



THE CITY OF WINNIPEG

TENDER

TENDER NO. 507-2021

**PIPELINE ACCESS MODIFICATIONS, CLEANING & SUPPORT FOR RIVER
CROSSING INSPECTIONS**

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PART B - BIDDING PROCEDURES

B1. CONTRACT TITLE

B1.1 PIPELINE ACCESS MODIFICATIONS, CLEANING & SUPPORT FOR RIVER CROSSING INSPECTIONS

B2. SUBMISSION DEADLINE

B2.1 The Submission Deadline is 12:00 noon Winnipeg time, July 13, 2022.

B2.2 The Contract Administrator or the Manager of Materials 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 Contract Administrator or an authorized representative will be available at the Site at 9:00 a.m. on July 6, 2022 to provide Bidders access to the Site. Bidders are instructed to meet at the first location at 9:00 a.m. after which site investigation will move to the subsequent location.

- (a) Site 3 – Norwood Bridge Force Main, North Abutment
- (b) Site 1 – Old Forts Bridge Force Mains, North Abutment
- (c) Site 1 – Old Forts Bridge Force Mains, South Abutment
- (d) Site 2 – Provencher Bridge Force Mains, East Abutment
- (e) Site 2 – Provencher Bridge Force Mains, West Abutment
- (f) Site 6 – Dakota Feeder Main
- (g) Site 4 – Fort Garry – St. Vital Force Main Siphon, Inlet Chamber
- (h) Site 4 – Fort Garry – St Vital Force Main Siphon, Outlet Chamber
- (i) Site 5 – West Perimeter Force Main, Pumping Station
- (j) Site 11 – Murray Ave Feeder Main
- (k) Site 8 – West End Feeder Main – Omand's Creek
- (l) Site 9 – West End Feeder Main – Truro Creek
- (m) Site 7 - Rouge Road Feeder Main
- (n) Site 10 – Haney-Moray Feeder Main

B3.2 Proponents attending the Site Investigation are required to register for the Site Investigation at least 48 hours prior to the Site Investigation by contacting the Contract Administrator listed in D5.1. Details of meeting locations and estimated times at sites will be provided to registered participants.

B3.3 The Bidder is advised that all valve chambers are Confined Space Entry locations. Confined Entry will not be permitted during Site Investigations.

B3.4 Although attendance at the Site Investigation is not mandatory, the City strongly suggests that Bidders attend.

B3.5 The Bidder shall not be entitled to rely on any information or interpretation received at the Site Investigation unless that information or interpretation is the Bidder's direct observation, or is provided by the Contract Administrator in writing.

B3.6 The Bidder may view portions of the site located within public right-of-ways without making an appointment.

B4. ENQUIRIES

- B4.1 All enquiries shall be directed to the Contract Administrator identified in D5.1.
- 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 he/she has 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 D5.

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 his/her 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 he/she wishes 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 his/her 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, and
 - (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 his/her own name, his/her 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 his/her 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 his/her 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 its duly authorized officer or officers;
 - (d) if the Bidder is carrying on business under a name other than his/her 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 D33. Any such costs shall be determined in accordance with D33.
- 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) Pure Technologies Ltd.
 - (i) Technical requirements for inspection technologies.
 - (b) PICA Corporation
 - (i) Technical requirements for inspection technologies.
 - (c) Corpro Canada, Inc.
 - (i) Technical requirements for inspection technologies.

B12. CONFLICT OF INTEREST AND GOOD FAITH

- B12.1 Further to C3.2, 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 its 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 its 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 its 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 its 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 its 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 its sole discretion:

- (a) disqualify a Bidder that fails to disclose a perceived, potential or actual Conflict of Interest of the Bidder or any of its 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 its 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 its 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 its 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, Materials Management Division website <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; and
 - (b) be fully capable of performing the Work required to be in strict accordance with the terms and provisions of the Contract; and
 - (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 B13.6 and D8).
- B13.4 Further to B13.3(a), the Bidder and/or any proposed Subcontractor undertaking the Work shall, within five (5) Business Days of a request by the Contract Administrator, provide proof satisfactory to the Contract Administrator to demonstrate the following qualifications in accordance with B13.5:
- (a) A minimum of three (3) examples of successful tapping sleeve installations on:
 - (i) Prestressed Concrete Pipe (PCCP)
 - (ii) Water mains larger than 600 mm in diameter.
 - (iii) Force mains larger than 300 mm in diameter.
 - (b) A minimum of three (3) examples of successfully cleaned water mains or force mains, utilizing cleaning methods proposed for this work for pressurized force mains.
- B13.5 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 on the Information Connection page at The City of Winnipeg, Corporate Finance, Materials Management Division website at <http://www.winnipeg.ca/matmgt/>).
- B13.6 Further to B13.3(d), the Bidder acknowledges they and all Subcontractors have obtained training required by the Accessibility for Manitobans Act (AMA) available at <http://www.accessibilitymb.ca/training.html> for anyone that may have any interaction with the public on behalf of the City of Winnipeg.

B13.7 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.

B13.8 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 its 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 on The City of Winnipeg, Corporate Finance, Materials Management Division website at <https://www.winnipeg.ca/MatMgt/templates/files/eBidsecurity.pdf>.

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(b).

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 his/her 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 there from (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 his/her Bid or in other information required to be submitted, that he/she is 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 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 its 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 D33 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 his/her Bid upon written request to the Contract Administrator.
- B19.4.2 If no Contract is awarded, then the City of Winnipeg will pay the requested Bidder up to a maximum of five hundred dollars (\$500) for each of the requested submissions listed in E4 for the preparation and delivery of Shop Drawings. 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.

PART C - GENERAL CONDITIONS

C0. GENERAL CONDITIONS

- C0.1 The *General Conditions for Construction* (Revision 2020 01 31) 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, Materials Management 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. FORM OF CONTRACT DOCUMENTS

D2.1 Notwithstanding C4.1(c) and C4.4, the Contract Documents will be provided to the Contractor electronically and there will be no requirement for execution and return to the City by the Contractor. Accordingly, the provisions under C4.4(a) and C4.4(b) are no longer applicable.

D3. SCOPE OF WORK

D3.1 The Work to be done under the Contract shall consist of development of access to, and cleaning of, feeder main and force main crossings under creeks and rivers, and provision of inspection support services to specialized pipe inspection contractors.

D3.2 The major components of the Work are as follows:

- (a) External Pipeline Inspection Support at Force Main Bridge Sites (Sites 1 – 3).
 - (i) Remove cladding and insulation from portions of force main.
 - (ii) Assist/facilitate exterior inspection by specialized inspection contractor and engineering staff.
 - (iii) Complete repairs as required and reinstall insulation and cladding.
- (b) Complete Low Pressure Leakage Tests on Fort Garry - St. Vital Interceptor Siphons (Site 4).
- (c) Internal and External Inspection Support at West Perimeter Force Main (Site 5).
 - (i) Development of site access.
 - (ii) Establishment and operation of flow bypass piping.
 - (iii) Civil modifications to facilitate inspection through:
 - ◆ Installation of corrosion test lead assemblies.
 - ◆ Installation of new manhole, gate valve, launch wye assembly, and tapping sleeve on south alignment.
 - ◆ Installation of new manhole and launch wye assembly on north alignment.
 - ◆ Cleaning of pipeline crossing under river using cleaning pigs, jet flushers, and other equipment as required.
 - ◆ Assist interior and exterior inspections by specialized inspection contractor(s).
 - ◆ Final pipeline modifications.
 - ◆ Site restoration.
- (d) Internal (In-Line) Pipeline Acoustic Inspection Support at Feeder Main Sites (Sites 6 – 11):
 - (i) Development of Site Access.
 - (ii) Coring of chamber roof slabs to facilitate inspection tool access.
 - (iii) Removal of existing 750 mm diameter manhole at West End Feeder Main at Truro Creek (Site 9).
 - (iv) Construct new air release manholes and tapping sleeves at West End Feeder Main Sites (Sites 8 and 9).
 - (v) Provision of other miscellaneous inspection support.
 - (vi) Site restoration.

D3.3 Inspection of the following pipelines are to be undertaken as a part of this Contract:

- (a) Site 1: Old Forts Bridge Force Mains (external inspection)
- (b) Site 2: Provencher Bridge Force Mains (external inspection)
- (c) Site 3: Norwood Bridge Force Main (external inspection)
- (d) Site 4: Fort Garry – St. Vital Interceptor Siphons (leakage testing)
- (e) Site 5: West Perimeter Force Main (cleaning, internal, and external inspection)
- (f) Site 6: Dakota Feeder Main (internal inspection)
- (g) Site 7: Rouge Road Feeder Main (internal inspection)
- (h) Site 8: West End Feeder Main at Omand's Creek (internal inspection)
- (i) Site 9: West End Feeder Main at Truro Creek (internal inspection)
- (j) Site 10: Haney – Moray Feeder Main (internal inspection)
- (k) Site 11: Murray Avenue Feeder Main (internal inspection)

D3.4 Third party inspections by specialized pipeline inspection contractors will be grouped into multiple inspection periods. Inspection mobilization dates are subject to change based on weather, high water conditions, availability of the pipeline inspection contractors, and system operations within the City of Winnipeg.

- (a) Inspection 1 as tendered under Tender 508-2021 Provision of Electromagnetic Inspection Services
 - (i) Site 1: Old Forts Bridge Force Mains – External electromagnetic pipeline inspection
 - (ii) Site 2: Provencher Bridge Force Mains – External electromagnetic pipeline inspection
 - (iii) Site 3: Norwood Bridge Force Main – External electromagnetic pipeline inspection
- (b) Inspection 2 as tendered under Tender 508-2021 Provision of Electromagnetic Inspection Services
 - (i) Site 5: West Perimeter Force Main – Electromagnetic in-line pipeline inspection
- (c) Inspection 3 as tendered under Tender 509-2021 Provision of Pipeline Acoustic Leak Detection and CCTV Services
 - (i) Site 6: Dakota Feeder Main – Internal acoustic/CCTV inspection
 - (ii) Site 7: Rouge Road Feeder Main – Internal acoustic/CCTV inspection
 - (iii) Site 8: West End Feeder Main at Omand's Creek – Internal acoustic/CCTV inspection
 - (iv) Site 9: West End Feeder Main at Truro Creek – Internal acoustic/CCTV inspection
 - (v) Site 10: Haney – Moray Feeder Main – Internal acoustic/CCTV inspection
 - (vi) Site 11: Murray Avenue Feeder Main – Internal acoustic/CCTV inspection
- (d) Third party inspections are not required for Site 4: Fort Garry – St. Vital Interceptor Siphons.

D4. DEFINITIONS

D4.1 When used in this Tender:

- (a) "**CPR**" means Canadian Pacific Railway;
- (b) "**CSA**" means Canadian Standards Association;
- (c) "**ASTM**" means American Society for Testing and Materials;
- (d) "**AWWA**" means American Water Works Association;
- (e) "**EM**" means Electromagnetic.
- (f) "**UT**" means Ultrasonic Testing.

- (g) “**RFT**” means Remote Field Technologies.
- (h) “**CIPS**” means Close Interval Potential Survey.
- (i) “**ECDA**” means External Corrosion Direct Assessment.
- (j) “**PCCP**” means Prestressed Concrete Cylinder Pipe.
- (k) “**Site 1**” means the Old Forts Bridge Force Mains crossing of the Assiniboine River.
- (l) “**Site 2**” means the Provencher Bridge Force Mains crossing of the Red River.
- (m) “**Site 3**” means the Norwood Bridge Force Main crossing of the Red River.
- (n) “**Site 4**” means the Fort Garry – St. Vital Interceptor Siphons crossing of the Red River.
- (o) “**Site 5**” means the West Perimeter Force Main crossing of the Assiniboine River.
- (p) “**Site 6**” means the Dakota Feeder Main crossing of the Seine River and Navin Drain.
- (q) “**Site 7**” means the Rouge Road Feeder Main crossing of Sturgeon Creek.
- (r) “**Site 8**” means the West End Feeder Main crossing of Omand’s Creek.
- (s) “**Site 9**” means the West End Feeder Main crossing of Truro Creek.
- (t) “**Site 10**” means the Haney - Moray Feeder Main crossing of the Assiniboine River.
- (u) “**Site 11**” means the Murray Avenue Feeder Main between McPhillips Street and Ferrier Street.

D5. CONTRACT ADMINISTRATOR

D5.1 The Contract Administrator is AECOM, represented by:

Tanner Beavis
Municipal Engineer-in-Training
Telephone No. 204 928-9200
Email Address tanner.beavis@aecom.com

D5.2 At the pre-construction meeting, Mr. Beavis will identify additional personnel representing the Contract Administrator and their respective roles and responsibilities for the Work.

D6. CONTRACTOR'S SUPERVISOR

D6.1 At the pre-construction meeting, the Contractor shall identify his/her designated supervisor and any additional personnel representing the Contractor and their respective roles and responsibilities for the Work.

D7. NOTICES

D7.1 Except as provided for in C22.4, all notices, requests, nominations, proposals, consents, approvals, statements, authorizations, documents or other communications to the Contractor shall be sent to the address or facsimile number identified by the Contractor in Paragraph 2 of Form A: Bid/Proposal.

D7.2 All notices, requests, nominations, proposals, consents, approvals, statements, authorizations, documents or other communications to the City, except as expressly otherwise required in D7.3 or elsewhere in the Contract, shall be sent to the attention of the Contract Administrator identified in D5.

D7.3 All notices, requests, nominations, proposals, consents, approvals, statements, authorizations, documents or other communications required to be submitted or returned to the City Solicitor shall be sent to the following facsimile number:

The City of Winnipeg
Legal Services Department
Attn: Director of Legal Services
Facsimile No.: 204 947-9155

D8. ACCESSIBLE CUSTOMER SERVICE REQUIREMENTS

- D8.1 The Accessibility for Manitobans Act (AMA) imposes obligations on The City of Winnipeg to provide accessible customer service to all persons in accordance with the Customer Service Standard Regulation ("CSSR") to ensure inclusive access and participation for all people who live, work or visit Winnipeg regardless of their abilities.
- D8.1.1 The Contractor agrees to comply with the accessible customer service obligations under the CSSR and further agrees that when providing the Goods or Services or otherwise acting on the City of Winnipeg's behalf, shall comply with all obligations under the AMA applicable to public sector bodies.
- D8.1.2 The accessible customer service obligations include, but are not limited to:
- (a) providing barrier-free access to goods and services;
 - (b) providing reasonable accommodations;
 - (c) reasonably accommodating assistive devices, support persons, and support animals;
 - (d) providing accessibility features e.g. ramps, wide aisles, accessible washrooms, power doors and elevators;
 - (e) inform the public when accessibility features are not available;
 - (f) providing a mechanism or process for receiving and responding to public feedback on the accessibility of all goods and services; and
 - (g) providing adequate training of staff and documentation of same.

D9. FURNISHING OF DOCUMENTS

- D9.1 Upon award of the Contract, the Contractor will be provided with 'issued for construction' Contract Documents electronically, including Drawings in PDF format only.

SUBMISSIONS

D10. AUTHORITY TO CARRY ON BUSINESS

- D10.1 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.

D11. SAFE WORK PLAN

- D11.1 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 but in no event later than the date specified in C4.1 for the return of the executed Contract Documents, if applicable.
- D11.2 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, Materials Management Division website at <http://www.winnipeg.ca/matmgt/Safety/default.stm>

D11.3 Notwithstanding B13.5 at any time during the term of the Contract, the City may, at its 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.

D12. INSURANCE

D12.1 The Contractor shall provide and maintain the following 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, such liability policy to also contain contractual liability, unlicensed motor vehicle liability, non-owned automobile liability and products and completed operations, 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) all risks course of construction insurance in the amount of one hundred percent (100%) of the total Contract Price, written in the name of the Contractor and The City of Winnipeg, at all times during the performance of the Work and until the date of Total Performance.

D12.2 Deductibles shall be borne by the Contractor.

D12.3 The Contractor shall provide the City Solicitor with a certificate(s) of insurance, in a form satisfactory to the City Solicitor, at least two (2) Business Days prior to the commencement of any Work but in no event later than the date specified in C4.1 for the return of the executed Contract Documents, as applicable.

D12.4 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 Contract Administrator.

D13. CONTRACT SECURITY

D13.1 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 form attached to these Supplemental Conditions (Form H1: Performance Bond), in the amount of fifty percent (50%) of the Contract Price; and
- (b) a labour and material payment bond of a company registered to conduct the business of a surety in Manitoba, in the form attached to these Supplemental Conditions (Form H2: Labour and Material Payment Bond), in an amount equal to fifty percent (50%) of the Contract Price.

D13.1.1 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 D13.1(b).

D13.1.2 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 its discretion, exercised reasonably, allows.

D13.1.3 Digital bonds passing the verification process will be treated as original and authentic.

D13.2 The Contractor shall provide the City Solicitor with the required performance and labour and material payment bonds within seven (7) Calendar Days of notification of the award of the Contract by way of an award letter and 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.

D13.3 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 D13.1(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.

D14. SUBCONTRACTOR LIST

D14.1 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 but in no event later than the date specified in C4.1 for the return of the executed Contract Documents, if applicable.

D15. EQUIPMENT LIST

D15.1 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.

D16. DETAILED WORK SCHEDULE

D16.1 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.

- (a) The Contractor shall note that schedule adjustments may be required in the event that the pipeline inspection Contractor schedule is altered.

D16.2 The detailed work schedule shall consist of the following:

- (a) a Gantt chart for the Work based on the C.P.M. schedule.
acceptable to the Contract Administrator.

D16.3 Further to D16.2(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 based on the proposed inspection schedule in D3.4..

(a) For each internal inspection site:

- (i) Site Access and Piping Modifications
- (ii) Pipeline Cleaning (where required)
- (iii) Inspection Support
- (iv) Low Head Leakage Testing (where required)
- (v) Feeder Main Flushing, Disinfection, and Health Testing (where required)
- (vi) Final Piping Modifications
- (vii) Site Restoration

(b) For each external inspection site:

- (i) Site Access and Piping Modifications
- (ii) Inspection Support (where required)
- (iii) Low Head Leakage Testing (where required)
- (iv) Final Piping Modifications
- (v) Site Restoration

D16.4 Further to D16.6(a), 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.

