



THE CITY OF WINNIPEG

TENDER

TENDER NO. 929-2025

NORTHWEST INTERCEPTOR LINING BY CIPP

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PART B - BIDDING PROCEDURES

B1. CONTRACT TITLE

- B1.1 Northwest Interceptor Lining by Cipp

B2. SUBMISSION DEADLINE

- B2.1 The Submission Deadline is 12:00 noon Winnipeg time, November 18, 2025.
- B2.2 The Contract Administrator or the Manager of Purchasing may extend the Submission Deadline by issuing an addendum at any time prior to the time and date specified in B2.1.

B3. SITE INVESTIGATION

- B3.1 Further to C3.1, the Contract Administrator or an authorized representative will be available at the Site at 9:00 a.m. on November 6, 2025, to provide Bidders access to the Parcel B of the Site. Access will be provided at the entrance road off Ferrier Street, approximately 300 m south of Murray Avenue. The Bidder may view the Site along Main Street, Foley Avenue, Highland Avenue and Gibbs Street without making an appointment.
- B3.2 The Bidder is advised that PPE including certified safety footwear, high visibility vests, hard hats and safety glasses are required.
- B3.3 The Bidder shall not be entitled to rely on any information or interpretation received at the Site investigation unless that information or interpretation is the Bidder's direct observation or is provided by the Contract Administrator in writing.
- B3.4 The Bidder 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 D6.1.
- B4.2 If the Bidder finds errors, discrepancies or omissions in the Tender, or is unsure of the meaning or intent of any provision therein, the Bidder shall notify the Contract Administrator of the error, discrepancy or omission, or request a clarification as to the meaning or intent of the provision at least five (5) Business Days prior to the Submission Deadline.
- B4.3 Responses to enquiries which, in the sole judgment of the Contract Administrator, require a correction to or a clarification of the Tender will be provided by the Contract Administrator to all Bidders by issuing an addendum.
- B4.4 Responses to enquiries which, in the sole judgment of the Contract Administrator, do not require a correction to or a clarification of the Tender will be provided by the Contract Administrator only to the Bidder who made the enquiry.
- B4.5 The Bidder shall not be entitled to rely on any response or interpretation received pursuant to B4 unless that response or interpretation is provided by the Contract Administrator in writing.
- B4.6 Any enquiries concerning submitting through MERX should be addressed to:
MERX Customer Support
Phone: 1-800-964-6379
Email: merx@merx.com

B5. CONFIDENTIALITY

- B5.1 Information provided to a Bidder by the City or acquired by a Bidder by way of further enquiries or through investigation is confidential. Such information shall not be used or disclosed in any way without the prior written authorization of the Contract Administrator. The use and disclosure of the confidential information shall not apply to information which:
- (a) was known to the Bidder before receipt hereof; or
 - (b) becomes publicly known other than through the Bidder; or
 - (c) is disclosed pursuant to the requirements of a governmental authority or judicial order.
- B5.2 The Bidder shall not make any statement of fact or opinion regarding any aspect of the Tender to the media or any member of the public without the prior written authorization of the Contract Administrator.

B6. ADDENDA

- B6.1 The Contract Administrator may, at any time prior to the Submission Deadline, issue addenda correcting errors, discrepancies or omissions in the Tender, or clarifying the meaning or intent of any provision therein.
- B6.2 The Contract Administrator will issue each addendum at least two (2) Business Days prior to the Submission Deadline or provide at least two (2) Business Days by extending the Submission Deadline.
- B6.3 Addenda will be available on the MERX website at www.merx.com.
- B6.4 The Bidder is responsible for ensuring that they have received all addenda and is advised to check the MERX website for addenda regularly and shortly before the Submission Deadline, as may be amended by addendum.
- B6.5 The Bidder shall acknowledge receipt of each addendum in Paragraph 10 of Form A: Bid/Proposal. Failure to acknowledge receipt of an addendum may render a Bid non-responsive.
- B6.6 Notwithstanding B4, enquiries related to an Addendum may be directed to the Contract Administrator indicated in D6.

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 B19.

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 B19.1(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.

B10.2 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 B19.4 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) Insituform Technologies Ltd – Constructability review
- (b) Capital Sewer Services Inc. – Constructability review

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. INELIGIBLE PERSONS

B13.1 Given this Tender is being used as a pilot to help establish the baseline social procurement requirements for RFP No. 779-2021B Progressive Design Build of NEWPCC Upgrade: Biosolids Facilities, Red River Biosolids Partners (an Aecon Water Infrastructure Inc. and Oscar Renda Contracting of Canada, Inc. and MWH Constructors Canada Ltd. Joint Venture) and any corporation within the Joint Venture, Red River Biosolids Partners (a general partnership consisting of Aecon Water Infrastructure Inc., Oscar Renda Contracting of Canada, Inc. and MWH Constructors Canada Ltd.), and any corporation within the general partnership, as well as Stantec Consulting Ltd. and Hatch Ltd., which corporations have representatives present during the contractual negotiations related to the Biosolids Project, have been deemed by the City to have a conflict of interest, and are not eligible to participate as a Bidder in respect of this Tender.

B14. QUALIFICATION

B14.1 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;
- (b) be financially capable of carrying out the terms of the Contract;
- (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; and
- (d) Submit a completed Social Procurement Plan.

B14.2 The Bidder and any proposed Subcontractor (for the portion of the Work proposed to be subcontracted to them) shall:

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

B14.3 The Bidder and/or any proposed Subcontractor (for the portion of the Work proposed to be subcontracted to them) shall:

- (a) have successfully carried out work similar in nature, scope and value to the Work;
- (b) be fully capable of performing the Work required to be in strict accordance with the terms and provisions of the Contract;
- (c) have a written workplace safety and health program if required pursuant to The Workplace Safety and Health Act (Manitoba); and
- (d) have completed the Accessible Customer Service online training required by the Accessibility for Manitobans Act (AMA) (see B14.5 and D8).

B14.4 Further to B14.3(c), the Bidder shall, within five (5) Business Days of a request by the Contract Administrator, provide proof satisfactory to the Contract Administrator that the Bidder/Subcontractor has a workplace safety and health program meeting the requirements of The Workplace Safety and Health Act (Manitoba), by providing:

- (a) Written confirmation of a safety and health certification meeting SAFE Work Manitoba's SAFE Work Certified Standard (e.g., COR™ and SECOR™) in the form of:
 - (i) a copy of their valid Manitoba COR certificate and Letter of Good Standing (or Manitoba equivalency) as issued under the Certificate of Recognition (COR) Program administered by the Construction Safety Association of Manitoba or by the Manitoba Heavy Construction Association's WORKSAFELY™ COR™ Program; or
 - (ii) a copy of their valid Manitoba SECOR™ certificate and Letter of Good Standing (or Manitoba equivalency) as issued under the Small Employer Certificate of Recognition Program (SECOR™) administered by the Construction Safety Association of Manitoba or by the Manitoba Heavy Construction Association's WORKSAFELY™ COR™ Program; or
- (b) a report or letter to that effect from an independent reviewer acceptable to the City. A list of acceptable reviewers and the review template are available at <http://www.winnipeg.ca/matmgt/Safety/default.stm>.

B14.5 Further to B14.3(d), the Bidder acknowledges that they and all Subcontractors have obtained training required by the Accessibility for Manitobans Act (AMA) available at <https://accessibilitymb.ca/resources-events-and-training/online-training.html> for anyone that may have any interaction with the public on behalf of the City of Winnipeg.

B14.6 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.

B14.7 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.

B14.8 Further to B14.1(d), the Bidder shall within five (5) Business Days of a request by the Contract Administrator, provide a completed Social Procurement Plan.

B15. BID SECURITY

B15.1 The Bidder shall include in their Bid Submission bid security in the form of a digital bid bond, in the amount of at least ten percent (10%) of the Total Bid Price, and agreement to bond of a company registered to conduct the business of a surety in Manitoba, in Form G1: Bid Bond and Agreement to Bond, available: <https://www.winnipeg.ca/media/4929/>.

B15.2 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 B15.2(a).

- B15.3 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 B19.1(a).
- B15.4 Bonds passing the verification process will be treated as original and authentic.
- B15.4.1 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.
- B15.5 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.
- B15.6 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.

B16. OPENING OF BIDS AND RELEASE OF INFORMATION

- B16.1 Bids will not be opened publicly.
- B16.2 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.
- B16.3 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.
- B16.4 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).
- B16.4.1 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.

B17. IRREVOCABLE BID

- B17.1 The Bid(s) submitted by the Bidder shall be irrevocable for the time period specified in Paragraph 11 of Form A: Bid/Proposal.
- B17.2 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.

B18. WITHDRAWAL OF BIDS

- B18.1 A Bidder may withdraw their Bid without penalty at any time prior to the Submission Deadline.

B19. EVALUATION OF BIDS

- B19.1 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 B14 (pass/fail);

- (c) Total Bid Price;
- (d) economic analysis of any approved alternative pursuant to B7.

- B19.2 Further to B19.1(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.
- B19.3 Further to B19.1(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.
- B19.4 Further to B19.1(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.
- B19.4.1 Further to B19.1(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.
- B19.4.2 Where MRST is shown on Form B as a separate line item, if that Line item is not completed, the MRST shall be considered to be included in the Total Bid Price.
- B19.4.3 Bidders are advised that the calculation indicated in B19.4 will prevail over the Total Bid Price entered in MERX.

B20. AWARD OF CONTRACT

- B20.1 The City will give notice of the award of the Contract or will give notice that no award will be made.
- B20.2 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.
- B20.2.1 Without limiting the generality of B20.2, 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.
- B20.3 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 B19.
- B20.3.1 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, Purchasing Division website at http://www.winnipeg.ca/matmgt/gen_cond.stm
- C0.2 A reference in the Tender to a section, clause or subclause with the prefix “**C**” designates a section, clause or subclause in the *General Conditions for Construction*.

PART D - SUPPLEMENTAL CONDITIONS

GENERAL

D1. GENERAL CONDITIONS

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

D2. FORM OF CONTRACT DOCUMENTS

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

D3. SCOPE OF WORK

- D3.1 The Work to be done under the Contract shall consist of sewer rehabilitation by installation of CIPP liners and related work.
- D3.2 The major components of the Work are as follows:
- (a) Mobilization to Site;
 - (b) Sewer cleaning and CCTV video inspection;
 - (c) Internal sewer preparation;
 - (d) Manhole installation, repairs and modifications;
 - (e) Flow control and bypass pumping;
 - (f) Full segment lining by CIPP; and
 - (g) Surface restoration, site clean-up and demobilization.

D4. SITE INVESTIGATION DUE DILIGENCE AND RISK

- D4.1 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.

D5. DEFINITIONS

D5.1 When used in this Tender:

- (a) "**ACI**" means American Concrete Institute.
- (b) "**ASCE**" means American Society of Civil Engineers.
- (c) "**ASTM**" means American Society for Testing and Materials.
- (d) "**AWWA**" means American Water Works Association.
- (e) "**CIPP**" means Cured In Place Pipe.
- (f) "**CIPP Supplier and Installer**" means only the Suppliers and Installers that were pre-approved under the City of Winnipeg "Request for Qualifications for Supply and Installation of Cured-in-Place-Pipe (CIPP), Bid Opportunity No. 403-2007" shall be approved for the 2009 sewer lining projects in the City of Winnipeg.
- (g) "**Condition State I**" means the host pipe condition as defined in ASCE Manual of Practice 145 for State I rigid pipelines.
- (h) "**Condition State II**" means the host pipe condition as defined in ASCE Manual of Practice 145 for State II rigid pipelines.
- (i) "**Condition State III**" means the host pipe condition as defined in ASCE Manual of Practice 145 for State III rigid pipelines.
- (j) "**CPKC**" is the acronym for Canadian Pacific Kansas City.
- (k) "**CPKC Railway**" refers to the Canadian Pacific Kansas City Railway Winnipeg Beach rail line.
- (l) "**CPT**" is the acronym for Chief Peguis Trail.
- (m) "**CPT ROW**" refers to the land slated for extension of the Chief Peguis Trail.
- (n) "**CSA**" means Canadian Standards Association.
- (o) "**External Point Repair (EPR)**" means a partial segment sewer repair installed by traditional excavation methods at an intermediate point between existing manholes.
- (p) "**Fully Deteriorated (FD)**" means the host pipe is not structurally sound and cannot support soil and live loads or is expected to reach this condition over the design life of the rehabilitated pipe. Liners for fully deteriorated pipes shall be designed to support all overburden loads, including: soil, live, external hydrostatic pressure and internal pressure.
- (q) "**Host Pipe**" means the existing sewer intended for rehabilitation through the installation and curing of a CIPP liner.
- (r) "**IGN**" means Information and Guidance Notes.
- (s) "**ISO**" means International Organization for Standardization.
- (t) "**MOP**" means Manual of Practice.
- (u) "**NWI**"-means Northwest Interceptor.
- (v) "**Parcel A**" refers to the land occupied by the current NEWPCC plant, bounded by Main Street to the east, the future extension of Chief Peguis Trail to the north, CPKC Railway Winnipeg Beach rail line to the west and the former CPKC Rail Bergen right of way to the south.
- (w) "**Parcel B**" refers to the land slated for expansion of the NEWPCC site, bounded by CPKC Railway Winnipeg Beach rail line to the east, the future extension of Chief Peguis Trail to the north, Ferrier Street to the west, and the former CP Bergen right of way to the south.
- (x) "**Parcel C**" refers to the land slated for expansion of the NEWPCC site, bounded by CPKC Railway Winnipeg Beach rail line to the east, Murray Avenue to the north, Ferrier Street to the west, and the future extension of Chief Peguis Trail to the south.

- (y) **“Partially Deteriorated (PD)”** means the host pipe can support the soil and surcharge loads throughout the design life of the rehabilitated pipe. Liners for partially deteriorated pipes shall be designed to account for internal and external hydrostatic pressure only.
- (z) **“Payment Certification”** means the Contract Administrator’s statement of the sums certified to be paid by the City to the Contractor with reference to its interim and final progress estimates and/or the Contractor’s Proper Invoice.
- (aa) **“Proper Invoice”** means the definition within the *Builders’ Liens Act*, R.S.M. 1987, c. B91 and any subsequent amendments thereto, and also includes the criteria to be included in an invoice, as set out in the Measurement and Payment provisions of the Contract.
- (bb) **“ROW”** is the acronym for Right-of-Way.
- (cc) **“RRBP”** is the acronym for Red River Biosolids Partners (an Aecon Water Infrastructure Inc. and Oscar Renda Contracting of Canada, Inc. and MWH Constructors Canada Ltd. Joint Venture).
- (dd) **“Structural Performance Grade (SPG)”** means a grade of 1 to 5 manually assigned to sewer and manhole assets to reflect the likelihood of failure.
- (ee) **“Supply Chain Disruption”** means an inability by the Contractor to obtain goods or services from third parties necessary to perform the Work of the Contract within the schedule specified therein, despite the Contractor making all reasonable commercial efforts to procure same. Contractors are advised that increased costs do not, in and of themselves, amount to a Supply Chain Disruption.
- (ff) **“Trenchless Point Repair (TPR)”** means a partial segment CIPP liner installed at an intermediate point between existing manholes.
- (gg) **“Supply Chain Disruption”** means an inability by the Contractor to obtain goods or services from third parties necessary to perform the Work of the Contract within the schedule specified therein, despite the Contractor making all reasonable commercial efforts to procure same. Contractors are advised that increased costs do not, in and of themselves, amount to a Supply Chain Disruption.
- (hh) **“The Builders’ Liens Act”** or **“the BLA”** means *The Builders’ Liens Act*, R.S.M. 1987, c. B91 and any subsequent amendments thereto.

D6. CONTRACT ADMINISTRATOR

- D6.1 The Contract Administrator is AECOM Canada ULC, represented by:
Mike Gaudreau
Project Engineer
Telephone No. 204-479-6762
Email Address mike.gaudreau@aecom.com
- D6.2 At the pre-construction meeting, Mr. Gaudreau will identify additional personnel representing the Contract Administrator and their respective roles and responsibilities for the Work.

D7. CONTRACTOR'S SUPERVISOR

- D7.1 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.

D8. ACCESSIBLE CUSTOMER SERVICE REQUIREMENTS

- D8.1 The Accessibility for Manitobans Act (AMA) imposes obligations on The City of Winnipeg to provide accessible customer service to all persons in accordance with the Customer Service Standard Regulation (“CSSR”) to ensure inclusive access and participation for all people who live, work or visit Winnipeg regardless of their abilities.

- D8.1.1 The Contractor agrees to comply with the accessible customer service obligations under the CSSR and further agrees that when providing the Goods or Services or otherwise acting on the City of Winnipeg's behalf, shall comply with all obligations under the AMA applicable to public sector bodies.
- D8.1.2 The accessible customer service obligations include, but are not limited to:
- (a) providing barrier-free access to goods and services;
 - (b) providing reasonable accommodations;
 - (c) reasonably accommodating assistive devices, support persons, and support animals;
 - (d) providing accessibility features e.g. ramps, wide aisles, accessible washrooms, power doors and elevators;
 - (e) inform the public when accessibility features are not available;
 - (f) providing a mechanism or process for receiving and responding to public feedback on the accessibility of all goods and services; and
 - (g) providing adequate training of staff and documentation of same.

D9. SUPPLIER CODE OF CONDUCT

- D9.1 The Contractor has reviewed and understands the City's Supplier Code of Conduct. This document is located at: <https://www.winnipeg.ca/media/4891>
- D9.2 The Contractor agrees to comply with the Supplier Code of Conduct as it may be amended or replaced from time to time. The Contractor is responsible for periodically checking the above link for updates to the Supplier Code of Conduct. Contract signature on Form A: Bid/Proposal from the Contractor signifies agreement to the Supplier Code of Conduct which comes into effect once the Contract starts.
- D9.3 If there is a conflict between the Contract and the Supplier Code of Conduct – the Contract will prevail.

