatic strength test report as per ISO 9080 or equivalent demonstrating extrapolated 50-year design strength.
- (b) Manufacture quality certificate in accordance to DVGW VP 643.
- (c) All available manufacture quality control reporting.
- (d) Submit design demonstrating conformance to specified operating pressures and physical environment.

E19.4.5 Submit a liner termination plan providing the following information:

- (a) Details of the termination seals and end rings to facilitate the transition from the installed liner to existing water mains.
- (b) Product description and applicable product literature.
- (c) Identify any water main modifications required to utilize the proposed system. Where permanent water main modifications are required beyond what has been shown on the Drawings, the Contractor shall provide a liner termination drawing or drawings clearly showing the configuration of liner termination and connections to the existing water main piping. The drawing(s) shall illustrate the permanent piping configuration complete with all fittings, couplings, restraints, corrosion protection features, bedding and backfill requirements, and any other pertinent detail required for evaluation by the Contract Administrator and construction. The drawing shall be sealed and signed by a Professional Engineer, registered in the Province of Manitoba and experienced in the design pressure pipelines.
- (d) A detailed installation procedure.
- (e) A minimum of three (3) examples of where the system has been used complete with liner design pressures and applicable pressure testing results.

E19.5 Liner Material and Design Requirements

E19.5.1 Liner Rehabilitation Systems

- (a) The pulled in place liner system shall be a manufactured flexible liner, brought to site and installed within the host pipe. No curing or on-site manufacturing beyond installation and securing of the termination points is permitted.
- (b) The liner system shall be designed to support the MAOP and Occasional Surge Pressures identified herein independent from the host pipe. i.e. the liner must be able demonstrate an ability to support the identified pressures in independent tests without confinement. The liner system is not required to have external load carrying capacity or resistance to internal vacuums.
- (c) The following products are accepted for use for this project:
 - (i) Primus Line; or
 - (ii) approved equal in accordance with B7.

Notwithstanding general acceptance for use, the proposed lining system shall be required to meet all project specific requirements to be considered for use in the City of Winnipeg.

- (d) Liner rehabilitation system shall be certified to NSF 61 Drinking Water System Components – Health Effects as Pipe liner- Immediate Return to Service for the pipe sizes and conditions specified herein.

E19.5.2 Liner Operational Requirements

- (a) Hydrostatic Pressure Loads:
 - (i) MAOP (for design) – 1034 kPa (150 psi).

- (ii) Occasional Surge Pressure – 275 kPa (40 psi).
- (iii) Test pressure – 862 kPa (125 psi).
- (b) Minimum nominal liner diameter: 400 mm.
- (c) Provide liner derating data as a result of deflections, bends and other constraints.

E19.6 Liner Terminations

- (a) Where specified the Contractor shall install end terminations for the purposes of ensuring a hydrostatically integral connection between the liner and the adjacent water main.
- (b) Liner termination systems shall be capable of being connected to the existing water main, through a flange, grooved end ring, or similar mechanical means. The supplied system shall be compatible with the existing piping or alternative piping modifications proposed in accordance with these specifications.
- (c) Liner terminations shall provide a water tight seal between the liner and the mechanical connection to the existing water main.
- (d) Liner terminations shall be supplied complete with fusion bonded epoxy coatings.
- (e) Liner termination shall not rely on installation methods requiring pushing liner into host pipe.

E19.7 Construction Methods

E19.7.1 Installation of Pulled in Place Liners

- (a) All equipment shall be equipment dedicated for use in potable water pipelines and shall not have any prior use in sewer or storm sewer applications.
- (b) All equipment being used within a potable water pipeline shall be spray or swab disinfected using a 200 mg/L free chlorine solution prior to entering or coming in contact with the pipe.
- (c) Installation shall not commence until liner preparation work has been completed and accepted by the liner manufacturer.
- (d) Liner installation shall conform to the submitted installation methods, including monitoring of and adherence to maximum pulling forces.

E19.7.2 Cleaning and Disinfection

- (a) Cleaning and Flushing
 - (i) Clean and flush the lined water main in accordance with CW 2125.
- (b) Disinfection
 - (i) Disinfect water mains in accordance to CW 2125 and E20.