D17. REQUIREMENT FOR SITE ACCESSIBILITY PLAN

D17.1 The Contractor shall provide the Contract Administrator with an Accessibility Plan at least five (5) 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.

D17.2 The Accessibility Plan shall demonstrate how the Contractor will accommodate the safe passage of pedestrians and cyclists in accordance with the Manual of Temporary Traffic Control, the Contract Drawings, Staging Plans, and Streets By-Law No. 1481/77 at all times for the duration of the Construction. Unless noted in the Contract, the Accessibility Plan must include a written plan for the following:

- (a) How the Contractor will maintain at least one crossing in each direction for each intersection (one north/south crosswalk and one east/west crosswalk).
- (b) How the Contractor will maintain access to bus stops within the site.
- (c) How the Contractor will maintain access to pedestrian corridors and half signals.
- (d) How the Contractor will maintain cycling facilities.
- (e) How the Contractor will maintain access to residents and businesses unless otherwise noted in the Contract.
- (f) Any required detour signage at adjacent crossings to facilitate sidewalk or active transportation pathway closures.

D17.3 The Accessibility Plan may also include figures, sketches, or drawings to demonstrate the proposed plan.

D17.4 The Accessibility Plan shall include written details on how the Contractor intends to review, maintain, and document all items related to the Accessibility Plan on-site during Construction, including, but not limited to:

- (a) Signage
- (b) Temporary Ramping

- (c) Transit Stops
- (d) Detour Signage

D17.5 At minimum, the Contractor shall review the site conditions on a daily basis to ensure that all features related to the Accessibility Plan are in place. The site review is intended to correct deficiencies as a result of unforeseen events such as wind, traffic, or the general public. Deficiencies that are direct result of the Contractors actions must be corrected immediately.

D17.6 Any changes to the Accessibility Plan must be approved by the Contract Administrator.

D17.7 Upon request from the Contract Administrator, the Contractor shall provide records demonstrating that the site has been maintained.

D17.8 Deficiencies as a direct result of actions by the Contractor that are not immediately corrected and/or failure to produce records that demonstrate that the site was maintained in compliance with the Accessibility Plan may result in a pay adjustment via the monthly Progress Payment. The rate of pay adjustment will be as per the following schedule:

- (a) First Offence – A warning will be issued and documented in the weekly or bi-weekly site meeting.
- (b) Second Offence - A field instruction to immediately correct the site will be issued by the Contract Administrator.
- (c) Third and subsequent Offences – A pay reduction will be issued in the amount of \$250.00 per instance and per day.

SCHEDULE OF WORK

D18. COMMENCEMENT

D18.1 The Contractor shall not commence any Work until he/she is in receipt of an award letter from the Award Authority authorizing the commencement of the Work.

D18.2 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 D10;
 - (ii) evidence of the workers compensation coverage specified in C6.15;
 - (iii) the Safe Work Plan specified in D11;
 - (iv) evidence of the insurance specified in D12;
 - (v) the contract security specified in D13;
 - (vi) the Subcontractor list specified in D14;
 - (vii) the equipment list specified in D15;
 - (viii) the detailed work schedule specified in D16;
 - (ix) the Requirement for Site Accessibility Plan in D17; and
 - (x) the direct deposit application form specified in D30.
- (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.

D18.3 The City intends to award this Contract by August 26, 2022.

D18.3.1 If the actual date of award is later than the intended date, the dates specified for Commencement, Critical Stages, Substantial Performance, and Total Performance will be adjusted by the difference between the aforementioned intended and actual dates.

D19. WORK BY OTHERS

- D19.1 Further to C6.25, the Contractor's attention is directed to the fact that other Contractors, the personnel of Utilities and the staff of the City may be working within the project limit, approach roadway, adjacent roadways or right-of-way. The activities of these agencies may coincide with the Contractor's execution of Work and it will be the Contractor's responsibility to cooperate to the fullest extent with other personnel working in the area, and such cooperation is an obligation of the Contractor under the terms of Contract.
- D19.2 Work by others on or near the Site will include but not necessarily be limited to:
- (a) Site 8 Saskatchewan Avenue - City of Winnipeg Bid Opportunity 362-2022, 2022 Watermain Renewals – Contract 10.
- D19.3 Further to D19.1 the Contractor shall cooperate and coordinate all activities with all parties performing required Work by Others identified in D19.1 and accommodate the necessary area on Site required for the Work by Others to complete the Work

D20. SCHEDULE RESTRICTIONS

- D20.1 Feeder Main Shutdowns
- D20.1.1 Feeder 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 his Work requiring isolation and draining of various feeder 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.
- D20.1.2 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 D20.1.1.
- D20.1.3 Feeder main shutdowns and disassembly of feeder 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.
- D20.1.4 Feeder main Shutdowns will not be permitted prior to September 6, 2022.
- D20.1.5 Feeder Main shutdowns are limited to fifteen (15) Calendar Days.
- D20.2 Waste Water System Shutdowns
- D20.2.1 Low head leakage testing of Site 4 shall be scheduled during typical dry weather flow periods when precipitation is not forecast or have had occurred within 24 hours of inspection.
- D20.2.2 Waste Water Lift Station Shutdown Restrictions
- D20.2.3 Lift station shut down at Site 5 to facilitate installation of flow bypass shall be limited to a maximum duration of 6 hours and shall occur between 12:00 A.M. and 6:00 A.M. during dry weather flow periods.
- (b) Work at Site 5 requiring lift station shutdown or use of bypass pumping shall not occur before September 15.
 - (c) The Contractor shall provide notice in writing to the Contract Administrator a minimum of five (5) Business Days prior in advance of any lift station shutdowns.

D21. WORKING DAYS

- D21.1 Further to C1.1(tt), 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.
- D21.2 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.
- D21.3 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.
- D21.4 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.

D22. CRITICAL STAGES

- D22.1 The Contractor shall achieve critical stages of the Work in accordance with the following requirements:
- (a) Inspection 1 pipelines (D3.4(a)) – All preparation work shall be completed by date established in D22.2(a).
 - (b) Inspection 2 pipelines (D3.4(b)) – All preparation and cleaning work shall be completed by date established in D22.2(b).
 - (c) Inspection 3 pipelines (D3.4(c)) – All preparation work shall be completed by date established in D22.2(c).
- D22.2 Final Critical Stage dates will be established immediately upon receipt of Letter of Award, on a mutually agreeable schedule between the pipeline inspection contractor(s), the City of Winnipeg, and the successful Contractor based on the availability of all parties and procurement of materials. The Contract Administrator will schedule a meeting with all parties within three (3) Business Days of receipt of the Letter of Award. Schedule dates shall be limited by the following dates:
- (a) Inspection 1 pipelines are to be available for inspection no later than November 14, 2022.
 - (b) Inspection 2 pipeline are to be available for inspection no later than November 14, 2022.
 - (c) Inspection 3 pipelines are to be available for inspection no later than October 30, 2022.

D23. SUBSTANTIAL PERFORMANCE

- D23.1 The Contractor shall achieve Substantial Performance within forty-five (45) consecutive Working Days of the commencement of the Work as specified in D18.
- D23.2 Further to D23.1, the Contractor shall achieve Substantial Performance by November 30, 2022.
- D23.3 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.

D23.4 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.

D24. TOTAL PERFORMANCE

D24.1 The Contractor shall achieve Total Performance by June 15, 2023, or within thirty (30) Calendar Days if seasonal inclement weather does not allow permanent restorations to commence immediately after Substantial Performance, whichever comes first. The Contract Administrator will advise the Contractor when seasonal conditions will allow permanent restorations to begin. The Contractor will start final restorations no later than fourteen (14) Calendar Days after formal notification by the Contract Administrator.

D24.2 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.

D24.3 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.

D25. LIQUIDATED DAMAGES

D25.1 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) Critical Stages:

- (i) Preparation of sites for Inspection 1 pipelines (D22.1(a))– Five thousand eight hundred dollars (\$5,800);
- (ii) Preparation of site for Inspection 2 pipelines (D22.1(b)) – Thirteen thousand eight hundred dollars (\$13,800); and
- (iii) Preparation of sites for Inspection 3 pipelines (D22.1(c)) – Nine thousand and fifty dollars (\$9,050).

(b) Substantial Performance – two thousand dollars (\$2,000);

(c) Total Performance – five hundred dollars (\$500).

D25.2 The amounts specified for liquidated damages in D25.1 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.

D25.3 The City may reduce any payment to the Contractor by the amount of any liquidated damages assessed.

D26. COVID-19 SCHEDULE DELAYS

D26.1 The City acknowledges that the schedule for this Contract may be impacted by the COVID-19 pandemic. Commencement and progress of the Work shall be performed by the Contractor with due consideration to the health and safety of workers and the public, directives from health authorities and various levels of government and in close consultation with the Contract Administrator.

D26.2 If the Contractor is delayed in the performance of the Work by reason of the COVID-19 pandemic, the Work schedule may be adjusted by a period of time equal to the time lost due to such delay and costs related to such delay will be determined as identified herein.

- D26.3 A minimum of seven (7) Calendar Days prior to the commencement of Work, the Contractor shall declare whether COVID-19 will affect the start date. The Contractor shall provide sufficient evidence that the delay is directly related to COVID-19, including but not limited to evidence related to availability of staff, availability of Material or work by others.
- D26.4 For any delay related to COVID-19 and identified after Work has commenced, the Contractor shall within seven (7) Calendar Days of becoming aware of the anticipated delay declare the additional delay and shall provide sufficient evidence as indicated in D26.3. Failure to provide this notice will result in no additional time delays being considered by the City.
- D26.5 The Work schedule, including the durations identified in D22 to D24 where applicable, will be adjusted to reflect delays accepted by the Contract Administrator. No additional payment will be made for adjustment of schedules except where seasonal work, not previously identified in the Contract, is carried over to the following construction season.
- D26.6 Where Work not previously identified is being carried over solely as a result of delays related to COVID-19, as confirmed by the Contract Administrator, the cost of temporary works to maintain the Work in a safe manner until Work recommences, will be considered by the Contract Administrator. Where the Work is carried over only partially due to COVID-19, a partial consideration of the cost of temporary works will be considered by the Contract Administrator.
- D26.7 Any time or cost implications as a result of COVID-19 and in accordance with the above, as confirmed by the Contract Administrator, shall be documented in accordance with C7.

CONTROL OF WORK

D27. JOB MEETINGS

- D27.1 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.
- D27.2 The Contract Administrator reserves the right to cancel any job meeting or call additional job meetings whenever he/she deems it necessary.

D28. PRIME CONTRACTOR – THE WORKPLACE SAFETY AND HEALTH ACT (MANITOBA)

- D28.1 Further to C6.26, 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).

D29. THE WORKPLACE SAFETY AND HEALTH ACT (MANITOBA) – QUALIFICATIONS

- D29.1 Further to B13.5, 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 its sole discretion and acting reasonably, require updated proof of compliance, as set out in B13.5.

MEASUREMENT AND PAYMENT

D30. PAYMENT

- D30.1 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.

D30.2 Further to E2, no payment will be made for Cash Allowances other than as set out in E2.4.

WARRANTY

D31. WARRANTY

D31.1 Warranty is as stated in C13.

DISPUTE RESOLUTION

D32. DISPUTE RESOLUTION

D32.1 If the Contractor disagrees with any opinion, determination, or decision of the Contract Administrator, the Contractor shall act in accordance with the Contract Administrator's opinion, determination, or decision unless and until same is modified by the process followed by the parties pursuant to D32.

D32.2 The entire text of C21.4 is deleted, and amended to read: "Intentionally Deleted"

D32.3 The entire text of C21.5 is deleted, and amended to read:

- (a) If Legal Services has determined that the Disputed Matter may proceed in the Appeal Process, the Contractor must, within ten (10) Business Days of the date of the Legal Services Response Letter, submit his written Appeal Form, in the manner and format set out on the City's Materials Management Website, to the Chief Administrative Officer, and to the Contract Administrator. The Contractor may not raise any other disputes other than the Disputed Matter in his Appeal Form.

D32.4 Further to C21, prior to the Contract Administrator's issuance of a Final Determination, the following informal dispute resolution process shall be followed where the Contractor disagrees with any opinion, determination, or decision of the Contract Administrator ("Dispute"):

- (a) In the event of a Dispute, attempts shall be made by the Contract Administrator and the Contractor's equivalent representative to resolve Disputes within the normal course of project dealings between the Contract Administrator and the Contractor's equivalent representative.
- (b) Disputes which in the reasonable opinion of the Contract Administrator or the Contractor's equivalent representative cannot be resolved within the normal course of project dealings as described above shall be referred to a without prejudice escalating negotiation process consisting of, at a minimum, the position levels as shown below and the equivalent Contractor representative levels:
 - (i) The Contract Administrator;
 - (ii) Supervisory level between the Contract Administrator and applicable Department Head;
 - (iii) Department Head.

D32.5 Names and positions of Contractor representatives equivalent to the above City position levels shall be determined by the Contractor and communicated to the City at the pre-commencement or kick off meeting.

D32.6 As these negotiations are not an adjudicative hearing, neither party may have legal counsel present during the negotiations.

D32.7 Both the City and the Contractor agree to make all reasonable efforts to conduct the above escalating negotiation process within twenty (20) Business Days, unless both parties agree, in writing, to extend that period of time.

D32.8 If the Dispute is not resolved to the City and Contractor's mutual satisfaction after discussions have occurred at the final escalated level as described above, or the time period set out in D32.7, as extended if applicable, has elapsed, the Contract Administrator will issue a Final Determination as defined in C1.1(v), at which point the parties will be governed by the Dispute Resolution process set out in C21.

THIRD PARTY AGREEMENTS

D33. FUNDING AND/OR CONTRIBUTION AGREEMENT OBLIGATIONS

D33.1 In the event that funding for the Work of the Contract is provided to the City of Winnipeg by the Government of Manitoba and/or the Government of Canada, the following terms and conditions shall apply, as required by the applicable funding agreements.

D33.2 Further to D33.1, in the event that the obligations in D33 apply, actual costs legitimately incurred by the Contractor as a direct result of these obligations ("Funding Costs") shall be determined by the actual cost to the Contractor and not by the valuation method(s) outlined in C7.4. In all other respects Funding Costs will be processed in accordance with Changes in Work under C7.

D33.3 For the purposes of D33:

- (a) "**Government of Canada**" includes the authorized officials, auditors, and representatives of the Government of Canada; and
- (b) "**Government of Manitoba**" includes the authorized officials, auditors, and representatives of the Government of Manitoba.

D33.4 Modified Insurance Requirements

D33.4.1 If not already required under the insurance requirements identified in D12, the Contractor will be required to provide wrap-up liability insurance in an amount of no less than two million dollars (\$2,000,000) inclusive per occurrence. Such policy will be written in the joint names of the City, Contractor, Consultants and all sub-contractors and sub-consultants and include twelve (12) months completed operations. The Government of Manitoba and its Ministers, officers, employees, and agents shall be added as additional insureds.

D33.4.2 If not already required under the insurance requirements identified in D12, the Contractor will be required to provide builders' risk insurance (including boiler and machinery insurance, as applicable) providing all risks coverage at full replacement cost, or such lower level of insurance that the City may identify on a case-by-case basis, such as an installation floater.

D33.4.3 The Contractor shall obtain and maintain third party liability insurance with minimum coverage of two million dollars (\$2,000,000.00) per occurrence on all licensed vehicles operated at the Site. In the event that this requirement conflicts with another licensed vehicle insurance requirement in this Contract, then the requirement that provides the higher level of insurance shall apply.

D33.4.4 Further to D12.3, insurers shall provide satisfactory Certificates of Insurance to the Government of Manitoba prior to commencement of Work as written evidence of the insurance required. The Certificates of Insurance must provide for a minimum of thirty (30) days' prior written notice to the Government of Manitoba in case of insurance cancellation.

D33.4.5 All policies must be taken out with insurers licensed to carry on business in the Province of Manitoba.

D33.5 Indemnification By Contractor

D33.5.1 In addition to the indemnity obligations outlined in C17 of the General Conditions for Construction, the Contractor agrees to indemnify and save harmless the Government of Canada and the Government of Manitoba and each of their respective Ministers, officers, servants, employees, and agents from and against all claims and demands, losses, costs,

damages, actions, suit or other proceedings brought or pursued in any manner in respect of any matter caused by the Contractor or arising from this Contract or the Work, or from the goods or services provided or required to be provided by the Contractor, except those resulting from the negligence of any of the Government of Canada's or the Government of Manitoba's Ministers, officers, servants, employees, or agents, as the case may be.

- D33.5.2 The Contractor agrees that in no event will Canada or Manitoba, their respective officers, servants, employees or agents be held liable for any damages in contract, tort (including negligence) or otherwise, for:
- (a) any injury to any person, including, but not limited to, death, economic loss or infringement of rights;
 - (b) any damage to or loss or destruction of property of any person; or
 - (c) any obligation of any person, including, but not limited to, any obligation arising from a loan, capital lease or other long term obligation;

in relation to this Contract or the Work.

D33.6 Records Retention and Audits

- D33.6.1 The Contractor shall maintain and preserve accurate and complete records in respect of this Contract and the Work, including all accounting records, financial documents, copies of contracts with other parties and other records relating to this Contract and the Work during the term of the Contract and for at least six (6) years after Total Performance. Those records bearing original signatures or professional seals or stamps must be preserved in paper form; other records may be retained in electronic form.