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 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. SOCIAL PROCUREMENT

D12.1 Social Procurement Plan

- D12.1.1 The City of Winnipeg Council has directed that social procurement requirements are to be considered and evaluated on this project. This includes specific commitments to engage skilled labour including targets for employment of Indigenous peoples and other under-represented groups within the Manitoba market.
- D12.1.2 As a requirement for this project, the Contractor shall commit to a target percentage, greater than zero, to engage with skilled labour of Indigenous peoples and other under-represented groups within the Manitoba market.
- D12.1.3 The Contractor shall provide the Contract Administrator with a Social Procurement Plan in Appendix K within five (5) Business Days of a request by the Contract Administrator as per B14.8.

D12.2 Social Procurement Reporting

- D12.2.1 As a requirement for this project, the Contractor shall commit to reporting on Skilled, Semi-Skilled, and General Labour of Indigenous Peoples and other Under-Represented Groups within the Manitoba Market.
- D12.2.2 The Contractor shall keep detailed records of the total number of full-time and part-time employees that identify as Indigenous peoples and other under-represented groups within the Manitoba market using the Employee Voluntary Self Identification Survey in Appendix J. The Contractor shall report the total number of employee hours that are delivered by Indigenous peoples and other under-represented groups within the Manitoba market using the Skilled Labour Employee Hours Report in Appendix I.
- D12.2.3 The Contractor shall provide the Contract Administrator the Skilled Labour Employee Hours Report midway through the Contract period and upon completion of the Contract period.
- D12.2.4 This commitment is inclusive of subcontractor employment hours and the Contractor shall report on their subcontractor's employment hours.

D12.2.5 The information received from the Skilled Labour Employee Reports may be shared publicly by the City.

D12.3 See Definitions in Appendix H.

D13. AUTHORITY TO CARRY ON BUSINESS

D13.1 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.

D14. SAFE WORK PLAN

D14.1 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.

D14.2 The Safe Work Plan should be prepared and submitted in the format shown in the City's template which is available on the Information Connection page at The City of Winnipeg, Corporate Finance, Purchasing Division website at <http://www.winnipeg.ca/matmgt/Safety/default.stm>

D14.3 Notwithstanding B14.4 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.

D15. INSURANCE

D15.1 The Contractor shall provide and maintain the following insurance coverage:

- (a) Commercial general liability insurance in the amount of at least five million dollars (\$5,000,000.00) inclusive, such policy to provide coverage for bodily injury, personal injury, property damage and products and completed operations endorsement. Commercial general liability insurance also to include cross-liability clause, contractual liability, unlicensed equipment liability, non-owned automobile liability, and sudden and accidental pollution liability. Commercial general liability insurance to include the following additional insureds, Manitoba and its ministers, officers, employees and agents and The City of Winnipeg.
- (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 \$5,000,000 inclusive for loss or damage including personal injuries and death resulting from any one accident or occurrence.
- (c) Contractors Pollution Liability (CPL) insurance in the amount of no less than one million dollars (\$1,000,000) per occurrence and two million dollars (\$2,000,000) aggregate covering third party injury and property damage claims including clean-up costs and transported cargo as a result of pollution conditions arising from the Contractor's operations and completed operations. Such policy shall name the City as an additional insured and remain in place for a minimum of twelve (12) months following Total Performance.
- (d) An all risks installation floater carrying adequate limits to cover the cost of any materials and supplies forming part of the final installation.

- (e) Property insurance for all mobile offices, portable toilets, machinery and equipment used by the Contractor directly or indirectly in the performance of the Work on the Project that may be owned, rented, leased or borrowed.

D15.2 Deductibles shall be borne by the Contractor.

D15.3 All Subcontractors performing Work on the Project shall provide the Contractor with evidence of insurance as outlined in Section D15.1(a) and D15.1(b) above and be registered with Workers Compensation Board of Manitoba and maintain insurance and Workers Compensation coverage throughout the performance of the Work. The Contractor shall provide the Contract Administrator with evidence of the same prior to the commencement of any Work by the Subcontractor.

D15.4 All policies shall be taken out with insurers licensed to carry on business in the Province of Manitoba.

D15.5 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.

D15.6 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.

D16. CONTRACT SECURITY

D16.1 The Contractor shall provide and maintain the performance bond and the labour and material payment bond until the expiration of the warranty period in the form of:

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

D16.1.1 Bonds are available at:

- (a) Performance Bond <https://www.winnipeg.ca/media/4928/>
 - (i) Performance Bond – Schedule A - Form of Notice
<https://www.winnipeg.ca/media/4831/>
 - (ii) Performance Bond – Schedule B – Surety's Acknowledgement
<https://www.winnipeg.ca/media/4832/>
 - (iii) Performance Bond – Schedule C – Surety's Position
<https://www.winnipeg.ca/media/4833/>
- (b) Labour & Material Payment Bond <https://www.winnipeg.ca/media/4930/>
 - (i) L&M Bond – Schedule A – Notice of Claim
<https://www.winnipeg.ca/media/4834/>
 - (ii) L&M Bond – Schedule B – Acknowledgement of a Notice
<https://www.winnipeg.ca/media/4835/>
 - (iii) L&M Bond – Schedule C – Surety's Position
<https://www.winnipeg.ca/media/4836/>

D16.1.2 Where the contract security is a performance bond, it may be submitted in hard copy or digital format. If submitted in digital format the contract security must meet the following criteria:

- (a) the version submitted by the Contractor must have valid digital signatures and seals;

- (b) the version submitted by the Contractor must be verifiable by the City with respect to the totality and wholeness of the bond form, including: the content; all digital signatures and digital seals; with the surety company, or an approved verification service provider of the surety company.
- (c) the version submitted must be viewable, printable and storable in standard electronic file formats compatible with the City, and in a single file. Allowable formats include pdf.
- (d) the verification may be conducted by the City immediately or at any time during the life of the bond and at the discretion of the City with no requirement for passwords or fees.
- (e) the results of the verification must provide a clear, immediate and printable indication of pass or fail regarding D16.1(b).

D16.1.3 Digital bonds failing the verification process will not be considered to be valid and may be determined to be an event of default in accordance with C18.1. If a digital bond fails the verification process, the Contractor may provide a replacement bond (in hard copy or digital format) within seven (7) Calendar Days of the City's request or within such greater period of time as the City in their discretion, exercised reasonably, allows.

D16.1.4 Digital bonds passing the verification process will be treated as original and authentic.

D16.2 The Contractor shall provide the Contract Administrator identified in D6 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.

D16.3 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 D16.1(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.

D17. SUBCONTRACTOR LIST

D17.1 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.

D18. DETAILED WORK SCHEDULE

D18.1 The Contractor shall provide the Contract Administrator with a detailed work schedule at least two (2) Business Days prior to the commencement of any Work on the Site but in no event later than the date specified in C4.1 for the return of the executed Contract Documents if applicable.

D18.2 The detailed work schedule shall consist of the following:

- (a) a critical path method (C.P.M.) schedule for the Work;
- (b) a Gantt chart for the Work based on the C.P.M. schedule;

all acceptable to the Contract Administrator.

D18.3 Further to D18.2(a), the C.P.M. schedule shall clearly identify the start and completion dates of all of the following activities/tasks making up the Work as well as showing those activities/tasks on the critical path.

- (a) Commencement Date;

- (b) Mobilization;
- (c) Construction of access shafts;
- (d) Construction of bypass pumping system;
- (e) Construction of CIPP liners (by segment);
- (f) Construction of Manholes;
- (g) Cleanup and Restoration;
- (h) Substantial Performance;
- (i) Total Performance.

D18.4 Further to D18.2(b), the Gantt chart shall show the time on a weekly basis, required to carry out the Work of each trade, or specification division. The time shall be on the horizontal axis, and the type of trade shall be on the vertical axis.

D18.5 Further to D30 and C12, the Contractor shall provide an updated schedule on a monthly basis. Submission and acceptance of an updated schedule is required for Progress Payments.

D19. REQUIREMENTS FOR SITE ACCESSIBILITY PLAN

D19.1 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.

D19.2 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.

D19.3 The Accessibility Plan may also include figures, sketches, or drawings to demonstrate the proposed plan.

D19.4 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

D19.5 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.

- D19.6 Any changes to the Accessibility Plan must be approved by the Contract Administrator.
- D19.7 Upon request from the Contract Administrator, the Contractor shall provide records demonstrating that the site has been maintained.
- D19.8 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.
- D19.9 Third and subsequent Offences – A pay reduction will be issued in the amount of \$250.00 per instance and per day.

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) the Social Procurement Plan specified in D12;
 - (ii) evidence of authority to carry on business specified in D13;
 - (iii) evidence of the workers compensation coverage specified in C6.15;
 - (iv) the Safe Work Plan specified in D14;
 - (v) evidence of the insurance specified in D15;
 - (vi) the contract security specified in D16;
 - (vii) the Subcontractor list specified in D17;
 - (viii) the Requirements for Site Accessibility Plan specified in D19; and
 - (ix) the direct deposit application form specified in D30 the Site Development Plan in B1; and
 - (x) the Environmental Protection Plan in E12.1.3.
 - (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 Contractor shall commence the Work on the Site within seven (7) Working Days of receipt of the award letter.
- D20.3 The City intends to award this contract by December 1, 2025.
- D20.3.1 If the actual date of award is later than the intended date, the dates specified for Critical Stages, Substantial Performance, and Total Performance will be adjusted by the difference between the aforementioned intended and actual dates.

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 Contract.

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

- (a) Tender 447-2024: NEWPCC Piping Installation, Soil Remediation, and Site Compound Development.
- (b) RFP 659-2018B: Design Build of North End Sewage Treatment Plant (NEWPCC) Upgrade: Headworks Facilities.
- (c) Tender 721-2024: NEWPCC Primary Clarification Upgrade Project.
- (d) Tender 385-2023: NEWPCC DCS Migration - General Construction Package.
- (e) Tender 36-2024: North End Sewage Treatment Plant (NEWPCC) Digester Tank 9-14 Spiral Heat Exchanger Replacements UV Upgrade.
- (f) Tender 197-2022: NEWPCC Interim Phosphorus Removal.
- (g) Tender 116-2025: NEWPCC Land Drainage System.
- (h) RFP 779-2021B: Progressive DB North End Sewage Treatment Plant Upgrade: Biosolids Facilities.
- (i) Potential Future CPKC Temporary Construction Surface Crossing.
- (j) Manitoba Hydro Transformer Installation east of CPKC north of the Site.

D21.2.1 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.

D21.2.2 The Contractor shall be aware that the 400 mm HDPE 4710 DR 17 force main being installed by others at the CPKC utilidor crossing will be available for connection by January 5, 2026 at the latest.

D22. CRITICAL STAGES

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

- (a) Critical Stage 1- Completion of CIPP lining and decommissioning bypass pumping by March 15, 2025, when seasonal increases in wet weather flows are expected.

D23. SUBSTANTIAL PERFORMANCE

D23.1 The Contractor shall achieve Substantial Performance by May 1, 2026 to allow for the RFP 779-2021B - Progressive DB North End Sewage Treatment Plant Upgrade: Biosolids Facilities to undertake piling works in the vicinity of the Northwest Interceptor being rehabilitated by CIPP lining.

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 May 31, 2026.

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 1 – seven thousand eight hundred dollars (\$7,800);
- (b) Substantial Performance – thirteen thousand eight hundred dollars (\$13,800);
- (c) Total Performance – three thousand five hundred dollars (\$3,500)

D25.2 The amounts specified for liquidated damages in D25.1 are based on a genuine pre-estimate of the City's losses in the event that the Contractor does not achieve Critical Stages, Substantial Performance or Total Performance by the days fixed herein for same.

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

D26. SUPPLY CHAIN DISRUPTION SCHEDULE DELAYS

D26.1 The City acknowledges that the schedule for this Contract may be impacted by the Supply Chain Disruption. Commencement and progress of the Work shall be performed by the Contractor with due consideration to the delivery requirements and schedule identified in the Contract in close consultation with the Contract Administrator.

D26.2 If the Contractor is delayed in the performance of the Work by reason of the Supply Chain Disruption, 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 a Supply Chain Disruption will affect the start date. The Contractor shall provide sufficient evidence that the delay is directly related to a Supply Chain Disruption, including but not limited to ordering of Material or Goods, production and/or manufacturing schedules or availability of staff as appropriate.

D26.4 For any delay related to Supply Chain Disruption 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 Supply Chain Disruption, 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 Supply Chain

Disruption, 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 Supply Chain Disruption and in accordance with the above, as confirmed by the Contract Administrator, shall be documented in accordance with C7.

CONTROL OF WORK

D27. JOB MEETINGS

- D27.1 Regular weekly job meetings will be held at the Site. These meetings shall be attended by a minimum of one representative of the Contract Administrator, one representative of the City and one representative of the Contractor. Each representative shall be a responsible person capable of expressing the position of the Contract Administrator, the City and the Contractor respectively on any matter discussed at the meeting including the Work schedule and the need to make any revisions to the Work schedule. The progress of the Work will be reviewed at each of these meetings.
- D27.2 The Contract Administrator reserves the right to cancel any job meeting or call additional job meetings whenever they deem it necessary.

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

- (a) Further to C6.26, the Contractor shall be the Prime Contractor within the Limits of Construction Site as outlined on Drawing C001 – GENERAL ARRANGEMENT AND BY-PASS PUMPING PLAN and shall serve as and have the duties of the Prime Contractor in accordance with The Workplace Safety and Health Act (Manitoba).
- (b) March 31, 2026, shall be considered as the last date the Contractor shall be the Prime Contractor on the Site between Ferrier Street and the CPKC line, where the RFP 779-2021B - Progressive DB North End Sewage Treatment Plant Upgrade: Biosolids Facilities Contractor shall be the Prime Contractor as of April 1, 2026, within these limits.

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

- D29.1 Further to B14.4, 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 B14.4.

INVOICES & MEASUREMENT AND PAYMENT

D30. MEASUREMENT AND PAYMENT

- D30.1 Progress Payments will be subject to the submission and approval of an updated project schedule on a monthly basis.
- D30.2 C12.2 is deleted and replaced with the following:
- C12.2 The amounts to be paid by the City to the Contractor shall be as set out in the Payment Certification. In the event the Payment Certification does not align with the Contractor's Proper Invoice and payment by the City to the Contractor is not made, or not going to be made, for the invoiced amount within 28 Calendar Days of receipt of the Proper Invoice, the City will issue a notice of non-payment to the Contractor in accordance with the BLA.
- C12.2.1 For unit price Contracts, such sums shall be determined by the Contract Administrator upon the basis of the unit prices for the various classes of the Work stated on Form B: Prices. The total amount to be paid to the Contractor for the Work will be the amount arrived at by measuring the amount of each class of the Work listed on Form B: Prices

and performed in accordance with the Contract, and pricing the same, in accordance with the unit prices stated thereon.

C12.2.2 For lump sum Contracts, such sums shall be determined by the Contract Administrator upon the basis of the lump sum price stated on Form B: Prices, if applicable, but in any event the lump sum price broken down into the percentage completed for each portion of the Work, commonly referred to as detailed prices.

D30.3 C12.7 to C12.15 are deleted and replaced with the following:

- C12.7 By the seventh (7) Calendar Day after the end of each month, the Contract Administrator shall issue to the Contractor a progress estimate indicating its opinion of the quantity and value of Work performed during the previous month. The Contractor may use the progress estimate to form part of its Proper Invoice as support of the type and quantity of Work performed. In the event the Contractor chooses to produce its own documentation of the type and quantity of Work performed to form part of its Proper Invoice, the content shall be in accordance with C12.2 and the format of such documentation should follow that of a typical progress estimate, including all evidence and records of measurement that the Contract Administrator would require to certify payment. In either event the Contractor shall include such supporting documentation as part of its invoice.
- C12.8 If the Contractor agrees with the progress estimate provided by the Contract Administrator it should indicate that on its Proper Invoice. If the Contractor does not agree with the progress estimate provided by the Contract Administrator it should attempt to reconcile the discrepancy, which could result in a revised progress estimate to be provided by the Contract Administrator or a revised invoice by the Contractor, so that the progress estimate and the Proper Invoice align. In the event that the discrepancy is not reconciled then the Contractor should detail the items within the progress estimate that it disagrees with in order that the value on the Proper Invoice aligns with and is supported by the progress estimate with noted discrepancies.
- C12.7 After the end of each month, the Contractor shall submit a Proper Invoice including documentation that details the type, quantity and value of Work performed during the previous month, in accordance with C12.2.
- C12.8 The Contract Administrator will review the Proper Invoice and produce its Payment Certification accordingly.
- C12.9 Any payment made by the City to the Contractor on account of a Proper Invoice shall be less any holdback required to be made by The Builders' Liens Act, and such holdbacks or other amounts which the City is entitled to withhold pursuant to the Contract.
- C12.10 If in the Contractor's opinion the Work performed during the previous month is minimal or does not warrant an invoice, the Contractor is permitted to not submit an invoice on the condition that the Contractor advises the Contractor Administrator in writing.
- C12.11 Unless agreed to by the Contract Administrator, in writing, on an exception basis, the Contractor shall not submit invoices more frequently than monthly.
- C12.12 Any reference to payment submittals or payment processes in the NMS Sections of the Contract are deleted and replaced with the payment submittals and payment processes within Section C12 of the General Conditions, as amended by the Supplemental Conditions.

FINAL PAYMENT

- C12.13 The Contractor shall indicate on its invoice if it is the final invoice for Work performed under the Contract. Payment Certification, in response to receipt of the final Proper Invoice by the Contractor, shall be subject to the following conditions:
- (a) issuance by the Contract Administrator of a certificate of Total Performance;
 - (b) receipt by the City of a certificate from the Workers Compensation Board stating that full payment has been made to the Board with respect to all assessments owing.
- C12.14 Payment on account of the holdback made by the City pursuant to The Builders' Liens Act, shall be paid to the Contractor when the time for filing liens or trust claims has elapsed, unless the City is in receipt of a lien or trust claim.
- C12.15 Neither the issuance of a certificate of Total Performance nor the payment of the final Proper Invoice shall relieve the Contractor from their responsibilities either under C13 or as a result of any breach of the Contract by the Contractor including, but not limited to, defective or deficient Work appearing after Total Performance, nor shall it conclude or prejudice any of the powers of the Contract Administrator or the Chief Administrative Officer hereunder.
- C12.16 Subject to C12.17, acceptance by the Contractor of payment on account of the final Proper Invoice shall constitute a waiver and release by them of all claims against the City whether for payment for Work done, damages or otherwise arising out of the Contract.
- C12.17 If the Contractor disputes a Payment Certification related to a notice of non-payment by the City to the Contractor in accordance with the BLA, the Contractor may appeal the determination of the Contract Administrator to the Chief Administrative Officer as provided for in C21. If prior to the appeal being concluded, the Contractor gives a notice of adjudication to the City pursuant to the BLA, the appeal process will be discontinued.