E19.7.3 Quality Assurance Requirements

- (a) The liner manufacturer and Contractor shall have in place a formal Quality Assurance Program. As a minimum the Quality Assurance Program shall be designed to verify that design intent is achieved in the construction process.
- (b) Maintain the following Quality Control records of the work and provide to the Contract Administrator after completion of the work, including but not limited to pulling force used to pull liners into place in the host pipe and measured liner elongation.

E19.7.4 Acceptance Testing

- (a) Carry out tests, secure samples and arrange for third party tests at the laboratory noted herein. The following Acceptance Testing is required.
- (b) Pressure Loss Method
 - (i) Carry out a pressure test on each liner installed in accordance with CW 2125. Minimum test pressure shall be 862kPa (125 psi), as measured at lowest system point.

- (ii) Leakage allowance is an “apparent” leakage allowance to account for entrapped air, etc. Any visible or readily apparent leaks shall be repaired irrespective of leakage allowance.
 - (iii) The pipe shall be pressurized at test pressure for 2 hours prior to test to allow for stabilization of the liner.
 - (iv) Allowable apparent leakage shall be calculated as 0.04 litres per millimetre of pipe diameter per kilometer of pipe per hour.
- (c) Pressure Drop Method
 - (i) Carry out a pressure test on each liner installed. Minimum test pressure shall be 862kPa (125 psi), as measured at lowest system point.
 - (ii) Fill test section and flush until air free.
 - (iii) Apply test pressure.
 - (iv) After a rest period of 5 minutes with pressure drop, the test pressure must be reapplied by pumping.
 - (v) The pumping process must repeatedly be applied after 5 minutes of rest.
 - (vi) The pressure drop should decline after each step compared to the pressure drop measured the step before.
 - (vii) The reapplication of the test pressure by pumping every 5 minutes has to be repeated until the pressure drop after 5 minutes is maximum of 1.6 KPa.
 - (viii) Apply test pressure for a period of two (2) hours. The test is considered a pass if pressure drop does not exceed 20 KPa per hour, and a total pressure drop of 40 KPa in the two hour test.
- (d) If additional testing is required beyond the minimum testing noted above it shall be reviewed in the context as defective work testing or Owner requested additional testing. Owner requested additional testing shall be paid for by the Owner, while additional testing required as a direct result of deficient work shall be borne by the Contractor.

E19.8 Measurement and Payment

E19.8.1 FFRP Liner Installation

- (a) FFRP liners will be measured on a length basis and paid for at the Contract Unit Price per metre for “Supply and Install 400 mm FFRP Liner”.
- (b) The length to be paid for will be the total length of liner in linear metres supplied and installed in accordance with this specification, accepted and measured by the Contract Administrator measured between the liner terminations. The length to be paid will be determined by the total inspected length of the pre-lining CCTV inspection.
- (c) Payment for “Supply and Install 400 mm FFRP Liner” will include all labour and materials required to complete the work as specified, including but not limited to:
 - (i) Provision of all required submissions;
 - (ii) Supply and installation of liner system;
 - (iii) Flushing, chlorination, and health testing; and
- (d) 90% payment will be made upon satisfactory installation and Acceptance Testing of the liner and returning the water main to service. The remaining 10% of the payment will be made upon delivery and acceptance of all required submissions, shop drawings, and reports.
- (e) Disinfection of pipelines, health testing, and disposal of chlorinated water will be considered incidental to “Supply and Install 400 mm FFRP Liner” and will not be measured for payment. No additional payment will be made.

E19.8.2 Supply and Installation of FFRP Liner Terminations

- (a) Supply and installation of liner terminations will be measured and paid on a unit basis, one for each end of the crossing, at the Contract Unit Price for "Supply and Install 400 mm FFRP Liner Termination Fittings" as listed in Form B: Prices. Payment shall include all labour and materials required to complete the work, including but limited to modifications to the existing water main, welding, new fittings, and re assembly of the water main.

E20. WATER MAIN DISINFECTION

E20.1 Description

- (a) This specification covers the disinfection of water mains and fittings.