- D33.6.2 In addition to the record keeping and inspection obligations outlined in C6 of the General Conditions for Construction, the Contractor shall keep available for inspection and audit at all reasonable times while this Contract is in effect and until at least six (6) years after Total Performance, all records, documents, and contracts referred to in D33.6.1 for inspection, copying and audit by the City of Winnipeg, the Government of Manitoba and/or the Government of Canada and their respective representatives and auditors, and to produce them on demand; to provide reasonable facilities for such inspections, copying and audits, to provide copies of and extracts from such records, documents, or contracts upon request by the City of Winnipeg, the Government of Manitoba, and/or the Government of Canada and their respective representatives and auditors, and to promptly provide such other information and explanations as may be reasonably requested by the City of Winnipeg, the Government of Manitoba, and/or the Government of Canada from time-to-time.

D33.7 Other Obligations

- D33.7.1 The Contractor consents to the City providing a copy of the Contract Documents to the Government of Manitoba and/or the Government of Canada upon request from either entity.
- D33.7.2 If the Lobbyists Registration Act (Manitoba) applies to the Contractor, the Contractor represents and warrants that it has filed a return and is registered and in full compliance with the obligations of that Act, and covenants that it will continue to comply for the duration of this Contract.
- D33.7.3 The Contractor shall comply with all applicable legislation and standards, whether federal, provincial, or municipal, including (without limitation) labour, environmental, and human rights laws, in the course of providing the Work.
- D33.7.4 The Contractor shall properly account for the Work provided under this Contract and payment received in this respect, prepared in accordance with generally accepted accounting principles in effect in Canada, including those principles and standards approved or recommended from time-to-time by the Chartered Professional Accountants of Canada or the Public Sector Accounting Board, as applicable, applied on a consistent basis.

- D33.7.5 The Contractor represents and warrants that no current or former public servant or public office holder, to whom the Value and Ethics Code for the Public Sector, the Policy on Conflict of Interest and Post Employment, or the Conflict of Interest Act applies, shall derive direct benefit from this Contract, including any employment, payments, or gifts, unless the provision or receipt of such benefits is in compliance with such codes and the legislation.
- D33.7.6 The Contractor represents and warrants that no member of the House of Commons or of the Senate of Canada or of the Legislative Assembly of Manitoba is a shareholder, director or officer of the Contractor or of a Subcontractor, and that no such member is entitled to any benefits arising from this Contract or from a contract with the Contractor or a Subcontractor concerning the Work.

FORM H1: PERFORMANCE BOND
(See D13)

KNOW ALL MEN BY THESE PRESENTS THAT

_____ ,
(hereinafter called the "Principal"), and

_____ ,
(hereinafter called the "Surety"), are held and firmly bound unto **THE CITY OF WINNIPEG** (hereinafter called the "Obligee"), in the sum of

_____ dollars (\$_____.)

of lawful money of Canada to be paid to the Obligee, or its successors or assigns, for the payment of which sum the Principal and the Surety bind themselves, their heirs, executors, administrators, successors and assigns, jointly and severally, firmly by these presents.

WHEREAS the Principal has entered into a written contract with the Obligee for

TENDER NO. 507-2021

PIPELINE ACCESS MODIFICATIONS, CLEANING AND SUPPORT FOR RIVER CROSSING
INSPECTIONS

which is by reference made part hereof and is hereinafter referred to as the "Contract".

NOW THEREFORE the condition of the above obligation is such that if the Principal shall:

- (a) carry out and perform the Contract and every part thereof in the manner and within the times set forth in the Contract and in accordance with the terms and conditions specified in the Contract;
- (b) perform the Work in a good, proper, workmanlike manner;
- (c) make all the payments whether to the Obligee or to others as therein provided;
- (d) in every other respect comply with the conditions and perform the covenants contained in the Contract; and
- (e) indemnify and save harmless the Obligee against and from all loss, costs, damages, claims, and demands of every description as set forth in the Contract, and from all penalties, assessments, claims, actions for loss, damages or compensation whether arising under "The Workers Compensation Act", or any other Act or otherwise arising out of or in any way connected with the performance or non-performance of the Contract or any part thereof during the term of the Contract and the warranty period provided for therein;

THEN THIS OBLIGATION SHALL BE VOID, but otherwise shall remain in full force and effect. The Surety shall not, however, be liable for a greater sum than the sum specified above.

AND IT IS HEREBY DECLARED AND AGREED that the Surety shall be liable as Principal, and that nothing of any kind or matter whatsoever that will not discharge the Principal shall operate as a discharge or release of liability of the Surety, any law or usage relating to the liability of Sureties to the contrary notwithstanding.

IN WITNESS WHEREOF the Principal and Surety have signed and sealed this bond the

_____ day of _____, 20____.

SIGNED AND SEALED
in the presence of:

(Witness as to Principal if no seal)

(Name of Principal)

Per: _____ (Seal)

Per: _____

(Name of Surety)

By: _____ (Seal)
(Attorney-in-Fact)

FORM H2: LABOUR AND MATERIAL PAYMENT BOND
(See D13)

KNOW ALL MEN BY THESE PRESENTS THAT

his/its heirs, executors, administrators, successors or assigns (hereinafter called the "Principal"), and

his/its heirs, executors, administrators, successors or assigns (hereinafter called the "Surety"), are held and firmly bound unto **THE CITY OF WINNIPEG** (hereinafter called the "Obligee"), for the use and benefit of claimants as herein below defined, in the amount of

_____ dollars (\$_____)

of lawful money of Canada, for the payment whereof we, the Principal and the Surety jointly and severally bind ourselves firmly by these presents.

WHEREAS the Principal has entered into a written contract with the Obligee for

TENDER NO. 507-2021

PIPELINE ACCESS MODIFICATIONS, CLEANING AND SUPPORT FOR RIVER CROSSING
INSPECTIONS

which is by reference made part hereof and is hereinafter referred to as the "Contract".

NOW THEREFORE the condition of the above obligation is such that if the Principal shall promptly make payment to all claimants as hereinafter defined, for all labour, service and material used or reasonably required for use in the performance of the Contract, then this obligation shall be void, otherwise it shall remain in full force and effect subject, however, to the following conditions:

- (a) A claimant is defined as one having a direct contract with the Principal for labour, service and material, or any of them, used or reasonably required for use in the performance of the contract, labour, service and material being construed to include that part of water, gas, power, light, heat, oil, gasoline, telephone service or rental of equipment (but excluding rent of equipment where the rent pursuant to an agreement is to be applied towards the purchase price thereof) directly applicable to the Contract;
- (b) The above-named Principal and Surety hereby jointly and severally agree with the Obligee that every claimant as herein defined, who has not been paid in full before the expiration of a period of ninety (90) days after the date on which the last of such claimant's work, labour or service was done or performed, or materials were furnished by such claimant, may sue on this bond, prosecute the suit to final judgment for such sum or sums as may be justly due claimant, and have execution thereon;
- (c) No suit or action shall be commenced hereunder by any claimant
 - (i) unless claimant shall have given written notice to the Principal and the Surety above-named, within one hundred and twenty (120) days after such claimant did or performed the last of the work, labour or service, or furnished the last of the materials for which said claim is made, stating with substantial accuracy the amount claimed and the name of the party to whom the materials were furnished, or for whom the work, labour or service was done or performed. Such notice shall be served by mailing the same by registered mail to the Principal, and Surety, at any place where an office is regularly maintained for the transaction of business, or served in any manner in which legal process may be served in the Province of Manitoba;

- (ii) after the expiration of one (1) year following the date on which Principal ceased work on said Contract; including work performed under the guarantees provided in the Contract;
 - (iii) other than in a court of competent jurisdiction in the Province of Manitoba.
- (d) The amount of this bond shall be reduced by and to the extent of any payment or payments made in good faith hereunder, inclusive of the payment by Surety of mechanics liens which may be filed of record against said improvement, whether or not claim for the amount of such lien be presented under and against this bond.
- (e) The Surety shall not be liable for a greater sum than the specified penalty of this bond.

The Principal and Surety hereby agree that The Guarantors' Liability Act (Manitoba) shall apply to this Bond.

IN TESTIMONY WHEREOF, the Principal has hereunto set its hand affixed its seal, and the Surety has caused these presents to be sealed and with its corporate seal duly attested by the authorized signature of its signing authority this

_____ day of _____, 20____ .

SIGNED AND SEALED
in the presence of:

(Witness as to Principal if no seal)

(Name of Principal)

Per: _____ (Seal)

Per: _____

(Name of Surety)

By: _____ (Seal)
(Attorney-in-Fact)

FORM K: EQUIPMENT
(See D15)

**PIPELINE ACCESS MODIFICATIONS, CLEANING AND SUPPORT FOR RIVER CROSSING
INSPECTIONS**

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

FORM K: EQUIPMENT
(See D15)

**PIPELINE ACCESS MODIFICATIONS, CLEANING AND SUPPORT FOR RIVER CROSSING
INSPECTIONS**

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

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 its 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, Materials Management 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>Title</u>
A	Record Drawings
B	Site Photos
C	AECOM Confined Space Safe Work Procedures
D	City of Winnipeg Under Bridge Crane (UBC) Training Requirements
E	Technical Memorandum - High Risk River – Phase 3 – West Perimeter Force Main - Hydraulics Analysis (Site 5)
F	CP Rail Access Application
G	Scope of Work Drawing Markups

<u>Drawing No.</u>	<u>Drawing Name/Title</u>
1-0798E-D0002-001	COVER SHEET
13017	SITE 1 – OLD FORTS BRIDGE FORCE MAINS
13018	SITE 2 – PROVENCHER BRIDGE FORCE MAINS
13019	SITE 3 – NORWOOD BRIDGE FORCE MAIN
13020	SITE 4 – FORT GARRY – ST. VITAL INTERCEPTOR SIPHONS
13021	SITE 5 – WEST PERIMETER FORCE MAIN
13022	MISCELLANEOUS DETAILS – SEWER SITES
1-0798E-C0003-001	SITE 8 – WEST END FEEDER MAIN AT OMAND'S CREEK
1-0798E-C0004-001	SITE 9 – WEST END FEEDER MAIN AT TRURO CREEK
1-0798E-C0005-001	MISCELLANEOUS DETAILS – WATER SITES
1-0798E-C0006-001	SITE 8 – TEMPORARY SHORING DETAILS (AT OMAND'S CREEK)
	NOTE: Sites 6, 7, 10 and 11 do not have construction drawings associated with the Work. For site details, refer to Scope of Work Drawing Markups provided in Appendix G.

GENERAL REQUIREMENTS

E2. CASH ALLOWANCE FOR ADDITIONAL WORK

- E2.1 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.
- E2.2 A cash allowance for Emergency Investigations has been included on Form B: Prices.
- E2.3 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.
- E2.4 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.
- E2.5 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.
- E2.6 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.
- E2.7 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.
- E2.8 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.
- E2.9 Measurement and Payment
- E2.9.1 Measurement and payment of this item will be made in accordance to terms of General Condition Clause C7.4, and will be authorized on a case by case basis as need arises.

E3. TRAFFIC CONTROL

- E3.1 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.
- (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.

E3.2 Further to (c), the Contractor shall make arrangement with the Traffic Services Branch of the City of Winnipeg to supply regulatory signs as required.

E3.3 Upon request from the Contract Administrator, the Contractor shall provide records demonstrating that the Site has been maintained.

E3.4 Further to E3.1(c) and E3.1(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.

E3.5 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.

E3.6 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.

E4. SHOP DRAWINGS

E4.1 Description

- (a) This Specification shall revise, amend, and supplement the requirements of CW 1110 of the City of Winnipeg's Standard Construction Specifications.

E4.2 Submit all Shop Drawings in accordance with CW 1110 except as modified herein.

E4.3 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.

E4.4 Submit Shop Drawing submissions within five (5) Calendar Days of a request as indicated in E4.8.1 or receipt of Notice of Award in accordance with B19, whichever is earlier.

E4.5 Allow for a five (5) Calendar Day period for review by the Contract Administrator of each individual submission and re-submission, unless noted otherwise in the Contract Documents.

E4.6 Shop Drawings not meeting the requirements of CW 1110 or the requirements specified herein will be returned to the Contractor without review for resubmission.

E4.7 Review of Shop Drawings by the Contract Administrator will be limited two (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 billed of the Contractor.

E4.8 Expedited Shop Drawings

E4.8.1 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) Ductile Iron Piping Components
- (b) Fabricated Steel Piping Components
- (c) Sleeve Couplings
- (d) Concrete Pressure Pipe Tapping Sleeve

E4.9 Measurement and Payment

- (a) If Award is made to the lowest responsive Bidder, then the provision of Shop Drawings shall be considered incidental to the Work and will not be measured for payment and no additional payment will be made. If no Contract is awarded, payment for Shop Drawings prepared will be paid in accordance with B19.4.2.

E5. ENVIRONMENTAL PROTECTION

E5.1 The Contractor shall be aware that feeder 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 metres of the existing chambers, excavations, etc.

E5.2 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.

E5.3 The Contractor is advised that at least the following Acts, Regulations, and By-laws apply to the Work:

E5.3.1 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.

E5.3.2 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.

E5.3.3 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.

E5.4 The Contractor is advised that the following environmental protection measures apply to the Work.

E5.4.1 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.

E5.4.2 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 metres 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 brooms 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.

E5.4.3 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.

E5.4.4 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 metres 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.

E5.4.5 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
 - 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
 - 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
 - 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
 - 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.

E5.5 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.

E5.6 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.

E6. SITE ACCESS

E6.1 Site Access Requirement and Constraints

- (a) Site 1 – Old Forts Bridge Force Mains (Main Street / Bridge of the Old Forts from Fort Gibraltar Trail to Mayfair Avenue)
- (i) Access to abutment chambers is through hatches located on the northbound sidewalk.
 - (ii) Light duty trucks may utilize the northbound sidewalk as required to facilitate the work.
 - (iii) Construction trailers and all vehicles not required to complete work shall be parked on adjacent residential streets.
 - (iv) Maintain access to all private approaches.
 - (v) Contractor shall be responsible for providing and maintaining all necessary traffic control in accordance with E12 and the City of Winnipeg Manual of Temporary Traffic Control.
- (b) Site 2 – Provencher Bridge Force Mains (Provencher Boulevard / Provencher Bridge from Tache Avenue to Israel Asper Way.)
- (i) Access to abutment chambers on both sides of the river is via access doors located underneath the bridge structure.
 - (ii) Access to the west abutment chamber door is from Provencher Boulevard.
 - (iii) Access to east abutment chamber door is from Tache Avenue.
 - (iv) Light duty trucks may utilize multi-use pathways as required to facilitate the work.
 - (v) Construction trailers and all vehicles not required to complete work shall be parked on adjacent residential streets.
 - (vi) Contractor to maintain access to all private approaches.
 - (vii) Contractor shall be responsible for providing and maintaining all necessary traffic control in accordance with E12 and the City of Winnipeg Manual of Temporary Traffic Control.
 - (viii) Under Bridge Crane
 - (i) For work located at the midspan of the bridge, the City will provide an Under Bridge Crane (UBC) for use by the Contractor and Inspection Contractor in the preparation, inspection, and repair of the Provencher Bridge Force Main.
 - (ii) The Contractor shall provide notice to the Contract Administrator a minimum of twenty (20) Business Days prior to the scheduled use of the UBC.
 - (iii) The Contractor shall provide a detailed schedule for the UBC operations a minimum of five (5) Business Days prior to the scheduled use of the UBC.
 - (iv) The Contractor shall review and undertake orientation and training detailed in Appendix D, and provide evidence of appropriate training from third party sources.
 - (v) Contractor shall provide required PPE including body harness and lanyard.
 - (vi) Only one (1) person other than the City of Winnipeg operator will be permitted in the UBC at any time.
 - (vii) City of Winnipeg UBC crew will be fully in charge of operation of UBC. Contractor shall abide by any instruction provided by UBC crew.
 - (viii) The use of the UBC for this work is estimated below. In all cases the Contractor shall minimize use of the equipment and coordinate with the Inspection Contractor to complete the Work as expeditiously as possible;
 - One(1) day for preparation work
 - One (1) day for inspection (by others)
 - One (1) day for restoration

- (c) Site 3 – Norwood Bridge Force Main (Queen Elizabeth Way / Norwood Bridge from Stradbrook Avenue to Lyndale Drive)
 - (i) Access to bridge abutments and girders along the bridge is through hatches located on the northbound sidewalk.
 - (ii) Light duty trucks may utilize the northbound sidewalk as required to facilitate the work.
 - (iii) Construction trailers and all vehicles not required to complete work shall be parked on adjacent residential streets.
 - (iv) Maintain access to all private approaches.
 - (v) Contractor shall be responsible for providing and maintaining all necessary traffic control in accordance with E12 and the City of Winnipeg Manual of Temporary Traffic Control.
- (d) Site 4 – Fort Garry/St. Vital Interceptor Siphons (Bishop Grandin at the Red River between the Fort Garry Bridges)
 - (i) Access to west chamber is off eastbound Bishop Grandin prior to the Fort Garry Bridge.
 - (ii) Access to east chamber is from River Road:
 - (iii) Small equipment and light duty trucks may utilize the multiuse path located within the Bishop Grandin north boulevard.
 - (iv) Provide access to both access points for inspection work.
- (e) Site 5 – West Perimeter Force Main (Perimeter Highway at the Assiniboine River)
 - (i) Access to lift station and north side of crossing is via Oxbow Bend Road.
 - (ii) Access to the south side of crossing is via northbound Perimeter Highway Manitoba Infrastructure Right-of-Way.
 - (iii) Contractor shall develop site access and work areas as required to complete the work. Contractor shall limit activity to a single access point and the space required to complete the chamber modifications and pipeline investigation.
 - (iv) Contractor shall be responsible for providing and maintaining all necessary traffic control in accordance with E12 and the City of Winnipeg Manual of Temporary Traffic Control.
- (f) Site 6 – Dakota Feeder Main (North of Bishop Grandin Boulevard crossing the Seine River and Navin Drain)
 - (i) Access to northeast chamber is off Beaverhill Boulevard along the Hydro Right-of-Way.
 - (ii) Access to west chamber is from the westbound shoulder of Bishop Grandin Boulevard.
 - (iii) Contractor shall develop site access and work areas as required to complete the work. Contractor shall limit activity to a single access point and the space required to complete the chamber modifications and pipeline investigation.
 - (iv) Contractor shall be responsible for providing and maintaining all necessary traffic control in accordance with E12 and the City of Winnipeg Manual of Temporary Traffic Control.
- (g) Site 7 – Rouge Road Feeder Main (Hamilton Avenue crossing Sturgeon Creek from Wharton Boulevard to Valley View Place)
 - (i) Access to the west chamber is from the eastbound curb lane of Hamilton Avenue.
 - (ii) Contractor shall be responsible for providing and maintaining all necessary traffic control in accordance with E12 and the City of Winnipeg Manual of Temporary Traffic Control.
- (h) Site 8 – West End Feeder Main at Omand's Creek (Saskatchewan Avenue crossing Omand's Creek at Empress Street)
 - (i) Access to the pipeline from the westbound curb lane of Saskatchewan Avenue, east of Omand's Creek.

