



THE CITY OF WINNIPEG

TENDER

TENDER NO. 814-2022

**NEWTON FORCE MAIN RED RIVER CROSSING - CONNECTIONS AND SEWER ON
SCOTIA STREET**

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PART B - BIDDING PROCEDURES

B1. CONTRACT TITLE

B1.1 NEWTON FORCE MAIN RED RIVER CROSSING - CONNECTIONS AND SEWER ON SCOTIA STREET

B2. SUBMISSION DEADLINE

B2.1 The Submission Deadline is 12:00 noon Winnipeg time, March 28, 2023.

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 Bidder may view the Site without making an appointment.

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

B4. ENQUIRIES

B4.1 All enquiries shall be directed to the Contract Administrator identified in D7.1.

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 B3.1 unless that response or interpretation is provided by the Contract Administrator in writing.

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

B5. CONFIDENTIALITY

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

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

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

B6. ADDENDA

B6.1 The Contract Administrator may, at any time prior to the Submission Deadline, issue addenda correcting errors, discrepancies or omissions in the Tender, or clarifying the meaning or intent of any provision therein.

B6.2 The Contract Administrator will issue each addendum at least two (2) Business Days prior to the Submission Deadline, or provide at least two (2) Business Days by extending the Submission Deadline.

B6.3 Addenda will be available on the MERX website at www.merx.com.

B6.4 The Bidder is responsible for ensuring that they have received all addenda and is advised to check the MERX website for addenda regularly and shortly before the Submission Deadline, as may be amended by addendum.

B6.5 The Bidder shall acknowledge receipt of each addendum in Paragraph 10 of Form A: Bid/Proposal. Failure to acknowledge receipt of an addendum may render a Bid non-responsive.

B6.6 Notwithstanding B3.1, enquiries related to an Addendum may be directed to the Contract Administrator indicated in D7.

B7. SUBSTITUTES

B7.1 The Work is based on the Plant, Materials and methods specified in the Tender.

B7.2 Substitutions shall not be allowed unless application has been made to and prior approval has been granted by the Contract Administrator in writing.

B7.3 Requests for approval of a substitute will not be considered unless received in writing by the Contract Administrator at least five (5) Business Days prior to the Submission Deadline.

B7.4 The Bidder shall ensure that any and all requests for approval of a substitute:

- (a) provide sufficient information and details to enable the Contract Administrator to determine the acceptability of the Plant, Material or method as either an approved equal or alternative;
- (b) identify any and all changes required in the applicable Work, and all changes to any other Work, which would become necessary to accommodate the substitute;
- (c) identify any anticipated cost or time savings that may be associated with the substitute;
- (d) certify that, in the case of a request for approval as an approved equal, the substitute will fully perform the functions called for by the general design, be of equal or superior substance to that specified, is suited to the same use and capable of performing the same function as that specified and can be incorporated into the Work, strictly in accordance with the proposed work schedule and the dates specified in the Supplemental Conditions for Substantial Performance and Total Performance;
- (e) certify that, in the case of a request for approval as an approved alternative, the substitute will adequately perform the functions called for by the general design, be similar in substance to that specified, is suited to the same use and capable of performing the same function as that specified and can be incorporated into the Work, strictly in accordance with the proposed work schedule and the dates specified in the Supplemental Conditions for Substantial Performance and Total Performance.

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

B8. BID COMPONENTS

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

B9. BID

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

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

B10. PRICES

- B10.1 The Bidder shall state a price in Canadian funds for each item of the Work identified on Form B: Prices.
- B10.1.1 Prices stated on Form B: Prices shall not include any costs which may be incurred by the Contractor with respect to any applicable funding agreement obligations as outlined in D35. Any such costs shall be determined in accordance with D35.
- 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) N/A

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 their participation in the Tender process or the Work; or
 - (f) has knowledge of confidential information (other than confidential information disclosed by the City in the normal course of the Tender process) of strategic and/or material relevance to the Tender process or to the Work that is not available to other bidders and that could or would be seen to give that Bidder an unfair competitive advantage.
- B12.3 In connection with their Bid, each entity identified in B12.2 shall:
- (a) avoid any perceived, potential or actual Conflict of Interest in relation to the procurement process and the Work;
 - (b) upon discovering any perceived, potential or actual Conflict of Interest at any time during the Tender process, promptly disclose a detailed description of the Conflict of Interest to the City in a written statement to the Contract Administrator; and
 - (c) provide the City with the proposed means to avoid or mitigate, to the greatest extent practicable, any perceived, potential or actual Conflict of Interest and shall submit any additional information to the City that the City considers necessary to properly assess the perceived, potential or actual Conflict of Interest.
- B12.4 Without limiting B12.3, the City may, in their sole discretion, waive any and all perceived, potential or actual Conflicts of Interest. The City's waiver may be based upon such terms and conditions as the City, in their sole discretion, requires to satisfy itself that the Conflict of Interest has been appropriately avoided or mitigated, including requiring the Bidder to put into place such policies, procedures, measures and other safeguards as may be required by and be acceptable to the City, in their sole discretion, to avoid or mitigate the impact of such Conflict of Interest.
- B12.5 Without limiting B12.3, and in addition to all contractual or other rights or rights at law or in equity or legislation that may be available to the City, the City may, in their sole discretion:
- (a) disqualify a Bidder that fails to disclose a perceived, potential or actual Conflict of Interest of the Bidder or any of their employees proposed for the Work;
 - (b) require the removal or replacement of any employees proposed for the Work that has a perceived, actual or potential Conflict of Interest that the City, in their sole discretion, determines cannot be avoided or mitigated;
 - (c) disqualify a Bidder or employees proposed for the Work that fails to comply with any requirements prescribed by the City pursuant to B12.4 to avoid or mitigate a Conflict of Interest; and

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

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

B13. QUALIFICATION

B13.1 The Bidder shall:

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

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

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

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

- (a) have successfully carried out work similar in nature, scope and value to the Work; 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 B13.5 and D9).

B13.4 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/>).

- B13.5 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.
- B13.6 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.
- B13.7 The Bidder shall provide, on the request of the Contract Administrator, full access to any of the Bidder's equipment and facilities to confirm, to the Contract Administrator's satisfaction, that the Bidder's equipment and facilities are adequate to perform the Work.

B14. BID SECURITY

- B14.1 The Bidder shall include in their Bid Submission bid security in the form of a digital bid bond, in the amount of at least ten percent (10%) of the Total Bid Price, and agreement to bond of a company registered to conduct the business of a surety in Manitoba, in Form G1: Bid Bond and Agreement to Bond, available 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(a).
- B14.3 Bonds failing the verification process will not be considered to be valid and the bid shall be determined to be non-responsive in accordance with B18.1(a).
- B14.4 Bonds passing the verification process will be treated as original and authentic.
- B14.4.1 If the Bidder submits alternative bids, the bid security shall be in the amount of the specified percentage of the highest Total Bid Price submitted.
- B14.5 The bid security of the successful Bidder and the next two lowest evaluated responsive and responsible Bidders will be released by the City when a Contract for the Work has been duly formed with the successful Bidder and the contract securities are furnished as provided herein. The bid securities of all other Bidders will be released when a Contract is awarded.
- B14.6 The bid securities of all Bidders will be released by the City as soon as practicable following notification by the Contract Administrator to the Bidders that no award of Contract will be made pursuant to the Tender.

B15. OPENING OF BIDS AND RELEASE OF INFORMATION

- B15.1 Bids will not be opened publicly.

- B15.2 Following the Submission Deadline, the names of the Bidders and their Total Bid Prices (unevaluated and pending review and verification of conformance with requirements) will be available on the MERX website at www.merx.com.
- B15.3 After award of Contract, the name(s) of the successful Bidder(s) and their Contract amount(s) will be available on the MERX website at www.merx.com.
- B15.4 The Bidder is advised that any information contained in any Bid may be released if required by The Freedom of Information and Protection of Privacy Act (Manitoba), by other authorities having jurisdiction, or by law or by City policy or procedures (which may include access by members of City Council).
- B15.4.1 To the extent permitted, the City shall treat as confidential information, those aspects of a Bid Submission identified by the Bidder as such in accordance with and by reference to Part 2, Section 17 or Section 18 or Section 26 of The Freedom of Information and Protection of Privacy Act (Manitoba), as amended.

B16. IRREVOCABLE BID

- B16.1 The Bid(s) submitted by the Bidder shall be irrevocable for the time period specified in Paragraph 11 of Form A: Bid/Proposal.
- B16.2 The acceptance by the City of any Bid shall not release the Bids of the next two lowest evaluated responsive Bidders and these Bidders shall be bound by their Bids on such Work until a Contract for the Work has been duly formed and the contract securities have been furnished as herein provided, but any Bid shall be deemed to have lapsed unless accepted within the time period specified in Paragraph 11 of Form A: Bid/Proposal.

B17. WITHDRAWAL OF BIDS

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

B18. EVALUATION OF BIDS

- B18.1 Award of the Contract shall be based on the following bid evaluation criteria:
- (a) compliance by the Bidder with the requirements of the Tender, or acceptable deviation 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 their Bid or in other information required to be submitted, that they are qualified.
- B18.4 Further to B18.1(c), the Total Bid Price shall be the sum of the quantities multiplied by the unit prices for each item shown on Form B: Prices.
- B18.4.1 Bidders are advised that the calculation indicated in B18.4 will prevail over the Total Bid Price entered in MERX.
- B18.4.2 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.

B19. AWARD OF CONTRACT

- B19.1 The City will give notice of the award of the Contract or will give notice that no award will be made.
- B19.2 The City will have no obligation to award a Contract to a Bidder, even though one or all of the Bidders are determined to be qualified, and the Bids are determined to be responsive.
- B19.2.1 Without limiting the generality of B19.2, the City will have no obligation to award a Contract where:
- (a) the prices exceed the available City funds for the Work;
 - (b) the prices are materially in excess of the prices received for similar work in the past;
 - (c) the prices are materially in excess of the City's cost to perform the Work, or a significant portion thereof, with their own forces;
 - (d) only one Bid is received; or
 - (e) in the judgment of the Award Authority, the interests of the City would best be served by not awarding a Contract.
- B19.3 If funding for the Work is provided to the City of Winnipeg by the Government of Manitoba and/or the Government of Canada, Bidders are advised that the terms of D35 shall immediately take effect upon confirmation of such funding, regardless of when funding is confirmed.
- B19.4 Where an award of Contract is made by the City, the award shall be made to the qualified Bidder submitting the lowest evaluated responsive Bid, in accordance with B18.
- B19.4.1 Following the award of contract, a Bidder will be provided with information related to the evaluation of their Bid upon written request to the Contract Administrator.

PART C - GENERAL CONDITIONS

C0. GENERAL CONDITIONS

- C0.1 The *General Conditions for Construction* (Revision 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. BACKGROUND

D3.1 The Newton Force Main being replaced as part of this Tender 814-2022 and the previous Tender 327-2022B is one of two crossings extending across the Red River from Fraser's Grove Park to the Newton Street right-of-way. A 350 mm steel force main directs flows from the Liden wastewater pumping station, and a 350 mm polyethylene (PE) force main receives flows from the Hawthorne wastewater pumping station. Both existing crossings were constructed along the river bottom. During recent inspections of these crossings, the PE crossing was found to be in poor condition and need of replacement. The steel crossing does not require replacement currently.

D3.2 An alternate alignment was required to support Provincial regulations and address constructability needs. The new river crossing initiates in Fraser Grove Park (further back from the existing crossing chamber) and the exits in Kildonan Park on the south side of Rainbow Stage. The crossing was installed by Accurate HD as part of Tender 327-2022B.

D3.3 Additional pipe works and chamber construction is required to complete the connections from the existing Hawthorne Valve Chamber to the new crossing inlet; and from the new crossing outlet to the Newton Interceptor Sewer (at Scotia Street and Newton Avenue).

D3.4 The most critical element of the current assignment will be the transition of the wastewater flows from the existing crossing to the new Newton force main crossing. This will occur during a 12-hour shut down of the Hawthorne wastewater pump station. The work will include the removal of the existing tee in the Hawthorne valve chamber and the installation of a new tee (and other elements) connected to the new piping. Bidders should closely review the requirements for the shut down and Hawthorne valve chamber modifications within the Tender documents to ensure that the risks associated with this Work have been addressed in their Bid.

D4. SCOPE OF WORK

D4.1 The Work to be done under the Contract shall consist of the trenchless installation of approximately 310 m of gravity and force main sewers connecting to the Hawthorne Valve Chamber to the Newton Avenue 1350 mm concrete wastewater sewer.

D4.2 The major components of the Work are as follows:

- (a) Site preparation and access
- (b) Provision of wastewater flow control and pump station shutdown plans
- (c) Partial demolition of the existing Hawthorne valve chamber to facilitate a new chamber extension and installation of new mechanical piping and fittings
- (d) Installation of new cast-in-place concrete launch wye chambers at both Kildonan Park and Frasers Grove Park

- (e) Supply and installation of 350 mm force main pipe, completed with all required fittings
- (f) Supply and installation of 600 mm wastewater sewer, completed with all required fittings
- (g) Installation of manholes
- (h) Abandoning the existing Hawthorne force main river crossing
- (i) Sewer video inspections
- (j) Pressure test of force main pipe
- (k) Site restoration

D5. SITE INVESTIGATION DUE DILIGENCE AND RISK

D5.1 Notwithstanding C3.1, the Contractor acknowledges that the site investigation reports and other site information included in this Tender have been provided to it and may be relied upon by the Contractor to the extent that the Contractor uses Good Industry Practice in interpreting such report(s) and site information and carries out the Work in accordance with Good Industry Practice based upon such report(s) and the information contained in them and such other site information. In the event that a site condition related to:

- (a) the location of any utility which can be determined from the records or other information available at the offices of any public authority or person, including a municipal corporation and any board or commission thereof, having jurisdiction or control over the utility;
- (b) the Site conditions, including but not limited to subsurface hazardous materials or other concealed physical conditions;
- (c) the location, nature, quality or quantity of the materials to be removed or to be employed in the performance of the Work;
- (d) the nature, quality or quantity of the Plant needed to perform the Work;
- (e) all matters concerning access to the Site, power supplies, location of existing services, utilities or materials necessary for the completion of the Work; and
- (f) all other matters which could in any way affect the performance of the Work;

that could not have been “properly inferable”, “readily apparent” and “readily discoverable” using Good Industry Practice by the Contractor, results in additional Work which is a direct result of this newly discovered site condition, such additional Work will be considered by the City under Changes in Work.

D6. DEFINITIONS

D6.1 When used in this Tender:

- (a) “**HDD**” means Horizontal Direction Drilling;
- (b) “**HDPE**” means High-Density Polyethylene;
- (c) “**PVC**” means Polyvinyl Chloride;
- (d) “**DN**” means Diameter Nominal.

D7. CONTRACT ADMINISTRATOR

D7.1 The Contract Administrator is KGS Group represented by:

Tristan Eldridge, C.E.T.
Municipal Engineering Technologist

Telephone No. 204 896-1209
Email Address teldridge@kgsgroup.com

D7.2 At the pre-construction meeting, Tristan Eldridge, C.E.T. will identify additional personnel representing the Contract Administrator and their respective roles and responsibilities for the Work.

D8. CONTRACTOR'S SUPERVISOR

D8.1 At the pre-construction meeting, the Contractor shall identify their designated supervisor and any additional personnel representing the Contractor and their respective roles and responsibilities for the Work.

D9. ACCESSIBLE CUSTOMER SERVICE REQUIREMENTS

D9.1 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.

D9.1.1 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.

D9.1.2 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.

D10. UNFAIR LABOUR PRACTICES

D10.1 Further to C3.2, the Contractor declares that in bidding for the Work and in entering into this Contract, the Contractor and any proposed Subcontractor(s) conduct their respective business in accordance with established international codes embodied in United Nations Universal Declaration of Human Rights (UDHR) <https://www.un.org/en/about-us/universal-declaration-of-human-rights> International Labour Organization (ILO) [https://www.ilo.org/global/lang--en/index.htm](https://www.ilo.org/global/lang-en/index.htm) conventions as ratified by Canada.

D10.2 The City of Winnipeg is committed and requires its Contractors and their Subcontractors, to be committed to upholding and promoting international human and labour rights, including fundamental principles and rights at work covered by ILO eight (8) fundamental conventions and the United Nations Universal Declaration of Human Rights which includes child and forced labour.

D10.3 Upon request from the Contract Administrator, the Contractor shall provide disclosure of the sources (by company and country) of the raw materials used in the Work and a description of the manufacturing environment or processes (labour unions, minimum wages, safety, etc.).

D10.4 Failure to provide the evidence required under D10.3, may be determined to be an event of default in accordance with C18.

D10.5 In the event that the City, in its sole discretion, determines the Contractor to have violated the requirements of this section, it will be considered a fundamental breach of the Contract and the

Contractor shall pay to the City a sum specified by the Contract Administrator in writing (“Unfair Labour Practice Penalty”). Such a violation shall also be considered an Event of Default, and shall entitle the City to pursue all other remedies it is entitled to in connection with same pursuant to the Contract.