INVOICES

D30.4 Further to C12, the Contractor:

- (a) shall submit invoices for Work performed during the previous calendar month in accordance with the instruction on the City's website at:
<https://www.winnipeg.ca/finance/corporate-accounts-payable.stm>; and
- (b) should copy the Contract Administrator on submission of its invoice.

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.

D31.2 Further to E6, no payment will be made for Cash Allowances other than as set out in E14.4.

WARRANTY

D32. WARRANTY

D32.1 Warranty is as stated in C13.

D32.1.1

DISPUTE RESOLUTION

D33. DISPUTE RESOLUTION

- D33.1 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 D33.
- D33.2 The entire text of C21.4 is deleted, and amended to read: "Intentionally Deleted"
- D33.3 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 Purchasing 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.
- D33.4 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.
- D33.4.1 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.
- D33.4.2 As these negotiations are not an adjudicative hearing, neither party may have legal counsel present during the negotiations.
- D33.4.3 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.
- D33.4.4 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 D33.4, 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.

INDEMNITY

D34. INDEMNITY

- D34.1 Indemnity shall be as stated in C17.

- D34.2 Notwithstanding C17.1, the Contractor shall save harmless and indemnify the City in the amount of twice the Contract Price or five million dollars (\$5,000,000), whichever is greater, against all costs, damages or expenses arising from actions, claims, demands and proceedings, by whomsoever brought, made or taken as a result of negligent acts or negligent omissions of the Contractor, their Subcontractors, employees or agents in the performance or purported performance of the Work, and more particularly from:
- (a) accidental injury to or death of any person whether retained by or in the employ of the contractor or not, arising directly or indirectly by reason of the performance of the Work, or by reason of any trespass on or damage to property;
 - (b) damage to any property owned in whole or in part by the City, or which the City by duty or custom is obliged, directly or indirectly, in any way or to any degree, to construct, repair or maintain;
 - (c) damage to, or trespass or encroachment upon, property owned by persons other than the City;
 - (d) any claim for lien or trust claim served upon the City pursuant to The Builders' Liens Act;
 - (e) failure to pay a Workers Compensation assessment, or Federal or Provincial taxes;
 - (f) unauthorized use of any design, device, material or process covered by letters patent, copyright, trademark or trade name in connection with the Work;
 - (g) inaccuracies in any information provided to the City by the Contractor.
- D34.3 Further to C17, The City shall save harmless and indemnify the Contractor in the amount of twice the Contract Price or five million dollars (\$5,000,000), whichever is greater, against all costs, damages or expenses arising from actions, claims, demands and proceedings, by whomsoever brought, made or taken as a result of negligent acts or negligent omissions of the City, their employees or agents in the performance of its obligation under the Contract.

THIRD PARTY AGREEMENTS

D35. FUNDING AND/OR CONTRIBUTION AGREEMENT OBLIGATIONS

- D35.1 Funding for the Work of the Contract is being provided to the City of Winnipeg by the Government of Manitoba and/or the Government of Canada and accordingly, as required by the applicable funding agreements, the following terms and conditions shall apply.
- D35.2 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.
- D35.3 Indemnification By Contractor
- D35.3.1 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.
- D35.3.2 The Contractor agrees that in no event will Canada or Manitoba, their respective officers, servants, employees or agents be held liable for any damages in contract, tort (including negligence) or otherwise, for:

- (a) any injury to any person, including, but not limited to, death, economic loss or infringement of rights;
- (b) any damage to or loss or destruction of property of any person; or
- (c) any obligation of any person, including, but not limited to, any obligation arising from a loan, capital lease or other long term obligation;

in relation to this Contract or the Work.

D35.4 Records Retention and Audits

D35.4.1 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.

D35.4.2 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 D35.4 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.

D35.5 Other Obligations

D35.5.1 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.

D35.5.2 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.

D35.5.3 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.

D35.5.4 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.

D35.5.5 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.

D35.5.6 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.

(See D17)

NORTHWEST INTERCEPTOR LINING BY CIPP

[illegible]

PART E - SPECIFICATIONS

GENERAL

E1. APPLICABLE SPECIFICATIONS AND DRAWINGS

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

<u>Drawing No.</u>	<u>Drawing Name/Title</u>
G-0000	Cover Sheet
G-0001	DRAWING INDEX, DESIGN NOTES, LEGEND & ABBREVIATIONS
C-0001	OVERALL SITE PLAN – GENERAL ARRANGEMENT AND BY-PASS PUMPING PLAN
C-1001	PARCEL 'B' – 1ST MH E OF FERRIE AVENUE TO 3RD MH 3 OF FERRIER AVENUE
C-1002	PARCEL 'A' AND 'B' – 3RD MH E OF FERRIER AVENUE
C-4001	DETAIL – STANDARD MANHOLE INSTALLATION
C-4002	DETAIL – BY-PASS PUMP CLOSURE
C-4003	DETAIL – CROSS OVER HEADER AND TEMPORARY PUMP SHAFT LAYOUT

<u>Appendix No.</u>	<u>Title</u>
A	LDS Alignment – Geotechnical Data Report and Test Holes
B	900 CPKC Rail Crossing – Geotechnical Data Report and Test Holes
C	1050 CPKC Rail Crossing – Geotechnical Data Report and Test Holes
D	NEWPCC Parcel B & C Phase II and Phase III ESA
E	Chief Peguis Trail ROW Stockpiles ESA and Remediation Plan
F	NEWPCC Archeological Find Procedure
G	Record Drawings
H	Social Procurement Definitions
I	Skilled Labour Employee Hours Report
J	Employee Voluntary Self Identification Survey
K	Social Procurement Plan
L	CIPP Design Curves

E2. SEWER INSPECTION DATA

- E2.1 Relevant documents, drawings and files/data are available by request to the Contract Administrator.
- E2.2 The following information will be released at the sole discretion of the City upon request to the Contract Administrator:

- (a) 2024 Sewer Condition Assessment Laser, SONAR, CCTV and NASCCO coding reports for asset ID S-MA70013760, S-MA70013759 and S-MA00000704.
- (b) 2024 Sewer Condition Assessment Manhole inspection data for asset ID S-MH00000586 and S-MH00000576. This file requires Panorama viewer.

E3. SOILS INVESTIGATION REPORT

- E3.1 Further to C3.1, a Geotechnical Data Report (GDR) was completed for the proposed LDS system, tendered under 116-2025, in August 2025. The GDR summarizes the testing and geotechnical conditions observed at the project site in 2024 and 2025 along the proposed LDS alignment and stormwater pond. This report includes geotechnical data collected at the project site and summary of anticipated subsurface conditions along the alignment. A copy of the GDR is included in Appendix A. Test Hole logs and material test results compiled during the design process are also provided within the GDR in Appendix A. The Test Hole logs and material test results are provided to supplement the Contractors evaluation of the Site conditions within the Work area. The information is considered accurate at the locations indicated and at the time of the investigation. However, considerable variations in soil conditions may exist between test holes and fluctuations in groundwater levels can be expected seasonally.
- E3.2 Further to C3.1, soils investigations and a Geotechnical Data Report (GDR) were undertaken for the proposed LDS system “900 CPKC Railway crossing”, tendered under 116-2025. Geotechnical Data is found in Appendix B, which notes conditions and design assumptions of the 900 CPKC Railway crossing as well as track and subsurface monitoring requirements. The GDR within Appendix B summarizes the testing and geotechnical conditions observed at the crossing site in 2023. Test Hole logs and material test results compiled during the design process are also provided within the GDR in Appendix B. The Test Hole logs and material test results are provided to supplement the Contractors evaluation of the Site conditions at the crossing site. The information is considered accurate at the locations indicated and at the time of the investigation. However, considerable variations in soil conditions may exist between test holes and fluctuations in groundwater levels can be expected seasonally.
- E3.3 Further to C3.1, soils investigations and a Geotechnical Data Report (GDR) were undertaken for the proposed LDS system “1050 CPKC Railway crossing”, tendered under 116-2025. Geotechnical Data is found in Appendix C, which notes conditions and design assumptions of the 1050 CPKC Railway crossing as well as track and subsurface monitoring requirements. The GDR in Appendix C summarizes the testing and geotechnical conditions observed at the crossing site in 2024 and 2025. Test Hole logs and material test results compiled during the design process are also provided within the GDR in Appendix C. The Test Hole logs and material test results are provided to supplement the Contractors evaluation of the Site conditions at the crossing site. The information is considered accurate at the locations indicated and at the time of the investigation. However, considerable variations in soil conditions may exist between test holes and fluctuations in groundwater levels can be expected seasonally.
- E3.4 Further to C3.1, a Phase 2 & 3 Environmental Site Assessment (ESA) on Parcel B, Phase 2 ESA on Parcel C was completed in 2023 and 2024. A copy of the completed ESA’s is included in Appendix D.
- E3.5 Further to C3.1, an Environmental Site Assessment (ESA) on the Stockpiles within the CPT ROW as shown on the Drawings was completed in 2025. A copy of the completed ESA is included in Appendix E.

GENERAL REQUIREMENTS

E4. OFFICE FACILITIES

- E4.1 The Contractor shall supply office facilities meeting the following requirements:
 - (a) the field office shall be for the exclusive use of the Contract Administrator;

- (b) the building shall be conveniently located near the Site of the Work at a location approved by the Contract Administrator;
- (c) the building shall have a minimum floor area of 25 m², a height of 2.4 m with two (2) windows for cross ventilation and a door entrance with a suitable lock;
- (d) the building shall be suitable for all weather use. It shall be equipped with an electric heater and air conditioner so that the room temperature can be maintained between 17 and 25 degrees Celsius;
- (e) the building shall be adequately lighted with fluorescent fixtures and have a minimum of three (3) wall outlets;
- (f) the building shall be furnished with one desk, one drafting table, one meeting table, one filing cabinet, and a minimum of 12 chairs;
- (g) a portable toilet shall be located near the field office building. The toilet shall have a locking door;
- (h) the field office building and the portable toilet shall be cleaned on a weekly basis the day prior to each Site meeting. The Contract Administrator may request additional cleaning when he/she deems it necessary; and
- (i) the building shall include a fire extinguisher and first aid kit.

E4.2 The office facilities will be provided from the date of the commencement of the Work to the date of Substantial Performance.

E4.3 Measurement and Payment

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

E5. MOBILIZATION AND DEMOBILIZATION PAYMENT

E5.1 Description

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

E5.2 Measurement and Payment

E5.2.1 Mobilization and Demobilization

- (a) Mobilization and demobilization will be measured on a lump sum basis and paid for at the Contract Lump Sum Price for "Mobilization and Demobilization". Payment for Mobilization and demobilization shall include all costs associated with mobilization and demobilization, site set up, and cleanup. Payment will be made on the following schedule:
 - (i) 25% payment of the Mobilization and Demobilization lump sum price will be paid once sewer cleaning and preparation crews arrive on site and commence with cleaning and sewer preparation works.
 - (ii) 50% payment of the Mobilization and Demobilization lump sum price will be paid once lining crews arrive on site and commence CIPP liner installations.
 - (iii) 100% of the Mobilization and Demobilization lump sum price will be paid subsequent to completion of the liner installation, liner repairs (if necessary), and site cleanup.

E6. HAZARDOUS MATERIALS

E6.1 If asbestos or other hazardous materials are encountered during the Work of the Contract, the Contractor shall stop all work and notify the Contract Administrator immediately. Removal of hazardous materials shall be dealt with by the City and the Contractor shall await further instruction by the Contract Administrator.

E7. SITE DEVELOPMENT PLAN

- E7.1 The Contractor shall provide the Contract Administrator with a Site Development Plan at least ten (10) Business Days prior to the commencement of any Work on the Site.
- (a) The Site Development Plan shall at a minimum include:
- (i) Work areas showing location of all required elements to complete the Work including fencing, gates, drainage and tree protection;
 - (ii) Material staging and laydown areas, including fencing and gates;
 - (iii) Staging areas for other Work elements;
 - (iv) Material Storage;
 - (v) Locations of shafts and excavations;
 - (vi) Office facility locations for Contract Administrator and Contractor; and
 - (vii) Temporary vehicle access/egress locations.
- E7.2 Measurement and Payment
- (a) The work specified herein will be considered incidental to the Work and will not be measured for payment. No additional payment will be made.

E8. SHOP DRAWINGS

- E8.1 Description
- (a) This Specification shall revise, amend, and supplement the requirements of CW 1110 of the City of Winnipeg's Standard Construction Specifications.
- (b) Submit all Shop Drawings in accordance with CW 1110 except as modified herein.
- (c) 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.
- E8.2 Schedule of Submittals
- (a) The Contractor shall provide a Schedule of Submittals and update it on a Monthly basis.
- (b) The Schedule of Submittals is required to show, at a minimum, the following:
- (i) A table listing all anticipated submittals required to complete the Work.
 - (ii) Identify each submittal by its submittal number in accordance with a numbering and tracking system.
 - (iii) Identify each submittal by its name or title.
 - (iv) Identify the estimated date of submission to the Contract Administrator.
 - (v) State the revision number and status for each submittal.
- E8.3 Contractors 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:
- (i) Field Measurements;
 - (ii) Field Construction Criteria; and
 - (iii) Catalogue numbers 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) Submit Shop Drawings well in advance of scheduled delivery date for associated equipment or material and in an orderly sequence so as to cause no delay in the Work.

- (e) The review time required will not alleviate the Contractor of his responsibility to deliver the completed Work within the required time frame and schedule. Planning for submittal reviews and the risk to the construction schedule remains the Contractor's sole responsibility.
- (f) Notify Contract Administrator, in writing at time of submission, of deviations from requirements of Contract Documents. Deviations are to be included on the Cover Page of the Submittal.
- (g) Responsibility for deviations in submission from requirements of Contract Documents is not relieved by Contract Administrator's review of submission unless Contract Administrator gives written acceptance of specified deviations.
- (h) Responsibility for errors and omissions in submission is not relieved by Contract Administrator's review of submittals.
- (i) 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 previous submission.
- (j) After Contract Administrator's review and return of copies, distribute copies to Subcontractors as appropriate.
- (k) 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.

E8.4 Shop Drawings

- (a) Original drawings are to be prepared by Contractor, Subcontractor, Supplier, Distributor, or Manufacturer, which illustrate appropriate portion of Work; showing fabrication, layout, setting or erection details as specified in appropriate sections.
- (b) Shop drawings for the following structural components shall bear the seal of a Registered Professional Engineer in the Province of Manitoba.
 - (i) Excavation and shoring, inclusive of dewatering methods, for all trenchless shafts, inclusive of the CPKC Rail crossings, and potential trench installation sections.
 - (ii) Reinforcing steel.
 - (iii) Pre-cast concrete structures.
 - (iv) Jacking equipment and pipe axial design calculations for the CPKC Rail crossings.
 - (v) Cast-in-place concrete structures.
- (c) Additional submittal requirements for each component of Work may be listed within the relevant specification section.

E8.5 Submission Requirements:

- (a) Schedule submissions at least ten (10) Calendar Days before dates reviewed submissions will be needed and allow for a ten (10) Calendar Day period for review by the Contract Administrator of each individual submission and re-submission, unless noted otherwise in the Contract Documents.
- (b) Submit one (1) digital copy (PDF) of shop drawings.
- (c) Accompany submissions with 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) Statement of deviation to Contract (if applicable).

- (viii) 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) Field dimensions, clearly 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 numbers.
 - (ix) Contractor's stamp, initialed or signed, certifying review of submission, verification of field measurements and compliance with Contract Documents.

E8.6 Incomplete Submittals:

- (a) Shop Drawings not meeting the requirements of CW 1100 or the requirements specified herein will be returned to the Contractor without review for resubmission.
- (b) Incomplete Shop Drawing information will be considered as stipulated deductions for the purposes of progress payment certificates.
- (c) When any of the following are missing, the submittal will be deemed incomplete:
 - (i) Contractor's review stamp, completed and signed.
 - (ii) Transmittal of Contractor's Submittal form, completed and signed.
 - (iii) Insufficient number of copies.
 - (iv) All requested information is not provided.
 - (v) Submittals missing Professional Engineer's seal and signature, where it is required.

E8.7 Resubmittals:

- (a) Clearly identify each correction or change made and include revision date.
- (b) No adjustment of the schedule outlined in D18 or Contract Price will be allowed due to delays in progress of Work caused by rejection and subsequent resubmittals.
- (c) Adjustments made on Shop Drawings by the Contract Administrator are not intended to change the Contract Price. If adjustments affect the value of the Work state such in writing to the Contract Administrator prior to proceeding with the Work.
- (d) Only two (2) reviews of Shop Drawings will be made by the Contract Administrator at no cost. Each additional review will be charged to the Contractor at the Contract Administrator's scheduled rates. The Contract Administrator's charges for the additional Work will be deducted from the payment to the Contractor.
- (e) Resubmittals will be subject to the same review time as E8.5.