- (ii) Contractor shall be responsible for providing and maintaining all necessary traffic control in accordance with E12 and the City of Winnipeg Manual of Temporary Traffic Control.
 - (iii) Single lane eastbound traffic must be maintained.
 - (iv) Requires work adjacent to CP Rail facilities. Contractor shall be responsible for coordinating and maintaining all necessary settlement monitoring points and pay all flagging costs to CPR in accordance with E8.
- (i) Site 9 – West End Feeder Main at Truro Creek (Silver Avenue crossing Truro Creek west of Linwood Street)
 - (i) Access to the air release manhole from Silver Avenue and adjacent multi-use path.
 - (ii) Construction trailers and all vehicles not required to complete work shall be parked on adjacent residential streets.
 - (iii) Maintain access to all private approaches.
 - (iv) Contractor shall be responsible for providing and maintaining all necessary traffic control in accordance with E12 and the City of Winnipeg Manual of Temporary Traffic Control.
- (j) Site 10 – Haney – Moray Feeder Main (East of William R. Clement Parkway crossing the Assiniboine River)
 - (i) Access to upstream chamber via multi-use path adjacent to northbound William R. Clement Parkway.
 - (ii) Contractor shall develop site access and work areas as required to complete the work. Contractor shall limit activity to a single access point and the space required to complete the chamber modifications and pipeline investigation.
 - (iii) Maintain access to all private approaches.
 - (iv) Contractor shall be responsible for providing and maintaining all necessary traffic control in accordance with E12 and the City of Winnipeg Manual of Temporary Traffic Control.
- (k) Site 11 – Murray Avenue Feeder Main (Murray Avenue from Hydro Right-of-Way west of McPhillips Street to approximately 200 metres east of McPhillips Street).
 - (i) Access to chambers from westbound Murray Avenue.
 - (ii) Maintain access to all private approaches.
 - (iii) Contractor shall be responsible for providing and maintaining all necessary traffic control in accordance with E12 and the City of Winnipeg Manual of Temporary Traffic Control.
- (l) General - all sites;
 - (i) The Contractor shall exercise caution to prevent damage to existing pavements, curbs, sidewalks, grassed areas, and trees. Surface restoration of damaged areas caused by the Contractor outside of the designated construction areas shall be the responsibility of the Contractor.
 - (ii) The Contractor shall protect existing interlocking paved paths from damage. Where excavations are required, the existing paving stones shall be carefully removed prior to excavation for replacement upon completion of the work.
 - (iii) Where site access utilizes multi-use pathways or sidewalks, the pathways or sidewalks must remain open to public use. Ensure adequate delineation, fencing, flagging or other measures are used to protect public.
 - (iv) Provide access to the pipeline at the areas designated on the drawings by scaffolding or similar lifting device from the existing ground level wherever possible.
 - (v) Where tracked equipment is utilized, protect pathways from damage with planking. No payment will be made for damages caused by equipment tracks on unprotected surfaces.
 - (vi) Where site access utilizes grassed right-of-ways, limit access for heavy equipment to a single pathway directly from street to work area. Protect grassed areas with planking or other measures to minimize rutting and damage.

- (vii) Laydown and storage areas shall be staged away from areas prone to damage.
- (viii) The Contractor shall maintain access to all businesses during business hours, except where written authorization has been provided by the business.
- (ix) The Contractor shall not park company or private vehicles inside a barricaded work zone in a manner that will block sightlines for vehicles and pedestrians approaching and crossing intersections.
- (x) The Contractor is responsible for maintaining safe vehicular traffic through their work site. The Contractor shall rectify any unsafe conditions immediately upon notification. This could include but is not limited to providing flag persons, clearing debris and snow from sites, moving equipment, and erecting additional signage.

E6.2 Measurement and Payment

- (a) Development of site access will be considered incidental to "Pipeline Modifications" and will not be measured for payment. No separate payment will be made.
- (b) Restoration, where approved by the Contract Administrator will be measured and paid in accordance to E20.
- (c) The City shall cover costs associated for the use and operation of the under bridge crane to complete the Work at Site 2.

E7. EXCAVATION, SHORING, AND BACKFILL

E7.1 Description

- (a) This Specification covers the requirements for excavations and backfilling of trenches, pipelines, and structures.

E7.2 Submittals

- (a) Shop Drawings for all excavation shoring (where required) shall be prepared and submitted in accordance with E4 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.

E7.3 Approvals

- (a) City of Winnipeg Waterways approvals have been submitted and will be in place prior to the start of construction.

E7.4 Shoring Design

- (a) Shoring, except as otherwise noted, shall be provided for excavations in accordance with CW 2030.
- (b) Shoring at Site 8, adjacent to CPR tracks, shall be as on the CPR approved design drawings and Geotechnical memorandum included in Appendix F. Any modification to designs may be subject to approval by CPR. Contractor shall be responsible for cost and application to CPR for any design changes proposed. Changes to contract dates as a result of any requested design changes will not be permitted.
- (c) The Contractor may utilize the shoring design provided for Site 8 for work at Site 9, however the contractor shall fully accept responsibility for the design, in writing, prior to utilizing the design. Any new design, or modification to designs provided shall be submitted as a Shop Drawing in accordance with E4. Contractor shall be responsible for costs of new shoring design or modifications to provided shoring design.
- (d) Excavation shoring shall be designed to accommodate the installation of all manholes and fittings.
- (e) Where long term shoring for excavations is required provide stamped Shop Drawings in accordance with E7.2.

- (f) All shoring systems shall comply with Manitoba Workplace Safety and Health requirements.

E7.5 Excavation

- (a) Material from excavations shall not be stockpiled on the riverbank, or within 30 metres of the top of the riverbank.
- (b) Granular materials, pipe bedding, and other materials shall not be stockpiled on the riverbank, or within 30 metres 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 hoarded and heated as required to keep soils and pipelines from freezing.
- (h) See E8 for additional restrictions when working in close proximity to feeder mains.
- (i) Provide heating and hoarding around the lower portion of the excavation and pipe during freezing conditions.

E7.6 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 metre of existing concrete structures shall be completed with free draining pit run granular material to CW 2030, Class 2 standards. The top 600 millimetres of the backfill adjacent to concrete structures not under paved surfaces, 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.

E7.7 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.

E8. WORKING IN CLOSE PROXIMITY TO RAIL INFRASTRUCTURE

E8.1 Description

- (a) This Specification shall cover site specific conditions required for development of pipeline access in close proximity to rail infrastructure.

E8.2 General

- (a) Development of pipeline access for Site 8 – West End Feeder Main at Omand's Creek requires excavation and installation of shoring located adjacent to infrastructure owned and operated by CP Rail.
- (b) The Contractor shall complete all submissions and necessary actions to pre-arrange site access with CP Rail. Example site access application forms can be found in Appendix F.

Note that the forms provided are for information only and may not constitute a complete application.

- (c) The Contract Administrator shall be copied on all correspondence with CP Rail. Copies of approved access permissions and agreements shall be provided to the Contract Administrator a minimum of 24 hrs prior to commencing the work.
- (d) The Contractor shall keep all equipment off the railway right of way except under express agreement with CP Rail.
- (e) Work adjacent to railway property must be undertaken between 7 am and 3 pm. Work within the limits of the roadway (curb line) and at the limit of shoring is not time limited by CPR. Heavy equipment must remain on the roadway outside of times noted above.
- (f) Provide CPR Roadmaster a minimum of five (5) Business Days notice of requiring flagging. Name and contact information will be provided to the successful Bidder.
- (g) Short term closure of south siding track of up to five (5) Calendar Days can be accommodated to facilitate construction activities such as shoring pile installations, conditions such as craning, removal of pipes etc. Provide Roadmaster one week notice (5 Business Days) to coordinate.

E8.3 Shoring and Track Settlement Monitoring Program

- (a) The Contractor shall permit AECOM access to the Site to execute the shoring monitoring program indicated on the Drawings and as included in Appendix F.
- (b) Horizontal and vertical movements of the shoring system shall be monitored by establishing survey points, prior to excavation. The results will be reviewed by AECOM's qualified geotechnical Engineer as indicated.
- (c) The Contractor shall take immediate actions if reported shoring or track movements are reported as Alert or Action thresholds indicated.

E8.4 Submissions

- (a) Contractor must provide information a minimum of ten (10) Business Days prior to undertaking the work.
- (b) Contractor to provide a detailed work plan for inclusion with the application. The plan should include:
 - (i) Overall Work Plan addressing:
 - ◆ Excavation and shoring procedures;
 - ◆ Shoring and track settlement monitoring (by AECOM);
 - ◆ Manhole Construction;
 - ◆ Backfill and shoring removal;
 - ◆ Restoration
 - (ii) All equipment to be used within railway property.
- (c) A detailed day by day schedule

E8.5 Measurement and Payment

- (a) Flagging costs associated with completing the Work shall be paid by the Contractor directly to CPR. Flagging cost will be considered incidental to the Work and will not be measured for payment. No separate payment will be made. Flagging costs and CPR contact information is provided in Appendix F.
- (b) All other costs associated with working in close proximity to rail infrastructure as outlined herein will be considered incidental to the Work and will not be measured for payment. No separate payment will be made.

E9. OPERATING CONSTRAINTS FOR WORK IN CLOSE PROXIMITY TO FEEDER MAINS

E9.1 Description

E9.1.1 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.

E9.1.2 The following shall be considered critical pipelines and water infrastructure for this project:

- (a) Site 6: Dakota Feeder Main
- (b) Site 7: Rouge Road Feeder Main
- (c) Site 8: West End Feeder Main at Omand's Creek
- (d) Site 9: West End Feeder Main at Truro Creek
- (e) Site 10: Haney – Moray Feeder Main
- (f) Site 11: Murray Avenue Feeder Main
- (g) Feeder main valve chambers located on the sites identified herein and as shown on the Drawings.

E9.2 General Considerations for Work in Close Proximity to Feeder Mains

E9.2.1 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.

E9.2.2 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.

E9.2.3 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. PCCP typically fails in a non-ductile mode and has the potential to cause extensive consequential damage to infrastructure if failure should occur.

E9.2.4 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.

E9.3 Submittals

E9.3.1 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;
- (c) load distributions in the intended operating configuration.

E9.3.2 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.

E9.3.3 Submit the following documentation for inclusion in the City's feeder main shutdown protocol for each planned feeder main shutdown a minimum of ten (10) Business Days prior to the proposed shutdown in accordance with E4:

- (a) 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.
- (c) Check list of equipment, materials, tools required to complete the work that need to be on site prior to undertaking the shutdown.

E9.4 Lock-out and Tag-out Procedures

E9.4.1 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.

E9.4.2 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.

E9.4.3 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.

E9.5 Pre-Work, Planning and General Execution

- E9.5.1 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.
- E9.5.2 Contact the City of Winnipeg Water and Waste Department, Construction Services Coordinator prior to construction.
- E9.5.3 Locate feeder mains and confirm their position horizontally and vertically at the proposed following locations prior to undertaking work in close proximity to the identified feeder mains. Note, exact locations to be identified in the field.
- E9.5.4 Visually delineate all critical infrastructure identified herein on Site by use of paint, staking/flagging, construction fencing, snow fencing, or other suitable methods
- E9.5.5 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.
- E9.5.6 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.
- E9.5.7 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.
- E9.5.8 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).
- E9.5.9 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.
- E9.5.10 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.

E9.6 Demolition, Excavation, and Shoring

- E9.6.1 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.
- E9.6.2 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.
- E9.6.3 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.

- E9.6.4 Equipment should not be allowed to operate while positioned directly over a feeder main or critical pipeline except where permitted herein, outlined in the reviewed and accepted construction method statement.
- E9.6.5 Excavations within 3 m of the outside edge of a feeder main (hydrovac holes for confirming trenchless installations excluded) and which extend below the top of the feeder main shall utilize shoring methods that precludes the movement of native in-situ soils (i.e. a tight shoring system).
- E9.6.6 Pre-bore all piles to below the invert of critical infrastructure within 5 m (horizontally) of the pipeline's outside edge.
- E9.6.7 Offset pile driving equipment a minimum of 3 m (horizontally) from the centerline of the pipeline during piling operations.

E9.7 Subgrade Construction

- E9.7.1 Subgrade and backfill compaction within 3 metres (horizontal) of a critical pipeline or valve chamber shall be limited to non-vibratory methods only. Small walk behind vibratory packers will be permitted.
- E9.7.2 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.
- E9.7.3 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.
- E9.7.4 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.
- E9.7.5 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.
- E9.7.6 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.

E9.8 Subbase and Base Course Construction

- E9.8.1 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.
- E9.8.2 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.

E9.9 Paving

- E9.9.1 When constructing asphalt pavements only non-vibratory compaction should be used within 3 m (horizontal) of the center of critical pipelines.

E9.10 Measurement and Payment

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

E10. WATER SUPPLY

E10.1 Further to specifications CW 1120, Section 3.1, CW 2140 and CW 2145, water supply for the Work may be taken from City of Winnipeg hydrants in accordance with the following:

- (a) Only hydrants approved by WSD shall be used for water supply.
- (b) The Contractor shall supply and use a Backflow Protection Arrangement as shown on Standard Drawing SD-019 when taking water from City hydrants. Alternatively, the Contractor may rent the Backflow Protection Arrangement from the Water Services Division (WSD) if available. WSD will supply a meter and locks for the Backflow Protection Arrangement.
- (c) The Contractor is permitted to turn approved hydrants on and off provided the Contractor has received training by the Water Services Division and the turn-ons and turn-offs are done in the presence of the Contract Administrator.
- (d) Hydrants approved for use shall be considered to be "in the Contractor's control" from the time the City has turned the hydrant on until the Contractor has notified the City the hydrant is no longer being used and the meter box has been removed.
- (e) Between November 1 and April 30 of any year 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. Heating and hoarding of hydrants will be required by the Contractor.
- (f) 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.
- (g) Erect and maintain signage (bump signs) warning oncoming traffic of hose crossings to the satisfaction of the Contract Administrator and the Manual of Temporary Traffic Control.
- (h) Direct hook-up of pipeline flushing equipment to a hydrant is not permitted unless approved by the Contract Administrator.
- (i) WSD may instruct the Contractor to make other arrangements for hydrant turn-ons and turn-offs.

E10.2 Measurement and Payment

- (a) The supply of the Backflow Protection Arrangement or rental of same from WSD shall be considered incidental to "Pipeline Modifications" and will not be measured for payment. No additional payment will be made.
- (b) All costs associated with heating and hoarding shall be considered incidental to "Pipeline Modifications" 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 Tender number shall be noted on each permit.

E11. CONFINED SPACE ENTRY SUPPORT

E11.1 Description

- (a) This specification covers provision of confined entry and access support for specialized inspection contractors and inspection personnel.

E11.2 General

E11.2.1 The Contractor shall be aware that Hydrogen Sulphide Gas is present in all underground structures connected to the City's sewer systems and has been known to accumulate in concentrations sufficient to cause serious harm or death to personnel who are not using adequate Personal Protective Equipment.

E11.2.2 The Contractor's attention is drawn to the Province of Manitoba Workplace Safety and Health Act ("the Act"), and the Regulations and Guidelines there-under pertaining to Confined Space Entry Work and in particular the requirements for conducting hazard/risk assessments and providing personal protective equipment (PPE).

E11.3 Scope of Services

(a) Inspection Contractors, consultants and City personnel require dedicated confined entry support services during pipeline inspection of pipeline river crossings. The following sites will require confined entry access on one or both sides of the river crossing for installation and retrieval of in-line inspection tools. For purpose of provision of services at Site 5, allow for 2 entrants per side and additional support as required for standby and rescue. All other sites allow for 2 entrants per site.

- (i) Site 1: Old Forts Bridge Force Mains
- (ii) Site 3: Norwood Bridge Force Main
- (iii) Site 6: Dakota Feeder Main (Existing chambers, if required)
- (iv) Site 7: Rouge Road Feeder Main (Existing chambers, if required)
- (v) Site 8: West End Feeder Main (east of Omand's Creek, new chamber)
- (vi) Site 9: West End Feeder Main (east of Truro Creek, new chamber)
- (vii) Site 10: Haney – Moray Feeder Main (Existing chambers, if required)
- (viii) Site 11: Murray Avenue Feeder Main (Existing chambers, if required)

(b) For waste water pipelines, when accessing areas with open sewage, services will include provision of air supply for self-contained breathing apparatus (SCBA), forced air ventilation fans and air quality monitors.

E11.4 Equipment

(a) Safety Retrieval Winch and Tripod

- (i) Provide sufficient retrieval winches to support inspection crews on each side of the crossing. A maximum of two entrants shall be assumed per side.
- (ii) Provide two body harnesses per entry location, plus additional harnesses for backup and rescue.

(b) Self-Contained Breathing Apparatus (SCBA) Air Supply (when required)

- (i) Provide air supply and regulators to support two entrants per location, plus rescue backup.
- (ii) Provide 5 minute backup bottles for each entrant.
- (iii) Regulators compatible with Scott AV-3000 masks or masks compatible with the Contractors equipment shall be provided.
- (iv) Entrants will provide their own masks if Scott Av-300 compatible system used.
- (v) Support and rescue personnel and equipment shall be provided by Contractor.

