THE CITY OF WINNIPEG

TENDER

TENDER NO. 1005-2025

2025 SEWER RENEWALS BY CIPP LINING – CONTRACT 1

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PART B - BIDDING PROCEDURES

B1. CONTRACT TITLE

B1.1 2025 Sewer Renewals by CIPP Lining – Contract 1

B2. SUBMISSION DEADLINE

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

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

B3. SITE INVESTIGATION

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

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

B4. ENQUIRIES

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

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

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

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

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

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

B5. CONFIDENTIALITY

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

(a) was known to the Bidder before receipt hereof; or

(b) becomes publicly known other than through the Bidder; or

(c) is disclosed pursuant to the requirements of a governmental authority or judicial order.

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

B6. ADDENDA

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

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

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

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

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

B6.6 Notwithstanding B4, enquiries related to an Addendum may be directed to the Contract Administrator indicated in D4.

B7. SUBSTITUTES

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

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

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

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

(a) provide sufficient information and details to enable the Contract Administrator to determine the acceptability of the Plant, Material or method as either an approved equal or alternative;

(b) identify any and all changes required in the applicable Work, and all changes to any other Work, which would become necessary to accommodate the substitute;

(c) identify any anticipated cost or time savings that may be associated with the substitute;

(d) certify that, in the case of a request for approval as an approved equal, the substitute will fully perform the functions called for by the general design, be of equal or superior substance to that specified, is suited to the same use and capable of performing the same function as that specified and can be incorporated into the Work, strictly in accordance with the proposed work schedule and the dates specified in the Supplemental Conditions for Substantial Performance and Total Performance;

(e) certify that, in the case of a request for approval as an approved alternative, the substitute will adequately perform the functions called for by the general design, be similar in substance to that specified, is suited to the same use and capable of performing the same function as that specified and can be incorporated into the Work, strictly in accordance with the proposed work schedule and the dates specified in the Supplemental Conditions for Substantial Performance and Total Performance.

B7.5 The Contract Administrator, after assessing the request for approval of a substitute, may in their sole discretion grant approval for the use of a substitute as an “approved equal” or as an “approved alternative”, or may refuse to grant approval of the substitute.

B7.6 The Contract Administrator will provide a response in writing, at least two (2) Business Days prior to the Submission Deadline, to the Bidder who requested approval of the substitute.

B7.6.1 The Contract Administrator will issue an Addendum, disclosing the approved materials, equipment, methods and products to all potential Bidders. The Bidder requesting and obtaining the approval of a substitute shall be responsible for disseminating information regarding the approval to any person or persons they wish to inform.

B7.7 If the Contract Administrator approves a substitute as an “approved equal”, any Bidder may use the approved equal in place of the specified item.

B7.8 If the Contract Administrator approves a substitute as an “approved alternative”, any Bidder bidding that approved alternative may base their Total Bid Price upon the specified item but may also indicate an alternative price based upon the approved alternative. Such alternatives will be evaluated in accordance with B18.

B7.9 No later claim by the Contractor for an addition to the Total Bid Price because of any other changes in the Work necessitated by the use of an approved equal or an approved alternative will be considered.

B8. BID COMPONENTS

B8.1 The Bid shall consist of the following components:

(a) Form A: Bid/Proposal;

(b) Form B: Prices;

(c) Form G1: Bid Bond and Agreement to Bond.

B8.2 All components of the Bid shall be fully completed or provided, and submitted by the Bidder no l ater than the Submission Deadline, with all required entries made clearly and completely.

B8.3 The Bid shall be submitted electronically through MERX at www.merx.com.

B8.3.1 Bids will **only** be accepted electronically through MERX.

B8.4 Bidders are advised that inclusion of terms and conditions inconsistent with the Tender document, including the General Conditions, will be evaluated in accordance with B18.1(a).

B9. BID

B9.1 The Bidder shall complete Form A: Bid/Proposal, making all required entries.

B9.2 Paragraph 2 of Form A: Bid/Proposal shall be completed in accordance with the following requirements:

(a) if the Bidder is a sole proprietor carrying on business in their own name, their name shall be inserted;

(b) if the Bidder is a partnership, the full name of the partnership shall be inserted;

(c) if the Bidder is a corporation, the full name of the corporation shall be inserted;

(d) if the Bidder is carrying on business under a name other than their own, the business name and the name of every partner or corporation who is the owner of such business name shall be inserted.

B9.2.1 If a Bid is submitted jointly by two or more persons, each and all such persons shall identify themselves in accordance with B9.2.

B9.3 In Paragraph 3 of Form A: Bid/Proposal, the Bidder shall identify a contact person who is authorized to represent the Bidder for purposes of the Bid.

B9.4 Paragraph 13 of Form A: Bid/Proposal shall be signed in accordance with the following requirements:

(a) if the Bidder is a sole proprietor carrying on business in their own name, it shall be signed by the Bidder;

(b) if the Bidder is a partnership, it shall be signed by the partner or partners who have authority to sign for the partnership;

(c) if the Bidder is a corporation, it shall be signed by their duly authorized officer or officers;

(d) if the Bidder is carrying on business under a name other than their own, it shall be signed by the registered owner of the business name, or by the registered owner's authorized officials if the owner is a partnership or a corporation.

B9.4.1 The name and official capacity of all individuals signing Form A: Bid/Proposal should be entered below such signatures.