E8.8 Measurement and Payment

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

E9. REQUESTS FOR INFORMATION

- E9.1 In the event that the Contractor or any Subcontractor involved in the Work, determines that some portion of the Drawings, Specifications, or other Contract documents requires clarification or interpretation by the Contract Administrator, the Contractor shall submit a Request for Information (RFI) Form in writing to the Contract Administrator.
- E9.2 Submission Procedure:
- (a) Submit RFI's to the Contract Administrator on the "Request for Information" in accordance with the link to the City's RFI form provided below. The Contract Administrator shall not respond to a RFI except as submitted on this form.
 - (b) [https://www.winnipeg.ca/infrastructure/templates/ExecutionControl/Request_for_Information_\(RFI\)_v2.0.docx](https://www.winnipeg.ca/infrastructure/templates/ExecutionControl/Request_for_Information_(RFI)_v2.0.docx)
 - (c) Number RFI's consecutively in one sequence in order submitted, in a numbering system established by the Contract Administrator.
 - (d) Submit one (1) distinct subject per RFI request. Do not combine unrelated items on one (1) form.
 - (e) Where RFI form does not have sufficient space, attach additional sheets as required.
 - (f) Submit with RFI form all necessary supporting documentation.
- E9.3 In the RFI, the Contractor shall clearly and concisely set forth:
- (a) The issue for which clarification or interpretation is sought and why a response is needed from the Contract Administrator; and
 - (b) An interpretation or understanding of the requirement along with reasons why such an understanding was reached.
- E9.4 The Contract Administrator will review all RFIs to determine whether they are valid RFIs. If it is determined that the document is not a valid RFI, it will be returned to the Contractor not having been reviewed with an explanation why it was deemed not valid.
- E9.5 An RFI response shall be issued within ten (10) Working Days of receipt of the request from the Contractor unless the Contract Administrator determines that a longer time is necessary to provide an adequate response. When the RFI submission is received by the Contract Administrator before noon, the review period commences on that Working Day. When the RFI submission is received by the Contract Administrator after noon, the review period commences on the subsequent Working Day.
- E9.6 If, at any time, the Contractor submits a large number of RFI's or the Contract Administrator considers the RFI to be of such complexity that the Contract Administrator cannot process the RFI's within ten (10) Working Days, the Contract Administrator shall confer with the Contractor within five (5) Working Days of receipt of such RFI's and the Contract Administrator and the Contractor will jointly prepare an estimate of the time necessary for processing same as well as an order of priority among the RFI's submitted. The Contractor shall accommodate such necessary time at no impact to the schedule and at no additional cost to the Contract.
- E9.7 If the Contractor submits a RFI on an activity with ten (10) Working Days or less of available time to the impacted activity on the current project schedule, the Contractor shall not be entitled to any time extension due to the time it takes the Contractor Administrator to respond to the request provided that the Contract Administrator responds within the ten (10) Working Days set forth above.
- E9.8 An RFI response from the Contract Administrator will not change any requirement of the Contract. In the event the Contractor believes that the RFI response from the Contract Administrator will cause a change to the requirements of the Contract, the Contractor shall within ten (10) Working Days give written notice to the Contract Administrator stating that the Contractor believes the RFI response will result in the Contract and the Contractor intends to submit a change request. Failure to give such written notice of fourteen (10) Working Days shall

waive the Contractor's right to seek additional time or cost under the requirements of the Contract.

E9.9 Measurement and Payment

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

E10. ENVIRONMENTAL PROTECTION

E10.1 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.

E10.2 The Contractor is advised that at least the following Acts, Regulations, and By-laws apply to the Work:

E10.2.1 Federal

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

E10.2.2 Provincial

- (a) The Dangerous Goods Handling and Transportation Act D12;
- (b) The Endangered Species Act E111;
- (c) The Environment Act c.E125;
- (d) The Fire Prevention Act F80;
- (e) The Manitoba Heritage Resources Act H39.1;
- (f) The Manitoba Noxious Weeds Act N110;
- (g) The Manitoba Nuisance Act N120;
- (h) The Public Health Act c.P210;
- (i) The Workplace Safety and Health Act W120; and
- (j) And current applicable associated regulations.

E10.2.3 Municipal

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

E10.3 The Contractor is advised that the following environmental protection measures apply to the Work.

E10.3.1 Materials Handling and Storage

- (a) Construction materials and debris shall be prevented from entering drainage pipes or channels.
- (b) Construction materials and debris shall also be prevented from accumulating on local roadways and sidewalks when tracked out of the Site by trucks hauling excavated materials.
- (c) The Contractor shall provide on-Site measures to mitigate the tracking of sediment off-Site and therefore reduce the amount of street cleaning required. These measures may take the form of a truck wheel wash (automated or manually operated) or other measures as approved by the Contract Administrator.

E10.3.2 Fuel Handling and Storage

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

E10.3.3 Waste Handling and Disposal

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

E10.3.4 Dangerous Goods/Hazardous Waste Handling and Disposal

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

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

E10.3.5

Emergency Response

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

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

E10.4 Vegetation

- (a) Herbicides and pesticides shall not be used adjacent to any surface watercourses.
- (b) All landowners adjacent to the area of application of herbicides or pesticides shall be notified prior to the Work.
- (c) Trees and shrubs shall not be felled into watercourses.

E10.5 Measurement and Payment

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

E11. HERITAGE RESOURCES PROTECTION

E11.1 The Contractor shall make all staff and all staff of Subcontractors aware of the requirements of the Heritage Resources Protection Plan noted in Appendix F.

E11.2 Prior to commencement of the Work the Contractor shall submit daily rates for delay claims in the event that a heritage resource is discovered resulting in a stop work order, rates shall be subject to the approval of the Contract Administrator.

E11.3 Measurement and Payment

- (a) In the event that a heritage resource is discovered resulting in a stop work order, compensation for delays shall be paid for under the cash allowance as defined in E14 and the following supplemental requirements shall apply:
 - (i) The Contractor shall reasonably re-deploy resources to limit cost and schedule impacts until the stop work order is resolved.

E12. ENVIRONMENTAL PROCEDURES

E12.1 General

E12.1.1 Definitions

- (a) Environmental Pollution and Damage: presence of chemical, physical, biological elements or agents which adversely affect human health and welfare; unfavourably alter ecological balances of importance to human life; affect other species of importance to humans; or degrade environment aesthetically, culturally and/or historically.
- (b) Environmental Protection: prevention/control of pollution and habitat or environment disruption during construction.

E12.1.2 Submittals

- (a) Provide submittals in accordance with E8.

E12.1.3 Environmental Protection Plan

- (a) Submit a Contractor developed Environmental Protection Plan (EPP) for review by the Contract Administrator prior to commencement of the Work.
- (b) EPP shall include comprehensive overview of known or potential environmental issues to be addressed on site during construction and shall comply with Section 4 of the Remediation Plan for Stockpiles within the Chief Peguis Trail right-of-way (CPT ROW), North End Winnipeg Pollution Control Center, Winnipeg, Manitoba, located in Appendix E.
- (c) Address topics at level of detail commensurate with environmental issue and required construction tasks.
- (d) The EPP shall be available for inspection by the City and regulatory agency personnel, and shall be posted at conspicuous locations throughout the Work Site.
- (e) Include in EPP:
 - (i) Names of contractor persons responsible for ensuring adherence to EPP.
 - (ii) Names and qualifications of persons responsible for manifesting hazardous waste to be removed from Site.
 - (iii) Names and qualifications of persons responsible for training site personnel.
 - (iv) Descriptions of environmental protection personnel training program.
 - (v) Include measures to reduce erosion of temporary and existing roadbeds by construction traffic, especially during wet weather.
 - ◆ Traffic Control Plan (TCP) to include measures to minimize amount of material transported onto paved public roads by vehicles or runoff, including truck wash stations if required or other measures or practices to prevent inadvertent spread of impacted soils during construction.
 - (vi) Submit a Contractor developed Site Work Plan (SWP) showing work areas for proposed activities in each portion of area and identifying areas of limited use or non-use.
 - ◆ SWP to include measures for marking limits of use areas and methods for protection of features to be preserved within authorized work areas.
 - ◆ Submit drawings indicating locations of proposed temporary excavations or embankments for haul roads, ditch crossings, material storage areas, structures, sanitary facilities, and stockpiles of excess or spoil materials including methods to control runoff and to contain materials on Site.
 - (vii) Submit a Contractor developed Spill Control Plan (SCP) including procedures, instructions, and reports to be used in event of unforeseen spill of regulated substance. Typically, the plan shall include:
 - ◆ The probability and severity of an adverse effect to health, property, or the environment, of a spill of sewage, chlorinated water, or hazardous materials, used, handled, or stored on the Work Site;
 - ◆ Spill/release notification and alerting procedures;
 - ◆ Spill containment, recovery, and clean-up procedures;
 - ◆ On Site spill/release clean-up materials, equipment, and locations;

- ◆ Names and telephone numbers of persons and organizations that may be contacted in the event of a potential environmental incident;
 - ◆ The Contractor shall maintain a readily available supply of spill prevention and emergency response equipment on the Work Site at all times in effective working condition and shall ensure that its personnel are adequately trained in its use to deal with environmental emergency situations;
 - ◆ In the event of an environmental emergency, the Contractor shall immediately notify the Contract Administrator. If the environmental emergency is a spill to land of a hazardous material in quantities equal to or greater than those listed in the Environmental Accident Reporting Regulation under the Dangerous Goods Handling and Transportation Act, the Contractor shall immediately notify the Provincial Emergency Reporting Line at 204 944-4888; and
 - ◆ The Contractor shall submit written incident reports to the Contract Administrator within 24 hours of any environmental incident or spill/release. The incident report shall identify the reporting organization, date, time, location, hazardous materials involved, source and persons or organizations notified. In addition, the report shall describe how the spill or release occurred, remedial action taken or planned, and actions necessary to prevent recurrence.
- (viii) Submit a Contractor developed Wastewater Management Plan (WMP) identifying methods and procedures for management and discharge of waste waters which are directly derived from construction activities, such as clean-up water, dewatering of ground water, decontamination water, and water collected in containment berms.

E12.1.4 Fires

- (a) Fire and burning of rubbish on site are not permitted.
- (b) Submit a Contractor developed Fire Safety Plan to the Contract Administrator.

E12.1.5 Contractor Environmental Representative

- (a) The Contractor shall designate a Contractor Environmental Representative (CER) to perform environmental monitoring and reporting throughout construction according to the EMP. The CER will interact with the project team throughout the Work.
- (b) The CER shall be adequately trained and experienced to perform the role according to the requirements of the EMP.
- (c) The CER shall represent the Contractor and information and instructions given to the CER by the Contract Administrator shall be deemed to have been given to the Contractor.
- (d) The Contractor shall not claim for delays for any the activities, findings or requirements set forth by the CER in the performance of their duties toward Environmental Monitoring nor those of the Contract Administrator as a result of inspections.
- (e) The Contractor is responsible for all costs relating to the CER for the entire duration of the project. This is not expected to be a full time role, but is needed for the Contractor to meet the Contractual and regulatory obligations related to environmental protection.

E12.1.6 Pre-Construction Procedures

- (a) Pre-Construction procedures shall be followed for wildlife species:
 - (i) The Site shall be cleared of natural vegetation and grubbed prior to construction outside of the breeding bird season for Winnipeg (April 30 – August 18) to prevent birds from establishing nests in vegetation on or above ground, to minimize adverse impacts on other wildlife species during the breeding season, and to avoid contravening wildlife protection legislation.

Vegetation regrowth must be controlled (e.g., weekly mowing of grassy areas) throughout the breeding bird nesting season to prevent bird nesting activities.

(b) Pre-Clearing – Wildlife Species with Activity Restrictions:

- (i) The CER shall locate, identify, classify and report wildlife species requiring activity restrictions discovered within and adjacent to the site during pre-clearing and the Contractor shall report to the Contract Administrator.
- (ii) The Contractor shall review, with the CER and Contract Administrator the wildlife species encountered and take reasonable measures, at Contractor's expense, to schedule activities outside of any timing restrictions and distance restrictions.
- (iii) The validity of the pre-clearing exercise is dependent on the time from when the pre-clearing is conducted to commencement of construction activity and thus must be coordinated with the Contractor Progress Schedule.
- (iv) The Contractor shall coordinate pre-clearing activities with the progress schedule, so that pre-clearing is conducted and coordinated with the Contractor's planned activities.
- (v) Bird Nests:
 - ◆ No bird nests shall be disturbed during the construction process.
 - ◆ If a bird nest is encountered in conflict with any construction activity, a mitigation strategy to avoid impact to the nest must be developed in consultation with the City and the Contract Administrator, Manitoba Environment and Climate and the federal Department of Environment and Climate Change Canada which may include postponing work within a no-activity buffer area until fledgling young have left the area, and/or the nest is no longer active.

E12.1.7 Site Preparation and Plant Protection

- (a) Protect trees and plants on site and adjacent properties in accordance with the City of Winnipeg By-laws, Standard Construction Specifications and the Work Drawings and Specifications.
- (b) Protect roots of designated trees to dripline during excavation and site grading to prevent disturbance or damage. Avoid unnecessary traffic, dumping and storage of materials over root zones.
- (c) Minimize vegetation stripping and grubbing where not necessary. Minimize soil removal and stockpiling.

E12.1.8 Drainage

- (a) Ensure that the ESCP measures are provided and that its recommendations are followed on site, in accordance with the site-specific SPPP, at all times during construction.
- (b) Provide temporary drainage and pumping as required to keep excavations on Site free of standing water.
- (c) Do not pump water containing excessive suspended materials into storm sewers, wetlands, waterways, surface drainage runs or adjacent properties.
- (d) Control disposal or runoff of water containing suspended materials or other harmful substances in accordance with the site-specific SPPP in compliance with the requirements of authorities having jurisdiction.

E12.1.9 Pollution Control

- (a) Maintain temporary erosion and pollution control features installed under this Contract in accordance with site-specific SPPP.
- (b) Control emissions from equipment and plant in accordance with local authorities' emission requirements. Check with local authorities for any environmental compliance requirements.

- (c) Cover or wet down dry materials and rubbish to prevent blowing dust and debris. Provide dust control for temporary roads. Use of anything other than water (e.g. tackifiers, chemical suppressants) shall be reviewed and only used if prior approved by the Contract Administrator. The use of oil for dust control is prohibited.
- (d) Tightly seal against corrosion and rust all containers of fuel, hazardous or toxic chemicals. Tanks for refueling should have secondary containment and be licensed with the Province of Manitoba.
- (e) Vehicle and equipment maintenance shall occur in designated areas. Contain and handle all maintenance fluids in accordance with the current National Fire Code of Canada. Spillage on the ground is prohibited.
- (f) Hoses and equipment for transfer of fuels and other hazardous fluids shall be in good condition, properly functioning with approved check valves and shall be attended by a qualified person for the duration of transfer of fuels or hazardous fluids. Do not fuel, lubricate or service equipment where spills may enter storm or sanitary sewer systems.
- (g) Greasy and oily rags and oil waste shall be contained in approved, sealed containers. Remove from the work Site and dispose of this material in accordance with the most stringent of applicable Federal, Provincial and Municipal Regulations.
- (h) Comply with any Local, Provincial or Federal Noise By-laws or Regulations.
- (i) Discharge of water containing any chlorine residual into open drainage channels, including the City's storm sewer system, is strictly prohibited.

E12.1.10 Notification

- (a) Contract Administrator will notify the Contractor in writing of observed noncompliance with Federal, Provincial environmental laws and regulations or Municipal environmental by-laws, permits, and other elements of site-specific plans.
- (b) Contractor after receipt of such notice, shall inform the Contract Administrator of proposed corrective action and take such action to obtain the approval of Contract Administrator.
 - (i) Take action only after receipt of written approval by the Contract Administrator.
- (c) Contract Administrator will issue stop order of Work until satisfactory corrective action has been taken.
- (d) No time extensions shall be granted, or equitable adjustments allowed to Contractor for such suspensions.

E12.2 Execution

E12.2.1 Cleaning

- (a) Clean in accordance with CW 1130.
- (b) Burying rubbish and waste materials on Site is not permitted.
- (c) Ensure public waterways, storm and sanitary sewers remain free of waste and volatile materials disposal.
- (d) Proceed with final cleaning upon completion and removal of surplus materials, rubbish, tools and equipment in accordance with CW 1130.
- (e) Waste Management: separate waste materials in accordance with CW 1130.

E12.3 Measurement and Payment

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

E13. SOIL REMEDIATION

E13.1 General

E13.1.1 Summary

- (a) The Contractor shall be aware of the potential of encountering Impacted Soils and is referred to Appendix D. The requirements of this section shall only be applicable if Impacted Soils are encountered.

E13.1.2 References

- (a) Applicable environmental and health and safety Laws and Regulations for Province of Manitoba and Municipal By-Laws.
- (b) CCME (Canadian Council of Ministers of the Environment) and applicable publications.
- (c) Manitoba Environment and Climate Change.
- (d) Remedial Plan application letter dated August 21, 2025, located in Appendix E.

E13.2 Environmental Procedures

E13.2.1 E12 Environmental Procedures.

E13.3 Submittals

E13.3.1 Provide submittals in accordance with E8.

E13.3.2 Provide Closeout Submittals:

- (a) Provide the following Closeout Submittals:
 - (i) Provide documentation of volume of contaminated soil that has been excavated from the Impacted Soil Stockpiles and transported to the landfill.
 - (ii) Provide documentation of volume of backfill from Suitable Material Stockpiles loaded, transported, placed and compacted within the excavation of the Impacted Soil Stockpiles, if any.
 - (iii) Provide documentation of required labour, equipment usage, fuel and/or power usage, environmental monitoring and inspection records, as required.

E13.4 Quality Assurance

E13.4.1 Qualifications:

- (a) Identify key members of project team including Project Manager and Site Supervisor. Define experience and qualifications of each key team members.

E13.4.2 Field Samples:

- (a) Impacted soil will be collected by the Contractor Administrator for potential laboratory analyses, with assistance by the Contractor, as requested by the Contractor Administrator.

E13.4.3 Survey:

- (a) The Contractor Administrator will perform surveys in collaboration with the Contractor as required.

E13.5 Site Conditions

E13.5.1 The approximate locations of known service or utility and buried objects are as indicated on the Drawings however it is the responsibility of the Contractor to establish location (horizontal position and depth) and extent of utility service lines in area of work before starting Work.

E13.5.2 Suspend operations whenever climatic conditions are unsatisfactory for excavation to conform with this Specification.

E13.5.3 After occurrence of heavy rains, do not operate equipment in designated areas until the material has dried sufficiently to prevent excessive rutting.