(c) Air Quality Monitors

- (i) Provide a minimum of two multi-gas air quality monitors for each crossing access location. Each monitor shall provide continuous exposure monitoring for oxygen, carbon monoxide, hydrogen sulphide and combustible gases.

E11.5 Methods

- E11.5.1 Be fully responsible for confined entry access on site, in accordance to Manitoba Workplace Health and Safety Regulation 217/2006 and subsequent amendments.
- E11.5.2 Support services will be required to support one pipeline crossing (one inspection crew) at a time. Site 5 will require support on each side of the river. All other sites will require support at one location. Safety Personnel shall be dedicated to confined entry access when inspection personnel are in confirmed areas.
- E11.5.3 Maintain confined entry permit logs.
- E11.5.4 Hazard Assessment
- (a) In conjunction with securing the site and obtaining underground clearances, the Contractor shall conduct a hazard assessment for each site requiring work within a confined space. The assessment shall identify and evaluate the hazards, including but not be limited to review of the following as it pertains to the work to be performed:
 - (i) nature of the work;
 - (ii) structural condition of the existing structure; and,
 - (iii) atmospheric conditions in the structure.
 - (b) The hazard assessment shall be based on the Contractors review of structures and external conditions. Prior to the inspection, the Contractor shall conduct the necessary atmospheric monitoring of the affected structures to establish acceptable entry conditions.
- E11.5.5 Safe Work Plan
- (a) Subsequent to performing a hazard assessment the Contractor shall develop a safe work plan to address the potential hazards associated with each site. In addition to addressing the potential hazards the safe work plan shall address but not be limited to the following:
 - (i) guidelines for confined space entry work established by The Manitoba Workplace Safety and Health Act;
 - (ii) provision for emergency response;
 - (iii) training and duties for entry personnel;
 - (iv) rescue and emergency services;
 - (v) requirement for purging, ingesting, flushing and/or continuous ventilation to eliminate or control atmospheric hazards;
 - (vi) requirement for and provision of supplied air;
 - (vii) communication between members of the repair crew in the pipe/trench and on the ground's surface;
 - (viii) current and forecasted weather conditions;
 - (ix) provision of back-up equipment;
 - (x) method of ingress into the structure; and,
 - (xi) method of egress out of the structure.
 - (b) The Contactor shall not enter the structures to begin the work until they have completed a hazard assessment and safe work plan for the specific repair and reviewed the plans with their designated safety officer for acceptance. The safe work plan procedures and practices shall conform to all federal, provincial and municipal codes, regulations and guidelines including Manitoba Workplace Safety and Health Regulations.
- E11.5.6 Third Party Inspections
- (a) The Contractor's safe work plan and confined space entry procedures for inspections involving the Inspection Contractor and/or AECOM personnel shall meet or exceed all requirements outlined in AECOM's Safe Work Procedure, attached in Appendix C and

those of the Inspection Contractor. The Inspection Contractor's safe work procedures will be provided prior to commencement of construction.

- (b) The Contractor shall provide confined space support for the Inspection Contractor and third party inspections by AECOM and City personnel. The Inspection Contractor, AECOM, and City personnel will provide personal PPE. Support shall include but is not limited to:
 - (i) Furnishing all confined space entry documentation and permits. Copies of the signed and closed out permits shall be provided to the Contract Administrator within five (5) Business Days of the confined space entry;
 - (ii) Provision of an attendant and supervisor dedicated to the confined space entry;
 - (iii) Provision of a retrieval tripod, complete with retractable winch line;
 - (iv) Provision of confined space harnesses. Harnesses shall be certified in accordance with the manufacturer's recommendations;
 - (v) Provision of atmospheric monitors for each entrant. Atmospheric monitors shall be calibrated and tested in accordance with the manufacturer's recommendations; and,
 - (vi) The Contractor shall complete and document atmospheric monitoring prior to and during entry in accordance with submitted confined space procedures.
- (c) Inspections may be delayed or postponed where onsite confined space procedures, hazard mitigation measures, or confined space entry support do not meet the Contractor's submitted and accepted safe work plan and procedures until such a time that discrepancies have been addressed to the satisfaction of the entrants. Claims for delays resulting from improper confined space operations will not be considered.

E11.6 Measurement and Payment

- (a) Confined entry support will be considered incidental to "Pipeline Modifications" and "Pipeline Inspection Support Services" and will not be measured for payment. No additional payment will be made.

E12. TRAFFIC MANAGEMENT

- E12.1 Further to Section 3.7 of CW 1130 of the General Requirements the Contractor shall be responsible to redirect and maintain traffic with appropriate signing in accordance with The City of Winnipeg, "Manual of Temporary Traffic Control in Work Areas on City Streets" at all times during construction.
- E12.2 Maintain access for approaches, driveways, public lanes and crossing streets for all locations.
- E12.3 The Contractor shall maintain access to all businesses during business hours, except where written authorization has been provided by the business.
- E12.4 The Contractor shall maintain access to all schools, community centres, and other public buildings at all times.
- E12.5 Further to Section 3.6 of CW 1130 of the General Requirements, the Contractor shall maintain safe pedestrian crossings at intersections at all times. If possible, only one pedestrian crossing at an intersection is to be blocked by construction at any one time. If more than one pedestrian crossing is blocked by construction at an intersection at the same time the Contractor shall provide flag persons to safely escort pedestrians across the intersection. The Contractor shall leave pedestrian crossing locations safe and free of equipment that may hamper pedestrians when no construction activities are being performed at a particular crossing location.
- E12.6 Further to Clause 3.7 of CW 1130 of the General Requirements, should the Contractor be unable to maintain pedestrian or vehicular access to a residence or business, he/she shall review the planned disruption with the business or residence and the Contract Administrator, and take reasonable measures to minimize the impact. The Contractor shall provide a minimum

of 24 hours notification to the affected residence or business and the Contract Administrator, prior to disruption of access.

E12.7 The Contractor shall not park company or private vehicles inside the barricaded work zone in a manner that will block sightlines for vehicles and pedestrians approaching and crossing intersections.

E12.8 The Contractor is responsible for maintaining safe vehicular and pedestrian traffic through their work site as identified herein. The Contractor shall rectify any unsafe conditions immediately upon notification. This could include but is not limited to, providing flag persons, clearing debris and snow from sites, moving equipment, and erecting additional signage.

E12.9 Regional Street Lane Closures

E12.9.1 Construction activities requiring lane closures on Regional Streets shall be restricted during Weekday Peak Periods (07:00 to 09:00 and 15:30 to 17:30 Monday to Friday) and during other hours as outlined herein or directed by the Contract Administrator.

E12.9.2 The City reserves the right to restrict or cancel Regional Street lane closures at any time due to the occurrence of special events or conflicting third party work.

E12.9.3 The Contractor shall submit all regional lane closure requests to the Contract Administrator a minimum of five (5) Business Days prior to the planned work. Requests for regional lane closures shall include all required information for submission required by the City's online request form. A link to the form can be found here:
<http://www.winnipeg.ca/publicworks/trafficcontrol/laneclosures/LaneClosuresMap.asp>.

E12.10 Residential Streets

- (a) Erect Road Closure signage in accordance with The City of Winnipeg, "Manual of Temporary Traffic Control in Work Areas on City Streets".
- (b) The Contractor shall strive to maintain at least one lane of traffic on residential streets.
- (c) A minimum of one lane of traffic shall be maintained on one-way residential streets at all times.
- (d) Where complete street closures are required, the Contractor shall provide notice of complete street shutdowns complete with dates and duration a minimum of five (5) Business Days prior to the street closures.

E12.11 Notwithstanding the requirements noted herein and CW 1130, the Contractor shall maintain the following minimum site specific traffic control requirements:

- (a) Site 5: West Perimeter Force Main
 - (i) Lane closures of the Perimeter Highway will not be permitted.

E12.12 Measurement and Payment

- (a) Traffic management as outlined here will be considered incidental to the Work and will not be measured for payment. No separate payment will be made.

E13. WWS FLOW CONTROL AND PUMP STATION SHUTDOWNS

E13.1 Description

- (a) This Specification shall cover pipeline shutdowns for the purposes of modifying and testing force mains.

E13.2 Submittals

E13.2.1 Submit an operation plan for each site in accordance with E4. The operation plan shall include the following:

- (a) A detailed description of the works to be undertaken, including but not limited to:
 - (i) Pump station shutdowns

- (ii) Pipeline plugging for leakage tests
- (iii) Pipeline modifications to be undertaken during pump station shutdowns
- (b) A list of the key components required for the works.
- (c) Sketches and diagrams illustrating the installation and blocking of all temporary plugs and in flow operations.
- (d) Step by step procedure for installation and removal of all in flow works.
- (e) Means and methods for dealing with excessive flows or wet weather events.
- (f) A detailed (step by step) schedule for any lift station shutdowns.

E13.3 Products

E13.3.1 Temporary Inflatable Plugs for Leakage Tests

- (a) Plugs shall be capable of withstanding a minimum of 70 kPa (10 psi) of backpressure.
- (b) Plugs shall be capable of being anchored from downstream.
- (c) Plugs shall have a 25 mm (min) air bleed port.

E13.4 Site Specific Requirements and Restrictions

E13.4.1 Site 5: West Perimeter Force Main

- (a) Shutdown of the West Perimeter Pumping Station is required to facilitate the installation of flow bypass piping:
 - (i) A maximum of two (2) pump station shutdowns will be permitted for set-up and removal of flow bypass pumps and piping. Pump station will remain out of service while temporary bypass is in place.
 - (ii) The shutdown may only occur during dry weather flows.
 - (iii) The shutdown may only occur between the hours of 12:00 A.M. and 6:00 am.
 - (iv) Maximum 6 hr pump station shut down duration.
 - (v) Inflatable plug shall be used to supplement overflow sluice gate and prevent overflow to environment.
 - (vi) If there is a schedule delay between pipe modifications and pipeline inspection period, the pump station can be returned to service on request. Contractor shall be responsible to configure force main modifications to accept flow, including opening main line valve, installing blind flanges and closing temporary bypass valves.
- (b) Bypass System Design
 - (i) Contractor shall provide submersible pumps and piping to suit to accommodate 20 l/s by pass. Provide redundant standby pump.
 - (ii) Contractor shall submit pump and system curve demonstrating Contractor's system can achieve the design capacity
 - (iii) The Contractor's by-pass shall connect from the West Perimeter Lift Station wet well to the 100 mm tapping sleeve in the south Air Release Chamber
 - (iv) The discharge will be conveyed approximately 2,670 m south via the existing 400 PVC force main into the gravity system
 - (v) For the purposes of design, the Contractor shall assume and account for the following in the development of their system curve:
 - ◆ All bypass piping from pumping station to force main connection
 - ◆ Contraction and tee losses at the by-pass connection into the 100 mm tapping sleeve south of the river
 - ◆ Friction loss in the 2,670 m of 400 PVC force main at design flow

- ◆ Minor losses in the 2,670 m of 400 PVC force main as follows:
 - 1 x Exit Loss
 - 3 x 11.25 Degree Bends
 - 5 x 22.5 Degree Bends
 - 2 x 45 Degree Bend
 - 2 Gate Valves (Open)
 - 2 x 400x400x200 tee (Flow Through)
- ◆ Static Lift
 - Downstream hydraulic grade line elevation: 235.02 m
 - Wet well level: 228.5 m
 - Contractor to confirm wet well elevations prior to implementing by pass system
- (c) Bypass Piping
 - (i) Bypass piping shall be capable of conveying specified flows and pressures.
 - (ii) Bypass piping over the existing bridge crossing Assiniboine River shall be HDPE with a Dimension Ratio (DR) of 17.
 - (iii) Install tapping sleeve and valve on existing pipe to facilitate controlled dewatering of the existing force main and to facilitate connection of bypass pumping.
 - (iv) Provide hydrovactor or septage truck to dewater sewage from pipeline. Dispose of sewage at an approved location.
 - (v) Provide standby hydrovactor or septage truck of minimum capacity of 7500 litres to dewater lift station wet well as required during the station shutdown, and while bypass is commissioned. Dispose of sewage at approved location. For purpose of dewatering, assume hydrovactor or septage truck for a minimum of the specified shutdown duration.
- (d) A technical memorandum summarizing AECOM's review of flow control requirements for Site 5 and a guideline of general shutdown procedures is included in Appendix E.

E13.5 Methods

E13.5.1 Installation of Inflatable Plugs

- (a) Install plugs as per manufacturers recommendations
- (b) Plugs to be braced or anchored as recommended by the manufacturer
- (c) Provide air supply and monitor plug inflation pressure, in accordance with manufacturer's recommendations.

E13.5.2 Be prepared to remove flow diversions immediately due to flow backups, wet weather flows or as requested by the Contract Administrator.

E13.6 Measurement and Payment

E13.6.1 All materials and labour required to undertake WWS flow control will be considered incidental to "Pipeline Modifications" and will not be measured for payment. No additional payment will be made.

E14. PIPELINE MODIFICATIONS

E14.1 Description

- (a) This Specification shall cover the modification of valve chambers, feeder mains, and force mains, as required for cleaning and inspection the river crossing pipelines.

E14.2 Description of Work:

E14.2.1 Piping Modifications:

- (a) See Drawings for details on proposed piping modifications.
- (b) Site 1 – Old Forts Bridge Force Mains
 - (i) Strip existing insulation and cladding at locations specified on the Drawings to enable inspection by specialized contractor.
 - (ii) Install new insulation and cladding as specified herein.
- (c) Site 2 – Provencher Bridge Force Mains
 - (i) Strip existing insulation and cladding at locations specified on the Drawings to enable inspection by specialized contractor.
 - (ii) Install new insulation and cladding as specified herein.
- (d) Site 3 – Norwood Bridge Force Main
 - (i) Strip existing insulation and cladding at locations specified on the Drawings to enable inspection by specialized contractor.
 - (ii) Install new insulation and cladding as specified herein.
- (e) Site 4 – Fort Garry – St. Vital Interceptor Siphons
 - (i) Perform temporary piping modifications within upstream and downstream chambers to facilitate low head leakage test as shown on the Drawings.
- (f) Site 5 – West Perimeter Force Main
 - (i) Install and operate temporary bypass to facilitate installation of pipeline modifications and pipeline inspection.
 - (ii) Complete permanent piping modifications and install new manholes as shown on the Drawings.
 - (iii) Install new CIPS test stations to facilitate inspection by specialty Contractor.
 - (iv) Restore site upon completion of work.
- (g) Site 6: Dakota Feeder Main
 - (i) Expose roof slab of existing upstream valve chamber providing access to existing core hole to facilitate inspection by specialty Contractor. Remove and replace cover plate.
 - (ii) Restore chamber and site upon completion of work.
- (h) Site 7: Rouge Road Feeder Main
 - (i) Expose roof slab of existing upstream valve chamber located at Vimy Road and Hamilton Avenue.
 - (ii) Core 300 mm diameter hole in roof slab above existing 50 mm air release port to facilitate inspection by specialty Contractor.
 - (iii) Install cored hole closure plate as shown on drawings.
 - (iv) Restore chamber and site upon completion of work.
- (i) Site 8: West End Feeder Main at Omand's Creek
 - (i) Complete permanent piping modifications and install new manhole as shown on the Drawings.
 - (ii) Restore site upon completion of work.
- (j) Site 9: West End Feeder Main at Truro Creek
 - (i) Remove existing 750 mm diameter manhole as shown on the Drawings.
 - (ii) Complete permanent piping modifications and install new manhole as shown on the Drawings.
 - (iii) Restore site upon completion of work.

- (k) Site 10: Haney – Moray Feeder Main
 - (i) Expose roof slab of existing upstream valve chamber providing access to existing core hole to facilitate inspection by specialty Contractor.
 - (ii) Restore chamber and site upon completion of work.
- (l) Site 11: Murray Avenue Feeder Main
 - (i) Expose roof slab of existing air release chamber.
 - (ii) Core 300 mm diameter hole in roof slab above existing 50 mm air release port to facilitate inspection by specialty Contractor.
 - (iii) Install cored hole closure plate as shown on drawings.
 - (iv) Restore chamber and site upon completion of work.
- (m) All tool launching assemblies, including 45 degree elbows, and spool pieces shall be turned over to the City upon completion of work.

E14.3 Submissions:

- E14.3.1 Submit Shop Drawings for all permanent and temporarily installed fittings, valves, piping and couplings in accordance with E4.
- E14.3.2 Submit Shop Drawings for pipeline insulation and cladding in accordance with E4.
- E14.3.3 Submit a tapping sleeve installation procedure complete with all pertinent product literature and procedures in accordance with E4.

E14.4 Products

E14.4.1 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 sleeve style couplings and/or restraints shall be ASTM F593 or ASTM F738M, type 316 stainless steel.
- (d) Nuts for all 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) For flanged connections, bolt size, type and diameter shall be in accordance to AWWA C207. Bolt length suitable for coupling AWWA C207 Class D flange.
- (g) All flanged connections shall be wrapped in a petrolatum tape coating system in accordance with E14.4.18. All steel bolting hardware shall be liquid epoxy coated in accordance with AWWA C116, E14.4.14 and E14.5.2 prior to wrapping with petrolatum tape coating system.

E14.4.2 Flange Gaskets

- (a) 3mm, 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.

E14.4.3 Blind Flanges

- (a) Steel blind flanges shall be AWWA C207 Class D.
- (b) Cast and ductile blind flanges shall be ASME/ANSI B16.1 Class 125.
- (c) Steel blind flanges to be fusion bonded epoxy coated in accordance with AWWA C213, E14.4.15, and E14.5.2.

- (d) Cast and ductile blind flanges shall be fusion bonded epoxy coated in accordance with AWWA C116, E14.4.15, and E14.5.2.

E14.4.4 Temporary bends and launch piping shall be constructed from either Ductile Iron in accordance with E14.4.5 and E14.4.6 or PVC in accordance with E14.4.7.