B9.5 If a Bid is submitted jointly by two or more persons, the word "Bidder" shall mean each and all such persons, and the undertakings, covenants and obligations of such joint Bidders in the Bid and the Contract, when awarded, shall be both joint and several.

B10. PRICES

B10.1 The Bidder shall state a price in Canadian funds for each item of the Work identified on Form B: Prices.

B10.1.1 Notwithstanding C12.2.3(c), prices on Form B: Prices shall not include the Manitoba Retail Sales Tax (MRST, also known as PST), which shall be extra where applicable.

B10.1.2 Prices stated on Form B: Prices shall not include any costs which may be incurred by the Contractor with respect to any applicable funding agreement obligations as outlined inC24. Any such costs shall be determined in accordance with C24.

B10.2 The quantities listed on Form B: Prices are to be considered approximate only. The City will use said quantities for the purpose of comparing Bids.

B10.3 The quantities for which payment will be made to the Contractor are to be determined by the Work actually performed and completed by the Contractor, to be measured as specified in the applicable Specifications.

B10.4 Payments to Non-Resident Contractors are subject to Non-Resident Withholding Tax pursuant to the Income Tax Act (Canada).

B10.5 The Bidder shall enter the Total Bid Price from Form B: Prices into the Total Bid Price field in MERX.

B10.5.1 Bidders are advised that the calculation indicated in B18.4 will prevail over the Total Bid Price entered in MERX.

B11. DISCLOSURE

B11.1 Various Persons provided information or services with respect to this Work. In the City's opinion, this relationship or association does not create a conflict of interest because of this full disclosure. Where applicable, additional material available as a result of contact with these Persons is listed below.

B11.2 The Persons are:

(a) N/A

B12. CONFLICT OF INTEREST AND GOOD FAITH

B12.1 Further to C3.3, Bidders, by responding to this Tender, declare that no Conflict of Interest currently exists, or is reasonably expected to exist in the future.

B12.2 Conflict of Interest means any situation or circumstance where a Bidder or employee of the Bidder proposed for the Work has:

(a) other commitments;

(b) relationships;

(c) financial interests; or

(d) involvement in ongoing litigation;

that could or would be seen to:

(i) exercise an improper influence over the objective, unbiased and impartial exercise of the independent judgment of the City with respect to the evaluation of Bids or award of the Contract; or

(ii) compromise, impair or be incompatible with the effective performance of a Bidder's obligations under the Contract;

(e) has contractual or other obligations to the City that could or would be seen to have been compromised or impaired as a result of their participation in the Tender process or the Work; or

(f) has knowledge of confidential information (other than confidential information disclosed by the City in the normal course of the Tender process) of strategic and/or material relevance to the Tender process or to the Work that is not available to other bidders and that could or would be seen to give that Bidder an unfair competitive advantage.

B12.3 In connection with their Bid, each entity identified in B12.2 shall:

(a) avoid any perceived, potential or actual Conflict of Interest in relation to the procurement process and the Work;

(b) upon discovering any perceived, potential or actual Conflict of Interest at any time during the Tender process, promptly disclose a detailed description of the Conflict of Interest to the City in a written statement to the Contract Administrator; and

(c) provide the City with the proposed means to avoid or mitigate, to the greatest extent practicable, any perceived, potential or actual Conflict of Interest and shall submit any additional information to the City that the City considers necessary to properly assess the perceived, potential or actual Conflict of Interest.

B12.4 Without limiting B12.3, the City may, in their sole discretion, waive any and all perceived, potential or actual Conflicts of Interest. The City's waiver may be based upon such terms and conditions as the City, in their sole discretion, requires to satisfy itself that the Conflict of Interest has been appropriately avoided or mitigated, including requiring the Bidder to put into place such policies, procedures, measures and other safeguards as may be required by and be acceptable to the City, in their sole discretion, to avoid or mitigate the impact of such Conflict of Interest.

B12.5 Without limiting B12.3, and in addition to all contractual or other rights or rights at law or in equity or legislation that may be available to the City, the City may, in their sole discretion:

(a) disqualify a Bidder that fails to disclose a perceived, potential or actual Conflict of Interest of the Bidder or any of their employees proposed for the Work;

(b) require the removal or replacement of any employees proposed for the Work that has a perceived, actual or potential Conflict of Interest that the City, in their sole discretion, determines cannot be avoided or mitigated;

(c) disqualify a Bidder or employees proposed for the Work that fails to comply with any requirements prescribed by the City pursuant to B12.4 to avoid or mitigate a Conflict of Interest; and

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

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

B13. QUALIFICATION

B13.1 The Bidder shall:

(a) undertake to be in good standing under The Corporations Act (Manitoba), or properly registered under The Business Names Registration Act (Manitoba), or otherwise properly registered, licensed or permitted by law to carry on business in Manitoba; and

(b) be financially capable of carrying out the terms of the Contract; and

(c) have all the necessary experience, capital, organization, and equipment to perform the Work in strict accordance with the terms and provisions of the Contract.