E13.6 Protection

- E13.6.1 Prevent damage to fencing, trees, landscaping, natural features, benchmarks, property pins, existing buildings, existing pavement, utility lines and Project Site appurtenances, which are to remain. Correct any damage caused by construction operations.
- E13.6.2 Provide protection to utilities, structures in areas shown on the Drawings.
- E13.6.3 Provide temporary fencing and gates as required to surround all excavations and work areas necessary at the Project Site to secure the work areas and protect the public.
- E13.6.4 Environmental protection measures shall be in accordance with the requirements specified in E10 and E12.
- E13.6.5 The release of all contact accumulated water, contact water, groundwater, and rinse water shall conform to the requirements outlined in E12.
- E13.6.6 Personnel Protection
- (a) Areas designated for cleanup under this Section involve soils containing petroleum hydrocarbon or heavy metals, which may be dangerous to human health and/or environment.
 - (b) When working with contaminated media, workers shall wear the required personal protective clothing and equipment that is acceptable for the Work.
 - (c) Supply sufficient quantities of designated protection equipment to fit all site personnel including the authorized visitors. Educate workers as to risks and train in safe work practices.
 - (d) No separate pay item shall apply to the work practice requirements, including personnel protection, of this Section. Costs shall be included in the applicable payment items to which this Section applies.
 - (e) Shall comply with Section 5 of the Remediation Plan for Stockpiles within the Chief Peguis Trail right-of-way (CPT ROW), North End Winnipeg Pollution Control Center, Winnipeg, Manitoba, located in Appendix E.

E13.7 Signs

- (a) Signage: Provide and erect signage at access points to the Project Site as required. Signage shall be visible from all sides of these areas. The English version of the sign shall read:
CAUTION: CONTAMINATED SOIL EXCAVATION AREA
AUTHORIZED PERSONNEL ONLY
- (b) Signage shall indicate all required personal protective equipment to enter the area.
- (c) Post a similar sign in any other language of that is applicable.
- (d) All lettering shall be black, not less than 100 mm high, with a 25 mm wide stroke, on a light-coloured background.

E13.8 Testing

- (a) If required, assist Contract Administrator in collection of soil samples from stockpiles. The Contract Administrator will collect confirmatory soil samples from the ground surface once stockpiles have been removed to verify all impacted soil has been excavated. Soil samples will be analyzed for metals and petroleum hydrocarbon fractions F2-F4.
- (b) The Contractor shall provide access to the Contract Administrator to collect confirmatory samples in the stockpile areas.

E13.9 Execution

E13.9.1 Application

- (a) Soil Management

- (i) Do not dilute contaminated soil with less contaminated soil.
- (b) Water Management
 - (i) Store, transport, and eliminate off site or treat residues generated by water treatment process in accordance with standards, requirements and regulations of Manitoba Environment and Climate Change.
- (c) Site Excavation
 - (i) Provide for access to the site to facilitate entrance and exit of equipment and trucks from the area during operation.
 - (ii) Repair and maintain the access road, as required, prior to use.
 - (iii) Provide and erect signage at access points to the site as required.
 - (iv) Excavation limits will be identified by the Contract Administrator.
 - (v) Strip vegetation from stockpiles prior to excavation.
 - (vi) Restore surface grades to match local drainage.

E13.10 Measurement and Payment

E13.10.1 Measurement and Payment shall be in accordance with E14 Cash Allowance if Impacted Soil are encountered.

E14. CASH ALLOWANCE FOR ADDITIONAL WORK

E14.1 Additional Work may be necessitated due to unforeseen circumstances that may arise during the course of the project due to:

- (a) Additions to the scope of Work by the Contract Administrator, beyond that defined herein.

E14.2 A cash allowance has been included on Form B: Prices.

E14.3 The City reserves the right to delete any or all of the Cash Allowance from the Contract if the Work intended to be covered by the Cash Allowance is not required, or if the Works intended are found to be more extensive than the provisional Cash Allowance.

E14.4 Cost of additional work shall be evaluated by the methods outlined in C7.4, and a Change Order prepared by the Contract Administrator. Cost of the Change Order will be paid on the Progress Estimate and deducted from the Cash Allowance. If the valuation of the authorized work exceeds the Value of the Cash Allowance, the Contract Value will be adjusted by the shortfall.

E14.5 Additional services and/or Work will not be initiated for:

- (a) Reasons of lack of performance or errors in execution.
- (b) Scheduling changes initiated by the City, where at least 24 hours' notice is given prior to the Contractors schedule time to be on Site.

E14.6 Should it be determined that additional material or services are required, the Contract Administrator shall approve the Work, prior to commencement of the additional Work.

E14.7 Material Mark-Up Factors in accordance with C7:

- (a) The base cost is to be the wholesale cost of the material, regardless of the Contractor or Subcontractor supplying the material.
- (b) In general, the party (Contractor or Subcontractor) supplying the material is the party that purchases the material from a supplier who does not perform any work on Site, unless otherwise determined by the Contract Administrator.
- (c) Where the Contractor is supplying the material, the mark-up on the material is limited to fifteen percent (15%).
- (d) Where the Contractor's immediate Subcontractor is supplying the material the total mark-up on the material including all Subcontractors and the Contractor is limited to twenty-five percent (25%).

- (i) The Subcontractor's mark-up on the material is limited to fifteen percent (15%);
 - (ii) The Contractor's mark-up on the material is limited to ten percent (10%).
- (e) A Third-Level Subcontractor is a Subcontractor of a Subcontractor of the Contractor.
 - (i) No Third-Level Subcontractors on this project are approved for additional mark-up.
 - (ii) In the event that a Third-Level Subcontractor is utilized, that is not approved for additional mark-up, the Contractor is responsible for coordinating the split of the maximum approved mark-up between the Contractor and Subcontractors.

E15. CONFINED SPACE ENTRY

E15.1 Description

- (a) This Specification shall outline minimum requirements for confined space operations through the course of the work.

E15.2 General

- E15.2.1 The Contractor shall be aware that Hydrogen Sulphide Gas is present in all underground structures connected to the City's sewer systems and has been known to accumulate in concentrations sufficient to cause serious harm or death to personnel who are not using adequate Personal Protective Equipment.
- E15.2.2 The Contractor's attention is drawn to the Province of Manitoba Workplace Safety and Health Act ("the Act"), and the Regulations and Guidelines there-under pertaining to Confined Space Entry Work and in particular the requirements for conducting hazard/risk assessments and providing personal protective equipment (PPE).
- E15.2.3 The Contractor is responsible for all safety and confined space support throughout the project.

E15.3 Methods

E15.3.1 Hazard Assessment

- (a) In conjunction with securing the site and obtaining underground clearances, the Contractor shall conduct a hazard assessment for each site requiring work within a sewer or manhole. The assessment shall identify and evaluate the hazards, including but not be limited to review of the following as it pertains to the work to be performed:
 - (i) nature of the defect;
 - (ii) location of the defect in the sewer/manhole;
 - (iii) structural condition and amount of debris in the remaining sewer/manhole;
 - (iv) condition of the manholes up and downstream of the required repair;
 - (v) atmospheric conditions in the manholes up and downstream of the required repair;
 - (vi) condition of adjacent downstream sewers; and,
 - (vii) flow in the sewer.
- (b) The hazard assessment shall be based on the Contractor's review of video for the sewer(s) and site inspection of the manholes, sewers and external conditions. Prior to the inspection, the Contractor shall conduct the necessary atmospheric monitoring of the affected manholes and sewers to establish acceptable entry conditions.
- (c) Based on the results of the hazard assessment the Contractor shall determine if they can perform the stabilization repairs in a safe manner. If the Contractor decides to proceed with the internal repairs, they shall prepare a Safe Work Plan complete with the necessary controls and procedures required to maintain a safe working environment for the repair. Otherwise, they shall notify the Contract Administrator and jointly the Contractor and the Contract Administrator shall review the nature of the work and determine alternative means of completing the work are required.

E15.3.2 Safe Work Plan

- (a) Subsequent to performing a hazard assessment the Contractor shall develop a safe work plan to address the potential hazards associated with each site. In addition to addressing the potential hazards the safe work plan shall address but not be limited to the following:
 - (i) guidelines for confined space entry work established by The Manitoba Workplace Safety and Health Act;
 - (ii) provision for emergency response;
 - (iii) training and duties for entry personnel;
 - (iv) rescue and emergency services;
 - (v) requirement for purging, ingesting, flushing and/or continuous ventilation to eliminate or control atmospheric hazards;
 - (vi) requirement for and provision of supplied air;
 - (vii) communication between members of the repair crew in the pipe and on the ground's surface;
 - (viii) current and forecasted weather conditions;
 - (ix) isolating the workspace by plugging of upstream sewers and monitoring of upstream flow levels;
 - (x) provision of back-up equipment;
 - (xi) method of ingress into the sewer; and,
 - (xii) method of egress out of the sewer – forward and backwards.
- (b) The Contractor shall not enter the sewer or manholes to begin the work until they have completed a hazard assessment and safe work plan for the specific repair and reviewed the plans with their designated safety officer for acceptance. The safe work plan procedures and practices shall conform to all federal, provincial and municipal codes, regulations and guidelines including Manitoba Workplace Safety and Health Regulations.

E15.3.3 Enter the Manhole and Sewer

- (a) The Contractor shall enter the manhole/sewer and complete the work in accordance with their safe work plan and requirements for the repair contained herein.
- (b) If at any time during the repair the attendant and/or Contractor believes he cannot safely perform the work they shall immediately stop the work and evacuate the sewer and manholes. The Contractor shall re-assess their safe work plan considering the reason for the work stoppage. The work shall only be resumed when the Contractor has deemed it safe to return by completing a re-assessment and safe work plan revision, where necessary.
- (c) If the Contractor deems the work cannot be safely completed by internal stabilization they shall notify the Contract Administrator and jointly the Contractor and the Contract Administrator shall review the nature of the defect and determine alternative means of completing the work are required.

E15.4 Measurement and Payment

E15.4.1 Confined Space Entry

- (a) Performing hazard assessments, preparing a Safe Work Plans, and confined space entry support for the Work and inspections will be considered incidental to the Work and will not be measured for payment. No separate payment will be made.

E16. FLOW CONTROL

E16.1 Description

- (a) This Specification shall cover flow control measures required for main line sewer and sewer services required to perform the work.

E16.2 Submittals

- (a) Submit a written flow control plan for all sewers to be lined for review by the Contract Administrator in accordance with E8, a minimum of fifteen (15) Business Days prior to undertaking the work. Flow bypass plans shall meet the requirements outlined herein.
- (b) The flow control plan will be used in the development of the Operational Shutdown Statement (OSS), which requires a minimum of 10 days prior to startup of bypass.

E16.3 Methods

- (a) Provide necessary flow control measures for the main line sewer and sewer services required to perform the work. Diversion of wastewater flow directly or indirectly to the environment, land drainage sewers, or storm relief sewers will not be allowed.
- (b) Maintain existing sewer flows from upstream sewers during construction around the sewers being lined. The anticipated flows through the site are as follows:
 - (i) Dry Weather Flow
 - (i) Average Dry Weather Flow: 181 l/s
 - (ii) Peak Dry Weather Flow: 242 l/s
 - (ii) Wet Weather Flow
 - (i) 1.11 year: 440 l/s
 - (ii) 2 year: 670 l/s
 - (iii) 5 year: 1,230 l/s
 - (iv) 10 year: 1,520 l/s
- (c) The Contractor shall provide a fully redundant bypass pumping and force main system, designed to accommodate the Peak Dry Weather flow of up to 242 l/s under a single pump and force main configuration. The force main shall be interconnected with valves immediately downstream of the pumps.
- (d) The total capacity of the flow by-pass system shall provide, at minimum, 620 l/s to capture unexpected high flow events.
- (e) Erection of scaffolding overtop of active roadways will not be permitted for the purposes of flow control.
- (f) Provide adequate temporary bypass pumping for live sewer services connected to the sewer being lined from when the service is blocked off until it is reinstated.
- (g) Provide security personnel for locations where by-pass pumping requires normally secure or locked doors and access areas to be left open or unlocked.
- (h) Ensure all flow control components and materials are removed from the sewer system upon completion of the work.
- (i) The Contractor shall put in place measures to prevent the spill of wastewater and styrene laden water from the CIPP installation process to the environment. When working near outfalls, the Contractor shall ensure flow bypass methods prevent upstream levels from exceeding overflow levels. Where plugs and other methods are employed to prevent overflows, the Contractor shall have contingency plans in place for unexpected flow increases and undertake 24 hr monitoring of upstream levels while flow control measures are in place.

E16.4 Design

- (a) Design bypass system for dry weather flow conditions as listed in E16.3(b). Provide automated 100% dry weather flow capacity. Redundant capacity is to be available to pump excess flows from run-off or other events at all times.
- (b) Pump control as shown on drawings:
 - (i) Pump 1 on: 2.5 m (elevation 220.72 m)
 - (ii) Pump 2 on: 2.8 m (elevation 221.02 m)
 - (iii) Pumps off: 1.7 m (elevation 220.22 m)

- (iv) High flow alarm: 3.1 m (elevation 221.32 m)
- (c) Storage in the NWI is permitted to a maximum elevation of 221.32 m coincident with the high flow alarm as measured at the pump shafts near Ferrier Road.
- (d) Increase pump speeds to the minimum total capacity of 620 l/s as required to maintain levels below the high flow alarm of 221.32 m.
- (e) Contractor shall be prepared to complete bypass pumping operations prior to March 15 of a given year.
- (f) The NWI is impacted by operations at the NEWPCC Wet Well, with typical diurnals varying from 217 to 218.5 m at the Wet Well. On-going Work at the NEWPCC facility may artificially increase levels up to 221.0 m. The Contractor shall consider this in selecting appropriate flow isolation plugs, or other, at the downstream end of the CIPP lining section.
- (g) Design system for continuous or near continuous flow, to prevent freezing, Alternately insulate pipeline.

E16.5 Flow Control Plans

- (a) The flow control plan shall include the following:
 - (i) A description and sketch detailing the arrangement of the proposed flow control measures.
 - (ii) A list of the key components required for the flow control measures, including but not limited to the following:
 - (i) Cofferdams
 - (ii) Piping or hoses (where required)
 - (iii) Pumps (where required)
 - (iii) Identify suction and discharge manholes.
 - (iv) A detailed procedure for installation and removal of the flow control measures.
 - (v) Monitoring plan (if required). Note: all plans shall include a 24 hr contact person.
 - (vi) Means and methods for dealing with excessive flows or wet weather events.
 - (vii) Means and methods for bypassing flows from apartment complexes and commercial buildings.
 - (viii) Supply of temporary washroom facilities where required.
- (b) The Contractor shall submit their flow control plans a minimum of fifteen (15) Business Days prior to commencement of the work to permit review by the Contract Administrator and the City.
- (c) The temporary flow by-pass shall be installed as shown on the Drawings, which consist of:
 - (i) Godwin HS 300 hydraulic submersible pumps, capable of:
 - (i) 310 l/s at 28 m of Total Dynamic Head at high speed
 - (ii) 200 l/s at 14 m of Total Dynamic Head at low speed
 - (b) 300 mm discharge piping to surface, transitioning to 300 mm HDPE 4710 DR17 for each pump system
 - (c) Cross over header installed in an insulated sea can to prevent freezing
 - (d) Valving to allow for isolation and cross over of pumped flows to allow for system maintenance
 - (e) Redundant 400 mm HDPE 4710 DR 17 force mains connecting to 400 mm HDPE 4710 DR 17 installed by others on west side of CPKC utilidor crossing
 - (i) The 400 mm HDPE 4710 DR 17 installed by others at the CPKC utilidor crossing will be pressure tested to 66 m (100 psi) measured at approximate ground elevation of 231.5 m
 - (f) Connect redundant 400 mm HDPE 4710 DR 17 force mains to 400 mm HDPE 4710 DR 17 installed by others on east side of CPKC utilidor crossing

- (g) Reduce to 300 mm HDPE 4710 DR 17 force mains at discharge manhole, discharge within an oversized HDPE 4710 DR 17 to allow for vacuum break within 1 m of ground elevation
- (h) Alternate temporary flow by-pass arrangements shall be submitted in accordance with B7.
- (d) The Contractor shall remove the temporary flow by-pass system upon successful completion of the CIPP lining, post-lining inspection and installation of the cast-in-place closures.
 - (i) The NWI can be expected to surcharge to an elevation of 220.0 m, commensurate with a 10 yr WWF event, when periods of WWF are expected beyond March 15, 2025.
 - (ii) Upon removal of the temporary flow by-pass system The Contractor shall fill and flush the 400 mm HDPE 4710 DR 17 force main installed by others at the utilidor crossing in accordance with CW 2125. Dewater vertical section of the 400 mm HDPE 4710 DR 17 line to a minimum of 3 m below grade, and re-install blind flanges upon completion.

E16.5.1 Mainline Sewer Flows

- (a) The Contractor shall ensure wet weather or excessive flow conditions can be pumped or otherwise accommodated through the work area. The Contractor shall schedule work requiring complete blockage of the sewer when the chances of wet weather events are minimized in accordance with E16.5.2.

E16.5.2 Weather

- (a) Review the Environment Canada weather forecast with the Contract Administrator before each day of liner installation.
- (b) Delay installation of liners and/or secure Works when the anticipated weather conditions are such that anticipated sewer flow will exceed the flow control measures provided.
- (c) The Contractor shall advise immediately of any weather-related delays.
- (d) The Contractor to schedule Work according to the weather; The City is not responsible for costs associated with weather related delays.

E16.6 Measurement and Payment

- (a) Flow control measures necessary for mainline sewers will be measured on a lump sum basis. Utilization of flow control shall constitute the deployment of pumps or hauling of sewage to bypass flows around a sewer being lined.
- (b) Payment for "Flow Control" shall include, but is not limited to the following:
 - (i) Supply of flow control plans, drawings, and submissions;
 - (ii) Investigative work to confirm flows, manhole, and pipe configurations;
 - (iii) Supply, installation, and removal of cofferdams, inflatable plugs and flow diversions;
 - (iv) Installation of access shafts, including locating and excavation of the existing pipe, locating existing utilities, cutting or coring the existing pipe opening and cast-in-place repair/closure, shoring, backfill;
 - (v) Supply, mobilization, monitoring, operation, and demobilization of pumps and hoses;
 - (vi) Hydrovac, hauling, and disposal of sewage where required for flow control purposes;
 - (vii) Any and all other plant and materials required to complete the work as specified herein and identified on reviewed flow control plans;
 - (viii) Removal of the bypass system, including filling, flushing, dewatering and blind flange installation of the segment of 400 mm HDPE 4710 DR 17 installed by others at the CPKC utilidor crossing.