E14.4.5 Ductile Iron Fittings

- (a) Flanged ductile iron fittings conforming to AWWA C110.
- (b) Fittings shall meet the following minimum criteria:
 - (i) Fittings shall be new.
 - (ii) Permanently installed fittings shall be cement-mortar lined in accordance with AWWA C104.
 - (iii) All fittings to be liquid epoxy coated to AWWA C210, E14.4.14 and E14.5.2.

E14.4.6 Ductile Iron Pipe

- (a) Ductile iron pipe conforming to AWWA C151.
- (b) Pipe shall meet the following minimum criteria:
 - (i) Thickness Class 54 (minimum).
 - (ii) Pipe shall be new.
 - (iii) Permanently installed pipe shall be cement-mortar lined in accordance with AWWA C104.
 - (iv) Temporarily installed pipe shall at a minimum be liquid epoxy lined to AWWA C210, and in accordance with E14.4.14 and E14.5.2.
 - (v) All pipe to be liquid epoxy coated in accordance with AWWA C210, E14.4.14 and E14.5.2.
- (c) Pipe used for feeder main and water main tool launching purposes must be cleaned disinfected in accordance with E16 prior to use.

E14.4.7 PVC Pipe and Fittings

- (a) PVC pipe and fittings shall conform to AWWA C900 and CSA B137.3.
- (b) Pipe and fittings shall meet the following minimum requirements:
 - (i) Shall have a dimension ratio (DR) of 18, or matched to existing.
 - (ii) Shall be new.
- (c) Temporary pipe used for launching cleaning and inspection tools may be in used condition.
- (d) Pipe used for feeder main tool launching purposes must be cleaned disinfected in accordance with E16 prior to use.
- (e) Flange adaptors used must be fully restrained from axial movement.

E14.4.8 Fabricated Steel Pipe and Fittings

- (a) Steel pipe and fittings shall conform to AWWA C200, AWWA C208, and meet the following requirements:
 - (i) Minimum steel yield strength of 240 MPa (35,000 psi).
 - (ii) Minimum wall thickness of 9.5 mm for all sizes.
 - (iii) All exposed steel surfaces (interior and exterior) shall be coated in accordance with AWWA C210, E14.4.14 and E14.5.2.
- (b) Welded steel patches on existing steel pipelines shall be a minimum thickness of 9.51 mm.
- (c) Welded steel patches on existing pipelines shall be externally coated with a petrolatum tape wrap system in accordance with E14.4.18 and E14.5.3.
- (d) Pipe used for feeder main and water main tool launching purposes must be cleaned disinfected in accordance with E16 prior to use.

E14.4.9 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.

E14.4.10 Pipe Couplings and Flange Adaptors

- (a) Pipe couplings shall conform to AWWA C219.
- (b) Unless otherwise specified, center sleeves for pipe couplings shall be constructed from:
 - (i) Ductile iron or steel for sizes 300 mm and smaller
 - (ii) Steel for sizes greater than 300 mm
- (c) 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
 - (iv) Design pressure 150 psi
- (d) Minimum requirements for flange adaptors:
 - (i) Flanges shall conform to ASME/ANSI B16.1 Class 125.
- (e) 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.
- (f) All hardware shall be type 316 stainless steel in accordance with E14.4.1.
- (g) Couplings to be fusion bonded epoxy coated in accordance with E14.4.15, and E14.5.2.
- (h) Couplings to be supplied with two di-electric insulating boots.
- (i) Buried pipe couplings shall be further protected against corrosion by wrapping the assembled coupler with petrolatum tape coating system in accordance with E14.4.18.
- (j) All transition couplings larger than 300 mm in diameter, with differential outside pipe diameters greater than 25 mm, shall be restrained to prevent movement of the coupling due to differential thrust forces. Tie rods placed in compression for the purpose of restraining differential thrust forces shall be no longer than 150 mm and the Contractor must demonstrate they are capable of withstanding the applied forces.

E14.4.11 Gate Valves

- (a) Gate valves shall conform to CW2110, City of Winnipeg Specification AT-4.21.1.7, AWWA C515, and shall be supplied with the following:
 - (i) Flanged joints conforming to AWWA C515.
 - (ii) Fusion bonded epoxy coating conforming to AWWA C550.
 - (iii) 50 mm AWWA operating nut.
 - (iv) Waste water valves shall be clockwise to close.

E14.4.12 Tapping Sleeve

- (a) Tapping sleeves for feeder main sites shall be a purpose built tapping sleeve intended for use on concrete cylinder pipe.
- (b) The tapping sleeve shall meet the following requirements:
 - (i) Minimum pressure capacity: 1030 kPa (150 psi)
 - (ii) Body Construction: Carbon Steel
 - (iii) Fasteners: Type 304 Stainless Steel
 - (iv) Coating: Fusion Bonded Epoxy in accordance with AWWA C213.
 - (v) Gaskets: Nitrile meeting ASTM D2000

- (c) Approved Products: Robar Model 6996 or approved equal in accordance with B7.

E14.4.13 Coatings

- (a) Unless otherwise specified herein coatings for all metal chamber piping and fittings shall be a liquid epoxy meeting the requirements of E14.4.14. As an alternative to liquid epoxy, the Contractor shall have the option to use fusion bonded epoxy in accordance with E14.4.15.
- (b) Field-applied pipe coatings for above ground piping shall be a liquid epoxy meeting the requirements of E14.4.14.

E14.4.14 Liquid Epoxy Coatings

- (a) Liquid epoxy coatings shall conform to AWWA C210.
- (b) Liquid epoxy coatings shall be NSF 61 certified for immersion service in feeder main and water main pipelines.
- (c) All coatings shall be applied in a minimum of two (2) or more layers (5 mils dry film thickness minimum each coat) for a minimum final coating dry film thickness of the greater of 16 mils or the thickness recommended by the manufacturer for immersion service.
- (d) Submit product data for interior lining and exterior coating products in accordance with E4.

E14.4.15 Fusion Bonded Epoxy Coatings

- (a) Fusion bonded epoxy coatings shall conform to AWWA C213 for steel components and AWWA C116 for ductile iron fittings.
- (b) Fusion bonded epoxies shall be NSF 61 certified for immersion service in feeder main and water main pipelines.
- (c) The final minimum coating thickness shall be the greater of 16 mils or the thickness recommended by the manufacturer for immersion service.
- (d) Submit product data for interior lining and exterior coating products in accordance with E4.

E14.4.16 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.

E14.4.17 CIPS Test Stations

- (a) Each station shall contain two (2) test cables mounted within the station terminal board.
- (b) Test cables shall be #10 RWU-90 wire conforming to CSA C22.2.
- (c) Submit Shop Drawings for CIPS test stations in accordance with E4.

E14.4.18 Petrolatum Tape Corrosion Protection System

- (a) All buried pipe couplers and flanged connections shall be protected against corrosion by a petrolatum tape corrosion protection system consisting of the following components:
 - (i) Petrolatum paste primer
 - (ii) Void-filling mastic filler

- (iii) Petrolatum tape
- (iv) Protective outerwrap
- (b) Petrolatum tape systems shall conform to AWWA C217.
- (c) Approved product: Petrolatum tape system manufactured by Denso North America Inc., Trenton Corporation, Petro Coating Systems Ltd, or approved equal in accordance with B7.
- (d) Submit Shop Drawings for petrolatum wrapping system in accordance with CW1110.

E14.4.19 Pipe Insulation

- (a) All new insulation for above ground piping shall be rigid polyurethane foam meeting or exceeding the following requirements:
 - (i) Thickness: 50 mm
 - (ii) Density: (ASTM D 1622) 35 to 46 kg/m³
 - (iii) Thermal Conductivity (ASTM C518): 0.027 W/m°C
 - (iv) Closed Cell Content (ASTM D6226): 90%, minimum
 - (v) Water Absorption (ASTM D2842): 4.0% by volume
- (b) Half shells for closures around pipe shall be prefabricated and molded for a snug fit.
- (c) Prefabricated foam shells shall include a thin polymer coating on all surfaces for strength during transit and installation.

E14.4.20 Pipe Cladding

- (a) Where existing pipe cladding consists of galvanized steel, new cladding for above ground piping shall be 1.214 (18 gauge) (minimum) galvanized steel.
 - (i) Banding used to secure new cladding shall be 20 millimetre wide by 0.38 millimetre thick 316 Stainless Steel.
 - (ii) Length of closure pieces shall be maximized in order to minimize the number of joints required for each closure.
- (b) Where existing pipe cladding consists of polyethylene (PE) wrap, new cladding for above ground piping shall be cross linked polyolefin tape.
 - (i) Approved product: Wrapid Tape by CANUSA-CPS , or approved equal in accordance with B7.
 - (ii) Submit Shop Drawings for polyolefin tape system in accordance with E4.

E14.5 Methods

E14.5.1 Installation of Lead Wires

- (a) Thermite Welding Procedure:
 - (i) Prepare steel surface to bare metal by grinding or filing. Remove all coatings, dirt, mill scale, oxide, grease, moisture, and other foreign matter from weld areas in an area required to complete the weld.
 - (ii) Before welding, remove wire insulation as required to fit mold, avoiding damage to the exposed copper wire. If wire is cut or nicked over halfway through its diameter, cut off and strip new end. If manufacturer requires the use of a copper sleeve, crimp it securely to wire and remove excess wire protruding from the end of the sleeve.
 - (iii) After charge is set, remove mold and slag from weld area with welder's hammer. Strike top and sides of weld with hammer to test secureness of connection. If weld does not hold, remove scrap weld material, clean, and begin weld process again.
 - (iv) After welding and before coating the cleaned weld area, the Contract Administrator may test the joint bond for and wires for electrical continuity.

- (v) When the weld passes test for soundness and electrical continuity, repair the coating in the weld area with mastic and weld cap placed over the weld. Clean weld area to remove any loose material, and welding residuals. Cover exposed metal on the pipe and wire with mastic filled weld cap. Ensure weld cap covers the entire area of coating removed for installation of the thermite weld. If not, repair coating as per the coating manufactures recommendations prior to installing weld cap.

E14.5.2 Coatings

- (a) Where indicated on the Drawings and directed by the Contract Administrator, prepare metal surfaces for recoating using the following methods:
 - (i) Steel - Prepare steel surfaces for recoating by blast cleaning to near-white metal as specified by Joint Surface Preparation Standard NACE No.2/SSPC-SP10.
 - (ii) Cast and Ductile Iron - Prepare ductile iron surface in accordance with NAPF 500-03.
 - (iii) Remove all dust and loose residues from the prepared surfaces and surrounding area. The surface shall be roughened to a degree suitable for the coating system employed.
- (b) Protect valve seals, machined surfaces, threads, and nameplates from sandblasting.
- (c) Primer coat to follow immediately after completion of sandblasting and prep.
- (d) Apply liquid epoxies of prepared surfaces in accordance with AWWA C210, E14.4.14, and the manufactures recommendations.
- (e) Apply fusion bonded epoxies of prepared surfaces in accordance with AWWA C213, E14.4.15, and the manufactures recommendations.
- (f) Provide adequate ventilation and heat to facilitate curing of coatings.
- (g) Interior linings for pipes and fittings shall be applied and cured as recommended by the manufacturer prior to placing into service. Linings must be fully cured for immersion service prior to installation and reinstating the line into service. Where accelerated cure times are required for assembly and water immersion, a coating and curing plan shall be submitted to the Contract Administrator in accordance with E4 a minimum of five (5) Business Days prior to application.

E14.5.3 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.

E14.5.4 Bedding

- (a) All pipes shall be installed in accordance with CW 2030, utilizing a Class B bedding.

E14.5.5 Installation of Gate Valves

- (a) Carefully excavate to expose existing pipelines in accordance with E7.5.
- (b) Confirm diameters of pipelines at tie in points and ensure appropriate couplers are available for reconnection of work.
- (c) Do not sever existing pipeline until all materials to complete installation are on site and available for installation.

E14.5.6 Installation of Tapping Sleeve

- (a) Install as per manufacturer's recommendations and AWWA M9.

E14.5.7 Pipe Insulation and Cladding

(a) Removal of Existing Insulation and Cladding

- (i) Confirm work locations with the Contract Administrator prior to removal of cladding.
- (ii) Neatly cut away the existing galvanized cladding or poly wrap between pipe supports as shown on the Drawings, leaving a minimum of 200 mm to the inside of each pipe support on either end. Take care not to damage the surface of the pipe when removing the cladding.
- (iii) Remove all existing foam insulation from the pipe. Mechanically clean the pipe surface to bare steel to allow for inspection of the pipe wall.

(b) Installation of New Insulation

- (i) Neatly square ends of existing cladding and insulation as required to allow for a clean joint.
- (ii) Test fit the new foam insulation half shells. Trim ends where necessary using hand tools to ensure a snug fit with the existing insulation.
- (iii) Once a proper fit is achieved, coat exposed pipe in accordance with E14.4.14 and E14.5.2.
- (iv) Lay a bead of silicone caulking on both mating surfaces of the new half shells and at the interface between the existing insulation and pipe surface prior to installation.
- (v) Position the shells around the pipe and secure in place with tape if required. Seams in the foam half shells should be at 3:00 and 9:00 position.
- (vi) Seal any cracks or voiding between the half shell insulation components and/or existing insulation with an expanding polyurethane insulation product compatible with the insulation system.
- (vii) Joints between new insulation and existing pipe should be sealed with self-adhesive butyl mastic tape. The joint seals should extend at least 75 mm to either side of the joint.

- ◆ Apply joint seals as per manufacturer's recommendations.

(c) Installation of New Metallic Cladding

- (i) Cut galvanized steel overwrap components to length, allowing for a minimum 100 mm overlap at each end. If a single-piece wrap is used, position the seam such that:
 - ◆ The lap is positioned at either 3 or 9 o'clock.
 - ◆ The top portion of the lap lays on top of the lower portion in order to shed water from the joint.
- (ii) Applied mastic sealant around the circumference of the cladding to be overlapped and along each longitudinal seam.
- (iii) Secure galvanized steel cladding in place with stainless steel banding and gear clamps at 600 mm on center (maximum). Clamps shall be located within 50 mm of the edge of each section of cladding.

- (d) Installation of New Polyolefin Wrap
 - (i) Spirally wrap polyolefin tape over newly installed insulation, ensuring minimum 50% overlap.
 - (ii) Follow manufacturer recommendations for cleaning and heating requirements.
 - (iii) Heating using open flame or combustible materials is not permitted.
 - (iv) Provide minimum 100 mm overlap at transitions between new and existing polyolefin wrap.

E14.6 Measurement and Payment

E14.6.1 Pipeline Modifications

- (a) The completion of pipeline modifications will be measured and paid on a Lump Sum basis for each river crossing site at the Contract Unit Price for "Pipeline Modifications" as listed in the Form B: Prices except where noted in the Form B: Prices.
- (b) Payment for "Pipeline Modifications" shall include the supply of all materials and performance of all pipe access modifications required for cleaning and inspection of the pipelines.
- (c) Payment for pipeline modifications shall include but is not limited to the following:
 - (i) Removal and trimming of trees;
 - (ii) Temporary grading and excavations;
 - (iii) Construction of temporary work platforms;
 - (iv) Erection of scaffolding;
 - (v) Supply, installation and maintenance of traffic control;
 - (vi) Supply, installation and operation of temporary bypass systems;
 - (vii) Temporary water supplies;
 - (viii) Supply and installation of all new valves;
 - (ix) Supply and Installation of tapping sleeves and valves;
 - (x) Supply and installation of miscellaneous pipe and fittings;
 - (xi) Installation of all permanent piping and fittings;
 - (xii) Supply and installation of new manhole and associated components.
 - (xiii) Removal of existing manholes.
 - (xiv) Installation and removal of all temporary piping and fittings;
 - (xv) The supply and installation of all gaskets, fasteners, and couplings required to complete the Work;
 - (xvi) Removal of cladding and insulation;
 - (xvii) Replacement of insulation and cladding;
 - (xviii) The installation of tag lines for cleaning and inspection purposes;
 - (xix) Completion and shoring of all excavations;
 - (xx) Pipe bedding and backfilling;
 - (xxi) Restoring site to existing grades;
 - (xxii) Disposal of all chlorinated water;
 - (xxiii) Heating and hoarding.
- (d) Payment for "Pipeline Modifications" shall not include the use of pipeline flushing equipment except for the purposes of installing tag lines.

E15. PIPELINE CLEANING

E15.1 Description

- (a) This Specification shall cover the supply of foam pipeline cleaning pigs and the cleaning of the pipelines to be inspected.

- (b) The following pipelines require cleaning prior to inspection:
 - (i) Site 5: West Perimeter Force Main

E15.2 Submittals

E15.2.1 Cleaning Plan

- (a) The Contractor shall submit in writing a detailed cleaning plan for each pipeline crossing for review by the Contract Administrator. The cleaning plan at a minimum shall include the following:
 - (i) Method(s) of cleaning
 - (ii) Sizes and densities of foam pigs to be used
 - (iii) Means of debris collection and disposal
- (b) The pipeline cleaning plan must be submitted a minimum of ten (10) Business Days prior to undertaking cleaning operations.
- (c) No cleaning operations shall be undertaken prior to review of the cleaning plan by the Contract Administrator.

E15.2.2 Shop Drawings

- (a) 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 cleaning pigs proposed for use.

E15.3 Products

E15.3.1 Tether Line

- (a) Tether lines used for installing winch lines shall be a minimum of 9 mm synthetic rope.

E15.3.2 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 and stored to prevent contamination.
- (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.
- (e) For towed pigs, 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.
- (f) Foam cores for pigs shall be of equal or greater density than foam body.
- (g) Pigs to be sized for the internal diameter of the pipeline, or as recommended by the manufacture and approved by the Contract Administrator.
- (h) Where required, bristled pigs shall be complete with synthetic plastic brush designed for regular scraping.

E15.3.3 Gauge Pigs will be supplied by the pipeline inspection contractor.

E15.3.4 Water for pig launching may be obtained from fire hydrants in accordance with CW 1120 and E10.