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

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

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

(a) have successfully carried out work similar in nature, scope and value to the Work; and

(b) be fully capable of performing the Work required to be in strict accordance with the terms and provisions of the Contract; and

(c) have a written workplace safety and health program if required pursuant to The Workplace Safety and Health Act (Manitoba);

(d) have completed the Accessible Customer Service online training required by the Accessibility for Manitobans Act (AMA) (see B13.5 and C6.19)

(e) upon request of the Contract Administrator, provide the Security Clearances in accordance with PART F - Security Clearances;

B13.4 Further to B13.3(c), the Bidder shall, within five (5) Business Days of a request by the Contract Administrator, provide proof satisfactory to the Contract Administrator that the Bidder/Subcontractor has a workplace safety and health program meeting the requirements of The Workplace Safety and Health Act (Manitoba), by providing:

(a) Written confirmation of a safety and health certification meeting SAFE Work Manitoba's SAFE Work Certified Standard (e.g., COR™ and SECOR™) in the form of:

(i) a copy of their valid Manitoba COR certificate and Letter of Good Standing (or Manitoba equivalency) as issued under the Certificate of Recognition (COR) Program administered by the Construction Safety Association of Manitoba or by the Manitoba Heavy Construction Association's WORKSAFELY™ COR™ Program; or

(ii) a copy of their valid Manitoba SECOR™ certificate and Letter of Good Standing (or Manitoba equivalency) as issued under the Small Employer Certificate of Recognition Program (SECOR™) administered by the Construction Safety Association of Manitoba or by the Manitoba Heavy Construction Association's WORKSAFELY™ COR™ Program; or

(b) a report or letter to that effect from an independent reviewer acceptable to the City. A list of acceptable reviewers and the review template are available at http://www.winnipeg.ca/matmgt/Safety/default.stm.

B13.5 Further to B13.3(d), the Bidder acknowledges that they and all Subcontractors have obtained training required by the Accessibility for Manitobans Act (AMA) available at https://accessibilitymb.ca/resources-events-and-training/online-training.html for anyone that may have any interaction with the public on behalf of the City of Winnipeg.

B13.6 The Bidder shall submit, within three (3) Business Days of a request by the Contract Administrator, proof satisfactory to the Contract Administrator of the qualifications of the Bidder and of any proposed Subcontractor.

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

B14. BID SECURITY

B14.1 The Bidder shall include in their Bid Submission bid security in the form of a digital bid bond, in the amount of at least ten percent (10%) of the Total Bid Price, and agreement to bond of a company registered to conduct the business of a surety in Manitoba, in Form G1: Bid Bond and Agreement to Bond, available: https://www.winnipeg.ca/media/4929/.

B14.2 Bid security shall be submitted in a digital format meeting the following criteria:

(a) The version submitted by the Bidder must have valid digital signatures and seals;

(b) The version submitted by the Bidder must be verifiable by the City with respect to the totality and wholeness of the bond form, including: the content; all digital signatures and digital seals; with the surety company, or an approved verification service provider of the surety company.

(c) The version submitted must be viewable, printable and storable in standard electronic file formats compatible with the City, and in a single file. Allowable formats include pdf.

(d) The verification may be conducted by the City immediately or at any time during the life of the bond and at the discretion of the City with no requirement for passwords or fees.

(e) The results of the verification must provide a clear, immediate and printable indication of pass or fail regarding B14.2(a).

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

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

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

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

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

B15. OPENING OF BIDS AND RELEASE OF INFORMATION

B15.1 Bids will not be opened publicly.

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

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

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

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

B16. IRREVOCABLE BID

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

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

B17. WITHDRAWAL OF BIDS

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

B18. EVALUATION OF BIDS

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

(a) compliance by the Bidder with the requirements of the Tender, or acceptable deviation therefrom (pass/fail);

(b) qualifications of the Bidder and the Subcontractors, if any, pursuant to B13 (pass/fail);

(c) Total Bid Price;

(d) economic analysis of any approved alternative pursuant to B7.

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

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

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

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

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

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

B19. AWARD OF CONTRACT

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

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

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

(a) the prices exceed the available City funds for the Work;

(b) the prices are materially in excess of the prices received for similar work in the past;

(c) the prices are materially in excess of the City's cost to perform the Work, or a significant portion thereof, with their own forces;

(d) only one Bid is received; or

(e) in the judgment of the Award Authority, the interests of the City would best be served by not awarding a Contract.

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

B19.4 Where an award of Contract is made by the City, the award shall be made to the qualified Bidder submitting the lowest evaluated responsive Bid, in accordance with B18.

B19.4.1 Following the award of contract, a Bidder will be provided with information related to the evaluation of their Bid upon written request to the Contract Administrator.

PART C - GENERAL CONDITIONS

C0. GENERAL CONDITIONS

C0.1 The *General Conditions for Construction* (Revision 2025-11-01) are applicable to the Work of the Contract.

C0.1.1 The *General Conditions for Construction* are available on the Information Connection page at The City of Winnipeg, Corporate Finance, Purchasing Division website at http://www.winnipeg.ca/matmgt/gen_cond.stm

C0.2 A reference in the Tender to a section, clause or subclause with the prefix "**C**" designates a section, clause or subclause in the *General Conditions for Construction*.

PART D - SUPPLEMENTAL CONDITIONS

GENERAL

D1. GENERAL CONDITIONS

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

D2. SCOPE OF WORK

D2.1 The Work to be done under the Contract shall consist of the rehabilitation of existing sewers by the installation of CIPP liners and related Work.