E20.2 Disinfection

- (a) Disinfection of water mains shall be completed in accordance with CW2125 and AWWA C651.
- (b) The Contractor shall take every reasonable precaution during construction to prevent debris from entering the pipeline. If, in the opinion of the Contract Administrator, deleterious substances have entered the pipeline, the Contractor shall flush the pipeline with sanitized pipeline cleaning equipment.
- (c) Further to CW 2125, segments of water mains not disinfected and used as temporary fittings as noted above, shall be disinfected by swabbing as outlined in Section 3.3.16 of CW 2125.
- (d) Upon completion of disinfection, chlorinated water shall be pumped from the pipeline at the lowest point(s) in the system. Chlorinated water shall not be directly discharged to the environment and shall be disposed of in accordance with E20.4.
- (e) Bi-directional flushing may be required to remove chlorine from the pipeline.
- (f) All equipment being used within a potable water pipeline shall be spray or swab disinfected using a 200 mg/L free chlorine solution prior to entering or coming in contact with the pipe.
- (g) Blind flanges shall be supplied with ports adequate to achieve desired flushing velocities.
- (h) The Contractor shall ensure hoses, hydrants, meters, and other appurtenances used for flushing operations are protected from freezing.
- (i) The Contractor shall ensure that the selected means of disposing of chlorinated water does not result in unsafe site conditions as a result of freezing atmospheric temperatures.

E20.3 Health Testing

- (a) The pipeline shall be refilled with potable water and water samples for health tests taken in accordance with CW 2125, except test samples shall be taken each day at least 24 hours apart for three (3) successive days.

E20.4 Disposal of Chlorinated Water

E20.4.1 Chlorinated water shall be treated by one of the following methods, as recommended in AWWARF – Guidance Manual for the Disposal of Chlorinated Water:

- (a) Discharged into nearby WWS MH's if possible. The allowable discharge rates for the nearby wastewater sewer manholes have been provided on the drawings. The Contractor may store water as required to meet allowable discharge rates.
- (b) De-chlorination of water with discharge into the LDS system or directly to the river. If discharging directly to the river the Contractor shall take all necessary precautions to prevent erosion of the riverbank. De-chlorination may be accomplished using the following:
 - (i) Sodium Ascorbate,
 - (ii) Vita-D-Chlor TM by Integra Chemical,
 - (iii) or approved equal in accordance with B7.

- (c) Contain chlorinated water on Site until chlorine has dissipated to acceptable limits.

E20.4.2 The contractor shall submit a chlorinated water disposal plan in writing to the Contract Administrator a minimum of five (5) working days prior to performing any cleaning or flushing of water main or feeder mains. The disposal plan shall at a minimum include the following:

- (a) Intended means of disposal for each site.
- (b) Means of de-chlorination (if required).
- (c) Means of storing water for discharge (if required).

E20.5 Measurement and Payment

E20.5.1 Disinfection, Health Testing, and Disposal of Chlorinated Water

- (a) Disinfection, and health testing, and disposal of chlorinated water shall be considered incidental to the Work and will not be measured for payment. No additional payment will be made.

E21. WORK PRACTICES ON ASBESTOS CEMENT PIPE

E21.1 Further to C.6.29(d), the Contractor's attention is directed to the possible health dangers associated with working with asbestos cement pipe and all work associated with the existing AC water mains shall conform to the following publications:

- (a) "Work Practices for Asbestos-Cement Pipe", AWWA No. M16, published by the American Water Works Association; and
- (b) "Recommended Work Practices for AC Pipe", 1977, published by the AC Pipe Producers Association.

E21.2 The Contractor shall state in the "job specific safe work plan" the proposed procedure for working on AC Pipe. The Contractor shall also provide proof of asbestos handling training or certification.

E22. TEMPORARY SURFACE RESTORATION

E22.1 General

- (a) This specification applies to temporary surface restoration Work.
- (b) Further to clause 3.3 of CW 1130 where permanent surface restorations cannot be made due to cold weather, the Contractor shall temporarily restore surfaces as follows:

E22.2 Construction Methods

- (a) Backfill under Temporary Surface Restoration
 - (i) Backfill and level boulevards and grassed areas to match existing surface elevations.
 - (ii) Use Class 2 backfill in excavation under temporary street pavement and sidewalk where Class 3 backfill cannot be jetted and flooded due to cold weather.
 - (iii) Class 2 backfill may be compacted in 600 mm lifts where backhoe operated pneumatic plate compactors are used.
 - (iv) Jet and flood Class 2, Class 3 and Class 5 backfilled excavations in spring when ground is not frozen prior to permanent restoration.
- (b) Temporary Surface Restoration
 - (i) Cap excavations in concrete pavement with a 100 mm layer of concrete for "Temporary Restoration of Utility Pavement Cuts" as specified in CW 3310.
 - (ii) Cap excavations in sidewalk pavement with a 50 mm layer of concrete for "Temporary Restoration of Utility Pavement Cuts" as specified in CW 3310.
 - (iii) Insulate temporary concrete as required during 48 hour curing period.