- D10.5.1 The Unfair Labour Practice Penalty shall be such a sum as determined appropriate by the City, having due regard to the gravity of the Contractor’s violation of the above requirements, any cost of obtaining replacement goods/ services or rectification of the breach, and the impact upon the City’s reputation in the eyes of the public as a result of same.
- D10.5.2 The Contractor shall pay the Unfair Labour Practice Penalty to the City within thirty (30) Calendar Days of receiving a demand for same in accordance with clause D10.5. The City may also hold back the amount of the Unfair Labour Practice Penalty from payment for any amount it owes the Contractor.
- D10.5.3 The obligations and rights conveyed by this clause survive the expiry or termination of this Contract, and may be exercised by the City following the performance of the Work, should the City determine, that a violation by the Contractor of the above clauses has occurred following same. In no instance shall the Unfair Labour Practice Penalty exceed the total of twice the Contract value.

D11. FURNISHING OF DOCUMENTS

- D11.1 Upon award of the Contract, the Contractor will be provided with ‘issued for construction’ Contract Documents electronically, including Drawings in PDF format only.

SUBMISSIONS

D12. AUTHORITY TO CARRY ON BUSINESS

- D12.1 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.

D13. SAFE WORK PLAN

- D13.1 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.
- D13.2 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>
- D13.3 Notwithstanding B13.4 at any time during the term of the Contract, the City may, at their sole discretion and acting reasonably, require an updated COR Certificate or Annual Letter of good Standing. A Contractor, who fails to provide a satisfactory COR Certificate or Annual Letter of good Standing, will not be permitted to continue to perform any Work.

D14. INSURANCE

- D14.1 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 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, broad form property damage cover and products and completed operations, to remain in place at all times during the performance of the Work and throughout the warranty period;

- (b) automobile liability insurance covering all motor vehicles, owned and operated and used or to be used by the Contractor directly or indirectly in the performance of the Work. The limit of liability shall not be less than \$2,000,000 inclusive for loss or damage including personal injuries and death resulting from any one accident or occurrence.
- (c) an all risks Installation Floater carrying adequate limits to cover all machinery, equipment, supplies and/or materials intended to enter into and form part of any installation.
- (d) contractor's pollution liability insurance (CPL) in the amount of no less than one million dollars (\$1,000,000) per occurrence and two million dollars (\$2,000,000) annual aggregate insuring against claims covering third-party injury and property damage claims and including clean-up costs and transported cargo as a result of pollution conditions arising suddenly or gradually from the Contractor operations and completed operations. Such policy to name the City as an additional insured and remain in place throughout the warranty period.

D14.2 Deductibles shall be borne by the Contractor.

D14.3 All policies shall be taken out with insurers duly licensed to carry on business in the Province of Manitoba.

D14.4 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.

D14.5 The Contractor shall not cancel, materially alter, or cause each policy to lapse without providing at least thirty (30) Calendar Days prior written notice to the Contract Administrator.

D15. CONTRACT SECURITY

D15.1 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.

D15.1.1 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 D15.1(b).

D15.1.2 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 their discretion, exercised reasonably, allows.

D15.1.3 Digital bonds passing the verification process will be treated as original and authentic.

D15.2 The Contractor shall provide the Contract Administrator identified in D7 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.

D15.3 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 D15.1(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.

D16. SUBCONTRACTOR LIST

D16.1 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 the General Conditions for the return of the executed Contract Documents, if applicable.

D17. REQUIREMENTS 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.
- D17.9 Third and subsequent Offences – A pay reduction will be issued in the amount of \$250.00 per instance and per day.
- D18. EXPEDITED SHOP DRAWINGS**
- D18.1 Further to E3, to expedite Shop Drawings with critical timeliness, the lowest responsive Bidder, as outlined in B15, will be permitted, after receiving written approval from the Contract Administrator, to arrange for the preparation of Shop Drawings for the following items with critical timelines:
- (a) 350 mm DR25 PVC with 50 mm Jacketed Insulation
 - (b) DN500 DI Pipe
 - (c) DN350 Knife Valves
 - (d) DN500 Wyes, Bends, and Reducers
 - (e) DN350 Wyes, Bends, and Reducers
 - (f) DN350 DI Pipe
 - (g) Pre-Cast Concrete Chambers
- D18.2 If Award is made to the lowest responsive Bidder, then as indicated in E3.2(a) no payment for the preparation of Shop Drawings will be made.
- D18.3 If no Contract is awarded, then the City of Winnipeg will pay the requested Bidder up to a maximum of five hundred dollars (\$500.00) for each of the requested items identified in D18.1 for the preparation and delivery of Shop Drawings. Delivery of the Shop Drawings to the City and payment of the above-mentioned 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.

D19. DETAILED WORK SCHEDULE

- D19.1 The Contractor shall provide the Contract Administrator with a detailed work schedule at least ten (10) Business Days prior to the commencement of any Work on the Site but in no event later than the date specified in the General Conditions for the return of the executed Contract.
- D19.2 The detailed work schedule shall consist of the following:
- (a) A critical path method (CPM) schedule for the work; and
 - (b) A Gantt chart for the Work based on the CPM schedule, as acceptable by the Contract Administrator.
- D19.3 Further to D19.2(a), the CPM schedule shall identify the start and completion dates of the following Work items:
- (a) Commencement date
 - (b) Utility locates
 - (c) Site preparation and access
 - (d) Installation of new cast-in-place concrete launch wye chambers at both Kildonan Park and Frasers Grove Park
 - (e) Supply and installation of 350 mm force main pipe, completed with all required fittings
 - (f) Supply and installation of 600 mm wastewater sewer, completed with all required fittings
 - (g) Installation of manholes
 - (h) Abandoning the existing Hawthorne force main river crossing
 - (i) Sewer video inspections
 - (j) Pressure test of force main pipe
 - (k) Partial demolition of the existing Hawthorne valve chamber to facilitate a new chamber extension and installation of new mechanical piping and fittings
 - (l) Provision of wastewater flow control and pump station shutdown plans
 - (m) Site restoration
 - (n) Additional Critical Dates
 - (o) Total Performance
- D19.4 Timelines and staging for pedestrian and traffic management identified in **E17** as required to complete the Work should be included in the schedule.
- D19.5 The Contractor shall update the schedule and provide it to the Contract Administrator prior to each weekly construction site meeting for review and discussion at the meetings.

SCHEDULE OF WORK

D20. COMMENCEMENT

- D20.1 The Contractor shall not commence any Work until they are in receipt of an award letter from the Award Authority authorizing the commencement of the Work.
- D20.2 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 D12;
 - (ii) evidence of the workers compensation coverage specified in C6.15;

- (iii) the Safe Work Plan specified in D13;
 - (iv) evidence of the insurance specified in D14;
 - (v) the contract security specified in D15;
 - (vi) the Subcontractor list specified in D16;
 - (vii) the Requirements for Site Accessibility Plan specified in D17; and
 - (viii) the Detailed Work Schedule specified in D19, and
 - (ix) the direct deposit application form specified in D31.
- (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.

D20.3 The City intends to award this Contract by May 2, 2023.

D20.4 If the actual date of award is later than the intended date, the dates specified for Critical Stages, Substantial Performance, and Total Performance will be adjusted by the difference between the aforementioned intended and actual dates.

D21. WORK BY OTHERS

D21.1 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 Contractors 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 the Contract.

D21.2 Work by others on or near the Site will include but not necessarily be limited to:

- (a) Accurate HD – Restorations for 327-2022B – Newton Force Main Red River Crossing by Horizontal Direction Drilling (See Drawing 13222) – Zone 1)

D21.3 Further to D21.1 the Contractor shall cooperate and coordinate all activities with all parties performing required Work by Others identified in D21.1 and accommodate the necessary area on Site required for the Work by Others to complete the Work.

D22. CRITICAL STAGES

D22.1 The Contractor shall achieve critical stages of the Work in accordance with the following requirements:

- (a) All Work in Kildonan Park must be complete, including testing, and restoration as directed by the Contract Administrator by July 1, 2023, as required for the opening of Rainbow Stage and Kildonan Park Outdoor Pool.

D23. SUBSTANTIAL PERFORMANCE

D23.1 The Contractor shall achieve Substantial Performance within forty-five (45) consecutive Working Days of the commencement of the Work or by August 4, 2023, whichever comes first.

D23.2 When the Contractor considers the Work to be substantially performed, the Contractor shall arrange, attend and assist in the inspection of the Work with the Contract Administrator for purposes of verifying Substantial Performance. Any defects or deficiencies in the Work noted during that inspection shall be remedied by the Contractor at the earliest possible instance and the Contract Administrator notified so that the Work can be reinspected.

D23.3 The date on which the Work has been certified by the Contract Administrator as being substantially performed to the requirements of the Contract through the issue of a certificate of Substantial Performance is the date on which Substantial Performance has been achieved.

D24. TOTAL PERFORMANCE

- D24.1 The Contractor shall achieve Total Performance by August 11, 2023.
- 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 Stage D22.1(a) – two thousand dollars (\$2000);
 - (b) Substantial Performance – two thousand five hundred dollars (\$2000);
 - (c) Total Performance – seven hundred and fifty dollars (\$750).
- D25.2 The amounts specified for liquidated damages in D25 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.

D27. SCHEDULED MAINTENANCE

D27.1 The Contractor shall perform the following scheduled maintenance in the manner and within the time periods required by the Specifications:

- (a) Watering and maintenance of all new trees and vegetation until established as specified in E10.
- (b) Acceptance of installed sod.

D27.2 Determination of Substantial Performance and Total Performance shall be exclusive of scheduled maintenance identified herein. All scheduled maintenance shall be completed prior to the expiration of the warranty period. Where the scheduled maintenance cannot be completed during the warranty period, the warranty period shall be extended for such period of time as it takes the Contractor to complete the scheduled maintenance.

CONTROL OF WORK

D28. JOB MEETINGS

D28.1 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.

D28.2 The Contract Administrator reserves the right to cancel any job meeting or call additional job meetings whenever they deem it necessary.

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

D29.1 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).

D30. THE WORKPLACE SAFETY AND HEALTH ACT (MANITOBA) – QUALIFICATIONS

D30.1 Further to B13.4, the Contractor/Subcontractor must, throughout the term of the Contract, have a Workplace Safety and Health Program meeting the requirements of The Workplace Safety and Health Act (Manitoba). At any time during the term of the Contract, the City may, at their sole discretion and acting reasonably, require updated proof of compliance, as set out in B13.4.

MEASUREMENT AND PAYMENT

D31. PAYMENT

D31.1 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.

D32. FUEL PRICE ADJUSTMENT

D32.1 The Contract is subject to a fuel price adjustment which will be calculated monthly based on eligible Work completed utilizing the following mathematical formulas;

- (a) where the price of fuel has increased - $((CFI/BFI)-1.15) \times Q \times FF$; and
- (b) where the price of fuel has decreased - $((CFI/BFI)-0.85) \times Q \times FF$; where
 - (i) BFI = base fuel index
 - (ii) CFI = current fuel index
 - (iii) FF = fuel factor
 - (iv) Q = monetary value of Work applied in the calculation.

D32.1.1 Eligible Work will be determined in accordance with D32.5.

D32.1.2 The base fuel index (BFI) will be the retail price of fuel identified on the Submission Deadline based on latest published "Monthly average retail prices for gasoline and fuel by geography" for Winnipeg, published by [Statistics Canada, Table 18-10-0001-01](#). The BFI is a blended rate based on 15% regular unleaded gasoline at self-service filling stations and 85% diesel fuel at self-service filling stations.

D32.1.3 The current fuel index (CFI) based on the above blended rate will be determined for each monthly progress estimate and applied on the following progress estimate as a change order once rates are published by Statistics Canada.

D32.1.4 A Fuel Factor (FF) rate of the monetary value of all eligible Work completed that month based on the Contract unit prices will be used to calculate the assumed apportioned cost of fuel.

D32.2 Fuel cost adjustments may result in additional payment to the Contractor or credit to the City within the Contract by way of a monthly change order.

D32.3 The fuel escalation or de-escalation adjustment will not be applied if the CFI is within $\pm 15\%$ of the BFI.

D32.4 Fuel escalation adjustments will not be considered beyond the Substantial Performance/Critical Stages except where those dates/Working Days are adjusted by change order. Fuel de-escalation adjustments will apply for Work that extends beyond the dates/Working Days specified for Substantial Performance/Critical Stages.

D32.5 The Fuel Factor (FF) rates will be set as follows:

- (a) The Fuel Factor rate shall be set at 1.2% of the monetary value of all Work identified on Form B: Prices related to Water and Waste Work.

WARRANTY

D33. WARRANTY

D33.1 Notwithstanding C13.2 the Contract Administrator may permit the warranty period for a portion or portions of the Work to begin prior to the date of Total Performance if:

- (a) a portion of the Work cannot be completed because of unseasonable weather or other conditions reasonably beyond the control of the Contractor but that portion does not prevent the balance of the Work from being put to its intended use.

D33.2 In such case, the date specified by the Contract Administrator for the warranty period to begin shall be substituted for the date specified in C13.2 for the warranty period to begin.

D33.3 For the purpose of contract security, the warranty period shall be one (1) year.

DISPUTE RESOLUTION

D34. DISPUTE RESOLUTION

D34.1 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 D34.

D34.2 The entire text of C21.4 is deleted, and amended to read: "Intentionally Deleted"

D34.3 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 their 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 their Appeal Form.

D34.4 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.

D34.4.1 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.

D34.4.2 As these negotiations are not an adjudicative hearing, neither party may have legal counsel present during the negotiations.

D34.4.3 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.

D34.4.4 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 D34.4.3, 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

D35. FUNDING AND/OR CONTRIBUTION AGREEMENT OBLIGATIONS

- D35.1 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.
- D35.2 Further to D35, in the event that the obligations in D35 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.
- D35.3 For the purposes of D35:
- (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.
- D35.4 Modified Insurance Requirements
- D35.4.1 If not already required under the insurance requirements identified in D14, 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 their Ministers, officers, employees, and agents shall be added as additional insureds.
- D35.4.2 If not already required under the insurance requirements identified in D14, 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.
- D35.4.3 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.
- D35.4.4 Further to D14.4, 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.
- D35.4.5 All policies must be taken out with insurers licensed to carry on business in the Province of Manitoba.
- D35.5 Indemnification By Contractor
- D35.5.1 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.

- D35.5.2 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;
 - (d) in relation to this Contract or the Work.
- D35.6 Records Retention and Audits
- D35.6.1 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.
- D35.6.2 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 D35.6.1 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.
- D35.7 Other Obligations
- D35.7.1 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.
- D35.7.2 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.
- D35.7.3 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.
- D35.7.4 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.
- D35.7.5 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.

D35.7.6 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 D15)

KNOW EVERYONE 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. 814-2022

NEWTON FORCE MAIN RED RIVER CROSSING - CONNECTIONS AND SEWER ON SCOTIA STREET

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 D15)

KNOW EVERYONE 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. 814-2022

NEWTON FORCE MAIN RED RIVER CROSSING - CONNECTIONS AND SEWER ON SCOTIA STREET

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
 - (ii) 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;

- (iii) 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;
 - (iv) 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)

PART E - SPECIFICATIONS

GENERAL

E1. APPLICABLE SPECIFICATIONS AND DRAWINGS

- E1.1 These Specifications shall apply to the Work.
- E1.2 *The City of Winnipeg Standard Construction Specifications* in their entirety, whether or not specifically listed on Form B: Prices, shall apply to the Work.
- E1.2.1 *The City of Winnipeg Standard Construction Specifications* is available on the Information Connection page at The City of Winnipeg, Corporate Finance, 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:

Drawing No.	Drawing Name/Title
1-0221S-D0006-001	NEWTON RIVER CROSSING - COVER SHEET
1-0221S-D0007-001	NEWTON RIVER CROSSING - INDEX PAGE
13216	NEWTON RIVER CROSSING - KEYPLAN
13217	NEWTON RIVER CROSSING – SOUTH AND NORTH TIE-IN'S
13218	NEWTON RIVER CROSSING – SCOTIA STREET SEWER
13219	NEWTON RIVER CROSSING – SCOTIA STREET SEWER
13220	NEWTON RIVER CROSSING – EXISTING FORCE MAIN ABANDONMENT
1-0221S-C0005-001	NEWTON RIVER CROSSING – MISCELLANEOUS DETAILS
1-0221S-C0006-001	NEWTON RIVER CROSSING – FORCE MAIN TIE-IN MANHOLE DETAILS
1-0221S-M0003-001	NEWTON RIVER CROSSING – MECHANICAL - DEMOLITION
1-0221S-M0004-001	NEWTON RIVER CROSSING – MECHANICAL - CONSTRUCTION
1-0221S-S0003-001	NEWTON RIVER CROSSING – STRUCTURAL – GENERAL NOTES
1-0221S-S0004-001	NEWTON RIVER CROSSING – STRUCTURAL – PLAN, SECTION AND DETAILS
13221	NEWTON RIVER CROSSING – RESTORATIONS ZONES

GENERAL REQUIREMENTS

E2. TRAFFIC CONTROL

- E2.1 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:
- Parking restrictions,
 - Stopping restrictions,
 - Turning restrictions,
 - Diamond lane removal,
 - 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.
- E2.2 Further to (c), the Contractor shall make arrangements with the Traffic Services Branch of the City of Winnipeg to supply regulatory signs as required.
- E2.3 Upon request from the Contract Administrator, the Contractor shall provide records demonstrating that the Site has been maintained.
- E2.4 Further to E2.1(c) and E2.1(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.
- E2.5 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.
- E2.6 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.