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

(a) Mobilization to the Site(s);

(b) Sewer cleaning and CCTV video inspection;

(c) Sewer repairs;

(d) Manhole modification and repairs necessary to facilitate the work;

(e) Flow control (sewers and sewer services);

(f) Full segment lining by CIPP;

(g) Surface restoration;

(h) Site cleanup, and

(i) Demobilization

D3. DEFINITIONS

D3.1 When used in this Tender:

(a) **"Acceptance Testing"** means testing completed on the installed product or prepared samples to confirm conformance with the project objectives and design requirements;

(b) **"ACI"** means American Concrete Institute;

(c) **"AMPP"** means Association for Materials Protection and Performance;

(d) **"ASTM"** means American Society for Testing and Materials;

(e) **"AWWA"** means American Water Works Association;;

(f) **"CIPP"** means Cured-In-Place Pipe;;

(g) **"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".;

(h) **"Combined Sewer (CS)"** means a sewer conveying both wastewater and surface runoff within or from a combined sewer district;

(i) **"CSA"** means Canadian Standards Association;

(j) **"Demonstration Testing"** means demonstrations and testing completed prior to commencement of the Work intended to demonstrate the Contractor's proposed methods will achieve the project objectives and design requirements for the installation;

(k) **"External Point Repair (EPR)"** means a partial segment sewer repair installed by traditional excavation methods at an intermediate point between existing manholes;.

(l) **"Fully Deteriorated (FD)"** means the host pipe is not structurally sound and cannot support soil and/or 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 external loads, including: soil, live, external hydrostatic pressure, and internal pressure;.

(m) **"Host Pipe"** means the existing sewer intended for rehabilitation by installation and curing of a CIPP liner;

(n) **"ICRI"** means International Concrete Repair Institute;

(o) **"IGN"** means Information and Guidance Notes;

(p) **"ISO"** means International Organization for Standardization;

(q) **"Land Drainage Sewer (LDS)"** means a sewer conveying primarily land drainage (surface runoff) flows;

(r) **"NACE"** means National Association of Corrosion Engineers;

(s) **"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 externally hydrostatic pressure only;

(t) **"Structural Performance Grade"** means a grade of 1 to 5 assigned to sewer and manhole assets to reflect the likelihood of failure;

(u) **"Trenchless Point Repair (TPR)"** means a partial segment CIPP liner installed at an intermediate point between existing manhole;

(v) **"Type Testing"** means product testing completed by the manufacturer, typically not as part of the Work, to confirm the product characteristics and suitability for use on the project;

(w) **"Wastewater Sewer (WWS)"** means a sewer primarily conveying wastewater flows (no significant surface runoff) in a separated sewer district.

D4. CONTRACT ADMINISTRATOR

D4.1 The Contract Administrator is Stantec Consulting Ltd., represented by:

Nathan Kehler, P. Eng.
Sr. Civil Engineer

Telephone No. 431-388-5986
Email Address nathan.kehler@stantec.com

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

D5. CONTRACTOR'S SUPERVISOR

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

D6. FURNISHING OF DOCUMENTS

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

SUBMISSIONS

D7. AUTHORITY TO CARRY ON BUSINESS

D7.1 The Contractor shall be in good standing under The Corporations Act (Manitoba), or properly registered under The Business Names Registration Act (Manitoba), or otherwise properly registered, licensed or permitted by law to carry on business in Manitoba, or if the Contractor does not carry on business in Manitoba, in the jurisdiction where the Contractor does carry on

business, throughout the term of the Contract, and shall provide the Contract Administrator with evidence thereof upon request.

D8. SAFE WORK PLAN

D8.1 The Contractor shall provide the Contract Administrator with a Safe Work Plan at least five (5) Business Days prior to the commencement of any Work on the Site.

D8.2 The Safe Work Plan should be prepared and submitted in the format shown in the City's template which is available on the Information Connection page at The City of Winnipeg, Corporate Finance, Purchasing Division website at http://www.winnipeg.ca/matmgt/Safety/default.stm

D8.3 Notwithstanding B13.4 at any time during the term of the Contract, the City may, at their sole discretion and acting reasonably, require an updated COR Certificate or Annual Letter of good Standing. A Contractor, who fails to provide a satisfactory COR Certificate or Annual Letter of good Standing, will not be permitted to continue to perform any Work.

D9. INSURANCE

D9.1 The Contractor shall provide and maintain the insurance coverage:

(a) commercial general liability insurance, in the amount of at least two million dollars ($2,000,000.00) inclusive, with The City of Winnipeg added as an additional insured, with a cross-liability clause, contractual liability, unlicensed motor vehicle liability (contractor's equipment), non-owned automobile liability and products and completed operations endorsement, to remain in place at all times during the performance of the Work and throughout the Warranty period;

(b) if applicable, Automobile Liability Insurance covering all motor vehicles, owned and operated and used or to be used by the Contractor directly or indirectly in the performance of the Work. The Limit of Liability shall not be less than $2,000,000 inclusive for loss or damage including personal injuries and death resulting from any one accident or occurrence.

(c) an all risks Installation Floater carrying adequate limits to cover all machinery, equipment, supplies and/or materials intended to enter into and form part of any installation.

D9.2 Deductibles shall be borne by the Contractor.