E17. SEWER INSPECTIONS

E17.1 Description:

- (a) This specification describes the requirements for obtaining sewer measurements and CCTV inspections required to facilitate the specified rehabilitation work.
- (b) This specification amends and supplements specification CW 2145.

E17.2 Methods

E17.2.1 Verification of Existing Sewer Dimensions

- (a) Verify sewer dimensions and depths prior to design as follows:
 - (i) Measure the distance from the centre of the start manhole to centre of the finish manhole in accordance with E17.5.8.
 - (ii) Manhole invert depths (from the manhole rim) at the upstream, downstream, and any intermediate manhole.
 - (iii) Measure the diameter and cross-section of the sewer at the upstream and downstream manholes and at a minimum distance of 500 millimetres inside the sewer from each manhole.
 - (iv) Use calibrated callipers or other suitable measuring device capable of measuring accurately to +/- 1 mm to confirm cross section geometry at the following clock positions:
 - ◆ 12:00 to 6:00
 - ◆ 2:00 to 8:00
 - ◆ 3:00 to 9:00
 - ◆ 4:00 to 10:00
 - (v) Obtain additional measurements for large diameter (larger than 600 millimetres) and for non-circular sewers sufficient to define the cross section to meet the design objectives for the rehabilitation system being utilized, including but not limited to:
 - ◆ The length of the inside perimeter (circumference) of the sewer at the upstream and downstream ends.
 - ◆ Perform a pre-design inspection in accordance with E17.2.2(a) where specified in order to confirm the dimensions of the existing host pipe.
- (b) Estimate the remainder of the sewer dimensional requirements based on dimensional checks and the CCTV sewer inspection videos.
- (c) Submit host pipe lengths, depths, and dimensions to the Contract Administrator in conjunction with the design submission and pre-design inspection where required.

E17.2.2 Perform the following sewer inspections in accordance with CW 2145 and as outlined herein:

- (a) Pre-Design Inspection:
 - (i) CCTV, SONAR and Laser Profiling from 2024 Condition Assessment Program are available as indicated in E2. The City considers this information suitable for design.
 - (ii) As soon as practically possible, at latest once the flow by-pass is commissioned, the Contractor shall undertake inspection of the pipeline to confirm design:
 - ◆ Intent is to confirm the continuous or discontinuous (every 5 metres minimum) measurement of the height and width of large diameter and non-circular sewers along the entire length of the sewer.
 - ◆ The following methods may be employed: hand measurements, laser profiling and/or CCTV inspections involving hand measurements shall clearly show the dimensional measurements and distance of the

measurement from the upstream manhole on the video. Distances based on CCTV cable measurement will be permitted.

- ◆ Any change in sewer cross section shall be sufficiently dimensioned to permit design and post-lining assessment of liner dimensions. Where hand measurements are utilized, any changes in the sewers cross sectional shape shall be documented in accordance with E17.2.1.
- ◆ CCTV inspections involving templating shall clearly show the passage of the template through the sewer. For templated sewers the dimensions of the template shall be measured visibly on the CCTV inspection and dimensions submitted for review with the pre-design inspection.
- ◆ Laser profiling technology must have sufficient accuracy and replicability as per E17.6.3.
- ◆ No coding of the submission will be required.
- ◆ The Contractor shall advise the Contract Administrator of any condition that is contrary to the design conditions or assumptions made that may affect either long or short term performance of the liner prior to commencing lining.

(b) Pre-Lining Inspection:

- (i) Perform after sewer cleaning and preparation.
- (ii) The Pre-Lining Inspection shall confirm:
 - ◆ Necessary cleaning and pipe preparation work, including internal and external sewer repairs, have been satisfactorily completed.
- (iii) Provide the Pre-Lining CCTV inspection a minimum of five (5) Business Days prior to lining for approval to proceed with the liner installation.
- (iv) No coding of the submission will be required.

(c) Post-Lining Inspection:

- (i) Perform immediately following installation of the liner, after completion of sewer service reinstatement, and while flow control measures are in place.
- (ii) Perform Post-Lining Inspection where Regional Street lane closures are required within 24 hours of completing the installation of the liner.
- (iii) Intent is to confirm the adequacy of sewer service reinstatements and the fit and finish of the liner.
- (iv) Post-Lining inspection shall be submitted within fifteen (15) Business Days of completion of the liner installation. Substantial Performance and Total Performance for the project will not be granted prior to submission and acceptance of the Post-Lining inspection CCTV and associated reports.
- (v) Full coding required.

(d) Warranty Inspection:

- (i) Perform before expiration of the warranty period and final acceptance but not prior to 10 months after installation of the liner.
- (ii) Intention is to confirm the fit and finish of the liner, the need for any remedial work, and acceptance of any repair work performed during the warranty period.
- (iii) Undertake sewer cleaning in accordance with CW 2140 as required to obtain a satisfactory inspection.
- (iv) Full coding required.
- (v) Complete warranty inspection during CCTV during night time low flow dry weather periods.

E17.2.3 Submit all inspection videos to the Contractor Administrator for review in accordance with CW 2145 and as specified herein.

E17.3 Sewer Inspection Reports

- (a) Provide the Contract Administrator with the following sewer inspection reports prepared in accordance with CW 2145.
 - (i) Pre and post-lining inspection and reports before acceptance of the Work for Total Performance.
 - (ii) Warranty inspection report before Final Acceptance of the Work.

E17.4 Sewer Service Reports

- (a) The Contractor is responsible to determine the usage and status of all service connections connected to the sewer to be rehabilitated. Confirm exact location of all sewer services connected to the sewer being lined by dye testing, tracing, or other methods. Any additional investigative and/or remedial work resulting from improper identification of connected services shall be borne by the Contractor.
- (b) Submit a written Sewer Service Report for each liner location to the Contract Administrator a minimum of five (5) Business Days prior to installation of liners. Provide the following information for each sewer service including CB leads and utility manhole drains.
 - (i) Location of connection (chainage from upstream manhole and clock reference).
 - (ii) Diameter of sewer connection lateral.
 - (iii) Material type of sewer connection.
 - (iv) Observed condition of connection.
 - (v) Status of connection (active, inactive or unable to determine).
 - (vi) Property serviced including the address.
- (c) Sewer Service Reports shall be submitted in conjunction with the Pre-Lining CCTV Inspection submission.

E17.5 Amendments and Supplements to CW 2145:

E17.5.1 Replace Section 3.4 with:

- (a) Ensure each operator is fully trained and certified in all aspects of sewer inspections and capable of making accurate observations and recording all conditions that may be encountered in the sewers.
- (b) Inspection shall be performed by certified operators in accordance with the National Association of Sewer Service Companies (NASSCO) having attained and retained their "Pipeline Assessment Certification Program" (PACP) and "Manhole Assessment Certification Program" (MACP) certification.

E17.5.2 Replace Section 3.5 with:

- (a) Perform sewer condition coding in accordance with the requirements of the NASSCO PACP and to Version 7.0.0 of the manual, or greater in accordance with E17.5.1 of this specification, and with the following additional requirements.

Pipe Header Section	Field No.	Field Name	NASSCO Mandatory	REQUIRED (Yes / No)?
General Information	1	Surveyed By (<i>Operator / PACP User Name</i>)	Yes	Yes
	2	Certificate Number	Yes	Yes
	3	Reviewed By	No	No
	4	Reviewer Certificate Number	No	No
	5	Owner	No	Yes
	6	Customer	No	Yes
	7	P/O Number (<i>Contract No.</i>)	No	Yes
	8	Work Order	No	Yes
	9	Media Label	No	Yes

Pipe Header Section	Field No.	Field Name	NASSCO Mandatory	REQUIRED (Yes / No)?
	10	Project	No	Yes
	11	Date	Yes	Yes
	12	Time	No	Yes
	13	Sheet Number	Yes	Yes
	14	Weather	No	Yes
	15	Pre-Cleaning	Yes	Yes
	16	Date Cleaned	No	No
	17	Flow Control	No	No
	18	Purpose of Survey	No	Yes
	19	Direction of Survey	Yes	Yes
	20	Inspection Technology Used	No	Yes
	21	Inspection Status	Yes	Yes
	22	Consequence of Failure	No	No
	23	Pressure Value	No	No

Location	24	Drainage Area	No	Yes
	25	Pipe Segment Reference (Asset ID)	No	Yes
	26	Street (Name and Number)	Yes	Yes
	27	City	Yes	Yes
	28	Location Code	No	Yes
	29	Location Details	No	Yes

Pipe	30	Pipe Use	Yes	Yes
	31	Height (Diameter)	Yes	Yes
	32	Width	Yes	Yes
	33	Shape	Yes	Yes
	34	Material	Yes	Yes
	35	Lining Method	No	No
	36	Coating Method	No	No
	37	Pipe Joint Length	No	Yes
	38	Total Length (Steel Tape Measurement)	No	Yes
	39	Length Surveyed	No	Yes
	40	Year Constructed	No	No
	41	Year Renewed	No	No

Measurements	42	Upstream MH No.	Yes	Yes
	43	Upstream MH Rim to Invert	No	No
	44	Upstream MH Rim to Grade	No	Yes
	45	Upstream MH Grade to Invert	No	No
	46	Upstream MH Northing	No	No
	47	Upstream MH Easting	No	No

Pipe Header Section	Field No.	Field Name	NASSCO Mandatory	REQUIRED (Yes / No)?
	48	Upstream MH Elevation	No	No
	49	Downstream MH No.	Yes	Yes
	50	Downstream MH Rim to Invert	No	Yes
	51	Downstream MH Rim to Grade	No	No
	52	Downstream MH Grade to Invert	No	No
	53	Downstream MH Northing	No	No
	54	Downstream MH Easting	No	No
	55	Downstream MH Elevation	No	No
	56	MH Coordinate System	No	No
	57	MH Vertical Datum	No	No
	58	GPS Accuracy	No	No
	59	Additional Information	No	Yes*

Yes* - when required.

(b) Record place names in accordance with Clause 3.9.4 of the CW 2145.

E17.5.3 Further to CW 2145 Clause 3.7.4, operators failing to provide copies of their NASSCO certification and / or meet the accuracy requirements on two occasions will not be permitted to code on the remainder of the Contract until they can demonstrate to the Contract Administrator that they can code in accordance with the requirements of the NASSCO PACP and MACP version 7.0.0 of the manual or greater.

E17.5.4 Further to Section 3.13, a paper or "hard copy" of the sewer inspection reports is not required and the digital format should be submitted on a CD-R.

- (a) The Contractor shall maintain backup copies of all digital video and inspection data submissions for the duration of the Warranty Period as stated in C13.
- (b) The Contractor shall supply inspection data for review by the Contract Administrator on a DVD.
- (c) The Contractor shall supply separately one (1) set of archival grade digital versatile discs, DVD-R format in accordance with E17.5.7 to the City upon completion of the project.

E17.5.5 The Contract drawings are based on information contained in the City's GIS database. If the Contractor has trouble interpreting the drawings, or if they believe them to be wrong, the Contract Administrator shall be approached for assistance/clarification.

- (a) The Contractor shall assist the Contract Administrator in making any required measurements for the correction of errors found on the Drawings.

E17.5.6 Replace Clause 3.8.1 with:

- (a) Provide a minimum of 400 lines of resolution around the periphery of the picture for digital MPEG video playback.

E17.5.7 Replace Clause 3.11.1 with:

- (a) Capture the inspections in digital format in colour from the live video source on archival grade digital versatile discs, DVD-R format to the following minimum requirements. Adjust requirements as required to achieve 400 lines of resolution specified in Clause E17.5.5 of this Specification.
 - (i) XDVD MPEG-2 or MPEG-4 format (MPEG-4 preferred).
 - (ii) Picture Size: NTSC 720 x 480 @ 29.97 frames per second.
 - (iii) Data/Bit Rate: 6.0 M-bits/sec.

E17.5.8 Replace Clause 3.16.1 with:

- (a) Measure the distance between the centre of the start and finish manholes on the ground surface above the sewer to the nearest 0.01 of a metre using a survey grade ISO 16331-1:2012(E) approved outdoor laser distance measurer capable of attaining 150m minimum steel tape distance, or alternative measuring methods approved by the Contract Administrator, before beginning the sewer inspection. The centre of the manhole will be based on the centre of the manhole cover regardless of the manhole configuration. If bends are identified to exist within the sewer segment, the Contractor shall approximate the measurement on the ground surface using incremental distances to the approximate alignment of the sewer between the start and finish manholes, to the approval of the Contract Administrator's Site Inspector.

E17.5.9 Further to Clause 3.17.7.8:

- (a) Service connection tap observation distances must occur at the centre of the tap and the side periphery. To determine use and deficiencies of the tap, the camera must continue to travel, camera centred in the perspective view (to capture other observations), to stop perpendicular to the tap and pan so that the camera can view directly into the barrel of the lateral, to enable the inspector to apply modification and descriptor codes to the tap as per NASSCO PACP standards as necessary.

E17.5.10 Replace Clause 3.17.7.6, with:

- (a) Record the distance from the centre of the manhole to the cable calibration location at the start of the inspection and adjust the distance reading so that zero is at the centre of the start manhole. This distance is known as the cable calibration distance. The cable calibration location is the intersection point between the camera's widest horizontal viewing angle and the pipe's side periphery (03 or 09 o'clock) when the camera is level and looking forward.

E17.5.11 The sewer inspected distance shall represent the distance from the center of the start to the center of the end manhole, access or control structure unless incomplete as per Section 3.19.2.

E17.5.12 Further to Section 3.19.2, incomplete inspections for sewer and manhole inspections shall be communicated to the Contract Administrator, indicating the date and time of the attempt, reasoning, efforts and actions set out by Section 3.19.

E17.5.13 Further to Section 3.19.2, manholes identified being in a surcharged environment (standing water) or in imminent failure shall be communicated to the Contract Administrator, indicating the issues observed in the inspection.

E17.5.14 Further to Section 3.22.1, clear water infiltration observations shall be communicated to the Contract Administrator, providing asset number, location, date and time of the observation, description with attached screen captures to help facilitate Section 3.19.

E17.6 Sewer Inspection Equipment

E17.6.1 Notwithstanding CW 2145, CCTV equipment meet the following requirements:

- (a) In-Line sewer inspection equipment shall be comprised of a self-propelled track-mounted platform bearing multiple inspection sensors / technologies that can undertake simultaneous remote inspection in sewers of all diameter ranges.
- (b) In areas where a self-propelled track-mounted platform is not possible to use during the inspections, the inspections shall be performed using a float or skid system. The Contractor shall notify the Contract Administrator prior to the use of a float or skid platform, tethered by use of flusher hosing capable at distances stated in E17.6.2(b).

E17.6.2 Minimum requirements of the in-line inspection platform include:

- (a) Independently controlled drive tracks that enable the platform to manoeuvre around bends and climb over debris up to 300 mm in height.

- (b) Operable under partially or fully submerged flow conditions, for distances up to 500 m upstream or downstream from a single access point.
- (c) Operable in sewers of various cross-sections and constructed of standard pipe materials including brick, concrete, PVC, HDPE, and steel.
- (d) Tethered to facilitate extraction of the platform from the sewer, without causing damage to the sewer infrastructure, in the event the equipment fails or otherwise becomes uncontrollable within the sewer.
- (e) Equipped with sufficient high intensity lighting to illuminate the sewer for visual inspection.
- (f) Equipment shall be capable of continuously capturing digital video from first generation recordings with no frame loss, regardless of the progression of the inspection.
- (g) Equipment shall be used to acquire continuous digital video images of the sewer for the entire length being inspected.

E17.6.3 Three Dimensional (3D) LASER Scanning Inspection

- (a) "Three Dimensional (3D) Laser Scanning" is a technique to determine the surface profile of mainline pipes using a three dimensional (3D) laser on the entire circumference above fluid level of the pipe.
- (b) Three Dimensional (3D) LASER scanning equipment shall provide an accurate determination of pipe geometry (features and defects) above the fluid level.
- (c) Minimum equipment requirements are:
 - (i) The laser shall be Class 1; eye-safe for operator safety.
 - (ii) Surface measurements accurate to 5 mm at 3 m in 1200 mm pipes and larger.
 - (iii) Precision ovality / deflection detailed range laser measurement scans accurate to $\pm 1\%$.
 - (iv) Laser scans shall produce a point cloud with a maximum distance between points of 10 mm in the transverse direction and 40 mm in the longitudinal direction. The rate of scan shall not exceed 9 m / minute.
- (d) The provision of LASER scanning Internal Diameter and Deflection graphs will be used, as needed, to quantify internal pipe wall material loss/gain or deformation (ovality and deflection) at a given location. Pipe cross-sections obtained from high resolution scans will be used to provide quantitative information regarding internal pipe diameter, including ovality. Precision Scans are produced with multi-colour indication depicting deviations from as built conditions as well as localized material gain and/or loss.
- (e) LASER scanning shall be conducted on identified sewer pipe entities and be conducted from access point to access point. LASER equipment shall be moved through the pipeline on a transport vehicle capable of supporting the LASER inspection equipment above the water level.

E17.7 Video Coding

- (a) Perform sewer condition coding in accordance with the requirements of the National Association of Sewer Service Companies (NASSCO) "Pipeline Assessment Certification Program" (PACP) and to version 7.0.3 of the manual or better.
- (b) Perform condition coding using certified operators in accordance with the NASSCO PACP and MACP. Ensure each operator is fully trained in all aspects of sewer inspection and capable of making accurate observations and recording all conditions that may be encountered in the sewers.
- (c) Operators failing to provide copies of their NASSCO certification and / or failing to meet the accuracy requirements on two occasions will not be permitted to code on the remainder of the Contract until they can demonstrate to the Contract Administrator that they can code in

accordance with the requirements of the NASSCO PACP and MACP version 7.0.0 of the manual or greater.

- (d) Incorporate a suitable distance-reading device to measure the location of the equipment in the pipe, to an accuracy of $\pm 0.5\%$ of the length of the inspection.