E3. SHOP DRAWINGS

E3.1 Description

- E3.1.1 This Specification shall revise, amend and supplement the requirements of CW 1110.
- (a) The term 'Shop Drawings' means drawings, diagrams, illustrations, schedules, performance charts, brochures, and other data, including Site erection drawings which are to be provided by the Contractor to illustrate details of a portion of the Work.
 - (b) 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.
- E3.1.2 Shop Drawings
- (a) Original drawings are to be prepared by the Contractor, Subcontractor, Supplier, Distributor, or Manufacturer, which illustrate an appropriate portion of Work; showing fabrication, layout, setting or erection details as specified in appropriate sections.
 - (b) Additional submittal requirements for each component of Work may be listed within the relevant specification section.
- E3.1.3 Contractor's Responsibility
- (a) Review Shop Drawings, product data and samples prior to submission and stamp and sign drawings indicating conformance to the Contract requirements.
 - (b) Verify the following metrics against what's indicated in the Shop Drawings:
 - (i) Field Measurements
 - (ii) Field Construction Criteria
 - (iii) Catalogue numbers of material delivered to the Site and similar data

- (c) Coordinate each submission with requirements of Work and Contract Documents. Individual Shop Drawings will not be reviewed until all related drawings are available.
- (d) Notify Contract Administrator, in writing at the time of submission, of deviations from the requirements of Contract Documents.
- (e) Responsibility for deviations from requirements of Contract Documents in the submission is not relieved by the Contract Administrator's review of the submission unless Contract Administrator gives written acceptance of specified deviations.
- (f) Responsibility for errors and omissions in submission is not relieved by the Contract Administrator's review of submittals.
- (g) The Contractor shall make any corrections required by the Contract Administrator and shall resubmit the required number of corrected copies of Shop Drawings. The Contractor shall direct specific attention in writing or on resubmitted Shop Drawings to revisions other than the corrections requested by the Contract Administrator on the previous submission.
- (h) After the Contract Administrator's review and return of copies, distribute copies to subtrades as appropriate.
- (i) Maintain one (1) complete set of reviewed Shop Drawings, filed by Specification Section Number, at the Site of the Work for use and reference of the Contract Administrator and Subcontractors.

E3.1.4 Submission Requirements

- (a) Schedule submissions at least ten (10) Calendar Days before the dates on which reviewed submissions will be needed, and allow for a 10 Calendar Day period for review by the Contract Administrator of each submission and re-submission unless noted otherwise in the Contract Documents.
- (b) Submit one (1) digital copy (PDF) of the shop drawings.
- (c) Accompany submissions with a transmittal letter, containing:
 - (i) Date
 - (ii) Project title and Bid Opportunity number
 - (iii) Contractor's name and address
 - (iv) Number of each Shop Drawing, product data and sample submitted
 - (v) Specification Section, Title, Number and Clause
 - (vi) Drawing Number and Detail/Section Number
 - (vii) Other pertinent data
- (d) Submissions shall include:
 - (i) Date and revision dates
 - (ii) Project title and Bid Opportunity number
 - (iii) Name of:
 - ◆ Contractor
 - ◆ Subcontractor
 - ◆ Supplier
 - ◆ Manufacturer
 - ◆ Separate detailer when pertinent
 - (iv) Identification of product of material
 - (v) Relation to adjacent structure or materials
 - (vi) Verification that field dimensions are identified as such
 - (vii) Specification section name, number and clause number or drawing number and detail/section number
 - (viii) Applicable standards, such as CSA or CGSB

- (ix) Contractor's stamp, initialed or signed, certifying review of the submission, verification of field measurements and compliance with Contract Documents

E3.1.5 Other Considerations

- (a) Fabrication, erection, installation or commissioning may require modifications to equipment or systems to conform to the design intent. Revise pertinent shop drawings and resubmit.
- (b) Material and equipment delivered to the Site of the Works will not be paid for at least until pertinent Shop Drawings have been submitted and reviewed.
- (c) Incomplete Shop Drawing information will be considered as stipulated deductions for progress payment certificates.
- (d) No delay or cost claims will be allowed that arise because of delays in submissions, re-submissions and review of Shop Drawings.

E3.2 Measurements and Payment

- (a) Preparation and submittal of Shop Drawings shall be considered incidental to the Works of this Contract and no measurement or payment will be made for this item.

E4. ENVIRONMENTAL PROTECTION PLAN

E4.1 The Contractor shall plan and implement the Work of this Contract strictly in accordance with the requirements of the Environmental Protection Measures as herein specified.

E4.2 The Contractor is advised that at least the following Acts, Regulations, and By-laws apply to the Work:

- (a) Federal
 - (i) Canadian Environmental Protection Act (CEPA) c.16
 - (ii) Canadian Environmental Assessment Act (CEAA) c.37
 - (iii) Transportation of Dangerous Goods Act and Regulations c.34
- (b) Provincial
 - (i) The Dangerous Goods Handling and Transportation Act D12
 - (ii) The Endangered Species Act E111
 - (iii) The Environment Act c.E125
 - (iv) The Fire Prevention Act F80
 - (v) The Manitoba Heritage Resources Act H39.1
 - (vi) The Manitoba Noxious Weeds Act N110
 - (vii) The Manitoba Nuisance Act N120
 - (viii) The Public Health Act c.P210
 - (ix) The Workplace Safety and Health Act W120
 - (x) Other current applicable associated regulations
- (c) Municipal
 - (i) The City of Winnipeg By-law no. 1/2008
 - (ii) Other applicable Acts, Regulations and By-laws

E4.3 The Contractor is advised that the following environmental protection measures apply to the Work:

- (a) Materials Handling and Storage
 - (i) Construction materials and debris shall be prevented from entering drainage pipes or channels.

- (ii) 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.
 - (iii) 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.
- (b) Fuel Handling and Storage
- (i) 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.
 - (ii) 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.
 - (iii) 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.
 - (iv) The Contractor shall ensure that all fuel storage containers are inspected daily for leaks and spillage.
 - (v) Products transferred from the fuel storage area(s) to specific Work Sites shall not exceed the daily usage requirement.
 - (vi) 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.
 - (vii) Refuelling of mobile equipment and vehicles shall take place at least 100 metres from a watercourse.
 - (viii) 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.
 - (ix) A sufficient supply of materials, such as absorbent material and plastic oil booms to clean up minor spills shall be stored nearby on-site. The Contractor shall ensure that additional material can be made available on short notice.
- (c) Waste Handling and Disposal
- (i) The construction area shall be kept clean and orderly at all times during and after construction.
 - (ii) 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.
 - (iii) All resulting debris shall be deposited at a Waste Disposal Ground operating under the authority of Manitoba Regulation #150/91. Exceptions are industrial liquid and hazardous wastes which may require special disposal methods (see SC:21.4 D).
 - (iv) Indiscriminate dumping, littering, or abandonment shall not take place.
 - (v) No on-site burning of waste is permitted.
 - (vi) Waste storage areas shall not be located to block natural drainage.
 - (vii) Run-off from a waste storage area shall not be allowed to cause siltation of a watercourse.
 - (viii) 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.
 - (ix) Equipment shall not be cleaned near watercourses; contaminated water from onshore cleaning operations shall not be permitted to enter watercourses.
- (d) Dangerous Goods/Hazardous Waste Handling and Disposal
- (i) Dangerous goods/hazardous wastes are identified by and shall be handled according to The Dangerous Goods Handling and Transportation Act and Regulations.

- (ii) The Contractor shall be familiar with The Dangerous Goods Handling and Transportation Act and Regulations.
 - (iii) 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. Proof of this certification shall be provided to the Contract Administrator.
 - (iv) Different waste streams shall not be mixed.
 - (v) Disposal of dangerous goods/hazardous wastes shall be at approved hazardous waste facilities.
 - (vi) Liquid hydrocarbons shall not be stored or disposed of in earthen pits on-site.
 - (vii) Used oils shall be stored in appropriate drums, or tankage, until shipment to waste oil recycling centres, incinerators, or secure disposal facilities is approved for such wastes.
 - (viii) Used oil filters shall be drained, placed in suitable storage containers, and buried or incinerated at approved hazardous waste treatment and disposal facilities.
 - (ix) Dangerous goods/hazardous waste storage areas shall be located at least 100 metres away from the high water line and be diked.
 - (x) Dangerous goods/hazardous waste storage areas shall not be located to block natural drainage.
 - (xi) Run-off from a dangerous goods/hazardous waste storage area shall not be allowed to cause siltation of a watercourse.
 - (xii) 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.
- (e) Emergency Response
- (i) The Contractor shall ensure that due care and caution are taken to prevent spills.
 - (ii) The Contractor shall report all major spills of petroleum products or other hazardous substances with significant impact on the environment and threat to human health and safety to Manitoba Conservation, immediately after the occurrence of the environmental accident, by calling the 24-hour emergency phone number (204) 945-4888. The Contract Administrator shall also be notified.
 - (iii) 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 to respond in the event of a spill.
 - (iv) 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:
 - Notify the emergency-response co-ordinator of the accident:
 - identify the exact location and time of the accident
 - indicate injuries, if any
 - request assistance as required by magnitude of accident (Manitoba Conservation 24-hour Spill Response Line (204) 945-4888, Police, Fire Department, Ambulance, company backup)
 - Attend to public safety:
 - stop traffic, roadblock/cordon off the immediate danger area
 - eliminate ignition sources
 - initiate evacuation procedures if necessary
 - Assess the situation and gather information on the status of the situation, noting:
 - personnel on-site
 - cause and effect of the spill
 - estimated extent of damage
 - amount and type of material involved
 - proximity to waterways, sewers, and manholes
 - If safe to do so, try to stop the dispersion or flow of spilled 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 manholes and other openings by covering them with rubber spill mats or diking. Resume any effective action to contain, clean up, or stop the flow of the spilled product.
- (v) The emergency response coordinator shall ensure that all environmental accidents involving contaminants shall be documented and reported to Manitoba Conservation according to The Dangerous Goods Handling and Transportation Act Environmental Accident Report Regulation 439/87.
- (vi) 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.
- (vii) 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.
- (viii) City emergency response, 9-1-1, shall be used if other means are not available.
- (f) Vegetation
- (i) Vegetation shall not be distributed 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, tree strapping, or signage and shall be approved in advance by the Contractor Administrator.
 - (ii) Herbicides and pesticides shall not be used adjacent to any surface watercourses.
 - (iii) All landowners adjacent to the area of application of herbicides or pesticides shall be notified prior to the Work.
 - (iv) Trees and shrubs shall not be felled into watercourses.
 - (v) Areas where vegetation is removed during clearing, construction, and decommissioning activities, shall be revegetated as soon as possible in accordance with the landscaping plans forming part of the contract, or as directed by the Contract Administrator.

E4.4 Method of Measurement and Payment

- (a) Adherence to the laws that govern the requirements for Environmental Protection is incidental to the Contract.

E5. SITE CONTAINMENT AND PROTECTION

- E5.1 The proposed Work areas on both sides of the Red River are within designated park areas that are accessible by the public, and as such, the Contractor shall implement measures to contain their work site and protect the public.
- E5.2 The Contractor shall develop a plan that outlines the measures they will implement to contain the site and protect the public. The plan shall be submitted to, discussed with, and approved by the Contract Administrator prior to mobilization. At a minimum, the plan shall include the placement of fencing around the work sites, equipment staging areas, and material stockpiles.
- E5.3 Provisions should be provided to allow pedestrian traffic around the work sites in accordance with E17, while still providing adequate protection and space for the work to be performed.
- E5.4 The Contractor may need to assess the Site Containment and Protection as the work progresses and adjust fencing and protection measures based on the actual flow of pedestrians and the Work progress.
- E5.5 The Contractor shall maintain and upkeep measures throughout the project and shall address concerns raised by the Contract Administrator immediately.

E5.6 The Contractor will provide periodic inspection and maintenance of the Site Containment and Protection measures during non-workdays.

E5.7 Measurements and Payment

- (a) No separate measurement or payment will be made for Site Containment and Protection and will be considered incidental to the Work.

E6. SITE DEVELOPMENT AND RESTORATION

E6.1 Description

- (a) This Specification shall cover all aspects of the Site Development and Restoration Work, including but not limited to mobilization and demobilization, Site access, Site security (fencing and gates), utility clearances, traffic control and signage, site runoff and drainage, protection, cleanup, and Site restoration.

E6.2 Submittals

- (a) Access and Layout Plans for review and approval by the Contract Administrator, in accordance with CW 1110 and E18, for the following items:
 - (ii) Fraser's Grove Park temporary workspace
 - (iii) Kildonan Park temporary workspace

E6.3 Equipment

- (a) All equipment, implements, tools and facilities used shall be of a size and type as required to complete the Work in a reasonable time, approved by the Contract Administrator.
- (b) The Contractor shall keep all equipment in good Working order and have sufficient standby equipment available at all times.

E6.4 Construction Methods

- (a) Temporary Workspace and Site Access

- (ii) Fraser's Grove Park

The Contractor shall be responsible to develop suitable Site access. This includes but is not limited to, removal of curbing, temporary ramping, construction signage, temporary bridging over structures, temporary safety fencing, protection of trees, any landscaping, grading and pavement repairs, removal and restoration of vegetation necessary to restore any Site and construction access areas to their pre-existing condition.

- (iii) Kildonan Park

The Contractor shall be responsible to develop suitable Site access. This includes but is not limited to, removal of curbing, temporary ramping, construction signage, temporary bridging over structures, temporary safety fencing, protection of trees, any landscaping, grading and pavement repairs, removal and restoration of vegetation necessary to restore any Site and construction access areas to their pre-existing condition.

- (iv) The Contractor is responsible for obtaining and paying for all required permits that are necessary for Site access.

- (b) Diversion of Flows

- (i) Flows such as snowmelt, rainfall, water from water main breaks or any other flow travelling through the Site, into excavations, or through pipes being worked on shall be diverted during construction by the Contractor.

- (c) Vegetation Removal and Protection

- (i) Vegetation (living trees smaller than 50 mm and sod) removal may be permitted to facilitate Site access and temporary lay-down areas. Existing vegetation shall not be removed without prior approval from the Contract Administrator.

- (ii) All trees within Fraser's Grove Park and Kildonan Park adjacent to construction works shall be Strapped and Protected
- (d) General Site Cleanup and Restoration
 - (i) All areas of the construction Site shall be restored to a condition the same or better than the original condition prior to initiation of Work. With the exception of the restoration of temporary work spaces (Zone 2) from Tender 327-2022B that is being paid out separately in accordance with E7.
- (e) Topsoil and Sod
 - (i) All topsoil and sodding Work shall be performed in accordance with CW 3510. Topsoil and Sodding Work shall include all existing grassed areas disturbed by the Contractor during construction. The Contractor shall restore all areas disturbed during construction to the condition prior to the initiation of the Work or better, using topsoil and sod at their own cost. With the exception of the restoration of temporary work spaces (Zone 2) from Tender 327-2022B that is being paid out separately in accordance with E7.
- (f) Traffic Control and Signage
 - (i) Coordinate, install and maintain traffic control and signage in accordance with E16 and E17.
- (g) Construction Fencing
 - (i) The erection of temporary construction fencing is required around the temporary workspace area(s) and all construction work activities to ensure the provision of a safe worksite.
 - (ii) Fencing or barriers shall be suitable to protect workers within the work site and minimize the impact on vehicular and pedestrian traffic or buildings and infrastructure in proximity to the worksite.
- (h) Surface Restoration
 - (i) Prior to construction, the Contractor shall inspect the grassed, pavement, and gravel surfaces within the site. After construction and site cleanup are complete, the Contractor shall re-inspect the conditions with the Contract Administrator.
 - (ii) The Contractor shall restore the condition and appearance of the site to pre-construction conditions or better in accordance with the following:
 - (i) Grassed areas that were cleared and grubbed as a result of construction activities will be restored in accordance with CW 3510 – Sodding or CW 3520 – Seeding. Treed areas will be restored as per E10.
 - (ii) Grassed areas damaged by construction activities will be restored in accordance with CW 3510 – Sodding, or CW 3520 – Seeding. Restoration of grassed areas outside of Restoration Zones 2 & 3 as shown on Drawing 13221 will not be measured for payment and will be included as part of the Work.
 - (iii) Pavement damaged by construction activities will be restored in accordance with CW 3230 – Full-Depth Patching of Existing Slabs and Joints, and CW 3410 – Asphaltic Concrete Pavement Works.
 - (iv) Concrete damaged by construction activities will be restored in accordance with CW 3310 – Portland Cement Concrete Pavement Works, and CW 3325 – Portland Cement Concrete Sidewalk.
 - (v) Gravel surfacing damaged by construction activities will be restored in accordance with CW 3150 – Gravel Surfacing.
 - (vi) Items outside of the City specifications shall be restored to a condition equal to or better than the preconstruction condition.