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

D9.4 The Contractor shall provide:

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

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

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

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

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

D10. CONTRACT SECURITY

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

(a) a performance bond of a company registered to conduct the business of a surety in Manitoba, in the amount of fifty percent (50%) of the Contract Price; and

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

D10.1.1 Bonds are available at:

(a) Performance Bond https://www.winnipeg.ca//media/4928/

(i) Performance Bond – Schedule A - Form of Notice https://www.winnipeg.ca/media/4831/

(ii) Performance Bond – Schedule B – Surety's Acknowledgement https://www.winnipeg.ca/media/4832/

(iii) Performance Bond – Schedule C – Surety's Position https://www.winnipeg.ca/media/4833/

(b) Labour & Material Payment Bond https://www.winnipeg.ca//media/4930/

(i) L&M Bond – Schedule A – Notice of Claim https://www.winnipeg.ca/media/4834/

(ii) L&M Bond – Schedule B – Acknowledgement of a Notice https://www.winnipeg.ca/media/4835/

(iii) L&M Bond – Schedule C – Surety's Position https://www.winnipeg.ca/media/4836/

D10.1.2 Where the contract security is a performance bond, it may be submitted in hard copy or digital format. If submitted in digital format the contract security must meet the following criteria:

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

(b) the version submitted by the Contractor must be verifiable by the City with respect to the totality and wholeness of the bond form, including: the content; all digital signatures and digital seals; with the surety company, or an approved verification service provider of the surety company.

(c) the version submitted must be viewable, printable and storable in standard electronic file formats compatible with the City, and in a single file. Allowable formats include pdf.

(d) the verification may be conducted by the City immediately or at any time during the life of the bond and at the discretion of the City with no requirement for passwords or fees.

(e) the results of the verification must provide a clear, immediate and printable indication of pass or fail regarding D10.1(b).

D10.1.3 Digital bonds failing the verification process will not be considered to be valid and may be determined to be an event of default in accordance with C18.1. If a digital bond fails the verification process, the Contractor may provide a replacement bond (in hard copy or digital format) within seven (7) Calendar Days of the City's request or within such greater period of time as the City in their discretion, exercised reasonably, allows.

D10.1.4 Digital bonds passing the verification process will be treated as original and authentic.

D10.2 The Contractor shall provide:

(a) the required Contract Security to:

The City of Winnipeg
Legal Services Department
185 King Street, 3rd Floor
Winnipeg, MB R3B 1J1

(b) The Contract Administrator with copies of the required Contract Security.

within seven (7) Calendar Days of notification of the award of the Contract and prior to the commencement of any Work on the Site.

D10.3 The Contractor shall, as soon as practicable after entering into a contract with a Subcontractor:

(a) give the Subcontractor written notice of the existence of the labour and material payment bond inD10.1(b); and

(b) post a notice of the bond and/or a copy of that bond in a conspicuous location at the Site of the Work.

D11. SUBCONTRACTOR LIST

D11.1 The Contractor shall provide the Contract Administrator with a complete list of the Subcontractors whom the Contractor proposes to engage (Form J: Subcontractor List) at least two (2) Business Days prior to the commencement of any Work on the Site.

D12. REQUIREMENTS FOR SITE ACCESSIBILITY PLAN

D12.1 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.

D12.2 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.

D12.3 The Accessibility Plan may also include figures, sketches, or drawings to demonstrate the proposed plan.

D12.4 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

D12.5 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.

D12.6 Any changes to the Accessibility Plan must be approved by the Contract Administrator.

D12.7 Upon request from the Contract Administrator, the Contractor shall provide records demonstrating that the site has been maintained.

D12.8 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.

D12.9 Third and subsequent Offences – A pay reduction will be issued in the amount of $250.00 per instance and per day.

SCHEDULE OF WORK

D13. COMMENCEMENT

D13.1 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.

D13.2 The Contractor shall not commence any Work on the Site until:

(a) the Contract Administrator has confirmed receipt and approval of:

(i) evidence of authority to carry on business specified in D7;

(ii) evidence of the workers compensation coverage specified in C6.17;

(iii) the Safe Work Plan specified in D8;

(iv) evidence of the insurance specified in D9;

(v) evidence of the contract security specified in D10;

(vi) the Subcontractor list specified in D11;

(vii) the Requirements for Site Accessibility Plan specified in D12;

(viii) the Detailed Work Schedule specified in D14; and

(ix) the direct deposit application form specified in C12.20.

(b) the Contractor has attended a pre-construction meeting with the Contract Administrator, or the Contract Administrator has waived the requirement for a pre-construction meeting.

D13.3 Commencement of the Work shall be at the discretion of the Contractor, provided the commencement date will allow the achievement of Substantial Performance and Total Performance of the work in accordance with D17 and D18.

D14. DETAILED WORK SCHEDULE

D14.1 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.

D14.2 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

all acceptable to the Contract Administrator

D14.3 Further to D14.2(a), the C.P.M schedule shall clearly identify the start and completion dates of all of the following activities/tasks making up the Work as well as showing those activities/tasks on the critical path.

(a) Mobilization(s) to site;

(b) Sewer cleaning, prep work, and pre-lining inspections;

(c) Sewer measurements and confirmation of design conditions;

(d) EPR's;

(e) Installation of CIPP liners;

(f) Manhole modifications and reconstruction;

(g) Restoration, and

(h) Planned breaks in construction in accordance with D16.7.

D14.4 Further to D14.2(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.

D15. WORK BY OTHERS

D15.1 Further to C6.26, 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.

D15.2 Work by others on or near the Site will include but not necessarily be limited to:

(a) N/A;

D15.2.1 Further to D15.1 the Contractor shall cooperate and coordinate all activities with all parties performing required Work by Others identified in D15.1 and accommodate the necessary area on Site required for the Work by Others to complete the Work

D16. WORKING DAYS

D16.1 Further to C1.1(tt), the Contract Administrator's determination of whether or not atmospheric and Site conditions are such that a Working Day is deemed to have elapsed may be based at one time on one type of work while at another time a Working Day may be based on another type of work. When more than one type of major work is involved, the quantity of equipment that must be able to work in order to meet the requirements of a Working Day may vary considerably from that specified in the General Conditions.