E15.4 Equipment

E15.4.1 Winch and Winch Line

- (a) Winch lines for cleaning shall not cause damage to pipelines or pipeline coatings. Provide synthetic winch line such as Amsteel, cable coated with sacrificial synthetic coating, or braided flusher hose.
- (b) Proposed winch lines must have a third party verified tensile load rating.

- (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.

E15.4.2 Sewage, Debris, Pumping and Disposal

- (a) Equipment as per CW 2140, except storage tank volume shall be a minimum of 13,500 (3000 Gal Imp) litres.
- (b) Where requested by Contract Administrator, such as in the case of a blockage, store liquid and decant at an approved offsite location.

E15.4.3 Flushing Equipment

- (a) Equipment as per CW 2140.
- (b) Nozzle pressures when utilizing flushing equipment within pipelines shall be limited to 10,350 kPa.
- (c) Disinfection of Equipment: Any equipment coming in contact with the potable water system shall be clean, must never have been used in a non-potable water or sewer system and shall be disinfected in accordance with E16.

E15.4.4 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:

Site	Nominal Diameter (mm)	Estimated Internal Diameter (mm)
Site 5	400	387.3 (steel), 404.4 mm (PVC)

E15.5 Methods

E15.5.1 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 approved method.
- (c) Cleaning is to be completed sufficiently to accommodate in-line inspection tools, typically 25 millimetres smaller than pipe inside diameter.
- (d) Minimum cleaning requirements per pipeline crossing:
 - (i) Pull one 25 mm undersized medium density foam cleaning pig (prove bore prior to pulling the gauge pig).
 - (ii) Pull one full sized low density foam cleaning pig (debris removal).
- (e) The use of foam cleaning pigs shall not introduce air into pipeline below river levels. Many pipelines are weighted bottom installations, or shallow cover, and susceptible to floatation. Pipelines shall be kept full behind pigs.
- (f) Foam cleaning pigs shall be tethered on each end and be capable of being winched in either direction.
- (g) A gauge pig shall be pulled through the pipe during the cleaning operation to determine the effectiveness of the cleaning operation. Gauge pig shall be tethered on each end and be capable of being winched in either direction.
- (h) Cleaning operations shall continue until the Contract Administrator is satisfied that the pipe is passable by the inspection tools. This shall be proved by passing of the supplied gauge pig through the line.
- (i) Upon completion of cleaning, a tag line shall be left in the pipeline and securely fastened, for future use by the pipeline inspection contractor.

- (j) The Contractor shall be prepared to remove hard debris from the pipe during cleaning process to the extent required to pass the supplied gauge pig.
- (k) It is anticipated that pipeline cleaning will take a maximum of one day per pipeline. More than one pipeline can be cleaned per day, time permitting. Overtime rate shall be approved by the Contract Administrator.

E15.5.2 Flushing of Pipelines using Traditional Flushing Equipment

- (a) Flushing equipment shall conform to CW 2140 and may be utilized for removal of debris from pipelines.
- (b) Nozzle pressures when utilizing flushing equipment within pipelines shall be limited to 10,350 kPa.

E15.6 Provisional Flushing and Hydrovac Services

- (a) Where requested by the Contract Administrator, provide provisional flushing and hydrovac services to assist in inspection operations. This work is outside of the normal cleaning operations identified in E15.6.
- (b) Flushing Equipment
 - (i) Flushing equipment shall conform to CW 2140 and may be utilized for removal of debris from pipelines.
 - (ii) Nozzle pressures when utilizing flushing equipment within pipelines shall be limited to 10,350 kPa.
- (c) Hydrovac equipment shall conform to E15.4.3.

E15.7 Chamber Cleaning

- (a) Clean excessive debris from all below-ground portions of chambers prior to undertaking inspection work. Areas to be cleaned shall be identified by the Contract Administrator prior to undertaking cleaning operations.
- (b) A pressure washer capable of supplying 20,685 kPa of pressure for cleaning shall be used. Care should be taken to clean but not damage existing chamber components.
- (c) Collect and dispose of solid debris off site as per CW 2140.

E15.8 Disposal of Solid Debris

- (a) Where hydrovacating of cleaning debris is required, the liquid may be decanted into nearby WWS MH's 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.

E15.9 Method of Measurement and Basis of Payment

E15.9.1 Pipeline Cleaning

- (a) Pipeline cleaning will be measured on a daily basis with an hourly overtime rate.
- (b) Payment for "Pipeline Cleaning" will include supplying of all materials and performance of all work as specified herein, including site access, removal of access hatches, confined entry support, temporary access, flow diversions, performance of all cleaning and gauging work, and disposal of solid debris.
- (c) Time measured will be based on on-site availability of the Contractor's crews, from the time crews are present on site, until crews are complete, and site secured of the shift, as certified by the Contract Administrator.
- (d) Hourly overtime rate for each hour or portion thereof in excess of the daily minimum rate of 10 hours.
- (e) The supply of pigs for pipeline cleaning will be considered incidental to "Pipeline Cleaning" and will not be measured for payment. No additional payment will be made.

- (f) Flushing of pipelines for the purposes of debris removal will be considered incidental to “Pipeline Cleaning” and will not be measured for payment. No additional payment will be made.
- (g) Disinfection of pipelines, health testing, and disposal of chlorinated water will be considered incidental to “Pipeline Modifications” and will not be measured for payment. No separate payment will be made.

E15.9.2 Provisional Hydrovac Services

- (a) Provisional use of a hydrovac truck shall be measured on an hourly basis for each hour of use on site and paid for at the unit price for “Hydrovac Truck”. Hauling and disposal of solid debris will not be measured for payment.
- (b) Payment for “Hydrovac Truck” shall include the supply of all materials and disposal of all debris.

E16. WATER MAIN AND FEEDER MAIN DISINFECTION

E16.1 Description

E16.1.1 This specification covers the disinfection of water mains, feeder mains, and fittings.

E16.2 General

E16.2.1 The following feeder mains require disinfection of tools prior to inspection work:

- (a) Site 6: Dakota Feeder Main
- (b) Site 7: Rouge Road Feeder Main
- (c) Site 8: West End Feeder Main at Omand’s Creek
- (d) Site 9: West End Feeder Main at Truro Creek
- (e) Site 10: Haney – Moray Feeder Main
- (f) Site 11: Murray Avenue Feeder Main

E16.3 Disinfection

E16.3.1 All fittings for tool access shall be spray disinfected as per CW 2125 and AWWA C651.

E16.3.2 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.

E16.4 Disposal of Chlorinated Water

E16.4.1 The following feeder mains require discharge of water to the environment, which must be dechlorinated prior to discharge. Estimates for flow and duration of discharge are provided;

E16.4.2

Site	Estimated Rate of Discharge (l/s)	Estimated Duration of Discharge (min)	Location of Discharge
Site 6: Dakota Feeder Main	370	30	Valve Chamber Bishop Grandin Blvd East of Red River
Site 11: Murray Avenue Feeder Main (v=0.8, 226 l/s Total)	100	40	Murray Road valve chamber at Ferrier St
	126	40	Hydrant at John Black

- E16.4.3 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. Allowable discharge rates for nearby WWS 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 river bank. De-chlorination may be accomplished using the following:
 - (i) Sodium Ascorbate,
 - (ii) Vita-D-Chlor™ Taby Mat Sock by Integra Chemical,
 - (iii) or approved equal in accordance with B7.
 - (c) Contain chlorinated water on Site until chlorine has dissipated to acceptable limits.
- E16.4.4 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).

E16.5 Measurement and Payment

- E16.5.1 Disposal of Chlorinated Water Utilized for Tool Deployment (Site 6 and Site 11)
- (a) Dechlorination of chlorinated water used for deployment of the inline inspection tools will be measured and paid on a lump sum basis for up to four (4) hours of dechlorination at the Contract Unit Price for "Dechlorination (up to 4 hours)" as listed in Form B: Prices. Additional dechlorination required beyond four (4) hours will be measured and paid on an hourly basis at the Unit Contract Price for "Dechlorination (in excess of 4 hours)" as listed in Form B: Prices.
 - (b) Payment for "Dechlorination (up to 4 hours)" and "Dechlorination (in excess of 4 hours)" will include supplying of all materials and performance of all work as specified herein.
 - (c) Time measured will be based on the duration of the feeder main flushing required to deploy the inspection tool and sufficiently clear the water within the pipeline as determined by the Inspection Contractor.
- E16.5.2 Disinfection and Disposal of Chlorinated Water
- (a) Disinfection, health testing, and disposal of chlorinated water shall be considered incidental to "Pipeline Modifications" and will not be measured for payment. No additional payment will be made.

E17. INSPECTION SUPPORT SERVICES

E17.1 Support Services Requirements

E17.1.1 General

- (a) Coordinate work hours with pipeline inspection contractor. Contractor and pipeline inspection contractor shall agree on time for commencement of work by the pipeline inspection contractor. The Contractor will be permitted reasonable time for preparation of activities prior to arrival of pipeline inspection contractor. Excessive site support time in advance of agreed site hours will not be measured for payment.

- (b) Pipeline inspections typically will require one day of onsite support per pipeline. It is intended that onsite support services will run on consecutive days. More than one site may be commenced on any day. No more than one inspection will occur at a time.
- (c) The pipeline inspection contractor may require time to configure their tooling prior to pipeline inspections. Scheduling of the inspections will be made after award of the contract.

E17.1.2 Site Access and Restoration

- (a) Minimize disruption of public right-of-ways. Do not encroach on private property.
- (b) Where access is required for heavy equipment and vehicles, limit access to a single pathway directly from the street to the work area. Plank pathways and grassed areas to minimize damages due to rutting.
- (c) Remove all waste and debris upon completion of inspection.
- (d) Clean up any spilled waste water and debris. Where directed, sprinkle sodium hypochlorite powder on spills.

E17.1.3 Chamber and Manhole Access

- (a) Remove hatches, covers, and removable concrete slabs as required for cleaning and inspection work.
- (b) City of Winnipeg crews will provide access to chambers and stations as required to facilitate the work. The City will strive to accommodate the Contractor's requests for access; however, the availability of City crews is based on a number of factors, including system operations, other work occurring on the system, and emergencies. The Contractor shall provide as much advance notice as possible for access into City owned structures.

E17.1.4 Lighting

- (a) Where required for night work, provide adequate lighting.

E17.1.5 Shop Space for Electromagnetic In-Line Inspection Contractor

- (a) The Contractor shall provide the following shop space for the electromagnetic in-line and external electromagnetic Inspection Contractor. Other Inspection Contractors do not require shop space.
- (b) The Contractor shall provide wash facilities and a heated shop space for the pipeline Inspection Contractor for configuration and storage of inspection tools.
 - (i) A wash bay for cleaning the inspection tool for transport complete with a pressure washer capable of supplying 7 LPM at 10,300 kPa.
- (c) The Contractor shall provide a work shop to facilitate maintenance and conversion of inspection tools by the pipeline Inspection Contractor. The work shop shall meet the following minimum requirements:
 - (i) Floor space - 80 m².
 - (ii) Overhead door adequate for unloading of inspection tools and equipment with forklift or wheel loader. Minimum dimensions - 3.66 m x 3.66 m.
 - (iii) The shop must be heated.
 - (iv) Lifting hoist or forklift availability.
 - (v) Electric air compressor with 20 gallon tank (minimum) and capable of supplying 8 cfm at 90 psi.
 - (vi) Power – two (2) 15 amp, 120 volt AC power circuits.
 - (vii) Work tables complete with vice.
- (d) The shop must be accessible to the pipeline inspection contractor after hours and during weekends.

E17.2 Site Specific Requirements

E17.2.1 External Pipeline Inspection (Sites 1 - 3)

- (a) Provide support labour to assist the pipeline inspection contractor's crews with handling of equipment, setup, and access.
- (b) Provide scaffolding and/or access to the pipeline for inspection for the duration of the inspection operations in accordance with E6.1(l)(iv). Scaffolding (if used) shall be setup at each inspection location prior to mobilization of the Inspection Contractor to minimize delays in the inspection process.
- (c) Provide minimum of two support persons, including small hand and power tools to assist the pipeline inspection contractor's crew, including:
 - (i) Light duty transportation truck(s)
 - (ii) Portable ladders as required to access scaffolding and pipeline locations
- (d) Support personnel shall assist the pipeline inspection contractor's crews with access, mobilization of inspection tools up to the work platforms, and any other general assistance to crews for completion of inspections.
- (e) The Contractor shall provide a heated space at each site for storage and setup of the inspection tools when atmospheric temperatures are below 5°C. The space shall be a minimum of 5 x 2.5 m.
- (f) The Contractor is fully responsible for safety on site, in accordance with Manitoba Workplace Safety and Health Regulations. The Contractor shall provide support for the pipeline inspection contractor's crews, and AECOM personnel as needed working at heights where required to facilitate pipeline inspections.

E17.2.2 Site 4 – Fort Garry – St. Vital Interceptor Siphons Leakage Testing

- (a) Complete low head leakage test in accordance with E18.

E17.2.3 Electromagnetic In-Line Pipeline Inspections (Site 5)

- (a) Provide support labour to assist the pipeline inspection contractor's crews with handling of equipment, setup, and access.
- (b) Provide minimum of two support persons, including small hand and power tools to assist the pipeline inspection contractor's crew, including:
 - (i) Portable hammer drills for setting anchor bolts in concrete (minimum 12 mm drive chuck).
 - (ii) Shovels
 - (iii) Hand tools
 - (iv) Light duty transportation truck(s)
 - (v) Portable ladders (two per crossing)
 - (vi) Gas powered air compressor with 5 gallon tank (minimum) and capable of supplying 8 cfm at 90 psi.
 - (vii) Disinfection solution and equipment for the purposes of spray and swap disinfection of pipeline inspection contractor's equipment, including but not limited to: inspection tools, launch equipment, winch lines, and any other equipment entering the pipeline. Disinfection equipment and procedures shall conform to E16.
- (c) Support personnel shall assist the pipeline inspection contractor's crews with access, removal of gratings, covers, installation of concrete anchors, where required, installation of flow diversion equipment, and any other general assistance to crews for completion of inspections.
- (d) The Contractor shall provide a heated space at each site for storage and setup of the inspection tools when atmospheric temperatures are below 5°C. The space shall be a minimum of 5 x 2.5 m.

(e) Lifting Equipment

- (i) Provide mobile lifting equipment, boom truck, loader or other equipment capable of lifting, moving and lowering inspection equipment at Site 5 into pipelines in accordance to the following:

Maximum Pipeline Size	Inspection Tool Mass (kg)	Maximum Depth (m)
400	395	7

- (f) The Contractor is fully responsible for confined entry access on site, in accordance with Manitoba Workplace Safety and Health Regulation 217/2006 and subsequent amendments. The Contractor shall provide confined entry support for the pipeline inspection contractor's crews, and AECOM personnel as needed, in accordance with E11, where required to facilitate pipeline inspections.

E17.2.4 Acoustic/CCTV In-Line Pipeline Inspection (Sites 6 - 11)

- (a) Provide support labour (a minimum of two support persons) to assist the pipeline inspection contractor's crews with handling of equipment, setup, and access.
- (b) Support personnel shall assist the pipeline inspection contractor's crews with access, removal of gratings, covers, and other general assistance required for completion of inspections. Light duty transportation truck(s) shall be on site and available to support with the inspection works.
- (c) The Acoustic/CCTV Inspection Contractor is responsible for:
- (i) setup of all inspection related equipment and temporary works (physical pipeline and chamber modifications excluded);
 - (ii) deployment of the inspection tool;
 - (iii) completion of the sonar inspection; and,
 - (iv) removal of all inspection related equipment and temporary works.
- (d) The Contractor shall be aware that tool deployment and inspection at Site 6 is anticipated to occur overnight.
- (e) The Contractor is fully responsible for confined entry access on site, in accordance with Manitoba Workplace Safety and Health Regulation 217/2006 and subsequent amendments. The Contractor shall provide confined entry support for the pipeline inspection contractor's crews, and AECOM personnel as needed, in accordance with E11, where required to facilitate pipeline inspections.
- (f) A summary of Acoustic Leak Detection is provided in Table 1.

Table 1 – Acoustic Leak Detection Summary

Site	Pipeline Name	Run	Pipeline Diameter	Proposed Insertion Point, See Record Drawings	Proposed End Point, See Record Drawings	Total Degree of Bends	Minimum Survey Distance	Minimum Estimated Velocity Required	Modeled Velocity	Notes	
			mm				m	m/s			
6	Dakota FM Crossing Seine River and Navin Drain	1	610	STA 85+38.80 - Meter Pit - Upstream Valve Chamber	STA 55+42.50 - Left Bend	159	913	1.19	1.21	Requires use of blow off at Red River to induce flow. Nighttime demand	
		2 (Provisional)		Sta 61+65.1 Air Valve	STA 55+42.50 - Left Bend	0	189	0.3	0.35	Daytime flow. If Required	
7	Rouge Road FM Crossing Sturgeon Creek	1	610	STA 119+63.70 - Upstream Valve Chamber	STA 126+57.86 - Right Bend	112	211	0.43	0.43	Daytime Demand	
8	West End FM Crossing Omand's Creek	1	900	STA 70+82.12 - NEW Air Release Valve	STA 69+55.88 - Left Bend	150	126	0.4	0.4	Daytime Demand	
9	West End FM Crossing Truro Creek	1	900	STA 29+21.22 - Air Release Valve	STA 26+99.56 - Vertical Deflection	0	221	0.34	0.37	Daytime Demand	
10	Haney Moray FM Crossing Assiniboine River	1	450	STA 62+58' (-0+96.31m) - Valve Chamber Insertion	STA 2+92.12 - 40 Degree Bend	27	388	0.37	0.38	Nighttime Demand	
11	Murray Ave Feeder Main at McPhillips	1	600	Sta 122+50.9 - Valve Chamber	STA 91+64 (approx)	0	940	0.8	0.8	Nighttime Demand. Limit is location of potential leak	
TOTAL							4600.99				

E17.3 Method of Measurement and Basis of Payment

E17.3.1 Pipeline Inspection Support Services

- (a) Provision of pipeline inspection support services for internal and external pipeline inspection by the Inspection Contractor will be measured on a daily basis with an hourly overtime rate for each inspection type. Payment will be for at the unit prices for "Pipeline Inspection Support Services".
- (b) Payment for "Pipeline Inspection Support Services" will include confined entry support, inspection support, lifting equipment, lighting, pumps and other miscellaneous support as specified herein.
- (c) Time measured shall be based on on-site availability of the Contractor's crews, from the time support crews are present on site, until crews are complete, and site secured of the shift, as certified by the Contract Administrator.