E6.5 Method of Measurement and Payment

- (a) Site development and restoration will be measured and paid for at the Contract Lump Sum Price for "Site Development and Restoration", which price shall be paid in full for supplying

all materials and for performing all operations herein described and all other items incidental to the Work included in this Specification.

- (b) 20% of the Site Development and Restoration unit price will be paid on the first Progress Payment following the commencement of the Work.
- (c) 40% of the Site Development and Restoration unit price will be paid on the Progress Payment on subsequent progress payments on a proportional basis based on the extent of progress up to Substantial Performance, as determined by the Contract Administrator.
- (d) 40% of the Site Development and Restoration unit price will be paid on the Progress Payment following Total Completion.

E7. TOPSOIL AND SODDING

E7.1 Description

- (a) This specification shall cover the supply and installation of topsoil and sodding within Zones 2 & 3 as shown on Drawing 13221.
- (b) Required topsoil and sodding shall be the responsibility of the Contractor and shall be done in accordance with CW 3510.

E7.2 Materials

- (a) Topsoil
 - (i) Shall be supplied in accordance with Clause 5.2 of CW 3540.
- (b) Sod
 - (i) Shall be supplied in accordance with Clause 2.3 of CW 3510.

E7.3 Construction Methods

- (a) Construction methods shall be in accordance with CW 3510.

E7.4 Method of Measurement

- (a) The supply and placement of topsoil and sodding within Zones 2 & 3 will be measured on an area basis. **The maximum areas to be paid for shall be the area indicated on Form B: Prices, which is based on the area to be topsoil and sodded as a direct result of specified works. Topsoil and Sodding area above this quantity shall be considered incidental to E6.**
- (b) The area within Zone 2 is an estimate based on the works completed as part of Tender 327-2022B and the identified temporary workspace as shown on Drawing 13217.
- (c) The formula used to calculate topsoil and sodding areas is: $[3 * (\text{pipe diameter}) + 6] * \text{pipe length}$ for all excavated pipe sections within Zones 3.
- (d) Where areas vary due to field conditions or instruction from the Contract Administrator, the quantity of Topsoil and Sodding to be paid will be adjusted as appropriate.

E7.5 Basis of Payment

- (a) Topsoil and Sodding - Zone 2
 - (i) The supply and installation of the Topsoil and Sodding within the Zone 2 area will be paid for at the Contract Unit Price per square meter of "Topsoil and Sodding – Zone 2" measured as specified, herein, which price shall be payment in full for supplying all materials and performing all operations herein described, and all other items incidental to the Work included in this Specification.
- (b) Topsoil and Sodding - Zone 3
 - (i) The supply and installation of the Topsoil and Sodding within the Zone 3 area will be paid for at the Contract Unit Price per square meter of "Topsoil and Sodding – Zone 3" measured as specified, herein, which price shall be payment in full for supplying

all materials and performing all operations herein described, and all other items incidental to the Work included in this Specification.

E8. PROTECTION OF EXISTING TREES

- E8.1 Required tree removal shall be the responsibility of the Contractor and shall be done in accordance with CW 3010 – Clearing and Grubbing.
- E8.2 The Contractor shall identify trees required for removal as per their Work Plan and submit it to the Contract Administrator for review and approval. No trees will be removed prior to the Contract Administrators approving the tree removal plan.
- E8.3 Construction activities may result in injury to the trunk, limbs or roots of trees causing damage or death of the tree. In order to prevent such damage:
 - (a) Trees within or adjacent to a construction area must be protected by means of a barrier surrounding a “Tree Protection Zone” (TPZ).
 - (b) Activities likely to injure or destroy the tree are not permitted within the TPZ.
 - (c) Tree pruning or root pruning of the City of Winnipeg owned trees may only be done by a contractor approved by the City’s Qualified Tree Consultant or Urban Forestry Branch.
 - (d) No objects may be attached to trees protected by the City of Winnipeg by-laws without written authorization from the City of Winnipeg.
 - (e) No City of Winnipeg tree or tree protected by a City of Winnipeg by-law may be removed without the written permission of the City of Winnipeg.
 - (f) American Elm trees shall not be pruned between April 1 and August 1, and Siberian Elm trees between April 1 and July 1 of any year under provisions of The Dutch Elm Disease Act.
 - (g) All damage to existing trees due to construction activities shall be repaired to the requirements and satisfaction of the City of Winnipeg, Parks and Recreation Department, Urban Forestry Branch at the Contractor’s expense.
- E8.4 Contractor to follow the City of Winnipeg, Public Works Department, Parks and Open Space Division, Urban Forestry Branch’s *Tree Planting Details & Specifications Downtown Area and Regional Streets* (City of Winnipeg, 2009) found at https://legacy.winnipeg.ca/publicworks/parksopenspace/urbanforestry/PDF/Principles_and_Guidelines.pdf.
- E8.5 The following is a chart showing optimal distances for determining a TPZ. Some site conditions may dictate the need for a smaller TPZ. The City of Winnipeg Urban Forestry Branch must be notified in these instances. Forestry will determine if the smaller TPZ is acceptable in the specific circumstance and advise of any additional tree protection or removal requirements.

Trunk Diameter (DBH)*	Minimum Protection Distances Required
<10 cm	2.0 m
11-40 cm	2.4 m
41-50 cm	3.0 m
51-60 cm	3.6 m
61-70 cm	4.2 m
71-80 cm	4.8 m

81-90 cm	5.4 m
>91 cm	6.0 m

*Diameter at breast height (DBH) measurement of tree trunk taken at 1.4 metres above the ground.

- E8.6 Trees within tree protection zones shall be protected by means of a “tree protection barrier” meeting the following specifications:
- (a) The required barrier is a 1.2 metre (4 ft) high orange plastic webbed snow fencing on a 2” x 4” frame or as directed by the City of Winnipeg Urban Forestry Branch in accordance with the City of Winnipeg Protection of Existing Tree Specifications. The barrier can be lowered around branches lower than 1.2 metres (4 ft). The barrier location can be adjusted to align with curbs and edges at a clear path of travel zones provided that Work activities are maintained at the proper distance from trees as indicated in the table above.
 - (b) Tree strapping material will be installed on individual trees, in accordance with CW 1140, where Work will be completed within the TPZ.
 - (c) Tree protection barriers are to be erected prior to the commencement of any construction or grading activities on the site and are to remain in place throughout the entire duration of the project. The Contractor shall notify the City of Winnipeg prior to commencing any construction activities to confirm that the tree protection barriers are in place.
 - (d) All supports and bracing used to safely secure the barriers should be located outside the TPZ. All supports and bracing should minimize damage to roots.
 - (e) No grade change or storage of materials or equipment is permitted within this area. The tree protection barrier must not be removed without the written authorization of the City of Winnipeg.
- E8.7 It is recognized that there are cases where trees are growing overtop existing utilities or beside capital infrastructure. While the guidelines in this specification still apply, in these cases some modifications in addition to root pruning may be permitted provided non-open trench methods of construction are employed (as defined in CW 2110 – Watermains and CW 2130 – Gravity Sewers).
- E8.8 Root pruning will be required to be done under the direction of – and along with – written sign-off by the Project’s Qualified Tree Consultant. The objective is to avoid severance of anchor roots, which provide upright support for trees and minimize damage to the tree.
- E8.9 Above-ground clearance for overhanging branches in the work zone must be anticipated. The utility or its consultant is required to have a Forestry-approved tree service raise the crown of all branches to provide adequate clearance for construction equipment.
- E8.10 The following requirements constitute Qualified Tree Consultants as required above:
- (a) An arborist certified by the International Society of Arboriculture (ISA) who has a diploma (minimum) in arboriculture or urban forestry; and
 - (b) A Landscape Architect who is a member in good standing of the Manitoba Association of Landscape Architects.
- E8.11 No separate measurement or payment will be made for the protection of existing trees. Any work will be considered incidental to the Works of the project.

E9. TREE REMOVAL

E9.1 Description

- E9.1.1 The temporary work areas identified for this project have been established to avoid the need for tree removal. In the event that a Contractor identifies a need for a tree to be

removed, they are to notify the Contract Administrator and arrange for a discussion with the Parks Department and the Urban Forestry Branch at the City of Winnipeg. Provisional items for tree removal have been included in this Tender for the unlikely risk that a tree is required to be removed.

E9.1.2 This specification shall cover the removal of existing trees.

E9.1.3 The Work to be done by the Contractor under this specification shall include the furnishing of all superintendence, overhead, labour, materials, equipment, tools, supplies and all things necessary for and incidental to the satisfactory performance and completion of all Work as hereinafter specified.

E9.2 Materials

E9.2.1 Existing Trees to be Removed.

(a) If tree removal is deemed necessary by the Contract Administrator, the existing trees within the work site are but are not limited to Ash, Elm, Cottonwood, Basswood, Oak, Pine, Maple, Spruce, etc., all of which may be cut with a standard chain saw equipment. The existing trees range from 50 mm to 1,000 mm in diameter.

E9.3 Construction Methods

E9.3.1 Prior to the commencement of the Work, the Contract Administrator shall identify all trees for removal. The Contractor shall cut down only trees designated to be removed and grub out all stumps and roots greater than 100 mm in diameter. In general, the Contractor shall start at the top of the tree and remove branches or trunks not longer than 2 m. Trees are to be felled to land within the limits of the Works. The Contractor shall load and haul all trees, stumps, roots, logs, brush, rubbish and all other surface litter from the Site and dispose of these materials at an approved disposal Site, acceptable to the Contract Administrator.

E9.3.2 The Contractor shall take all precautions to prevent damage to structures, adjacent property and trees and shrubs. In the event of damage, the Contractor will be held liable and shall be required to provide appropriate restoration at their cost, to the satisfaction of the Contract Administrator.

E9.3.3 Any trees damaged during construction activities shall be examined by a bonded tree care professional and pruned as required. Damaged trees which are not viable shall be replaced by the Contractor at their own cost.

E9.4 Measurement and Payment

E9.4.1 The removal of existing trees shall be measured on a per-tree basis and paid for at the Contract Unit Price per unit for the "Items of Work" listed below. The amount to be paid shall be the total number of trees removed in accordance with this specification, accepted and measured by the Contract Administrator.

Items of Work: Tree Removal

i. 50 mm to 249 mm Diameter

ii. 250 mm to 500 mm Diameter

iii. Greater than 500 mm Diameter

E9.4.2 The removal of trees and brush less than 50 mm in diameter is considered incidental to the Work and no separate measurement or payment will be made.

E10. TREE PLANTING

E10.1 Description

E10.1.1 Trees will be planted as directed by the Contract Administrator. Plantings will consist of trees in various container sizes.

- E10.1.2 The Work to be undertaken by the Contractor under this Specification shall include the furnishing of all superintendence, overhead, labour, materials, equipment, tools, supplies and all other things necessary for and incidental to the satisfactory performance and completion of all Work as shown on the Drawings and as herein specified.
- E10.1.3 Work shall include, but not necessarily be confined to, the relocation, supply and installation of trees and shrubs.
- E10.1.4 Reference
- (a) All plants shall be supplied and installed as per the Canadian Standards for Nursery Stock Current Edition, published by the Canadian Nursery Trades Association, except where specified otherwise.
- E10.1.5 Source Quality Control
- (a) All plant material shall be randomly inspected at the source upon request of the Contract Administrator.
 - (b) Trees are to be grown in nurseries under proper cultural practices as recommended by the Canadian Nursery Trades Association.
 - (c) Only those trees that have been grown for at least four (4) previous years in local Manitoba nurseries located in an Agriculture Canada Plant Hardiness Zone designation of 2(a or b) or 3(a or b) and within a 250 km radius of Winnipeg, will be accepted. Trees that have grown in plant hardiness zones 1 and 4 or greater will be rejected.
- E10.1.6 Maintenance
- (a) The Contractor shall be responsible for the maintenance of the trees for a period of one (1) year from the date of Total Performance. For any areas planted after September 15th, the maintenance period will commence on May 15th of the following year or such date as mutually agreed upon by all parties.
 - (b) Water to ensure soil moisture conditions for optimum growth and health of plant material. Ensure watering techniques do not cause erosion.
 - (c) Reform damaged watering saucers.
 - (d) Remove weeds as per the overall weed control strategy.
 - (e) Replace or re-spread damaged, missing or disturbed mulch.
 - (f) For non-mulched areas, cultivate monthly to keep the top layer of soil friable.
 - (g) If required to control insects, fungi and disease, use appropriate control methods in accordance with Federal, Provincial and Municipal regulations. Obtain product approval from Contract Administrator prior to application.
 - (h) Apply fertilizer as directed by the manufacturer's specifications.
 - (i) Remove dead, broken or hazardous branches from plant material.
 - (j) Keep trunk protection and tree supports in proper repair and adjustment.
 - (k) Remove trunk protection, the tree supports and level watering saucers at end of the warranty period.
 - (l) Remove and replace dead plants and plants, not in healthy growing conditions. Make replacements in the same manner as specified for the original plantings.
 - (m) Submit weekly written reports to Contract Administrator identifying:
 - ◆ Maintenance work carried out.
 - ◆ Development and condition of plant material.
 - ◆ Preventative or corrective measures required which are outside Contractor's responsibility.
- E10.1.7 Warranty

- (a) The Contractor shall, at his/her expense, warrant the Work against any and all defects or deficiencies resulting from insect infestation, disease and mechanical damage due to improper handling, installation or maintenance, for a period of one (1) year from the date of the Total Performance. Nursery stock damaged by vandalism or reasons beyond the control of the Contractor shall be replaced by the client.
- (b) End-of-Warranty inspection will be conducted by the Contract Administrator.
- (c) The Contract Administrator reserves the right to request material replacement or extend the Contractor's Maintenance responsibilities for an additional one (1) year if, at the end of the Warranty Period, leaf development and growth are not sufficient to ensure the future survival of the plant material.

E10.1.8 Replacements

- (a) During the Warranty Period, the Contractor shall remove from the Site any plant material that has died or failed to grow satisfactorily as determined by the Contract Administrator and replace as per Specifications within a maximum ten (10) day period from notification.
- (b) Defective trees shall be replaced within three (3) days of notification to the Contractor unless otherwise agreed to by the Contract Administrator.
- (c) The Contractor shall extend Maintenance and Warranty on the replacement tree for a period equal to the original Maintenance and Warranty Periods.
- (d) The Contractor shall continue such replacement, Maintenance and Warranty until the tree is acceptable.

E10.2 Materials

E10.2.1 Planting Soil and Mulch

- (a) As per Planting Preparation.
- (b) Imported soils shall be used to backfill tree and shrub plantings.

E10.2.2 Miscellaneous Materials

- (a) Water shall be potable and free of minerals which may be detrimental to plant growth.
- (b) Stakes shall be metal T-Bar, steel, 40x40x5x2440 mm.
- (c) ARBORTIE® by Deep Root Canada Corp., or equivalent approved by the Contract Administrator to be used for staking and guying trees.
- (d) Guying Collar shall be a plastic tube, 13mm diameter, nylon reinforced.
- (e) Trunk Protection shall be a plastic perforated spiralled strip.
- (f) Fertilizer shall be a slow-release formulation of low nitrogen and high phosphorus e.g. 10-50-12. Apply quantities at rates stated by the product manufacturer.
- (g) Root Ball Burlap shall be 150 g Hessian burlap, biodegradable.
- (h) Wire Baskets shall be a horticultural accepted product designed to carry the weight and to contain a burlap-covered root ball. The minimum diameter basket size is to conform to the same minimum diameter of the tree root ball for the respective minimum tree calliper sizes.

E10.2.3 Plant Material

- (a) All nursery stock supplied shall be Canadian Prairie nursery grown, and of species and sizes indicated in the plant list on the Drawings. Its quality shall be in accordance with the "Guide Specification for Nursery Stock of the Canadian Nursery Trades Association".
- (b) Any nursery stock dug from native stands, wood lots, orchards, or neglected nurseries which have not received proper cultural maintenance as advocated by the Canadian Nursery Trades Association shall be designated as "collected plants". The use of "collected plants" will not be permitted unless specified below.