D16.2 In the event that incidental work is behind schedule which, in the opinion of the Contract Administrator, should have been or could have been carried out by the Contractor in conjunction with or immediately following work of a major type, the City hereby reserves the right to charge Working Days on the incidental work until such time as it is up to schedule.

D16.3 When the major type of work involves restoration of the site to the condition it was prior to rainfall, Working Days shall not be charged.

D16.4 The Contract Administrator will furnish the Contractor with a daily record for each major type of work showing various information concerning the equipment, the time it worked, could have worked and Working Days charged. This report is to be signed each day by an authorized representative of the Contractor.

D16.5 Notwithstanding C1.1(tt), if the Contractor chooses to work on a Saturday, Sunday, or statutory or civic holiday and is able to complete at least seven (7) hours of work during the period between 7:00 a.m. Winnipeg time or the time the Contractor's operations normally commence, whichever is earlier, and 7:00 p.m. Winnipeg time the day shall be considered a Working Day.

D16.6 Working Days shall be incurred by the Contractor for every Working Day as defined herein. Working days shall be incurred starting on the date the Contractor commences work on site, or the date of commencement identified on the Contractors submitted schedule (D14), whichever occurs first.

D16.7 Planned Breaks in Construction

(a) The Contractor will be permitted planned suspensions of on-site construction to facilitate the nature of the work and seasonal weather breaks where contract work is not or cannot be completed. Working Days will not be incurred during these periods.

(b) All planned breaks in on-site construction activity must be clearly identified in the Contractors detailed construction schedule (D14) and notice must be provided in writing a minimum of two (2) Business Days prior to the planned suspension of work. Failure of the Contractor to provide adequate notice, in the opinion of the Contract Administrator, may result in Working Days being incurred.

(c) Planned breaks in construction should be minimised to the greatest degree possible to promote the efficient and expedient completion of the Work. Individual days or repeated short duration breaks (less than five (5) Working Days) where work could otherwise be completed will not be accepted as planned breaks in construction. Outside of planned breaks in construction, consecutive Working Days will be applied.

(d) During these periods, the Site must be made secure, roadways completely operational, and all existing facilities and work in progress be protected from weather or other potentially harmful effects.

(e) Upon recommencement of site activities after long breaks (greater than 1 month), the Contractor shall provide an updated schedule and notification to the Contract Administrator a minimum of five (5) Business Days prior to recommencement of work.

(f) No changes to the Contract completion dates resulting from suspension of contract time as described herein will be considered.

D17. SUBSTANTIAL PERFORMANCE

D17.1 The Contractor shall achieve Substantial Performance within seventy-six (76) consecutive Working Days of the commencement of the Work as specified in D13, or by October 2, 2026, whichever comes first.

D17.2 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.

D17.3 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.

D17.4 In the event that seasonal inclement weather does not allow permanent pavement surface restorations to be completed, Substantial Performance can be achieved provided that all required temporary surface restorations have been completed in accordance with E19.

D18. TOTAL PERFORMANCE

D18.1 The Contractor shall achieve Total Performance within eighty-six (86) consecutive Working Days of the commencement of the Work as specified in D13, or by October 16, 2026, whichever comes first.

D18.2 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.

D18.3 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.

D18.4 In the event that permanent pavement restoration and surface restorations cannot commence immediately after Substantial Performance due to seasonal inclement weather, the Contract Administrator will advise the Contractor when seasonal conditions allow permanent restorations to begin. Counting of consecutive Working Days will recommence fourteen (14) Calendar Days after formal notification by the Contract Administrator, or the day that the Contractor recommences the Work, whichever occurs first.

D19. LIQUIDATED DAMAGES

D19.1 If the Contractor fails to achieve, Critical Stages, Substantial Performance or Total Performance in accordance with the Contract by the days fixed herein for same, the Contractor shall pay the City the following amounts per Working Day for each and every Working Day following the days fixed herein for same during which such failure continues:

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

(b) Total Performance – one thousand dollars ($1,000).

D19.2 The amounts specified for liquidated damages in D19.1 are based on a genuine pre-estimate of the City's losses in the event that the Contractor does not achieve Substantial Performance or Total Performance by the days fixed herein for same.

D19.3 The City may reduce any payment to the Contractor by the amount of any liquidated damages assessed.

D20. SCHEDULED MAINTENANCE

D20.1 The Contractor shall perform the following scheduled maintenance in the manner and within the time periods required by the Specifications:

(a) Landscaping as specified in CW 3510;

D20.2 Determination of Substantial Performance and Total Performance shall be exclusive of scheduled maintenance identified herein. All scheduled maintenance shall be completed prior to the expiration of the warranty period. Where the scheduled maintenance cannot be completed during the warranty period, the warranty period shall be extended for such period of time as it takes the Contractor to complete the scheduled maintenance.

CONTROL OF WORK

D21. JOB MEETINGS

D21.1 Regular bi-weekly job meetings will be held at the Site. These meetings shall be attended by a minimum of one representative of the Contract Administrator, one representative of the City and one representative of the Contractor. Each representative shall be a responsible person

capable of expressing the position of the Contract Administrator, the City and the Contractor respectively on any matter discussed at the meeting including the Work schedule and the need to make any revisions to the Work schedule. The progress of the Work will be reviewed at each of these meetings.