- (iv) Where curb has been removed as part of the pavement cut pour temporary curb using "Concrete for Temporary Restoration of Utility Pavement Cuts" as specified in CW 3310.
- (v) Remove all temporary pavements prior to permanent restorations.
- (c) Maintenance
 - (i) The Contractor shall monitor and maintain temporarily restored surfaces as required until permanent restoration is complete.
 - (ii) If, in the opinion of the Contract Administrator, temporarily restored surfaces are not being adequately maintained or were not properly constructed and pose a danger to the public, maintenance or reconstruction will be done by the City forces with no advance notification the Contractor.
 - (iii) All costs associated with the maintenance or reconstruction of temporary pavement incurred by the City shall be deducted from future payments to the Contractor.

E22.3 Measurement and Payment (Provisional Item)

- (a) Temporary restoration will be measured on unit price basis as listed in Form B: Prices. Payment will be made at the Contract Price for "Temporary Surface Restorations".
- (b) No extra payment will be made for the installation of Class 2 backfill under temporary street pavement and sidewalk.
- (c) No measurement or payment will be made for the temporary restorations of boulevards and grassed areas.
- (d) No measurement or payment will be made for the removal of temporary pavement prior to permanent restoration.

E23. PERMANENT RESTORATION

E23.1 Description

- (a) This specification identifies the requirements for permanent surface restorations.
- (b) The specification amends the Surface Restorations defined in CW 2130 and places the cost of permanent surface restorations upon the particular Work item being undertaken.

E23.2 General

- (a) The Contractor will follow the City's Street By-law No. 1481/77 and Street Cuts Manual (2026) for all pavement restoration unless otherwise shown on the drawing or specifications or as directed by the Contract Administrator. The Contractor or their subcontractor shall hold a Restoration Contractor's License issued under the Streets By-law in order to restore pavement cuts in accordance with the City of Winnipeg Street Cuts Manual.
- (b) The Street Classification and Surface Type within the project work area are classified as follows:

Street Name	Segment	Classification	Pavement Type	General Condition
Goulet Street	Youville Street to End	Local	Concrete	Fair
Doucet Street	Dufresne Avenue to End	Local	Asphalt over Concrete	Good
Note: Values obtained from City of Winnipeg Street Conditions Map available at: https://winnipeg.ca/publicworks/maps/streetconditions.asp Conditions reported at the time of posting may not reflect existing conditions.				

- (c) All street segments within the work area impacted by the Work as determined by the Contract Administrator shall be maintained and restored with the following additional requirements.

- (i) Review and record the condition of each street segment with the Contract Administrator and a City Representative from Public Works prior to the initiation of Work.
- (ii) Review and record the condition of each street segment with the Contract Administrator and a City Representative from Public Works prior to surface restoration. The surface restoration required for each street segment will be agreed upon at this review meeting.
- (iii) Pavement Restoration Guidelines can be found in the City of Winnipeg Street Cuts Manual and are summarized below.

◆ Asphalt and Asphalt over Concrete:

Rated Pavement Condition of Segment	Regional Streets	Non-Regional Streets
	Action Required	Action Required
New	Grind and repave full lane width, and length of excavation or project (see Note A-3 and Pavement Restoration Requirements for Series of Cuts)	Grind and repave full lane width, and length of excavation or project (see Note A-3 and Pavement Restoration Requirements for Series of Cuts)
Good		
Fair		Decision after inspection by Public Works Department (see Notes A-2 and A-3)
Poor	Decision after inspection by Public Works Department (see Notes A-2 and A-3)	Isolated repairs accepted

◆ Concrete:

Rated Pavement Condition of Segment	Regional Streets	Non-Regional Streets
	Action Required	Action Required
New	Full panel repair	Full panel repair
Good		
Fair	Decision after inspection by Public Works Department (see Note B-2)	Decision after inspection by Public Works Department (see Note B-2)
Poor		Isolated repairs accepted