- (c) The nomenclature of specified nursery stock shall conform to the International Code of Nomenclature for Cultivated Plants and shall be in accordance with the approved scientific names given in the latest edition of Standardized Plant Names. The names of varieties not named therein are generally in conformity with the names accepted in the nursery trade.
- (d) Plants larger than specified may be used if approved by the Contract Administrator. The use of such plants shall not increase the Contract price.
- (e) Plants shall be free of disease, insect infestation, rodent damage, or environmental stress.
- (f) Trees:
 - (i) To be characteristically developed for their species and structurally sound, well-branched, healthy and vigorous and densely foliated when in leaf. The tree is to have a healthy, well-developed, fibrous root system which may be verified through a testing procedure that destructively samples one or more randomly selected root balls;
 - (ii) To have been root pruned regularly, but not later than one growing season prior to arrival on-site. The Contractor may be required to furnish documentation to the client on their root-pruning program. Trees in excess of 75 mm calliper are to have been half-root pruned during each of two successive growing seasons, the latter at least, one growing season prior to arrival on-site;
 - (iii) To have all parts, especially lower branches, moist and show live, green cambium tissue when cut;
 - (iv) Single-stem trees have only one, sturdy, reasonably straight and vertical trunk, and a well-balanced crown with a fully developed leader.
 - (v) To be free of disease, insect infestation, rodent damage, sun scald, frost cracks, abrasions, unhealed scars, scars exceeding 5 cm in diameter, major forks or crooks in the trunk, broken branches, or angled leaders. Trees having the above defects will not be accepted by the Contract Administrator;
 - (vi) Trees having a leader which has developed at a sharp angle to the trunk as a result of pruning or trunk damage will not be accepted;
 - (vii) Trees exhibiting suppressed, weakly developed branches due to competition from other closely spaced trees in the nursery will not be accepted. Trees exhibiting dead branches will not be accepted.
 - (viii) Any tree that has come out of the dormant stage and is too far advanced will not be accepted unless prior approval is obtained. Approval is required for any tree which has been held in cold storage.
 - (ix) Balled and burlapped trees in excess of a 3 m height must have been dug with a large firm ball. Roots in root balls must be comprised of 75% fibrous and feeder root systems. Secure root balls with burlap, heavy twine and rope. For trees 75 mm or more in calliper, wrap the ball in a double layer of burlap and drum lace with a minimum 10 mm diameter rope. Protect root balls against sudden changes in temperature and exposure to heavy rainfall.
 - (x) Tree Spade-dug trees are to be dug with mechanized digging equipment with a hydraulic spade. Lift the root ball from the hole, and place it in a wire basket designed for the purpose and lined with burlap. Tie the basket to the ball with a heavy rope. Take care not to injure the trunk of the tree with wire basket ties or rope.
 - (xi) The use of collected or native trees is not permitted.

E10.2.4 Tree Quantity and Size

- (a) Trees are to be planted at the quantities and callipers listed in Form B and broken down in detail below. Any variations to size, calliper or species of specified trees will require a request for approval from the Contract Administrator.
 - (i) Large trees shall be a minimum 75 mm calliper, 2.5 m in height, with a minimum of eight (8) major branches 2 m above grade, have balled and

burlapped root balls, and be double staked. Tree species specific to the site shall consist of:

- ◆ American Elm
- ◆ Bur Oak
- ◆ Manitoba Maple
- ◆ Basswood
- ◆ Cottonwood

- (b) Planting locations will be determined on-site by the Contract Administrator.
- (c) Trees are to conform to the measurements specified in Form B, except that trees larger than specified may be used if approved by the Contract Administrator.
- (d) Trees are to be measured when the branches are in their normal position. The height dimensions specified are to refer to the main body of the tree and not from the branch tip to the root base. Where trees have been measured by calliper or diameter, reference is to be made to the diameter of the trunk measured 15 cm above the ground as the tree stands in the nursery prior to lifting. The calliper of the tree shall be appropriately designed on a permanently fixed tag on one of the branches.

E10.2.5 Shipment and Pre-Planting Care

- (a) Coordinate shipping of trees and excavation of holes to ensure minimum time lapse between digging and planting.
- (b) Tie branches of trees securely, and protect trees against abrasion, exposure and extreme temperature change during transit. Avoid binding trees with rope or wire which would damage bark, break branches or destroy the natural shape of the tree. Give full support to the root ball of trees during lifting.
- (c) Cover tree foliage with tarpaulin, and protect bare roots utilizing dampened straw, peat moss, sawdust or other acceptable material to prevent loss of moisture during transit and storage.
- (d) Remove broken and damaged roots with sharp pruning shears. Make clean cuts, and cover cuts over 10 mm in diameter with a tree wound dressing.
- (e) Keep roots moist and protected from sun and wind. Heel-in trees cannot be planted immediately in shaded areas and water well.

E10.3 Construction Methods

E10.3.1 Workmanship

- (a) All areas and locations provided for planting will be staked out or painted on-Site by the Contract Administrator. Excavation shall not proceed until the layout has been inspected and approved by the Contract Administrator. Excavation shall not be undertaken until all underground utilities have been located and protected.
- (b) Coordinate operations. Keep the Site clean and planting holes drained. Immediately remove soil or debris spilled onto street pavement, grass or sidewalk.
- (c) Work to be coordinated with the installation of fencing and planting of the shrub.

E10.3.2 Planting Time

- (a) Plant trees as early as May 15 but no later than June 30 depending on when topsoil is placed and prepared.
- (b) Plant only under conditions that are conducive to the health and physical conditions of trees.
- (c) Provide planting schedule to Contract Administrator. Extending planting operations over a long period using a limited crew will not be accepted.

- (d) The Contractor must obtain all above and below ground clearances from all utilities as well as the appropriate District Operations Branch in a timely manner so as not to jeopardize the schedule of the complete tree planting Contract.

E10.3.3 Excavation

- (a) Tree pit to be dug with a backhoe.
- (b) Excavate tree pits as indicated by stakes or paint marks.
- (c) Protect the bottom of excavations against freezing.
- (d) Remove the water which enters excavations prior to planting. Ensure the source of water is not groundwater and notify Contract Administrator.
- (e) Upon excavation of the planting, the excavation shall be backfilled with a Topsoil mixture to a depth to permit adequate installation and stabilization of the plant material. Topsoil shall be placed in accordance with the City of Winnipeg Standard Construction Specification CW 3540 to a 300 mm depth.

E10.3.4 Installation

- (a) Plantings of trees shall be undertaken as approved by the Contract Administrator. Configuration of planting shall be subject to input and final approval by the Contract Administrator.
- (b) Planting shall be done during periods of suitable weather conditions and in accordance with locally accepted practice.
- (c) Trees are to be planted within forty-eight (48) hours of excavation from the nursery.
- (d) No tree pit is to be left open at the end of the Contractor's Workday. The planting program is to be planned to ensure that all approved trees delivered to the Site at designated planting locations are installed and thoroughly watered on the same day as delivery.
- (e) With balled and burlapped root balls and root balls in wire baskets, burlap shall be loosened and cut away from the top 1/3 without disturbing the root ball. Wire shall be cut away and removed from the top 1/3 of the root ball. Burlap or rope shall not be pulled from under the root ball. Non-biodegradable wrapping shall be removed.
- (f) To avoid future root girdling, the Contractor shall ensure that roots are not coiled around the root ball. After removal from the container, if it is seen that roots are coiled around the root ball, roots must be loosened and spread out in a more natural form before planting in order to establish healthy root development and root direction after planting.
- (g) After inserting the tree and tamping the root system with Topsoil in layers of 150 mm, water shall be poured in until the pit is thoroughly soaked. Filling of the hole shall then be completed and the fill-in soil shall be packed firmly around the roots, leaving a concave surface for convenient watering. After filling, the planting shall be watered at frequent intervals.
- (h) Each tree is to have an earth saucer at its base having a diameter as large as the excavation with a 10 cm lip formed at the perimeter of the saucer to retain water.
- (i) All nursery stock shall be set plumb in the centre of pits and at levels as shown on the planting details after settlement has taken place.
- (j) Nursery stock shall be faced to give the best appearance or relationship to adjacent structures and to the approval of the contract administrator. Trees shall be placed equal to the depth they were originally growing in the nursery.
- (k) Tree pit depth shall be such that the top of the root ball is even with the existing grade, taking into account that proper planting depth requires the root flare to be at or slightly above the finished grade. It is important to determine how deep the root flare is in the ball before it is placed in the planting hole. Sometimes the top of the ball may need to be raised until the root flare is at the proper planting depth and/or soil must be removed from the top of the ball.

- (l) Each tree must be planted such that the trunk flare is visible at the top of the root ball. Trees, where the trunk flare is not visible, shall be considered a deficiency and payment for the planting will not be received until the deficiency is addressed. Do not cover the top of the root ball with soil.

E10.3.5 Supply and Installation of Mulch

- (a) The Contractor is to supply and install mulch in tree pits, planters and in areas as indicated in the Drawings. The mulch supplied shall cover the entire planting area to a consistent depth of 100 mm.
- (b) Mulch must not be placed within 8 cm (3 in) of tree trunks.

E10.3.6 Fertilizing

- (a) When planting is completed, give the surface of planting saucer dressing of fertilizer meeting the requirements of Specification. Mix fertilizer thoroughly with a top layer of planting soil and water in the well.

E10.3.7 Trunk / Beaver Protection

- (a) Install trunk protection on all new trees planted by the Contractor.
- (b) Install trunk protection prior to installation of tree supports when used.

E10.3.8 Pruning

- (a) The Contractor shall provide a licensed Manitoba Certified Arborist for each Work crew or Work Site.
- (b) Employ clean sharp tools and make cuts flush with branch collars. Remove dead and injured branches.

E10.3.9 Watering

- (a) Trees are to be watered during the planting procedure as described previously, and once a week thereafter, or more frequently as required, during the growing season.
- (b) Apply 40 litres of water per 25 mm calliper per application using a deep root feeder or low/pressure nozzle and hose. The water stream must not gouge out a hole in the soil and mulch.
- (c) A complete record is to be kept of each series of waterings for all planted trees noting: 1) location and 2) date of watering. This record shall be sent bi-weekly to the Contract Administrator.

E10.4 Measurement and Payment

E10.4.1 Installation and maintenance of trees shall be measured on a per-unit basis. The amount to be paid for shall be the total number of trees supplied and installed in accordance with this Specification, and as acceptable to the Contract Administrator.

E10.4.2 Payment for Installation and maintenance of trees shall be paid for at the Contract Unit Prices for "Tree Revegetation" This price shall be paid in full for supplying all labour, equipment and materials, and performing all operations herein described and all other items incidental to the Work included in this Specification and accepted by the Contract Administrator.

E11. WATER SUPPLY FOR CONSTRUCTION WORK

E11.1 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 Water Services Division (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 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 from 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 when the ambient air temperature reaches below 0°C at any time during the period of time under which the hydrant is in the Contractor's Control.
- (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. The Water Services Division of the City's Water and Waste Department will provide and install metering equipment once a permit has been obtained.

E11.2 Measurements and Payment

- (a) There will be no separate measurement or payment for permits or equipment related to obtaining water supply and will be considered incidental to the Work being done.

E12. WATERWAY BY-LAW

- E12.1 The Contractor shall note that all works within 106.7 m (350 ft) of the regulated summer water level of the Red River within the City of Winnipeg are within the jurisdiction of the Waterway By-Law and require a Waterway Permit prior to commencing construction.
- E12.2 Under no circumstances will stockpiling of any material be permitted within the designated regulated area of the Red River waterway and adjacent lands.

E13. WATERWAYS PROTECTION

- E13.1 All work adjacent to or crossing waterways including creeks and ditches draining into a waterway is regulated by the Federal Department of Fisheries and Oceans (DFO). The Contractor must implement the Work in accordance with DFO guidelines and regulations.
- E13.2 The Contractor is to follow the Environmental Protection Plan and the City of Winnipeg's *Best Management Practices Handbook for Activities In and Around the City's Waterways and Watercourses* (City of Winnipeg, 2005).
- E13.3 No separate measurement or payment will be made for Waterways Protection and will be considered incidental to the Work.

E14. RED RIVER WATER LEVELS

- E14.1 Normal Red River water levels are as follows:
 - (a) Average Summer River Level (ASRL) – is approximately 223.74 m (geodetic).

- (b) Average Winter River Level (AWRL) – is approximately 221.76 m (geodetic).
- (c) Ordinary High-Water Mark (OHWM) – 229.3 m (geodetic).

E14.2 The Red River in Winnipeg is regulated in the summer at the approximate ASRL listed and efforts are made to lower the river to the AWRL in the winter months. However, annual flooding occurs in the Red River Valley and water levels can fluctuate greatly from year to year and month to month and no guarantees are made that the water level will be at the levels indicated. For more information on past river levels within the City of Winnipeg, visit <https://winnipeg.ca/waterandwaste/flood/riverLevels.stm>

E14.3 The Contractor shall schedule the work and layout of the site so that the Red River water levels will not impact the Works.

E14.4 The occurrence of high river levels during the construction of the Work will not be considered a basis for a claim for extra work or extra time.

E14.5 The Contractor is responsible to secure the site in the event of any high river elevations that may impact the work.

E15. PROVISIONAL ITEMS

E15.1 The Provisional Items listed on Form B: Prices are part of the Contract.

E15.2 The Contractor shall not perform Work included in the Provisional Items without prior authorization from the Contract Administrator. All Work included in the Provisional Items will be carried out within the construction areas shown on the Drawings.

E15.3 Notwithstanding C:7.5, the City reserves the right to diminish all or any portion of the items of work listed in the Provisional Items and no claim shall be made for damages on the grounds of loss of anticipated profit or for any other reason.

TRAFFIC CONTROL AND SAFETY

E16. TRAFFIC CONTROL

E16.1 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) 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.

E16.2 Further to E16.1, the Contractor shall make an arrangement with the Traffic Services Branch of the City of Winnipeg to supply regulatory signs as required.

E16.3 Upon request from the Contract Administrator, the Contractor shall provide records demonstrating that the Site has been maintained.

E16.4 Further to E16.1, 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.

E16.5 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.

E16.6 If the Contract Administrator determines that the Contractor is not performing Traffic Control in accordance with this specification, the 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.

E17. TRAFFIC AND PEDESTRIAN SAFETY

E17.1 The Contractor shall maintain vehicular traffic to adjacent roadways to the project site.

E17.2 The Contractor shall be responsible for the development and maintenance of alternate temporary pathways during the project as directed by and to the satisfaction of the Contract Administrator.

E17.3 The Contractor shall notify the Contract Administrator who will notify the City Parks Department and the operations staff at Kildonan Park and Frasers Grove Park of any closures to roadways or pathways associated with the Work. The notification shall be provided with a minimum of five (5) Working days prior to each closure.

E17.4 General Requirements

- (a) The Contractor shall provide appropriate warning signage, custom signage indicating upcoming sidewalk and/or pathway closures, custom signage indicating detours, temporary curb ramps (if required), and traffic control at all pedestrian crossings that are consistent with the requirements of the City of Winnipeg *Manual of Temporary Traffic Control on City Streets*.
- (b) The Contractor shall provide signage installed every 50 m along and leading up to any temporary pathway and/or re-routing detours to ensure that appropriate wayfinding exists for pedestrians, cyclists and vehicular traffic. Erect signage at all potential temporary pathway access points that explain the temporary detours.
- (c) The Contractor shall be responsible to maintain the temporary pedestrian diversion corridor daily. This shall include but not be limited to providing snow clearing and laying down traction gravel. The Contractor shall prioritize inspecting the temporary pedestrian corridor in the morning and implementing any necessary maintenance works daily. If at the discretion of the Contract Administrator, any element of the temporary pedestrian corridor requires maintenance, the Contractor shall immediately implement the necessary maintenance works to the satisfaction of the Contract Administrator.
- (d) The following minimum expectations are anticipated to be required as part of the Work:
 - (i) Kildonan Park
 - ◆ Maintain full access to the outer loop of the park at all times. No excavations within McKay Drive, Riverview Drive and Peguis Drive will be permitted.
 - (ii) Fraser's Grove Park
 - ◆ Portions of the curb lane on Rossmere Crescent will be available for Contractor vehicles, work trailers and equipment. The extent of the roadway is shown on the Drawings.
 - ◆ Maintain safe pedestrian access to the existing pathways at all times.
 - ◆ **An alternate safe pedestrian pathway is to be erected and maintained for the duration of Works that are being completed within the existing flood protection berm.**
 - ◆ Maintain safe access to the playground.

E17.5 Measurement and Payment

- (a) The supply, placement, and removal of temporary pathways shall be considered incidental to the Work. No separate measurement or payment will be made.