D21.2 The Contract Administrator reserves the right to cancel any job meeting or call additional job meetings whenever they deem it necessary.

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

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

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

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

PAYMENT

D24. PAYMENT

D24.1 Further to E3, no payment will be made for Cash Allowances other than as set out in E4.4.

D25. FUEL PRICE ADJUSTMENT

D25.1 The Contract is subject to a fuel price adjustment which will be calculated monthly based on eligible Work completed utilizing the following mathematical formulas;

(a) where the price of fuel has increased - ((CFI/BFI)-1.15) x Q x FF; and

(b) where the price of fuel has decreased - ((CFI/BFI)-0.85) x Q x FF; where

(i) BFI = base fuel index

(ii) CFI = current fuel index

(iii) FF = fuel factor

(iv) Q = monetary value of Work applied in the calculation.

D25.1.1 Eligible Work will be determined in accordance with D25.5.

D25.1.2 The base fuel index (BFI) will be the retail price of fuel identified on the Submission Deadline based on latest published “Monthly average retail prices for gasoline and fuel by geography” for Winnipeg, published by Statistics Canada, Table 18-10-0001-01. The BFI is a blended rate based on 15% regular unleaded gasoline at self-service filling stations and 85% diesel fuel at self-service filling stations.

D25.1.3 The current fuel index (CFI) based on the above blended rate will be determined for each monthly progress estimate and applied on the following progress estimate as a change order once rates are published by Statistics Canada.

D25.1.4 A Fuel Factor (FF) rate of the monetary value of all eligible Work completed that month based on the Contract unit prices will be used to calculate the assumed apportioned cost of fuel.

D25.2 Fuel cost adjustments may result in additional payment to the Contractor or credit to the City within the Contract by way of a monthly change order.

D25.3 The fuel escalation or de-escalation adjustment will not be applied if the CFI is within ±15% of the BFI.

D25.4 Fuel escalation adjustments will not be considered beyond Substantial Performance except where those dates/Working Days are adjusted by change order. Fuel de-escalation adjustments will apply for Work that extends beyond the dates/Working Days specified for Substantial Performance.

D25.5 The Fuel Factor (FF) rates will be set as follows:

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

D26. WATER USED ON CITY OF WINNIPEG CONSTRUCTION PROJECTS

D26.1 Further to Section 3.7 of CW 1120, charges incurred for the permit and water meters shall be paid for by the Contractor when taken out. The Contractor shall forward the invoice to the Contract Administrator for reimbursement. The billing for water usage sent to the Contractor shall be forwarded to the Contract Administrator for payment. The Tender number shall be noted on each permit.

WARRANTY

D27. WARRANTY

D27.1 Notwithstanding C13.2, the warranty period shall begin on the date of Total Performance and shall expire one (1) year thereafter, except where longer warranty periods are specified in the respective Specification sections, or unless extended pursuant to C13.2.1 or C13.2.2, in which case it shall expire when provided for thereunder.

(a) For the purposes of Contract Security, the Warranty period shall be one (1) year.

INDEMNITY

D28. INDEMNITY

D28.1 Indemnity shall be as stated in C17.

Form J: Subcontractor List
(See D11)

2025 SEWER RENEWALS BY CIPP LINING – CONTRACT 1

Name	Address

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:

Appendix No.	Appendix Title
A	Host Pipe Conditions and Inspections
B	Design Conditions
C	Traffic Control – General Requirements
D	Combined Sewer Overflow Review and Bypass Pumping
E	Record Drawings

Drawing No.	Drawing Name/Title
13715	COVER PAGE
13716	DRAWING INDEX
13717	BALMORAL ST - 1ST MH S OF SARGENT AV TO MH AT QU'APPELLE AV
13718	BEATRICE ST - 1ST MH S OF COBOURG AV TO MH AT COBOURG AV
13719	BELAIR RD (S.LEG) - MH AT BELAIR RD(E.LEG) TO MH AT MARSHALL BY(W.LEG)
13720	BROCK ST - MH AT GRANT AV TO 1ST MH S OF GRANT AV
13721	BROCK ST - MH AT GRANT AV TO 1ST MH N OF GRANT AV
13722	CARPATHIA DR. (S.LEG) - 1ST MH E.OF KENASTON BV. TO MH AT CARPATHIA DR.
13723	CHALMERS AV - 1ST MH W OF ROCH ST TO 2ND MH W OF ROCH ST
13724	CHERRIER ST - 1ST MH W OF ARCHIBALD ST TO MH AT ARCHIBALD ST
13725	CHURCH AV - 1ST MH W MCGREGOR AV - MH @ MCGREGOR AV
13726	DEARBORN AV - MH AT LACY ST TO MH AT BRAZIER ST
13727	DES MEURONS AV - MH AT DUBUC ST TO 1ST MH S OF DUBUC ST
13728	DES MEURONS AV - 1ST MH S OF DUBUC ST TO MH AT YARDLEY ST
13729	DES MEURONS AV - MH AT YARDLEY ST TO MH AT NIVERVILLE AV
13730	DUBUC ST - MH AT BRAEMAR AV(E.OF CL) TO MH AT BRAEMAR AV(CL)
13731	EASEMENT(E OF SANDRA BY(E.LEG)) - 1ST MH N OF CRANE AV TO MH AT CRANE AV
13732	EUGENIE ST(CL) - 3RD MH E OF DES MEURONS-MH @ YOUVILLE ST
13733	FURBY ST - 2ND MH S OF PORTAGE AV TO 3RD MH S OF PORTAGE AV
13734	FURBY ST - 4TH MH S OF SARGENT AV TO MH AT ELLICE AV
13735	HALLIDAY BY NLEG - MH @ HALLIDAY BY ELEG - MH @ SPEERS RD
13736	HALLIDAY BY S LEG - MH AT HALLIDAY BY E LEG TO MH AT SPEERS RD
13737	HARBISON AV W - 1ST MH W OF ROCH ST TO 2ND MH W OF ROCH ST
13738	HARVARD AV W - MH AT WINONA ST TO 1ST MH W OF BOND ST
13739	HILL ST. - 1ST MH S.OF DUBUC ST. TO 2ND MH S.OF DUBUC ST.