E17.8 Measurement and Payment

E17.8.1 Verification of Sewer Dimensions:

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

E17.8.2 Sewer inspections will be measured and paid for in accordance with CW 2145 except as modified herein:

- (a) The total length of inspection to be paid will be the total length of sewer inspected to the satisfaction of the Contract Administrator.
 - (i) The maximum length to be paid will be the manhole to manhole sewer length provided by the Contractor.
 - (ii) Where partial or incomplete inspections are submitted, the length of sewer inspected will be the length recorded by the Contractor's calibrated inspection equipment or as determined by the Contract Administrator.

E17.8.3 Sewer Service Reports

- (a) Sewer service reports shall be considered incidental to the CIPP installation and will not be measured for payment. No separate payment will be made.
- (b) The Contractor is responsible for rectifying any damages caused or additional inspection work resulting from incomplete or erroneous Sewer Service Reports.

E17.8.4 Sewer Inspection Reports

- (a) Sewer inspection reports measured and paid for in accordance with CW 2145.

E18. SHAFTS, MANHOLE RECONSTRUCTION AND 1500 SEWER REPAIR

E18.1 Description

- (a) This Specification supplements and amends City of Winnipeg Standard Construction Specification CW 2130 Gravity Sewers and shall cover the installation of new shafts for temporary flow-bypass and 1500 sewer repair, and installation of the access shafts and new manholes, including shoring, excavation, cutting of pipe openings, reinforced concrete, waterstops, epoxy grout, manhole sections, backfill, and all associated appurtenances.

E18.2 Materials

E18.2.1 Excavation, Bedding, and Backfill

- (a) As per CW 2030 and Drawings.

E18.2.2 Formwork, Reinforcing Steel and Concrete

- (a) As per CW 2160 and Drawings.

E18.2.3 Concrete Mix Design

- (a) As per CW 2160 and Drawings.

E18.2.4 Extrudable Waterstop

- (a) Gun Grade extrudable polyurethane based waterstop, SikaSwell S2 by Sika, or Approved Equal in accordance with B7.

E18.2.5 Manhole

- (a) As per CW 2160 and Drawings.

E18.2.6 Geofoam

- (a) Provide Geofoam conforming to ASTM D6817
- (b) Compressive Resistance at 1%: between 75 kPa and 100 kPa
- (c) Compressive Resistance at 10%: between 200 kPa and 225 kPa

E18.3 Submittals

- (a) Shoring design in accordance with CW 2030.
- (b) Reinforcing steel Shop Drawings and concrete mix design in accordance with CW 2160.
- (c) Manhole drawings in accordance with CW 2160.
- (d) Method statement for proposed methods of connection.
- (e) Geofoam product and physical properties in accordance with ASTM D6817.

E18.4 Construction Methods

E18.4.1 As per CW 2160 and Drawings.

E18.4.2 Confirm locations and elevations of existing utilities prior to construction. Protect and support existing utilities in accordance with the requirements of the utility owner. Utilities may not be interrupted. Any proposed interruptions or temporary relocations will require permission of utility owner and Contract Administrator.

E18.4.3 Verify locations of existing 1500 mm interceptor pipe.

E18.4.4 The Contractor shall be aware of the potential of Impacted Soils as described in Appendix D. Impacted Soils shall be disposed of at a Licensed Waste Disposal Grounds. Refer to Section E13.

E18.5 Method of Measurement and Basis of Payment

E18.5.1 The installation of access shafts for the temporary flow by-pass will be considered incidental to "Flow Control". No additional measurement or payment will be made.

E18.5.2 Repair of the 1500 interceptor at the access shafts for the temporary flow by-pass will be considered incidental to "Flow Control". No additional measurement or payment will be made.

E18.5.3 The installation of access shafts for CIPP lining and installation of new manholes will be measured on a lump sum basis and paid for at the Contract Unit Price for "Manhole". The lump sum price shall include but not be limited to locating and excavating the existing pipe, locating existing utilities, cutting or coring the existing pipe opening, shoring, manhole sections, backfill, cast-in-place concrete works and performing all operations necessary to complete the Works as specified and as indicated on the Drawings including all items incidental to the Works.

- (a) MH B is considered optional, and the Contractor may bid this price as zero (0) dollars should they chose the shaft access at the MH B location is not required.
- (b) Any additional access shafts beyond those required for the Manholes listed in Form B: Prices will be considered incidental to the Work. No additional measurement or payment will be made.

E19. CURED-IN-PLACE-PIPE (CIPP)

E19.1 Description

- (a) This specification covers the supply and installation of full segment and partial full segment (blind shot) rehabilitation using cured-in-place pipe (CIPP).

E19.2 Definitions

- (a) Cured-in-place-pipe (CIPP) means trenchless sewer rehabilitation by installing a resin-felt composite structure which when cured will form a continuous-close fit liner within an existing sewer.
- (b) Approved CIPP Suppliers and Installers means suppliers and installers pre-approved under City of Winnipeg "Request for Qualifications for the Supply and Installation of Cured in Pipe (CIPP)". A list of pre-approved CIPP suppliers and installers for 2010 is included in the Specifications.
- (c) Full segment CIPP means CIPP extending from manhole to manhole or manhole to node (wye or tee connection to another sewer).
- (d) Partial full segment CIPP means CIPP extending from a manhole to an intermediate point within the sewer and shall generally be longer than ten metres in length.
- (e) Non-Reinforced CIPP liners shall be considered any CIPP liner constructed from a non-reinforced felt.
- (f) Reinforced CIPP liners shall be considered any CIPP liner constructed from either a carbon fibre or glass fibre reinforced felt.

E19.3 Pre-Approved CIPP Suppliers, Installers, and Materials

- (a) Approved installers shall include:
 - (i) Insituform Technologies Limited
 - (ii) Capital Commercial Pipe Services
 - (iii) CIPP Corporation
- (b) Any other lining manufacturers or installers shall seek formal approval as an approved equal.

E19.4 Submittals

E19.4.1 Installation of CIPP liners shall not commence prior to submission and review of the submissions identified herein by the Contract Administrator.

E19.4.2 CIPP design curves are provided in Appendix L. The Contractor shall submit the selected design and minimum selected design thickness and other information below;

- (a) Name, manufacturer and product of the resin and felt tube proposed for each CIPP.
- (b) Means of liner installation and curing method (e.g. air/steam, water, air/UV).
- (c) CIPP material properties.
- (d) Host pipe measurements identified in E17.2.1, including the following:
 - (i) Sewer length
 - (ii) Host pipe dimensions
 - (iii) Sewer invert depths
 - (iv) Governing host pipe imperfections that impact design
- (e) Liner sizing. Identify under-sizing from the measured circumference and anticipated liner stretch to form a close fit with the host pipe.
- (f) Host pipe modifications to be made to accommodate the liner as designed, including chamber modifications or treatment to match the liner design.
- (g) Other information that may reasonably be required by the Contract Administrator to confirm the CIPP design proposed conforms to the specified requirements and design intent.

E19.4.3 Provide resin samples within five (5) Business Days of a request by the Contract Administrator. Samples shall be provided as follows:

- (a) Arrange for the manufacturer of the resin to forward a reference sample of each type of resin proposed for use on the works to a test laboratory designated by the Contract

Administrator to be used as a comparative reference sample for infrared spectrum testing.

- (b) When requested by the Contract Administrator, deliver a representative sample from each resin batch to be used on the project before adding the catalyst from the wet-out facility to a test laboratory designated by the Contract Administrator.
- (c) The Contract Administrator will arrange and pay for an infrared analysis of the samples, if required for the project.

E19.4.4 Submit a liner impregnation protocol that provides information on the following a minimum of five (5) Business Days prior to wet of out liners:

- (a) Resin impregnation method.
- (b) Designated location of the wet-out facility.
- (c) Documentation that the resin to be used has not exceeded its shelf life as recommended by the manufacturer of the resin.
- (d) Volume and weight of resin to be impregnated into each liner and repair section including the proposed excess allowance for polymerization and migration (typically 7% for inversion installs) into cracks and joints of the host pipe.
- (e) Resin calculations shall be provided for each liner greater than 600 in diameter or height.
- (f) Roller gap setting required to provide the final installed CIPP thickness based on the proposed volume of resin.

E19.4.5 Submit a liner installation protocol that provides information on the following a minimum of five (5) Business Days prior to installation of CIPP:

- (a) Proposed main line flow control arrangements in accordance with E16. Note, flow control plans may be submitted separate from the liner installation protocol.
- (b) Installation protocol complete with proposed equipment.
 - (i) Details of pre-liner installation, if utilized.
 - (ii) Liner installation specifics as per Clause 7.4 of ASTM F1216 for inversions, Clause 6.4 of ASTM F1743 for pull-in installations, and/or Clause 6.2 of ASTM F2019 for air inversion methods with reinforced tubes.
- (c) A full curing protocol, including
 - (i) Required curing heads and times as per Clause 7.6.3 of ASTM F1216 for inversions of non-reinforced tubes, Clause 6.6.3 of ASTM F1743 for pull-in installations, and/or Clause 6.6.3 or 6.7.3 of ASTM F2019 for steam and UV curing methods, respectively. Curing protocols shall provide specific direction on:
 - ◆ Recognized temperature for exothermic reaction.
 - ◆ Curing times or in the case of UV light cures, rate of travel of the ultraviolet light train assembly, pressures, temperature of the liner, and the amount and power of the lamps in operation.
 - ◆ Length of time to full cure after exotherm has occurred and recommended adjustments to curing time for complex heat sink or temperature variations that may occur during the curing period.
 - ◆ Cool down rates for hot water and steam cure methods.
 - ◆ Estimated length of time required to reinstate the culvert.
 - ◆ Method of styrene management to be employed.
- (d) Provide the maximum allowable axial and longitudinal tensile stress for the fabric tube and the arrangement for monitoring pull-in forces during installation if liner insertion is to be by pull-in methods.
- (e) Number and location of heat source monitor gauges.

- (f) Number and location of thermistors to be used for monitoring the temperature of the liner during the curing process.
- (g) Estimated length of time required to reinstate the main line sewer and sewer services.
- (h) Additional information may be required by the Contract Administrator for complex installations. This may include site setup details, over the hole wet-out procedures, and other information pertinent to the review and evaluation of the Contractors proposed construction methods.
- (i) Submission Requirements:
 - (i) Installation protocols.

E19.4.6 Submit a sampling protocol a minimum of five (5) Business Days prior to installation of the first CIPP liner. The protocol shall include:

- (a) Detailed procedure for preparing plate samples, including a sample plate sample preparation quality control form. The Contractor shall provide a filled out plate sample preparation form for each plate sample provided, signed off by the wet-out supervisor and project manager affirming the correct preparation of the samples. The form shall include the dimensions of the sample, direction of the circumferential fibres, and date of preparation, location of preparation.
- (b) Sampling procedures for plate samples, confined pipe samples.
- (c) Description of confined pipe forms to be utilised.
- (d) Procedure, complete with diagram for placement of heat sink (sand bags) for confined pipe samples.
- (e) Sizes for all samples to be obtained.
- (f) Liner repair products and procedures for direct cut samples.

E19.4.7 Submit a styrene management plan in accordance with E19.7.8(d) a minimum of five (5) Business Days prior to installation CIPP liners requiring styrene management. All styrene management plans shall include sufficient details on:

- (a) Regulatory compliance considerations for discharge based on the Contractor's proposed resin selection, curing method, and discharge location for steam condensate or cure water, first flush, etc.
- (b) The means, methods, and techniques employed to mitigate styrene levels to within acceptable limits for the site specific application, including:
 - (i) Resin selection to eliminate or mitigate styrene levels;
 - (ii) Cure considerations to mitigate excessive styrene volatilization;
 - (iii) Handling considerations, post cure to mitigate levels discharged to aquatic or other environments that may be deleteriously impacted by excessive styrene levels.

E19.4.8 Submit CIPP spot repair product and methodology for Lining the hose pipe through the access shafts and existing manholes.

E19.5 Design of CIPP Liners

E19.5.1 Design Responsibility

- (a) Designs are provided by the Contract Administrator using stated criteria and material properties in Appendix L. The Contractor shall review the designs as provided and confirm that the stated properties and design criteria are consistent with pipe parameters, condition, and pre-design inspection. Provide statement in writing that design has been reviewed.
- (b) The Contractor may submit alternate design in accordance with the requirements specified herein and in accordance with B7.

E19.5.2 Design Objectives

- (a) Maximizing the structural enhancement of the sewer by installing a close-fit CIPP.
- (b) Maximise the internal diameter of the rehabilitated sewer with as little impact on the hydraulic capacity of the sewer as possible.
- (c) Reducing infiltration and exfiltration.
- (d) Preventing root intrusion.
- (e) Providing sufficient chemical resistance to prevent further sewer pipe degradation related to the conveyance of sewage.
- (f) Minimizing sewer service disruption during rehabilitation.
- (g) Minimizing the time required to complete the sewer rehabilitation.
- (h) Minimizing disturbance to pavements and boulevards.
- (i) Minimizing disruption to vehicular and pedestrian traffic.
- (j) Minimizing the impact of construction on commercial, industrial, and institutional facilities.
- (k) Select a CIPP product and construction approach for rehabilitation with the intent towards maximizing the achievement of these design objectives.

E19.5.3 General

- (a) Chemical and mechanical properties of the liner based on the waste stream to establish acceptability based on 50 years or more of continuous exposure.
- (b) Size CIPP in accordance with the design objectives to provide a close-fit to the host pipe with no annulus except for the maximum allowable diametric shrinkage due to curing permitted in ASTM D5813.
- (c) Long-term values for flexural modulus of elasticity and flexural strength will be considered to be the projected value at 50 years of a continuous application of the design load based on the specific resin and felt composite as established by ASTM D2990 (or equivalent ISO or otherwise accepted testing method) based on an applied stress level of 25% of the yield strength of the liner for circular applications and representative stress levels for non-circular applications. A minimum test length of 10,000 hrs is required. The Contractor shall provide supporting long term test data conforming to ASTM D2990 for any resin and felt composites intended for use on the project.
- (d) The Contractor shall also provide short term test data on the modulus of elasticity and flexural strength of the in place composite structure conforming to ASTM D790 for any resin and felt composites intended for use on the project.
- (e) Final internal sewer dimensions (post lining) shall not be less than those identified on the Drawings.

E19.5.4 Minimum Loading Assumptions:

- (a) Unless otherwise specified, the groundwater table shall be assumed to be 2.0 m below the existing ground surface.
- (b) Calculate soil loads based on saturated soil unit weight of 18.85 kN/m^3 (1922 kg/m^3).
- (c) Design calculations shall consider both maximum and minimum soil cover scenarios for each liner. The governing load case shall govern the design.
- (d) The following live loads shall be included in the design:
 - (i) Sewers crossing beneath rail lines: Where identified, applied soil pressures from a Cooper E80 rail load shall be estimated and utilized in the design of the CIPP liner. Rail loads shall include a track allowance dead load of 297 kg/m . Applied rail loads at depth shall be calculated using the Boussinesq solution for distribution of soil stresses from surface point loads. Impact factors for rail loads shall be calculated in accordance with the AREMA Manual for Railway Engineering.

- (ii) All other sewers: The applied soil pressures from an AASHTO HS 25 design truck unless a higher or lower value is indicated in the contract specifications shall be estimated and utilized in the design of the CIPP liner. Applied soil pressures from AASHTO design truck loads shall be estimated in accordance with AASHTO LRFD Bridge Design Specifications, Seventh Edition (2014).
- (e) Unless otherwise specified, applied soil pressures at depth caused by superimposed surface loads shall be calculated using the Boussinesq solution for distribution of stresses from surface point loads.

E19.5.5 Circular Design

- (a) All final circular Design Submissions shall be based on ASCE MOP 145, based on the following design assumptions:
 - (i) Host pipe design condition per ASCE MOP 145 State III for each pipe segment as noted in E19.5.
 - (ii) Maximum Annular Gap (g) = 1 mm
 - (iii) Hinge rotational angle based on 2.54 mm initial crack size
 - (iv) ASCE standard criteria for flattening and intrusion, where imperfections are noted
 - (v) 5% long term deflection
- (b) The selection of CIPP minimum thicknesses for circular liners for Bidding Purposes shall be completed in accordance with the appropriate design equations provided in Appendix L. The designs provide thickness requirements based a range of long-term flexural strength and modulus values for the conditions noted in the design curves.
- (c) Minimum material properties:
 - (i) Material properties shall conform to the material requirements specified herein and fall within the range of material properties noted in Appendix L.
- (d) The Contractor shall confirm the design conditions stipulated with the design equations and advise the Contract Administrator of any conditions more adverse than those identified with the designs. If field conditions are found to be more adverse than those identified with the designs the Contract Administrator (designer) will provide new minimum thickness for the design conditions measured on site and the Contractor's stated declared values and processing allowances. Increases to the liner thickness based on the discovery of more adverse design conditions will be considered a Change in Work as defined by the General Conditions.

Similarly, should host pipe dimensions and conditions be found that are less severe than the Bid values, the Contractor may apply for a reduced liner thickness with the provisional of a suitable credit to the City, rationalized in the same manner as noted above as a Change in Work.

E19.5.6 Existing Sewer Design Conditions

- (a) The assessment of the liner system design conditions and site-specific repairs required to accommodate lining were based on the conditions observed from sewer inspections that were performed as part of the City of Winnipeg's Sewer Inspection Program. Refer to B1 regarding obtaining copies of the existing inspections.
- (b) The Contractor shall be aware the video inspections provided were completed by others. It is not known what level of cleaning was completed prior to completing video. The amount of sediment and debris present at the time of this Tender may not be the same. The Contractor shall be responsible to determine the actual amount of sediment and debris in the sewers included in this Work.
- (c) Observed sewer defects evident in the existing sewer inspection videos have been provided in E17.

E19.6 Materials

E19.6.1 Non-Reinforced CIPP Products

- (a) Non-Reinforced CIPP products shall conform to the requirements of ASTM F1216 and D5813.

E19.6.2 Reinforced CIPP Products

- (a) Reinforced CIPP products shall conform to the requirements of ASTM F2019 and D5813. Notwithstanding ASTM F2019, the fabric tube may be reinforced with either glass or carbon fibres, as required to achieve the desired short- and long-term material properties and may be installed via inversion methods.
- (b) Reinforced CIPP systems utilizing UV curing methods may be utilized.