E18. SITE ACCESS

- E18.1 Access to the temporary workspace at Fraser's Grove Park and Kildonan park will be as follows:
- (a) Fraser Grove Park
 - (i) Access the south side of Fraser's Grove Park from Rossmere Crescent via a temporary access road as shown on Drawing 13217.
 - (ii) Access and egress shall follow the same route, and the Contractor shall not disturb any more of the grounds than is necessary.
 - (iii) Maintain driveway accesses along Rossmere Crescent.
 - (b) Kildonan Park
 - (i) Access Rainbow Drive via McKay Drive or Lord Selkirk Drive via Riverview Drive.
 - (ii) Egress shall be via Lord Selkirk Drive to Peguis Drive or via Scotia Street.
- E18.2 The Contractor shall provide proper protection for any crossings or structures while accessing the site.
- E18.3 Any damage caused by the Contractor accessing the site shall be reported to the Contract Administrator and repaired by the Contractor in accordance with the Contract Dates. The Contractor is responsible for any repair costs.
- E18.4 Measurement and Payment
- (a) Site Access shall be considered incidental to the Work. No separate measurement or payment will be made.

SEWER WORKS

E19. SUPPLY AND INSTALLATION OF TEMPORARY SHORING

- E19.1 Description
- (a) This Specification shall cover shoring requirements for the Works where required under Manitoba Acts, Regulations, and Guidelines, or as indicated on the Drawings.
- E19.2 Construction Methods
- E19.2.1 Excavation
- (a) Remove excavated material from the Site immediately. Excavated material shall not be stockpiled on-Site or along the riverbank.
 - (b) All Working areas below grade shall be kept adequately and securely supported during and after excavation until the shoring and bracing are in place to prevent loss of ground or injury to any person from falling material.
- E19.2.2 Excavation Safety Fence
- (a) Further to Clause 3.1 of CW 1130, completely cover the excavation and provide a security fence to surround the excavation when unattended.
 - (b) The safety fence installed shall be as per Workplace Safety and Health regulations.
- E19.2.3 Shoring
- (a) The type, strength, and amount of shoring and bracing shall be such as the nature of the ground and attendance conditions may require, taking into account property lines, existing slopes, utilities and roadways.
 - (b) Shoring and bracing shall be so spaced and dimensioned as to prevent caving, loss of ground, surface settlement, or squeezing of the soil beyond the neat lines of excavation. It shall be free from defects that might impair its strength or suitability for the Work. Sheeting/shoring and bracing shall conform to the latest revisions of the

"Construction Safety Act" of the Department of Labour of the Government of Manitoba and be in accordance with the Province of Manitoba "W210 The Workplace Safety and Health Act" and "Guidelines for Excavation Work".

- (c) Supporting design calculations as required to facilitate review of the submission for conformance with the Contract Documents.
- (d) Submit AutoCAD Shop Drawings and design calculations for the shoring/excavation system designed and sealed by a Professional Engineer registered or licensed to practice in the Province of Manitoba and experienced in the structural design of shoring systems. The designer of the shoring system shall inspect the system during construction and certify, in writing to the Contract Administrator, that construction is in conformance with the approved design.
- (e) Shoring and bracing shall be installed such that the structure size and wall thickness shown on the shop drawings can be obtained subsequent to the installation of the shoring system.
- (f) Shoring and bracing shall be designed and installed to prevent settlement and damage to existing structures. In the event of damage, the Contractor will be held liable and shall be required to provide appropriate restoration at their cost, to the satisfaction of the Contract Administrator.
- (g) Shoring and bracing shall remain in place until the concrete has attained 75% of the design strength.

E19.3 Measurement and Payment

- (a) Supply and Installation of Temporary Shoring shall be considered incidental to the Work. No separate measurement or payment will be made.

E20. FORCE MAIN PIPE INSTALLATION

E20.1 Description

- (a) This Specification shall cover the installation of the 350 mm force main. This Specification shall amend, and supplement Standard Specifications CW 2110 as follows:
 - (i) The term "force main" shall be considered equivalent to the term "watermain".
 - (ii) Disinfection of the force main pipe will not be required.

E20.2 Materials

E20.2.1 Force Main Pipe

- (a) The force main shall be constructed using 350 mm PVC DR 25 pipe or an equivalent product from the City of Winnipeg Approved Product list and as per Section B.7.

E20.2.2 Equipment

- (a) All equipment, implements, tools and facilities used shall be of a size and type as required to complete the Work in a reasonable time, approved by the Contract Administrator. The Contractor shall keep all equipment in good working order, and always have sufficient standby equipment available, as required.

E20.3 Construction Methods

E20.3.1 Trench Shoring and Excavation

- (a) Work must be completed in accordance with CW 2030 unless otherwise indicated by the Contract Administrator.
- (b) The Contractor shall take precautionary steps to prevent damage from construction activities to adjacent properties. All damage to adjacent properties caused by the Contractor's activities shall be repaired to equal or better condition than prior to

construction, as approved by the Contract Administrator. No separate measurement or payment will be made for the protection of adjacent private property.

- (c) The Contractor shall provide heating and hoarding of backfill material when the temperature is at or below 5° C or if the temperature will fall below 5° C within 24 hours after placing the material.

E20.4 Method of Measurement and Payment

E20.4.1 Supply and Installation of 350 mm PVC Force Main Pipe.

- (a) Force main installation will be measured on a length basis for each size, method of installation, type of bedding and type of backfill and paid for at the Contract Unit Price per metre for "Force Main". The length to be paid for will be the total number of linear metres supplied and installed in accordance with this Specification, accepted and measured by the Contract Administrator.
- (b) Measurement for the length of the force main installed trenchless will be made horizontally at grade above the centerline of pipe through-fittings.
- (c) Correction of alignment and grade exceeding the allowable variance will be at the Contractor's own expense.

E21. FLOOD PROTECTION DIKE - EXCAVATION

E21.1 Description

- (a) This Specification shall cover all aspects of excavation including excavation of existing dikes, cut off trenches, or drainage features. The work to be done by the Contractor under this Specification shall include the furnishing of all superintendence, overhead, labour, materials, and all things necessary for and incidental to the satisfactory performance and completion of all work as hereinafter specified.

E21.2 Materials

- (a) General
 - (i) The Contractor shall be responsible for the supply, safe storage and handling of all materials set forth in this Specification.
- (b) Dike Fill and Near Surface Soils
 - (i) The in-situ dike fill and near surface soils consist primarily of intermediate to high plasticity clay (CI-CH). Deleterious material such as roots, organic material, concrete slabs, wood debris, or other unsuitable material shall be separated and disposed of as described in E9 or as directed by the Contract Administrator.
- (c) Unsuitable Materials
 - (i) Any deleterious material encountered during excavation, such as roots, organic material, concrete slabs, wood debris, or other materials deemed to be unsuitable for dike construction by the contract administrator, shall be separated from the excavated soils and disposed of off site at a location selected by the Contractor, and approved by the Contractor Administrator. Stockpiling of any unsuitable material in the Work area will not be permitted, unless approved in writing by the Contract Administrator.

E21.3 Construction Methods

- (a) Survey Control and Layout
 - (i) A minimum of five (5) survey control points will be provided by the Contract Administrator within the limits of the Work area. All detailed survey control shall be the responsibility of the Contractor. The Contractor should anticipate that final "field fitting" of the dike alignment will be required to protect and avoid trees and other items at the Site.
- (b) Site Preparation

- (i) All ice and snow shall be removed from all portions of the work area before excavation and backfill operations proceed. Frozen materials shall not be incorporated into the Works. Material shall not be placed over frozen ground, ice, or snow. Removal of snow and ice and ripping or breaking of frozen material shall be considered incidental to the work.
 - (ii) All topsoil, organics, silt, sand and other deleterious material shall be removed from within the limits of the existing dike prior to any construction. Unsuitable deleterious material shall be removed off Site immediately upon excavation to a location selected by the Contractor and approved by the Contract Administrator. All deleterious subgrade material below the topsoil (root, silt, sand, etc.), shall be removed down to competent subgrade material prior to any fill placement. All unsuitable excavated material shall be removed off Site immediately upon excavation. No stockpiling of unsuitable material in the Work area will be permitted.
 - (iii) Grade around excavations to prevent surface water runoff into excavated area. Protect bottoms of excavations from deterioration resulting from weather including freezing and accumulating precipitation.
- (c) Existing Dike Excavation
- (i) The existing dike shall be excavated or trimmed to the depths and dimensions shown on the Drawings or as directed by the Contract Administrator.
 - (ii) The excavation shall be supervised at all times, and open excavations shall be adequately guarded or covered for safety.
 - (iii) Clay soil that is deemed suitable for dike construction, as determined by the Contract Administrator, shall be removed and stockpiled at the Contractor's staging area or, alternatively, where it will not interfere with construction or drainage. All stockpiling areas will be subject to approval in writing by the Contract Administrator.

E21.4 Method of Measurement

- (a) The excavation for the existing dike including unsuitable material will be measured on a volume basis. The volume to be paid for shall be the total number of cubic metres of excavation, measured from the ground surface at the start of the dike construction carried out in accordance with this Specification, acceptable to the Contract Administrator, and as computed from measurements made by the Contract Administrator.

E21.5 Basis of Payment

- (a) The excavation for the existing dike will be paid for at the Contract Unit Price for "Flood Protection Dike - Excavation", measured as specified herein, which price shall be payment in full for supplying materials and performing all operations herein described and all other items incidental to the Work included in this Specification.

E22. FLOOD PROTECTION DIKE - CLAY FILL

E22.1 Description

- (a) This Specification shall cover all aspects of the new dike construction Work, including the supply, hauling and placement of clay fill.
- (b) The work to be done by the Contractor under this Specification shall include the furnishing of all superintendence, overhead, labour, materials, and all things necessary for and incidental to the satisfactory performance and completion of all work as hereinafter specified.

E22.2 Materials

- (a) General

- (i) The Contractor shall be responsible for the supply, safe storage and handling of all materials set forth in this Specification.
- (b) Clay Fill
 - (i) Clay fill shall consist of suitable site excavated material, and suitable imported material. Suitable clay fill shall consist of intermediate to high plasticity silty clay free of deleterious material such as organics, roots, rock, snow, ice, or other unsuitable materials that would detract from the properties of a low permeability clay soil.
 - (ii) All clay fill material shall meet the following requirements:

Parameter	Test Method	Specified Limit
Liquid Limit	ASTM D4318	40% min.
Plasticity Index	ASTM D4318	15% min.
Effective Permeability	ASTM D5084	10 ⁻⁷ cm/s min.
Clay Content	ASTM D422	25% min.

- (iii) A 50 kg sample of any imported clay fill shall be submitted to the Contract Administrator a minimum of ten (10) days prior to its use.

E22.3 Submittals

- (a) The Contract shall submit in writing the intended sources of clay fill. If the source has not been previously identified, the Contractor shall submit information sufficient to ensure the material meets the specified requirements.
- (b) The Contractor shall submit a Work Plan including a list of the intended construction equipment, along with the method to be used to achieve the placement and compaction specified herein.

E22.4 Equipment

- (a) Compaction of clay shall be conducted with sheep foot or pad foot compactor equipment that is suited to achieve the performance requirements specified herein and meets the constraints, dimensions, space limitations and restrictions of this Site and project.

E22.5 Construction Methods

- (a) General
 - (i) Placement shall commence at the area having the lowest foundation elevation.
 - (ii) Fill shall not be placed in a frozen condition and shall not be placed on a surface which is frozen or covered with snow or ice. Placing of fill in freezing weather will only be permitted if proper measures are taken to prevent freezing of the fill and foundation material and when approved by the Contract Administrator.
 - (iii) Clay fill shall be placed and managed to promote surface water runoff and minimize the risk of precipitation ponding that could affect the compacted fill already in place. Any portion of the dike fill which has suffered a reduction in density due to the action of frost, rain, or due to any other reason, shall be scarified and re-compacted, or removed and replaced with suitable material.
 - (iv) If clay fill activities are to be suspended for an extended period of time or when rain is anticipated, the surface of the clay fill material shall be raised above any adjacent pervious zones, crowned to promote surface runoff, and sealed to minimize infiltration.
 - (v) When tying into an existing clay face, all loose, dried, or altered fill shall be removed to a suitable depth. For each lift of new clay fill placed, the Contractor shall excavate or “step” into the existing clay face by 100 mm to 150 mm horizontally to produce a

horizontal and level surface that will be flush with the surface of the new clay fill lift being placed, thereby allowing the contract with the existing clay to be compacted with the new fill.

(b) Placement

- (i) All clay fill shall be placed in the dry under dewatered conditions to the lines and grades as shown on the Drawings. The material shall be placed in such a manner to achieve a stable and homogeneous fill which is free of horizontal stratifications and lenses or pockets of pervious materials, and from lumps of materials that do not satisfy the requirements of these Specifications. Care shall be taken during placement to prevent contamination by mixing with adjacent granular materials.
- (ii) Clay fill shall be deposited and spread in approximately horizontally uniform homogenous layers at maximum 150 mm thick lifts (uncompacted thickness) for the full width of the dike. The maximum lift thickness will be dependent on the ability of the compaction equipment to achieve effective compaction of the full depth of the lift thickness, and will be adjusted accordingly based on testing of the placed material. Any lifts not achieving full depth compaction shall be removed and replaced.
- (iii) The allowable fill tolerances shall be within ± 25 mm vertically of the grades shown on the Drawings. Tolerance for the horizontal width and zone thickness of the dike fill material shall be within ± 150 mm of the dimensions shown on the Drawings.

(c) Compaction

- (i) Each lift shall be thoroughly compacted for its full depth. The density for an average of any ten consecutive field test samples, shall not be less than 98% of the maximum Standard Proctor Maximum Dry Density with a moisture content between 2% below and 2% above the optimum moisture content. The density of the impervious material, as indicated by any single test, shall not be less than 95% of the Standard Proctor Maximum Dry Density.
- (ii) Portions of the fill which cannot be compacted adequately with rollers due to inaccessibility shall be placed in layers not exceeding 100 mm in thickness and compacted to the specified density using power tampers.
- (iii) Any lift shall be subject to quality control testing and acceptance by the Contract Administrator prior to placement of successive lifts. Any lifts that have been placed overtop of unapproved material shall be removed.
- (iv) Scarification of each compacted and accepted lift shall be completed to a minimum of 50 mm depth prior to placement of the successive lift.

(d) Quality Assurance Testing Frequency

- (i) The Contractor shall adhere to the minimum inspection and testing frequencies specified as follows:

Test Activity	Minimum Inspection / Test Frequency
Particle Size Analysis	Confirmation test twice per source.
Standard Proctor	Confirmation test twice per source.
Permeability	Confirmation test twice per source.
Atterberg Limits	Confirmation test twice per source.
Compaction/Density	5 per lift

E22.6 Method of Measurement

- (a) Clay fill will be measured on a volume basis. The volume to be paid for shall be the total number of cubic metres of clay fill material supplied and placed in accordance with this Specification, as measured in the field, and accepted by the Contract Administrator. The

volume of Clay Fill shall be measured by using neat line average end areas for any placed and compacted clay fill surfaces that are determined by the Contract Administrator to come from onsite sources or imported to the site. Onsite sources shall be those that yield suitable materials excavated from the existing dike or comparable excavations in the immediate work area. Imported sources shall be any borrow material source selected by the Contractor and approved by the Contract Administrator.

E22.7 Basis of Payment

- (a) Clay Fill will be paid for at the Contract Unit Price for "Flood Protection Berm - Clay Fill", measured as specified herein, which price shall be payment in full for the placement of all materials and performing all operations herein described and all other items incidental to the Work included in this Specification.

E23. HAWTHORNE VALVE CHAMBER MODIFICATIONS - MECHANICAL

E23.1 Description

- (a) This Specification shall cover the modification of the piping within the valve chamber, as required for reconfiguration and expansion.

E23.1.1 Piping Modifications:

- (a) Hawthorne Force Main Valve Chamber
 - (i) Perform temporary piping modifications within the valve chamber as shown on the Drawings.
 - (ii) Restore the force main, chamber piping, valve chamber, and site as shown on the Drawings.
- (b) All tool launching assemblies, including fittings, and spool pieces shall be turned over to the City upon completion of work.

E23.2 Submissions:

- E23.2.1 Submit Shop Drawings for all installed fittings, valves, piping and couplings in accordance with E3.

E23.3 Products

E23.3.1 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) The anti-seize compound shall be used on all bolts.
- (f) For flanged connections, bolt size, type and diameter shall be in accordance with AWWA C207. Bolt length shall be suitable for coupling AWWA C207 Class D flange.

- E23.3.2 All steel bolting hardware shall be liquid epoxy coated in accordance with AWWA C116, E23.3.16, and E23.3.14

E23.3.3 Flange Gaskets

- (a) 3 mm, full-faced, SBR rubber gaskets or neoprene in accordance with AWWA C207.
- (b) Gaskets shall be one piece construction where possible.

- (c) Segmented gaskets shall be constructed of a minimum number of segments and joints shall be of dovetailed construction, or other jointing methods approved by the Contract Administrator.