E23.3 Methods

- (a) The Contractor shall permanently restore all existing surface areas disturbed by construction activities including but not limited to areas disturbed by; construction equipment, placement of equipment trailers and where construction materials were stockpiled, shall be restored as follows:
- (i) Full depth partial slab patches in accordance with CW 3230.
 - (ii) Boulevards, ditches and grassed areas - sodding using imported topsoil in accordance with CW 3510. The Contractor shall restore all areas disturbed during construction to existing condition or better, using topsoil and sod at its own cost.
 - (iii) Asphalt surfaces – match existing base course and asphalt thickness or a minimum of 150 mm of base course and 75 mm of Type 1A Asphaltic Concrete, whichever is greater, in accordance with CW 3410.
 - (iv) Miscellaneous concrete slabs, including sidewalk - in accordance with CW 3235.
 - (v) Concrete curb and gutter – in accordance with CW 3240.
 - (vi) Trees - requiring replacement due to construction activities (as directed by the Contract Administrator) shall be installed in accordance with CW 3510. The Contractor will not be reimbursed under a separate pay item for replacing trees damaged by construction activities. The work will be considered incidental to the Work.

E23.4 Measurement and Payment

- E23.4.1 Payment for restoration works will be limited to areas disturbed to facilitate construction. Surface restoration outside of the designated construction areas shall be at the Contractors expense.
- E23.4.2 Sodding
- (a) Supply and installation of sod using imported topsoil shall be measured and paid in accordance with CW 3510.
- E23.4.3 Concrete Curb Renewals

- (a) Concrete curb renewal shall be measured on a linear meter basis and paid for at the Contract Unit Price per linear meter for "Concrete Curb Renewal - Barrier Curb (SD-204)" for the specified curb type, as identified in Form B. Payment shall include all materials and labour required to complete the work as specified.
- (b) All cost incurred for sub base and base course materials shall be included in the unit price for "Concrete Curb Renewal - Barrier Curb (SD-204)".

E23.4.4 Sidewalk Patches

- (a) Construction of sidewalk patches will be measured on a square metre basis for each type of pavement at the Contract Unit Price for "Sidewalk Patches - Unreinforced Concrete up to 100 mm thick" as listed in Form B: Prices. Measurement will be made for each square metre of sidewalk acceptably replaced.
- (b) Payment for "Sidewalk Patches - Unreinforced concrete up to 100 mm thick" shall include all base and sub-base preparation, supply and placement of concrete and asphalt pavements.

E23.4.5 Concrete Slab Patches

- (a) Construction of concrete slabs will be measured on a square metre basis at the Contract Unit Price for "Partial Slab Patches – 150 mm Reinforced Concrete Pavement" as listed in Form B Prices. Measurement will be made for each square metre of pavement acceptably replaced.
- (b) Payment for "Partial Slab Patches – 150 mm Reinforced Concrete Pavement" shall include base and sub-base preparation, supply and installation of dowels and tie bars, reinforcement steel, and supply and placement of concrete pavements.

E23.4.6 Asphalt Overlay

- (a) Repair of asphalt pavement overtop of existing concrete slabs (overlays) will be measured and paid on a square metre basis at the Contract Unit Price for "Asphalt Overlay over Existing Concrete Pavement – Tie-Ins and Approaches" as listed in Form B: Prices.
- (b) Payment for "Asphalt Overlay over Existing Concrete Pavement – Tie-Ins and Approaches" shall include existing pavement removal, surface preparation, and supply and placement asphalt pavements.

PART F - SECURITY CLEARANCE

F1. SECURITY CLEARANCE

F1.1 Each individual proposed to perform the following portions of the Work:

- (a) any Work on private property;
- (b) any Work within City facilities other than:
 - (i) an underground structure such as a manhole;
 - (ii) in areas and at times normally open to the public;
- (c) communicating with residents and homeowners in person or by telephone;

F1.1.1 Each Individual shall be required to obtain a Police Information Check from the police service having jurisdiction at their place of residence. Or

- (a) Sterling BackCheck – for existing account holders, log into your account to send individual invitations to employees requiring security clearance. For those that do not have an account, click on the following link to open an account:
<https://forms.sterlingbackcheck.com/partners/platform2-en.php?&partner=winnipegcity>; or
- (b) Commissionaires (Manitoba Division), forms to be completed can be found on the website at: <https://www.commissionaires.ca/en/manitoba/home>; or
- (c) FASTCHECK Criminal Record & Fingerprint Specialists, forms to be completed can be found on the website at: <https://myfastcheck.com>