- (d) Hourly overtime rate for each hour or portion thereof in excess of the daily minimum rate of 10 hours.
- (e) Installation of tag lines shall be considered incidental to “Pipeline Modifications” and will not be measured for payment. No additional payment will be made.
- (f) Provision of a heated shop shall be considered incidental to “Pipeline Modifications” and will not be measured for payment. No additional payment will be made.

E18. LOW PRESSURE LEAKAGE TESTS

E18.1 Description

- (a) This Specification shall cover the performance of low pressure leakage tests on existing pressure pipeline crossings.

E18.2 General

- (a) Low pressure leakage tests shall be completed at the following sites:
 - (i) Site 4 – Fort Garry – St. Vital Interceptor Siphons
 - (ii) Site 5 – Perimeter West force main

E18.3 Submissions

- (a) Submit a leakage test procedure for each site in accordance with E4 a minimum of five (5) Business Days prior to undertaking the leakage tests. The leakage test procedure shall include:
 - (i) Products and materials proposed for plugging the pipeline. Include shop drawings or product literature for review.
 - (ii) Procedures and installation steps for installation of the pipe blocking/plugging.
 - (iii) Means of filling and flushing air from the pipeline.
 - (iv) Testing procedures.

E18.3.1 Fort Garry – St. Vital Interceptor Siphons (Site 4)

- (a) Leaking testing requires the following operations to undertake the leakage test:
 - (i) Provide temporary closure for 900 mm overflow with sandbags, plugs or temporary plate.
 - (ii) Installation of inflatable plugs in upstream and downstream chambers of siphon being tested.
 - (iii) Complete low head pressure test.
 - (iv) Removal of inflatable plugs from upstream and downstream chambers.
 - (v) Open sluice gate on 900 mm outfall in overflow chamber.
- (b) Only one (1) interceptor siphon may be isolated at a time to facilitate leakage testing.
- (c) Upstream inflatable plug to be equipped with port suitable to allow addition of water to the siphon and monitoring of make-up water.
 - (i) Test elevation at upstream port shall be 225.3 m.
- (d) Full time monitoring of levels in upstream chamber is required for the duration of leakage testing.
 - (i) Abandon test and remove inflatable plugs if levels in upstream chamber exceed 226.7 m.
 - (ii) In the event that leakage testing is abandoned due to high elevations in the upstream chamber allow flows to return to normal operating elevations prior to reopening 900 mm sluice gate in overflow chamber.

E18.4 Measurement and Payment

- (a) Completion of low pressure leakage tests will be measured and paid on lump sum basis at the Contract Unit Price for “Low Pressure Leakage Tests” as listed in Form B: Prices.

Payment for “Low Pressure Leakage Tests” shall include all materials and labour as necessary to complete the work as specified.

E19. CHAMBER CONSTRUCTION

E19.1 Description

- (a) This Specification shall cover the modification and restoration of existing concrete valve chambers as shown on the Drawings and specified herein.

E19.2 Shop Drawings

- E19.2.1 Provide shop drawings in accordance with E4.

E19.3 Materials

- E19.3.1 All materials shall conform to the requirements of this Specification and the requirements of the latest edition of the City of Winnipeg Standard Construction Specification.

E19.3.2 Structural Concrete

- (a) Provide concrete mixed in accordance with requirements of CW 2160 and CAN/CSA-A23.2.
- (b) Structural concrete design shall be in accordance with performance specification having the following properties:
 - (i) Class of Exposure: S-1
 - (ii) Minimum Compressive Strength @ 28 days: 35 MPa

E19.3.3 Reinforcing Steel

- (a) Further to CW 2160 Sentence 2.6 Materials: Reinforcing Steel, all reinforcing steel shall conform to the requirements of CSA G30.18, Grade 400.

E19.3.4 Bar Accessories

- (a) Bar accessories shall be of type approved by the Contract Administrator. They shall be made from a non-corroding material, and they shall not stain, blemish, or spall the concrete surface for the life of the concrete. Bar chairs are to be PVC; galvanized bar chairs are not acceptable.
- (b) Bar accessories shall include bar chairs, spacers, clips, wire ties, wire (18 gauge minimum), or other similar devices. Bar accessories are not shown on the Contract Drawings. The supply and installation of bar accessories shall be considered incidental to the supply and placing of reinforcing steel.

E19.3.5 Non Shrink Grout

- (a) Grout, if required, shall be Sika Grout 212 or CPD Non Shrink Grout or approved equal in accordance with B7, mixed and applied in accordance with the manufacturer’s instructions and of a consistency suitable for the intended application, as approved by the Contract Administrator.

E19.3.6 Concrete Patching Repair Material

- (a) Patching repair material shall be polymer modified mortar based Sika Top 123 Plus by Sika Canada Inc., Master Emaco S 488CI by BASF Master Builders Solutions, or approved equal in accordance with B7.

E19.3.7 Foundation Waterproofing

- (a) Foundation waterproofing shall conform to CW 2160.

E19.3.8 Removable Roof Slab Sealant

- (a) Sealant for horizontal removable roof slab joints shall be a general purpose polyurethane sealant rated for buried and exterior locations and suitable for concrete.

E19.3.9 Joint Fillers

(a) Joint Fillers

- (i) Joint filler for concrete slab shall be self-leveling, polyurethane sealant to meet requirements of ASTM C920, Type S, Grade P, Class 25, Use T, M, A, O, and I.
- (ii) Approved product: Vulkem 45 as manufactured by Tremco, Sikaflex 1C SL, or approved equal in accordance with B7.

(b) Backer rod shall meet requirements of ASTM C1330.

(c) Bond Breaker: pressure sensitive plastic tape, which will not bond to sealants.

(d) Joint Cleaner: xylol, methylethyleketon or non-corrosive type recommended by sealant manufacturer and compatible with joint forming materials.

E19.3.10 Extrudable Polyurethane Waterstop

(a) Extrudable polyurethane waterstop shall be a Gun Grade extrudable polyurethane base waterstop.

(b) Approved Products: SikaSwell S by Sika, or approved equal in accordance with B7.

E19.4 Construction Methods

E19.4.1 Construction Method Submission

(a) No Work shall commence on construction of valve chamber until after the Contract Administrator's review of the Contractor's Construction Method submission.

(b) The Contractor shall prepare for the Contract Administrator's review a Construction Method submission detailing:

- (i) Construction sequence to be followed including all methods to be employed to ensure no damage occurs to existing structures or adjacent properties within or adjacent to excavation.
- (ii) Proposed method of construction.
- (iii) Specialized equipment to be used.
- (iv) Any design revisions proposed to accommodate the Contractor's proposed construction method.
- (v) Flow control considerations including details on the Contractor's proposed method of flow control.
- (vi) The Contractor shall respond to any concerns that may be raised by the Contract Administrator after review of the Construction Method submission.

E19.4.2 Hatches and Removable Slabs

(a) Remove access hatches, covers and removable slabs where indicated on the drawings and as required for cleaning and inspection services. Replace all fasteners and bolts unless otherwise directed by the Contract Administrator.

(b) Replace all hatches and roof panels once cleaning and inspection work is complete.

(c) Installation of Roof Slab

- (i) Remove all existing sealants and clean joint surfaces as per sealant manufacturer's instructions.
- (ii) Apply sealant to horizontal surfaces in accordance with the sealant manufacturer's instructions.
- (iii) Re-install roof slab.
- (iv) Apply joint filler as shown on the Drawings and in accordance with the manufacturer's instructions.
- (v) Fill all lifting hook recesses with polyurethane sealant.

E19.4.3 Cast-in-Place Concrete Construction

- (a) Adjust the location of the reinforcing steel adjacent to openings and in location of the waterstop along the center line of wall to frame those openings in accordance with good practice, and maintain the bar spacing intent.
- (b) Do not use welded splices for reinforcing steel.
- (c) Install foundation waterproofing in accordance with Specification CW 2160.

E19.4.4 Placing of Reinforcing Steel

- (a) Reinforcing steel shall be placed accurately in the positions shown on the Contract Drawings. Carefully adjust the location of reinforcing steel adjacent to openings to frame those openings in accordance with good practice, and maintain the bar spacing intent.
- (b) Splices in reinforcing steel shall be made only where indicated on the Contract Drawings. Prior approval of the Contract Administrator shall be obtained where, in the opinion of the Contractor, other splices must be made. All splices shall have laps of at least 40 bar diameters. Welded splices shall not be used.
- (c) A minimum of twenty-four (24) hours notice shall be given to the Contract Administrator prior to the pouring of any concrete to allow for inspection of reinforcing steel.

E19.4.5 Concrete Patching

- (a) Provide heating and hoarding to maintain the manufacturer's minimum installation and curing substrate temperature.
- (b) Use materials in accordance with manufacturer's printed instructions, and as specified.
- (c) Remove delaminated, loose, and spalled concrete using lightweight mechanical chipping hammers or other suitable means to sound concrete. Protect reinforcing bars during removal.
- (d) Thoroughly clean all surfaces previously chipped of any loose concrete and/or laitance and prepare surface for patching in accordance with printed instructions from the manufacturer of the patching mortar. Use pressure washing to clean and prepare concrete surfaces. Do not damage the structures.
- (e) Apply material to concrete substrate in accordance with the manufacturer's printed instructions.
- (f) The patch repair and non-shrink grout shall be finished to match the profile of the surrounding concrete.
- (g) Wet cure patch repairs and non-shrink grout in accordance with the manufacturer's printed instructions.

E19.5 Measurement and Payment

E19.5.1 Chamber Modifications and Restoration

- (a) Chamber modifications and restoration will be considered incidental to "Pipeline Modifications" and will not be measured for payment. No additional payment will be made.

E19.5.2 Bollards (Provisional)

- (a) Construction of bollards will be measured and paid on a unit basis for each bollard acceptably installed at the Contract Unit Price for "Bollards" as listed in Form B: Prices. Payment for "Bollards" will include all labour and materials necessary to complete the work as specified.

E20. RESTORATION

E20.1 Description

E20.1.1 This specification covers the restoration of work sites.

E20.2 Restoration Works

- (a) Regrade sites back to original condition upon completion of work.
- (b) Reconstruct asphalt pavements overlays in accordance with CW 3410.
- (c) Sidewalks:
 - (i) Reconstruct existing asphalt sidewalks with 75 mm of Type 1A asphaltic concrete pavement conforming to CW 3410. The sidewalk shall be constructed with 50 mm (min) of compacted base material and 150 mm (min) of sub-base material.
 - (ii) Reconstruct existing non reinforced concrete sidewalks with a 100 mm non-reinforced concrete conforming to CW3325 and SD-228A. The sidewalk shall be constructed with 100 mm (min) of compacted base material.
 - (iii) Reconstruct of the existing reinforced concrete sidewalks with a 150 mm reinforced concrete conforming to CW 3235 and SD-237. The sidewalk shall be constructed with 100 mm (min) of compacted base material. To be used for private approaches.
- (d) Reconstruct concrete curbs in accordance with CW 3240 and SD-206A.
- (e) Temporary Surface Restoration
 - (i) At Site 8, provide temporary concrete pavement restoration. Permanent paving repairs will be completed by others.
 - (ii) Cap excavations in concrete pavement with a 150 mm layer of concrete for "Temporary Restoration of Utility Pavement Cuts" as specified in CW 3310.
 - (iii) Cap excavations in sidewalk pavement with a 50 mm layer of concrete for "Temporary Restoration of Utility Pavement Cuts" as specified in CW 3310.
 - (iv) Insulate temporary concrete as required during 48 hour curing period.
 - (v) 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.
 - (vi) Boulevard sodding is not required at Site 8.
- (f) Restore existing interlocking paving stone in accordance with CW 3330 and SD-240A. It is anticipated that existing paving stones can be reused for restoration purposes. The Contractor shall take all necessary steps to not damage existing paving stone surfaces.
- (g) Sod all maintained grassed areas in accordance with CW 3510.

E20.3 Measurement and Payment

E20.3.1 Site Regrading

- (a) Regrading of sites to original elevations or as shown on the Drawings will be considered incidental to "Pipeline Modifications" and will not be measured for payment. No additional payment will be made.

E20.3.2 Asphalt Sidewalks

- (a) Repair of asphalt sidewalks will be measured and paid on a square metre basis at the Contract Unit Price for "Asphalt Sidewalks" as listed in Form B: Prices. Payment for "Asphalt Sidewalks" shall include existing pavement removal, surface preparation, and placement asphalt pavements.

E20.3.3 Temporary Concrete Barrier Curb Replacement

- (a) the renewal of concrete barrier curbs shall be measured on a linear metre basis and paid for at the Contract Unit Price for "Temporary Concrete Barrier Curb Renewal" as listed in Form B: Prices. Measurement will be made for each linear metre of concrete

curb acceptably replaced. Payment for "Temporary Concrete Barrier Curb Renewal" shall include all base and sub base preparation, and the supply and placement of concrete curbing.

E20.3.4 Temporary Concrete Pavement

- (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". Payment shall include removal of existing pavements.

E20.3.5 Gravel Surfacing shall be measured and paid as per CW 3150

E20.3.6 Sodding and seeding

- (a) Supply and installation of sod using imported topsoil shall be measured and paid in accordance with CW 3510.
- (b) Supply and installation of seeding using imported topsoil shall be measured and paid in accordance with CW 3520.

E20.3.7 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.

E21. TREE PROTECTION, PRUNING, AND REMOVAL

E21.1 Description

E21.1.1 This specification covers the pruning and removal of existing trees as required to facilitate construction.

E21.1.2 This specification amends CW 3110 Clearing and Grubbing.

E21.2 Quality Control

E21.2.1 Person performing work shall possess a valid Manitoba Arborists License.

E21.3 Materials

E21.3.1 Wound Dressing

- (a) Wound dressing shall be horticultural accepted non-hardening bituminous emulsion, free of materials toxic to callus formation, containing disinfectant for fungal and other diseases.

E21.4 Construction Methods

E21.4.1 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 metres 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.
- (d) Operation of equipment within the dripline of the trees shall be kept to the minimum required to perform the work required. Equipment shall not be parked, repaired, refuelled; construction materials shall not be stored, and earth materials shall not be stockpiled within the driplines of trees. The dripline of a tree shall be considered to be

the ground surface directly beneath the tips of its outermost branches. The Contractor shall ensure that the operations do not cause flooding or sediment deposition on areas where trees are located.

- (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.

E21.4.2 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/her designate.

E21.4.3 Scheduling of Work

- (a) The Contractor shall review work with Contract Administrator prior to starting work.
- (b) The Contractor shall schedule the work in accordance with the restrictions set out in the federal Migratory Birds Convention Act, 1994.

E21.4.4 Removal

- (a) If the Contractor requires removing trees to access the Site or facilitate construction, the Contractor shall submit a plan to the Contract Administrator for review, a minimum of ten (10) Business Days prior to removal. No removal of trees shall be made without written acceptance by the Contract Administrator and the City of Winnipeg's Forestry Department. The plan shall at a minimum indicate:
 - (i) Trees requiring removal complete with size and species, and description of requirement for removal.
- (b) Replanting requirements will be determined by the level of tree removals proposed and accepted by the Contract Administrator and City of Winnipeg's Forestry Department.

E21.4.5 Pruning

- (a) Prune individual trees as indicated by the Contract Administrator. Remove dead, dying, diseased, interfering, objectionable and weak growth in order to promote healthy development suitable to the purpose for which plant material is grown.
- (b) Prune in accordance with Agriculture Canada Publication 1505-1977, The Pruning Manual.
- (c) Employ clean sharp tools and make cuts flush with main branch, smooth and sloping as to prevent accumulation of water. Remove projecting stumps on trunks or main branches. Remove dead and injured branches and branches that rub causing damage to bark. Trim trees without changing their natural shape. Do not damage lead branches or remove smaller twigs along main branches.

E21.4.6 Cut Back

- (a) Eliminate narrow crotches as much as possible; avoid cutting back to small suckers. Remove smaller limbs and twigs to leave foliage evenly distributed.
- (b) When reducing overall size, make symmetrical in appearance to maintain tree-like form typical of species.
- (c) Do not remove more than one-third of total branching at single operation.

E21.4.7 Repair and Protection

- (a) Repair cuts and old scars in accordance with Agriculture Canada Publication 1505-1977, The Pruning Manual.
- (b) Paint new cuts 100mm in diameter and over with wound dressing.

E21.5 Measurement and Payment

E21.5.1 Tree protection, pruning and removals will be considered incidental to "Pipeline Modifications" and will not be measured for payment. No additional payment will be made.

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; and
 - (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 his/her 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>
- F1.2 Prior to the award of Contact, and during the term of the Contract if additional or replacement individuals are proposed to perform Work, the Contractor shall supply the Contract Administrator with a Police Information Check obtained not earlier than one (1) year prior to the Submission Deadline, or a certified true copy thereof, for each individual proposed to perform such Work.
- F1.3 Any individual for whom a Police Information Check is not provided, or for whom a Police Information Check indicates any convictions or pending charges related to property offences or crimes against another person will not be permitted to perform any Work specified in F1.1.
- F1.4 Any Police Information Check obtained thereby will be deemed valid for the duration of the Contract subject to a repeated records search as hereinafter specified.
- F1.5 Notwithstanding the foregoing, at any time during the term of the Contract, the City may, at its sole discretion and acting reasonably, require an updated Police Information Check. Any individual who fails to provide a satisfactory Police Information Check as a result of a repeated Police Information Check will not be permitted to continue to perform any Work specified in F1.1.