E23.3.4 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 are to be fusion bonded epoxy coated in accordance with AWWA C213, E23.3.16, and E23.3.14.
- (d) Cast and ductile blind flanges shall be fusion bonded epoxy coated in accordance with AWWA C116, E23.3.16, and E23.3.14.

E23.3.5 Ductile Iron Fittings

- (a) Flanged ductile iron fittings shall conform to AWWA C110.
- (b) Fittings shall meet the following minimum criteria:
 - (i) All fittings shall be new.
 - (ii) Permanently installed fittings shall be cement-mortar lined in accordance with AWWA C104.
 - (iii) Temporarily installed fittings shall be liquid epoxy lined to AWWA C210, E12.4.15, and E12.5.3. as a minimum.
 - (iv) All fittings are to be liquid epoxy coated to AWWA C210, E23.3.16, and E23.4.3.

E23.3.6 Ductile Iron Pipe

- (a) Ductile iron pipe conforming to AWWA C151.
- (b) The pipe shall meet the following minimum criteria:
 - (i) Thickness Class 54 (minimum).
 - (ii) The 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 E23.3.16, and E23.4.3.
 - (v) All pipes are to be liquid epoxy coated in accordance with AWWA C210, E23.3.16, and E23.4.3.

E23.3.7 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.

E23.3.8 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) The 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 of 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 E23.3.1.
- (g) Couplings are to be fusion bonded epoxy coated in accordance with E23.3.16, and E23.4.3.
- (h) Couplings are to be supplied with two di-electric insulating boots.
- (i) 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 can withstand the applied forces.

E23.3.9 Grooved Joints and Couplings

- (a) Direct grooved ends for ductile iron pipe shall conform to AWWA C606.
- (b) Grooved flange adaptors shall be compatible with AWWA C606 grooved end joints. Confirm compatibility with existing piping and fittings.
- (c) Grooved couplings and adaptors shall be constructed from ductile iron conforming to ASTM A536, grade 65-45-12.
- (d) Grooved end fittings shall be epoxy coated in accordance with E23.3.15 or E23.3.16, and E23.4.3.
- (e) Bolting hardware for grooved end fitting shall be galvanized steel conforming to E23.3.1.
- (f) Approved manufacturer: Victaulic or approved equal in accordance with B7.

E23.3.10 Gate Valves

- (a) Gate valves shall conform to CW2110, City of Winnipeg Specification AT-4.21.1.7, AWWA C509, and shall be supplied with the following:
 - (i) 316 stainless steel body and gate material.
 - (ii) Flanged joints conforming to AWWA 509.
 - (iii) Fusion bonded epoxy coating conforming to AWWA C550.
 - (iv) 50 mm AWWA operating nut.
 - (v) Operating direction in accordance with SD-008.
- (b) Submit Shop Drawings of the gate valves in accordance with E3.
- (c) Approved manufacturer: "DeZurik" style KGC-BD or approved equal in accordance with B7.

E23.3.11 Gate Valve Stem Extension:

- (a) The City of Winnipeg standard valve stem extension per AP-003. The extension shall be ASTM A276 Type 304 stainless steel, with a 50x50 mm square operating nut.
- (b) Submit Shop Drawings of the valve stem extension in accordance with E3.
- (c) Approved manufacturer: "DeZurik" or approved equal in accordance with B7.

E23.3.12 Gate Valve Stem Extension Guide and Wall Brackets:

- (a) The Stem extension guide and wall brackets shall conform to ASTM A276, Type 316 stainless steel suitable for keeping the stem extension plumb and centred in the valve box while not interfering with the operation of the valve stem.
- (b) Submit Shop Drawings of the gate valve stem extension guides and wall brackets in accordance with E3.

(c) Approved manufacturer: "Trumbull" or approved equal in accordance with B7.

E23.3.13 Valve Box:

(a) The City of Winnipeg standard valve box with hinged cover marked with an 'S' per AP-001 or AP-002.

(b) Approved manufacturer: Titan Foundry Ltd, or W.D. Industrial Group or approved equal in accordance with B7.

E23.3.14 Coatings

(a) Unless otherwise specified herein coatings for all metal chamber piping and fittings shall be a liquid epoxy meeting the requirements of E23.3.15. As an alternative to liquid epoxy, the Contractor shall have the option to use fusion bonded epoxy in accordance with E23.3.16.

(b) Field-applied pipe coatings for above ground piping shall be a liquid epoxy meeting the requirements of E23.3.15.

E23.3.15 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 for each coat) for a minimum final coating dry film thickness of greater than 16 mils or the thickness recommended by the manufacturer for immersion service.

(d) Interior pipe linings shall be a 100% solids liquid epoxy product. Approved products: Enviroline 230, Bar-Rust 234P, Specialty Polymer Coatings SP-7888, or approved equal in accordance with B7.

(e) Exterior coatings for all exposed steel, piping, valves, and actuators shall be Polyamide Epoxy. Approved products: Enviroline 230, Bar-Rust 234P, Specialty Polymer Coatings SP-7888, Tnemec Series 140F Pota-Pox Plus, Amerlock 2 or approved equal in accordance with B7.

(f) Submit product data for interior lining and exterior coating products in accordance with E3.

E23.3.16 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 greater than 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 E3.

E23.3.17 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 a 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.

E23.3.18 Continuity Bonding

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

E23.3.19 Galvanic Anodes

- (a) Galvanic anodes for cathodic protection of buried ferrous pipes and fittings shall be 10.9 kg pre-packaged zinc anodes to meet CW 2110.

E23.4 Methods

E23.4.1 Confirmation of Victaulic Components

- (a) The Contractor shall confirm the diameter and style of existing Victaulic couplings prior to procurement of materials.
- (b) The Contractor shall clean the existing couplings sufficiently to identify the coupling style and required replacement components.
- (c) A qualified representative of Victaulic shall be present at the investigation to confirm the coupling style.

E23.4.2 Installation of Lead Wires, Continuity Bonding and Galvanic Anodes

- (a) Anodes and continuity bonding shall be installed on new and existing pipes and fittings where shown on the Drawings or as directed by the Contract Administrator.
- (b) 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 the area required to complete the weld.
 - (ii) Before welding, remove wire insulation as required to fit the mould, avoiding damage to the exposed copper wire. If the wire is cut or nicked over halfway through its diameter, cut off and strip the new end. If the 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 the charge is set, remove mould and slag from the weld area with the welder's hammer. Strike the top and sides of the weld with the hammer to test the secureness of the connection. If the weld does not hold, remove scrap weld material, clean it, and begin the welding process again.
 - (iv) After welding and before coating the cleaned weld area, the Contract Administrator may test the joint bond and wires for electrical continuity.
 - (v) When the weld passes the test for soundness and electrical continuity, repair the coating in the weld area with mastic and weld cap placed over the weld. Clean the weld area to remove any loose material and welding residuals. Cover exposed metal on the pipe and wire with a mastic-filled weld cap. Ensure the weld cap covers the entire area of coating removed for installation of the thermite weld. If not, repair the coating as per the coating manufactures recommendations prior to installing the weld cap.

E23.4.3 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 the near-white metal as specified by Joint Surface Preparation Standard NACE No.2/SSPCSP10.

- (ii) Cast and Ductile Iron - Prepare ductile iron surface in accordance with NAPP 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, E23.3.15, and the manufactures recommendations.
 - (e) Apply fusion bonded epoxies of prepared surfaces in accordance with AWWA C213, E23.3.16, and the manufactures recommendations.
 - (f) Provide adequate ventilation and heat to facilitate the 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 pipe 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 E3 a minimum of five (5) Business Days prior to application.

E23.4.4 Installation of Gate Valves

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

E23.5 Measurement and Payment

- (a) Supply and install of all materials and labour required to undertake the mechanical modifications will be paid for at the Contract Lump Sum Price for "Hawthorn Valve Chamber Modifications – Mechanical". The said price shall be paid in full for supplying all materials and performing all operations herein described and all other items incidental to the Work included in this specification, accepted by the Contract Administrator.

E24. HAWTHORNE VALVE CHAMBER MODIFICATIONS - STRUCTURAL

E24.1 Description

- (a) This Specification shall cover the modification and restoration of the existing concrete valve chambers as shown on the Drawings. These specifications shall be read in conjunction with drawing specifications.

E24.2 Shop Drawings

- E24.2.1 Provide concrete reinforcement, formwork, concrete mix, water stop and miscellaneous steel shop drawings in accordance with E3.

E24.3 Temporary Shoring System

- E24.3.1 The Contractor is to provide shoring plan drawings indicating the shoring system used, materials, methods of construction, staging as required, dewatering plan as well as other miscellaneous details such as support of shoring off the existing chamber. Shoring drawings are to be designed and sealed by a Professional Engineer licensed in the Province of Manitoba. Drawings to show loads (soil, surcharge loads) used to design the shoring system. The extent of shoring shown on the Contract Drawings is schematic and does not represent actual shoring extents. The Contractor is to coordinate with the shoring designer to ensure a sufficient extent of excavation to safely perform the work.

E24.4 Materials

E24.4.1 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.

E24.4.2 Structural Concrete

- (a) Provide concrete mixed in accordance with requirements of CW 2160 and CAN/CSA A23.2.
- (b) The structural concrete design shall be in accordance with performance specifications having the following properties:
 - (i) Class of Exposure: S-1
 - (ii) Minimum Compressive Strength @ 28 days: 32 MPa

E24.4.3 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.

E24.4.4 Bar Accessories

- (a) Bar accessories shall be of the 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 placement of reinforcing steel.

E24.4.5 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.

E24.4.6 Water Stop

- (a) Adhered rubber water stop shall be acrylic-polymer based swellable.
- (b) Approved Products: Sikaswell type 2005 by Sika, or approved equal in accordance with B6.

E24.4.7 Ladder

- (a) The ladder material shall be aluminum in accordance with CSA S157-05 (R2010) type 6061-T651.
- (b) Aluminum welding shall be in accordance with CSA W59.2-M1991 (R2013) by welders certified and qualified in accordance with CSA W47.2-11. All welds shall be 6 mm unless otherwise noted on the Drawings.
- (c) Aluminum in contact with concrete or cast into concrete to have a bituminous isolation coating. Approved product: Intertuf 16 or approved equal in accordance with B6.

E24.4.8 Adhesive Anchors and Reinforcing Dowels

- (a) Epoxy anchor diameter as shown on the Drawings. Adhesive to be epoxy grout. Approved product: Hilti HIT-HY 200 or approved equal in accordance with B6.

E24.5 Construction Methods

E24.5.1 Construction Method Submission

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

This submission shall be provided with a minimum of five (5) Working Days prior to the planned start of the Work.

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

E24.5.2 Cast-in-Place Concrete Construction

- (a) Adjust the location of the reinforcing steel adjacent to openings and in the location of the water stop along the center line of the 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) Provide cold and hot weather protection in accordance with CSA A23.1

E24.5.3 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 36 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.

E24.5.4 Water Stop

- (a) Install water stop as per manufacturer instructions and recommendations.

E24.5.5 Adhesive Anchors and Reinforcing Dowels

- (a) Install adhesive anchors and rebar dowels as per the manufacturer's instructions and recommendations.

E24.6 Measurement and Payment

- (a) Supply and install of all materials and labour required to undertake the structural modifications will be paid for at the Contract Lump Sum Price for "Hawthorne Valve Chamber Modifications – Structural". The said price shall be paid in full for supplying all materials and performing all operations herein described and all other items incidental to the Work included in this specification, accepted by the Contract Administrator.
- (b) If the Contractor requires the roof of the existing Hawthorne Valve Chamber to be removed to accommodate the allowable shutdown time, then the Contractor shall include the costs for the removal and reinstatement within their Bid Price for the "Hawthorne Valve Chamber Modifications – Structural". Separate Shop Drawings in accordance with E3 will be required to address this Work.

E25. HAWTHORNE VALVE CHAMBER MODIFICATIONS - HAWTHORNE PUMP STATION SHUTDOWNS

E25.1 Description

- (a) This Specification shall cover the shutdown of the Hawthorne Pump Station (PS) for the reconfiguration of the Newton Force Main North Valve Chamber piping.

E25.2 Submittals

E25.2.1 Submit an operation plan in accordance with E3. The operation plan shall include the following:

- (a) A detailed description of the Works to be undertaken, including but not limited to:
 - (i) Closure/reopening of positive gates at Hawthorne PS
 - (ii) Turning off/on pumps at Hawthorne PS
 - (iii) Monitoring wastewater levels at Hawthorne PS
- (b) A list of the key components required for the Works.
- (c) A detailed list of equipment, material, vehicles, and personnel required to be on-site prior to the commencement of the Work. The list shall also consider the requirements to mitigate the potential risks addressed in the Operational Shutdown Plan.
- (d) Step-by-step procedure for reconfiguration of all internal piping.
- (e) Means and methods for dealing with excessive flows or wet weather events.
- (f) A detailed (step-by-step) schedule for the pump station shutdowns.
- (g) A draft operation shutdown plan showing the requirements for this shutdown has been provided in Appendix A for reference.

E25.3 Site-Specific Requirements and Restrictions

- (a) Install piping as shown on the Drawings.
- (b) The shutdown is subject to approval from Wastewater Services based on acceptable system levels.
- (c) The shutdown of the Hawthorne PS is required to facilitate the work:
 - (i) A maximum of two (2) pump station shutdowns will be permitted for the reconfiguration of chamber piping in the north valve chamber, one (1) test shutdown to be completed in advance of the proposed shutdown to confirm the available working window and one (1) to accommodate the piping reconfiguration.
 - (ii) The shutdown may only occur during dry weather flows; when wet weather events are not anticipated; and only after the system has returned to dry weather flows following a wet weather event.
 - (iii) The shutdown may only occur between the hours of 10:00 pm and 10:00 am.
 - (iv) Maximum 12-hour pump station shut down per occurrence, with an 11-hour working window available once the force main is drained.
- (d) Full-time monitoring of upstream wastewater levels is required during pump station shutdowns.
 - (i) Maximum allowable elevation: 225.00 m.
 - (ii) Monitoring points are to be identified prior to the pump station shutdown.

E25.4 Methods

- E25.4.1 Be prepared to remove flow diversions immediately due to flow backups, wet weather flows or as requested by the Contract Administrator at any time during the Work. The Contractor must include this in their submittal describing the Works to be undertaken.

E25.5 Measurement and Payment

E25.5.1 Supply and install of all materials and labour required to undertake pump station shutdowns will be paid for at the Contract Lump Sum Price for "Hawthorn Valve Chamber Modifications – Hawthorne Pump Station Shutdowns". The said price shall be paid in full for supplying all materials and performing all operations herein described and all other items incidental to the Work included in this specification, accepted by the Contract Administrator.

E26. LAUNCH WYE CHAMBERS ASSEMBLY

E26.1 Description

E26.1.1 The Work to be done by the Contractor under this Specification shall include the supply and construction of the new precast concrete 2400 mm by 2400 mm Launch Wye Chambers, excavation, bedding, backfill, concrete anchor and all mechanical appurtenances and piping. Furnishing of all superintendence, overhead, labour, materials, equipment, tools, supplies and all things necessary for an incidental to the satisfactory performance and completion of all Work as hereinafter specified.

E26.2 Submissions:

E26.2.1 Submit Shop Drawings for all installed fittings, valves, piping and couplings in accordance with E3.

E26.3 Products:

E26.3.1 Bedding and Backfill

- (a) Bedding and initial backfill material is to be sand in accordance with CW 2030.
- (b) Backfill excavations in boulevards and pavement areas are to be Class 3 in accordance with clause 3.8.2 of CW 2030.
- (c) Sand bedding as per CW 2030.
- (d) Backfill around the concrete anchor shall be with cement-stabilized fill and bear against undisturbed soil. The cement-stabilized fill shall extend past the HDPE to DI connection down toward the existing casing pipe as shown on the drawings.
- (e) The Contractor shall provide heating and hoarding of backfill material when the temperature is at or below 5° C or if the temperature will fall below 5° C within 24 hours after placing the material.

E26.3.2 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) The anti-seize compound shall be used on all bolts.
- (f) For flanged connections, bolt size, type and diameter shall be in accordance with AWWA C207. Bolt length shall be suitable for coupling AWWA C207 Class D flange.
- (g) All steel bolting hardware shall be liquid epoxy coated in accordance with AWWA C116, E26.3.16, and E26.4.3.

E26.3.3 Flange Gaskets

- (a) 3 mm, full-faced, SBR rubber gaskets or neoprene in accordance with AWWA C207.
- (b) Gaskets shall be one piece construction where possible.

- (c) Segmented gaskets shall be constructed of a minimum number of segments and joints shall be of dovetailed construction, or other jointing methods approved by the Contract Administrator.

E26.3.4 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 are to be fusion bonded epoxy coated in accordance with AWWA C213, E26.3.16, and E26.4.3.
- (d) Cast and ductile blind flanges shall be fusion bonded epoxy coated in accordance with AWWA C116, E26.3.16, and E26.4.3.