E19.6.3 CIPP Spot Repairs

- (a) Provide CIPP Spot Repair products to line the host pipe through the access shafts and existing manholes.

E19.7 Construction Methods

E19.7.1 Verification of Existing Sewer Dimensions

- (a) Verify dimensional requirements of each sewer to be rehabilitated prior to manufacture of the CIPP tube in accordance with E17.2.1.

E19.7.2 Sewer Cleaning

- (a) Remove loose debris, solid debris, roots, and grease in accordance with CW 2140 in order to adequately prepare the sewer for lining.

E19.7.3 Sewer Preparation and Repairs Prior to Lining

- (a) Perform sewer preparation and repairs as indicated in the specification and drawings.
- (b) Complete the following internal host pipe.
 - (i) Fill in holes and patch deteriorated sections of the host sewer pipe wall.
 - (ii) Fill voids in the surrounding backfill flush with the inside surface of the sewer pipe.
 - (iii) Reshape host sewer pipe invert to the original dimension and cross section at locations where the invert has completely deteriorated.

E19.7.4 Manhole, and Catch Basin Modifications

- (a) Remove and replace manhole frames, covers, rungs and risers required to facilitate the CIPP installation in accordance CW 2130.

E19.7.5 Continuous Temperature Monitoring

- (a) The Contractor shall install the CIPP liners complete with a fibre optic thermal sensing cable (to be left in place) that is capable of continuously monitor curing temperatures along the entire length of CIPP liner for all installations noted below. The cable and recording equipment shall be capable of temperature readings every 450 mm in real time. Curing data logs shall be submitted to the Contract Administrator with the Quality Control records.
- (b) Continuous temperature monitoring shall be utilized on the following installations:
 - (i) Air/steam installations 900 mm and greater in diameter;
 - (ii) water installations 1200 mm and greater in diameter;
 - (iii) Non-circular installations, and/or
 - (iv) as specified in E19 and/or on the Drawings.

E19.7.6 Installation of CIPP

- (a) Install liners by inversion methods in accordance with ASTM F1216 or by pull-in methods in accordance with ASTM F1743 or ASTM F2019.
- (b) Full segment and partial full segment CIPP shall be cured by hot water, steam, or UV light sources.

- (c) Carry out workmanship in accordance with ASTM D5813.
- (d) Trim ends of CIPP neatly to fit flush with interior vertical surface and manhole benching and seal to make watertight.
- (e) Fill annular spaces where the CIPP does not make an adequate seal with the host pipe at manholes, termination points and sewer services due to broken or misaligned pipe with a resin-rich mixture compatible with the CIPP.
- (f) Provide CIPP end seals or other equivalent means of lining through the host pipe at shaft locations.

E19.7.7 Annulus Grouting

- (a) Complete annulus grouting where identified by the Contract Administrator during the Post Lining Video inspection.

E19.7.8 Styrene Management

- (a) Under no circumstances shall cure water or condensate containing styrene be discharged into a storm sewer or any other direct connection to surficial drainage courses or facilities.
- (b) The Contractor shall develop and implement a styrene management plan for each site that could reasonably be impacted by planned or inadvertent discharge of styrene into the land drainage system, based on the site specific conditions for the CIPP installation and boundary conditions at that site.
- (c) The Contractor shall submit styrene management plan(s) for each identified site in accordance with E19.4.7.
- (d) The Contractor's styrene management approach shall include one of the following methods of control:
 - (i) Use of styrene free resins;
 - (ii) Use of on-site treatment systems where hot water curing methods are utilized;
 - (iii) 100% condensate capture and off-site disposal to the WWS system; a maximum styrene disposal concentration of 2.5 ppm is allowed at the NEWPCC.
 - (iv) On-site monitoring to verify no residual styrene is discharged to the environment where UV curing methods are used.
- (e) The Contractor shall be responsible to undertake sufficient monitoring to confirm and demonstrate that discharge levels are consistent with the styrene management plan's stated discharge limit objectives. Provide a report on styrene monitoring results upon completion of liner installation.

E19.7.9 Quality Control Records

- (a) Maintain the following Quality Control records of the work and provide to the Contract Administrator after completion of the work.
 - (i) Summary of the resin impregnation process including:
 - ◆ Volume of resin supplied.
 - ◆ Excess quantity of resin added during the wet-out to account for polymerization and migration into the host pipe.
 - ◆ Roller gap setting.
 - ◆ Resin catalyst(s) used.
 - ◆ Time and location of the wet-out.
 - ◆ Means taken to store and transport the resin impregnated CIPP from the wet-out facility to the job site.
 - (ii) Means of curing liners.
 - (iii) Continuous log of pressure maintained in the liner during the curing period.

- (iv) Pulling force used to pull or winch CIPP into place in the host sewer and measured liner elongation.
- (v) Continuous log of temperature at boiler in and out and at all thermistors placed between the host pipe and the liner at all manholes during the initial cure, cure, and cool down periods.
- (vi) Where specified, the Contractor shall install the CIPP liners complete with a fibre optic thermal sensing cable (to be left in place) that is capable of continuously monitor curing temperatures along the entire length of CIPP liner. Curing data logs shall be submitted to the Contract Administrator with the Quality Control records.
- (vii) For UV cures, monitoring shall also include the rate of travel of the UV assembly and the amount of lamps in operation during the curing process.
- (viii) Continuous temperature monitoring logs.

E19.7.10 CIPP Samples for Quality Assurance Purposes

- (a) The Contractor shall provide the following samples from each CIPP liner:
 - (i) Plate sample in accordance with E19.7.10(i).
- (b) If it can be demonstrated that it is impractical to obtain confined test samples due to CIPP size and/or site specific conditions then results from test plate sample results modified in accordance with Clause E19.7.10(i)(vi) of this specification will be used to confirm flexural strength and flexural modulus.
- (c) Schedule the installation of liners for which confined pipe samples are impractical to obtain after a minimum of three (3) previous CIPP linings on the same project have been completed and confined pipe and test plate samples have been secured to provide collaborative testing. The Contract Administrator will coordinate and pay for CIPP sample testing to confirm the CIPP flexural strength, flexural modulus and thickness in accordance with the requirements of ASTM D5813, D790, and ASTM D3567.
- (d) Where plate sample test results are used for design reconciliation purposes, they will be reduced by the statistical difference between plate and pipe sample testing results on the project as described in E19.7.10(c). Where no statistical correlation can be found due to poor testing results or lack of comparison samples, a 15% reduction will be applied to both flexural strength and modulus results obtained from plate sample testing.
- (e) In larger sewer sizes where it is not possible to provide a full diameter confined test sample and upon the request of the Contract Administrator, the Contractor shall cut a sample directly from the installed CIPP liner in accordance with E19.7.10(j).
- (f) Where confined test samples cannot be obtained or where confined test samples forms do not match the inside dimensions of the host pipe the Contractor shall obtain and provide the Contract Administrator with pre and post lining measurements taken in accordance with Clause E17.2.1 of this specification to confirm in-place liner thickness.
- (g) The Contract Administrator will review CIPP liner thickness results taken from test plates or unconfined samples on a case-by-case basis.
- (h) All samples shall be labeled as follows:
 - (i) City of Winnipeg Tender Number
 - (ii) City of Winnipeg asset number
 - (iii) Date of installation
 - (iv) Street name
- (i) Test Plate Samples
 - (i) Produce and provide to the Contract Administrator test plate samples of each CIPP liner installed.

- (ii) Test plate samples shall be produced from a full thickness portion of the liner (where possible), shall contain the same resin and hardener ratios and volumes used in the CIPP liner wet-out. Ensure the test plate is clamped as close to the final installation thickness of the CIPP liner as possible.
 - (iii) For unreinforced liners the minimum dimension of test plate sample shall be 300 mm x 300 mm.
 - (iv) For reinforced liners the test plate sample shall be sized to accommodate a 32:1 span to depth (liner thickness) ratio. Circumferential reinforcing fibres shall be orientated in the long dimension of the test plate sample. Minimum dimensions for the test sample shall be as follows. Confirm the required test plate size for reinforced liners with the Contract Administrator prior to installation of the CIPP liner.
 - ◆ Width: 13 times the thickness of the liner
 - ◆ Length: 35 times the thickness of the liner
 - (v) Prepare test plate samples on-site from the actual CIPP and cure in the following manner:
 - ◆ in a clamped mold placed in the downtube or manhole for water-cured liners.
 - ◆ In a clamped mold placed in a container filled with uniformly distributed steam from the installation manhole for steam-cured liners.
 - (vi) Flexural strength and flexural modulus results obtained from test plates will be reduced, if necessary, by the maximum percentage difference of the confined pipe and test plate samples prepared from the same CIPP system for a minimum of three (3) previous CIPP linings of similar size on the same project.
- (j) Direct Samples
- (i) Where directed, the Contractor shall obtain a sample of the installed CIPP liner from within the host pipe.
 - (ii) Direct samples of the CIPP liner shall be a minimum of 300mm x 300mm for unreinforced liners.
 - (iii) For reinforced liners the sample shall be sized to accommodate a 32:1 span to depth (liner thickness) ratio. Circumferential reinforcing fibres shall be orientated in the long dimension of the sample. Minimum dimensions for the test sample shall be as follows. Confirm the required sample size for reinforced liners with the Contract Administrator prior to obtaining the sample.
 - ◆ Width: 13 times the thickness of the liner
 - ◆ Length: 35 times the thickness of the liner
 - (iv) Cut the test sample from a location where no defects were noted at the 10:00 o'clock or 2:00 o'clock position in circular sewers. Direct samples from reinforced liners shall be oriented with the long dimension vertically in the straightest portion of the sewer or as directed by the Contract Administrator. Confirm sampling locations with the Contract Administrator prior to work.
 - (v) For repairs up to 25 mm in thickness, grout the area where test sample was taken with a resin-rich repair product such as an epoxy based repair system that is compatible with the liner system and specifically designed for the nature, size and thickness of the patch being repaired to form a smooth watertight patch flush with liner.
 - ◆ For repairs over 25 mm in thickness, polymer modified cementitious grout compatible with the liner materials may be used.
 - (vi) Ensure repairs at direct sampling locations are captured during subsequent CCTV inspections.

E19.7.11 Infrared Spectroscopy

- (a) The Contract Administrator may arrange for testing to compare the infrared spectrum of the resin field samples supplied from the wet-out to the reference spectrum

generated from the resin sample provided by the resin manufacturer to verify installed material acceptability at no cost to the Contractor.

E19.7.12 Post Construction Design Review for Total Performance

- (a) The Contract Administrator will perform a post-construction design review to confirm that the completed CIPP meets the minimum structural resistance with full safety factor or load and resistance factors for ASCE MOP 145 design prior to issuance of Total Performance. The design review will utilize the measured values for flexural strength, flexural modulus, and CIPP thickness from the confined pipe sample testing, directly obtained samples, or the reduced strength/modulus values obtained from the test plate testing in circumstances where confined pipe samples are not able to be secured and will back calculate them to confirm that the equivalent structural resistance of the installation has been achieved.
- (b) CIPP stiffness and strength values will be further reduced to account for creep based on the creep reduction values recommended in the pre-qualification submissions to assess the suitability of the liner to meet the design requirements for the project. Any imperfections in the liner/host pipe interface shall be assessed in accordance with ASCE MOP 145 and the observed conditions to confirm acceptability of the installation.
- (c) The Contract Administrator will advise of any discrepancies between the constructed CIPP and the design requirements.
 - (i) Deficiencies in the physical testing results for CIPP liners will be reviewed by the Contract Administrator. The Contract Administrator will undertake efforts to reconcile the design based on the physical test results for the deficient liner, and accounting for the verified condition of the host pipe prior to lining, the CIPP installation conditions, and the long-term use of the sewer to assess whether the installed CIPP meets the specified design objective.
 - (ii) Defects in CIPP liners will be reviewed on a case by case basis by the Contract Administrator. The Contract Administrator will consult with the Contractor and taking into account the condition of the host pipe prior to lining, the CIPP installation conditions, and the long term use of the sewer to assess the structural and performance ramifications of the defects
- (d) The Contractor shall:
 - (i) Perform necessary remedial measures to confirm that a CIPP deemed as structurally deficient will comply with the design requirements stated herein such as confirmation of actual ovality, determination of a more representative groundwater elevation locally through monitoring, and supplemental strength testing and thickness measurements.
 - (ii) Repair sections of CIPP removed for supplemental testing by placing a full circumference internal point repair of the same thickness as the full segment liner over and extending 300 millimetres beyond each side of the cut section.
 - (iii) Install a supplemental CIPP of the required thickness to structurally enhance the installed CIPP if supplemental testing fails to confirm the CIPP will meet the stated design requirements of the Contract.
 - (iv) Review remedial action with the Contract Administrator prior to implementation.
 - (v) Perform further testing, monitoring and calculations and install structural enhancements at own cost.

E19.8 Measurement and Payment

E19.8.1 Verification of Existing Sewer and CIPP Dimensions

- (a) Verification of existing sewer and CIPP dimensions shall be considered incidental to the Work and will not be measured for payment. No separate payment will be made.

E19.8.2 Sewer Cleaning

- (a) Sewer cleaning will be measured and paid for in accordance with CW 2140.

- (b) Only one item of payment will be made for pre-lining cleaning.
- (c) Removal of intruding sewer services and solid debris cutting will be measured and paid for in accordance with CW 2140.
- (d) Grease and roots cutting will be measured on a unit basis and paid for at the Contract Unit Price for "Removal of Excessive Grease, and or Roots per Sewer Segment". Grease and root removal will be measured per sewer segment where work is undertaken, accepted, and measured by the Contract Administrator. Only one item of payment will be made for grease and root removal per sewer segment.
- (e) Where diameter changes have been identified mid-pipe, sewer cleaning for that asset will be paid at the Contract Rate listed in Form B "Sewer Cleaning" for the largest identified diameter of that asset.

E19.8.3 Sewer Preparation and Repairs Prior to Lining

- (a) Internal sewer pipe repairs will be considered incidental to the Work. No additional measurement or payment will be made.

E19.8.4 CIPP Installation

- (a) Liner installation will be measured on a length basis for each size and paid for at the Contract Unit Price for "Full Segment CIPP". Length to be paid for will be the total length of CIPP supplied and installed in accordance with this specification, accepted and measured by the Contract Administrator.
- (b) Full segment CIPP measurement will be made horizontally at grade, above the centreline of the pipe from centre to centre of manholes, inclusive of spot repairs through the shaft access and existing manholes.
- (c) 80% of the payment will be made upon satisfactory completion of the CIPP installation work. The remaining 20% of the payment will be made upon confirmation of the CIPP strength, delivery and acceptance of all required submissions, shop drawings, and reports, and rectification of all identified defects.
- (d) Where CIPP liners are improperly installed due to negligence on the part of the Contractor, payment for the CIPP liner will be withheld until the identified issues have been rectified.

E19.8.5 Quality Control Records

- (a) Preparation of quality control records shall be considered incidental to the CIPP installation and will not be measured for payment. No separate payment shall be made.

E19.8.6 Test Samples

- (a) All work and materials required for the preparation, recovery, and repair of CIPP test samples shall be considered incidental to the CIPP installation and will not be measured for payment. No separate payment shall be made.

E19.8.7 Continuous Temperature Monitoring

- (a) All work and materials required for the supply, preparation, installation, and operation of continuous temperature monitoring apparatus shall be considered incidental to the CIPP installation and will not be measured for payment. No separate payment shall be made.

E19.8.8 Styrene Management

- (a) All work and materials required for the management of styrene will be considered incidental to the CIPP installation and will not be measured for payment. No separate payment shall be made.

E20. WATER SUPPLY

- E20.1 Further to Section 3.14 of CW 2140 and Section 3.7 of CW 1120 of the General Requirements water supply for the Work may be taken from City of Winnipeg hydrants.
- E20.2 The Contractor shall make the following arrangements for hydrant turn on and turn off.
- (a) Contact City of Winnipeg Water Services Division (WSD) for hydrant turn on and turn off required between 0800 hours and 1500 hours Monday to Friday. Notice for turn on and turn off shall be provided on the previous business day.
 - (b) Contact Emergency Services Branch (986-2626) with a minimum of 2 hours notice for hydrant turn on and turn off required outside of the above hours.
 - (c) The Contractor shall wait at the hydrant from the requested turn on or turn off time until City staff arrives to turn on or turn off the hydrant.
- E20.3 Hydrants shall be considered to be “in the Contractor’s control” from the time the City has turned the hydrant on until the City has turned the hydrant off.
- E20.4 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.
- E20.5 If a hydrant or appurtenance is damaged due to freezing or improper turn on or turn off procedures while in the Contractor’s control, WSD will assess the damage and determine if WSD will repair the damage or if the Contractor will be responsible to repair the damage. Costs for repairs completed by WSD will be deducted from payments owing the Contractor. Repairs completed by the Contractor will be at the Contractor’s expense.
- E20.6 The Contractor shall provide a traffic ramp for hydrant connection hoses that cross roadways. The ramp shall be designed and constructed to not present a hazard to vehicles travelling over it and to ensure that no part of the hose is run over by a motor vehicle. Traffic ramps shall be satisfactory to the Contract Administrator.
- E20.7 Measurement and Payment
- (a) Charges incurred for the permits and water meters shall be paid for by the Contractor when the permit is taken out. The Contractor shall forward the invoice to the Contract Administrator for reimbursement. The billing for water usage sent to the Contractor shall be forwarded to the Contract Administrator for payment. The Bid Opportunity number shall be noted on each permit.
 - (b) Costs associated with heating and hoarding of hydrants during cold weather will be considered incidental to the Work and will not be measured for payment. No additional payment will be made.
 - (c) All other costs associated with sourcing construction water will be considered incidental to the Work and will not be measured for payment. No additional payment will be made.

E21. RESTORATION

- E21.1 Restore roadways to a condition equal to or better than existing condition.
- E21.2 All open areas shall be neatly graded to match existing grades without ponding. Finish grading, topsoil or seeding is not required.
- E21.3 Measurement and Payment
- E21.3.1 All work and materials required for the restoration will be considered incidental to the Work. No separate payment shall be made.