E26.3.5 Ductile Iron Fittings

- (a) Flanged ductile iron fittings conforming to AWWA C110.
- (b) Fittings shall meet the following minimum criteria:
 - (i) All fittings shall be new.
 - (ii) Permanently installed fittings shall be cement-mortar lined in accordance with AWWA C104.
 - (iii) Temporarily installed fittings shall be liquid epoxy lined to AWWA C210, E26.3.15, and E26.4.3. as a minimum.
 - (iv) All fittings are to be liquid epoxy coated to AWWA C210, E26.3.15, and E26.4.3

E26.3.6 Ductile Iron Pipe

- (a) Ductile iron pipe conforming to AWWA C151.
- (b) The pipe shall meet the following minimum criteria:
 - (i) Thickness Class 54 (minimum).
 - (ii) The 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 E26.3.15, and E26.4.3.
 - (v) All pipes are to be liquid epoxy coated in accordance with AWWA C210, c

E26.3.7 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.

E26.3.8 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) The 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 of 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 E26.3.1
- (g) Couplings are to be fusion bonded epoxy coated in accordance with E26.3.15, and E26.4.3.
- (h) Couplings are to be supplied with two di-electric insulating boots.
- (i) 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 to restrain differential thrust forces shall be no longer than 150 mm and the Contractor must demonstrate they are capable of withstanding the applied forces.

E26.3.9 Grooved Joints and Couplings

- (a) Direct grooved ends for ductile iron pipe shall conform to AWWA C606.
- (b) Grooved flange adaptors shall be compatible with AWWA C606 grooved end joints. Confirm compatibility with existing piping and fittings.
- (c) Grooved couplings and adaptors shall be constructed from ductile iron conforming to ASTM A536, grade 65-45-12.
- (d) Grooved end fittings shall be epoxy coated in accordance with E26.3.15, or E26.3.15, and E26.4.3.
- (e) Bolting hardware for grooved end fittings shall be galvanized steel conforming to E26.3.1.
- (f) Approved manufacturer: Victaulic or approved equal in accordance with B7.

E26.3.10 Gate Valves

- (a) Gate valves shall conform to CW2110, City of Winnipeg Specification AT-4.21.1.7, AWWA C509, and shall be supplied with the following:
 - (i) 316 stainless steel body and gate material.
 - (ii) Flanged joints conforming to AWWA 509.
 - (iii) Fusion bonded epoxy coating conforming to AWWA C550.
 - (iv) 50 mm AWWA operating nut.
 - (v) Operating direction in accordance with SD-008.
- (b) Submit Shop Drawings of the gate valves in accordance with E3.
- (c) Approved manufacturer: "DeZurik" style KGC-BD or approved equal in accordance with B7.

E26.3.11 Gate Valve Extension:

- (a) The City of Winnipeg standard valve stem extension per AP-003. The extension shall be ASTM A276 Type 304 stainless steel, with a 50x50 mm square operating nut.
- (b) Submit Shop Drawings of the valve stem extension in accordance with E2.
- (c) Approved manufacturer: "DeZurik" or approved equal in accordance with B7.

E26.3.12 Gate Valve Stem Extension Guide and Wall Brackets:

- (a) The Stem extension guide and wall brackets shall conform to ASTM A276, Type 316 stainless steel suitable for keeping the stem extension plumb and centred in the valve box while not interfering with the operation of the valve stem.
- (b) Submit Shop Drawings of the gate valve stem extension guides and wall brackets in accordance with E2.
- (c) Approved manufacturer: "Trumbull" or approved equal in accordance with B7.

E26.3.13 Valve Box:

- (a) The City of Winnipeg standard valve box with hinged cover marked with an 'S' per AP-001 or AP-002
- (b) Approved manufacturer: Titan Foundry Ltd, or W.D. Industrial Group or approved equal in accordance with B7.

E26.3.14 Coatings

- (a) Unless otherwise specified herein coatings for all metal chamber piping and fittings shall be a liquid epoxy meeting the requirements of E26.3.15. As an alternative to liquid epoxy, the Contractor shall have the option to use fusion bonded epoxy in accordance with E26.3.16.
- (b) Field-applied pipe coatings for above ground piping shall be liquid epoxy meeting the requirements of E26.3.15.

E26.3.15 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 for each coat) for a minimum final coating dry film thickness of greater than 16 mils or the thickness recommended by the manufacturer for immersion service.
- (d) Interior pipe linings shall be a 100% solids liquid epoxy product. Approved products: Enviroline 230, Bar-Rust 234P, Specialty Polymer Coatings SP-7888, or approved equal in accordance with B7.
- (e) Exterior coatings for all exposed steel, piping, valves, and actuators shall be Polyamide Epoxy. Approved products: Enviroline 230, Bar-Rust 234P, Specialty Polymer Coatings SP-7888, Tnemec Series 140F Pota-Pox Plus, Amerlock 2 or approved equal in accordance with B7.
- (f) Submit product data for interior lining and exterior coating products in accordance with E2.

E26.3.16 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 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 E2.

E26.3.17 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 a 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.

E26.3.18 Continuity Bonding

- (a) Wires for continuity bonding shall be the No.10 American Wire Gauge (AWG) 7-strand copper conductor with black TWU insulation.

- (b) Thermite weld products shall be properly selected based on the wire size, pipe size and material.
- (c) Thermite weld caps shall be constructed from 20 mils high-density polyethylene and may be either pre filled or field filled with a bituminous mastic coating or approved equal.

E26.3.19 Galvanic Anodes

- (a) Galvanic anodes for cathodic protection of buried ferrous pipes and fittings shall be 10.9 kg pre-packaged zinc anodes to meet CW 2110.

E26.3.20 Cast-in-place Concrete Anchor

- (i) Proportioning of fine aggregate, coarse aggregate, cement, and water for the cast-in-place concrete anchor shall be as follows:
 - ◆ Cement Type: HS
 - ◆ Minimum Compressive Strength @ 28 days: 30 MPa
 - ◆ Maximum coarse aggregate size: 19 mm
 - ◆ Maximum Water/Cement ratio: 0.45
 - ◆ Slump (Before Plasticizing): 80 mm +/- 30 mm
 - ◆ Slump (After Plasticizing): 150 mm +/- 30 mm
 - (ii) All admixtures must be compatible and meet the following standards:
 - ◆ Air entraining agents to ASTM C260
 - ◆ Chemical admixtures (water reducing) to ASTM C494
 - ◆ Type F high-range water reducing (super-plasticizing) admixture shall be used when a slump of more than 110 mm is desired.
- (b) Grout
- (i) Grout shall be Sika Grout 212 or approved equal in accordance with B7.
- (c) Reinforcing Steel
- (i) Reinforcement is new deformed billet steel bar conforming to CSA G30.18 (Latest). Grade 400.
 - (ii) Unless noted otherwise, reinforcement clear concrete cover distances shall be a minimum of:
 - ◆ 75 mm for concrete cast against earth.
 - ◆ 50mm for all other concrete.
 - (iii) Reinforcing steel shall be clean, free of rust, dirt, loose scale, oil, grease or any material that could reduce bond with the concrete.

E26.4 Methods

E26.4.1 Confirmation of Victaulic Components

- (a) The Contractor shall confirm the diameter and style of existing Victaulic couplings prior to procurement of materials.
- (b) The Contractor shall clean the existing couplings sufficiently to identify the coupling style and required replacement components.
- (c) A qualified representative of Victaulic shall be present at the investigation to confirm the coupling style.

E26.4.2 Installation of Lead Wires, Continuity Bonding and Galvanic Anodes

- (a) Anodes and continuity bonding shall be installed on new and existing pipes and fittings where shown on the Drawings or as directed by the Contract Administrator.
- (b) 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 the area required to complete the weld.
- (ii) Before welding, remove wire insulation as required to fit the mould, avoiding damage to the exposed copper wire. If the wire is cut or nicked over halfway through its diameter, cut off and strip the new end. If the 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 the charge is set, remove mould and slag from the weld area with the welder's hammer. Strike the top and sides of the weld with the hammer to test the secureness of the connection. If the weld does not hold, remove scrap weld material, clean it, and begin the welding process again.
- (iv) After welding and before coating the cleaned weld area, the Contract Administrator may test the joint bond and wires for electrical continuity.
- (v) When the weld passes the test for soundness and electrical continuity, repair the coating in the weld area with mastic and weld cap placed over the weld. Clean the weld area to remove any loose material and welding residuals. Cover exposed metal on the pipe and wire with mastic filled weld cap. Ensure the weld cap covers the entire area of coating removed for installation of the thermite weld. If not, repair the coating as per the coating manufactures recommendations prior to installing the weld cap.

E26.4.3 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 the near-white metal as specified by Joint Surface Preparation Standard NACE No.2/SSPCSP10.
 - (ii) Cast and Ductile Iron - Prepare ductile iron surface in accordance with NAF 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, E26.3.15, and the manufactures recommendations.
- (e) Apply fusion bonded epoxies of prepared surfaces in accordance with AWWA C213, E26.3.16, and the manufactures recommendations.
- (f) Provide adequate ventilation and heat to facilitate the curing of coatings for the entire duration of the curing process, as specified by the manufacturer.
- (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 E3 a minimum of five (5) Business Days prior to application.

E26.4.4 Cast-in-place Concrete Anchor

- (a) Construct cast in place concrete anchor in accordance with CW 2160, except as supplemented, revised or amended in this specification and as indicated in the construction notes on the Drawings.
- (b) Adjust the location of reinforcing steel adjacent to openings to frame those openings in accordance with good practice, and maintain the bar spacing intent.

- (c) Do not use welded splices for reinforcing steel.
- (d) Order all wall reinforcing steel in lengths to best suit the spacing of walers so that reinforcing bars will not be bent or misformed in order to remove the walers.

E26.5 Measurement and Payment

E26.5.1 Supply and installation of the Launch Wye Chamber Assemblies up to and including the concrete anchor and connections to the 350 mm PVC and 500 mm OD HDPE will be paid for at the Contract Lump Sum Price for "Supply and Installation of Fraser's Grove Park Launch Wye Chamber" and "Supply and Installation of Kildonan Park Launch Wye Chamber". The said price shall be paid in full for supplying all materials and performing all operations herein described and all other items incidental to the Work included in this specification, accepted by the Contract Administrator.

E27. CONNECTION OF THE NEW FORCE MAIN TO THE FORCE MAIN TIE-IN MANHOLE

E27.1 Description

E27.1.1 This Specification shall cover the Connection of the New Force Main to the Force Main Tie-In Manhole. This Specification shall amend and supplement CW 2130, CW 2030 and SD-010D.

E27.1.2 The Work to be done by the Contractor under this Specification shall include the supply and construction of:

- (a) Pipe couplings.
- (b) Ductile iron pipe, drop pipe, fittings, and appurtenances.
- (c) Downpipe anchor straps.
- (d) Concrete Collar.
- (e) Excavation, Bedding and Backfill.
- (f) As well as the furnishing of all superintendence, overhead, labour, materials, equipment, tools, supplies and all things necessary for an incidental to the satisfactory performance and completion of all Work as hereinafter specified.

E27.2 Materials

E27.2.1 Fittings and Appurtenances

- (a) Fittings, couplings, and appurtenances to be used for the force main and sewers are to be approved products for underground use in the City of Winnipeg.
- (b) Acceptable Manufacturers
 - (i) Robar
 - (ii) Approved equal in accordance with B7.

E27.2.2 Force main Pipe

- (a) Ductile iron spool pieces for connecting the ductile iron drop tee to the PVC force main.
- (b) Ductile iron spool pieces for connecting the ductile iron drop tee to the ductile iron bend.

E27.2.3 Bedding and Backfill

- (a) Bedding and initial backfill material is to be sand in accordance with CW 2030.
- (b) Backfill excavations in boulevards and pavement areas are to be Class 3 in accordance with clause 3.8.2 of CW 2030.
- (c) Sand bedding as per CW 2030.
- (d) Backfill under the Connection of the New Force main to the Force main Tie-In Manhole shall be with cement-stabilized fill and bear against undisturbed soil. The

cement-stabilized fill shall extend past the flexible coupling down toward the base of the manhole.

- (e) The Contractor shall provide heating and hoarding of backfill material when the temperature is at or below 5° C or if the temperature will fall below 5° C within 24 hours after placing the material.

E27.3 Measurement and Payment

- E27.3.1 Connection of the New Force main to the Force main Tie-In Manhole will be paid for at the Contract Lump Sum Price for "Connection of the New Force Main to the Force Main Tie-In Manhole". The said price shall be paid in full for supplying all materials and performing all operations herein described and all other items incidental to the Work included in this specification, accepted by the Contract Administrator.

E28. PIPE SWABBING AND HYDROSTATIC LEAKAGE TESTING

- E28.1 Pipe swabbing and hydrostatic pressure testing are to be completed before the final force main connections.

E28.2 Pipe Swabbing

- (a) The Contractor shall slowly fill the force main to expel as much air as possible by flushing.
- (b) Swabs shall be done with open-cell polyurethane foam with a density of 16-30 kg/m³ (1-2 lb/ft³)
- (c) Swabs shall be able to traverse standard piping configurations such as 45-degree elbows, tees, and valves.
- (d) Three swabs shall be passed through the force main consecutively no more than 24 hours apart.
- (e) The Contractor is to employ a method to ensure that the swabs being discharged at the force main tie-in manhole are retrieved.
- (f) Ensure no air is introduced into the force main after swabbing and before leakage testing.
- (g) Submit a swabbing procedure to the Contract Administrator for approval at least five (5) Working Days prior to swabbing.

- E28.2.1 Pipe swabbing associated with the work herein described will be considered incidental to the cost of the force main renewal.

E28.3 Hydrostatic Leaking Testing

- (a) After flushing and swabbing are completed, test the force main in accordance with CW2125 except as modified below.
- (b) The force main will be tested to a pressure of 690 kPa (100 psi)

E28.4 Measurement and Payment

- E28.4.1 Hydrostatic Leakage Testing associated with the work herein described will be considered incidental to the cost of the force main relocation.

E29. PLUGGING AND ABANDONING EXISTING 350 POLY FORCE MAIN RIVER CROSSING

E29.1 Description

- (a) This Specification shall amend and supplement Standard Specifications CW 2130 and shall cover the abandonment of the existing 350 mm diameter poly force main river crossing, including excavation, backfill, supply, and installation for all associated Works required to abandon the force main river crossing with flowable cement-stabilized fill.
- (b) The Work to be done by the Contract under this Specification shall include furnishing of all superintendence, overhead, labour, materials, equipment, tools, supplies, and all things

necessary for and incidental to the satisfactory performance and completion of all Work hereinafter specified.

E29.2 Materials

- (a) Abandonment fill material shall be flowable cement-stabilized fill as indicated on the drawings and in accordance with CW 2160.

E29.3 Construction Methods

- (a) Construction methods to be in accordance with Standard Specifications CW 2130.

E29.4 Measurement and Payment

- (a) Excavation, backfill, shoring, supply, and installation of flowable cement-stabilized fill to plug the existing 350 poly force main river crossing will be measured on a volume basis. The volume will be paid for at the Contract Price for "Plugging and Abandoning Existing 350 Poly Force Main River Crossing" to be paid for shall be the total number of cubic meters of material, supplied and placed in accordance with this Specification, as measured in the field and accepted by the Contract Administrator.

E30. FITTINGS

E30.1 Description

- (a) This Specification shall amend and supplement Standard Specifications CW 2110 and shall cover the supply, install, and supply and install of fittings.
- (b) The Work to be done by the Contract under this Specification shall include furnishing of all superintendence, overhead, labour, materials, equipment, tools, supplies, and all things necessary for and incidental to the satisfactory performance and completion of all Work hereinafter specified.

E30.2 Materials

- (a) Shall be supplied in accordance with CW 2110.

E30.3 Construction Methods

- (a) Construction methods shall be in accordance with CW 2110.

E30.4 Measurement and Payment

- (a) Supply and Install of Fittings
 - (i) Supply and installation of fittings will be measured on a unit basis for each type and size and paid for at the Contract Unit Price for "Supply and Install of Fittings". Number of units to be paid for will be the total number of fittings supplied and installed in accordance with CW 2110, accepted and measured by the Contract Administrator.
 - (ii) Construction of concrete thrust blocks and installation of mechanical restrainers and joint harnesses will be included with installation of fittings.
- (b) Supply of Fittings
 - (i) Supply of fittings will be measured on a unit basis for each type and size and paid for at the Contract Unit Price for "Supply of Fittings". Number of units to be paid for will be the total number of fittings supplied in accordance with CW 2110, accepted and measured by the Contract Administrator.
- (c) Installation of Fittings
 - (i) Installation of fittings will be measured on a unit basis for each type and size and paid for at the Contract Unit Price for "Installation of Fittings". Number of units to be paid for will be the total number of fittings installed in accordance with CW 2110, accepted and measured by the Contract Administrator.

- (ii) Construction of concrete thrust blocks and installation of mechanical restrainers and joint harnesses will be included with installation of fittings.