13740 HILL ST. - 2ND MH S.OF DUBUC ST. TO MH AT NIVERVILLE AV
13741 HILLCREST AV - 1ST MH S OF NIVERVILLE AV TO MH AT CATON ST
13742 HORACE ST - 1ST MH W OF YOUVILLE ST TO MH AT YOUVILLE ST
13743 KILDARROCH ST. - 1ST MH N.OF MOUNTAIN AV. TO MH AT MOUNTAIN AV.
13744 LA GRAVE ST - 1ST MH N OF LORD AV TO MH AT LEMAY AV
13745 LANGSIDE ST - MH AT NOTRE DAME AV(SPL) TO 1ST MH S OF NOTRE DAME AV
13746 LANSDOWNE AV - 1ST MH E OF AIKENS ST TO 2ND MH E OF AIKENS ST
13747 LAWNDALE AV - 1ST MH N OF LYNDALE DR TO MH AT CONISTON ST
13748 MADELINE ST - MH AT KILDARE AV W NPL TOMH AT KILDARE AV W CL
13749 MCGEE ST - MH AT SARGENT AV(SPL) TO 1ST MH S OF SARGENT AV
13750 MCMICKEN ST - 1ST MH N. OF SARGENT AV. TO MH AT SARGENT AV.
13751 MOUNTIAN AVE(CL) - MH @ TINNIS WOOD ST(CL)-MH @ RADFORD ST
13752 NOBLE AV - 3RD MH W OF HENDERSON HWY TO MH AT BEATRICE ST
13753 NOTTIGHAM AV - 1ST MH W OF BESANT ST TO 2ND MH W OF BESANT ST
13754 PARKER AV - 1ST MH W OF DANIEL ST TO MH AT DANIEL ST EPL
13755 PILGRIM AV - MH @ DES MEURONS ST (EPL) TO MH @ DES MEURONS ST
13756 PIONEER AV - 3RD MH W OF WESTBROOK ST TO 4TH MH W OF WESTBROOKST
13757 PROVENCHER BLVD - 2ND MH W OF ST JEAN BAPTISTE-MH @ LANGEVIN (CL)
13758 PROVENCHER BLVD - MH AT THIBAULT ST TO 1ST MH W OF THIBAULT ST
13759 RADFORD ST - 1ST MH N OF MOUNTAIN AVE-MH @ MOUNTAIN AVE
13760 REDWOOD AVE - MH AT CHARLES ST CL TO 1ST MH W CHARLES ST
13761 RUE AUBERT - MH AT GABRIELLE ROY PL. TO CERCLE MOLIERE
13762 RUE LANGEVIN - 1ST MH N. OF HAMEL AV TO MH AT HAMEL AV
13763 RUE ST.JOSEPH - 1ST MH N.OF PROVENCHER BV.
13764 SHERBROOK ST - 3RD MH S OF NOTRE DAME AV TO 1ST MH S OF CUMBERLAND AV
13765 SPEERS RD - 1STMH N OF CRESTWOOD CRTO2NDMH N OF CRESTWOOD CR
13766 SPENCE ST - MH AT SARGENT AV TO 1ST MH S OF SARGENT AV
13767 TACHE AV. - MH AT RUE MESSAGER TO MH AT RUE HEBERT
13768 TINNISWOOD ST - 1ST MH N OF MOUNTAIN AVE-MH @ MOUNTAIN AVE(CL)
13769 WATERFORD AV. - 3RD MH E.OF PEMBINA HWY TO 4TH MH E.OF PEMBINA HWY.
13770 WATERFORD AV. - 4TH MH E.OF PEMBINA HWY TO MH AT WICKLOW ST.
13771 WESTGROVE WAY - MH @ PEPPERTREE PL TO 1ST MH E OF PEPPERTREE PL
13772 WHITTIER AV W - 1ST MH W OF WINONA ST TO MH AT WINONA ST
13773 WILLIAM NEWTON AV - MH AT ALLEN ST TO 1ST MH W OF ALLEN ST
13774 WINONA ST - MH AT HARVARD AV W TO MH AT WHITTIER AV W

GENERAL REQUIREMENTS

E2. MOBILIZATION AND DEMOBILIZATION PAYMENT

E2.1 Description

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

E2.2 Measurement and Payment

E2.2.1 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:

(b) 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.

(c) 50% payment of the Mobilization and Demobilization lump sum price will be paid once lining crews arrive on site and commence CIPP liner installations.

(d) 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.

E3. PROVISIONAL ITEMS

E3.1 Provisional Items listed in Form B: Prices are considered part of the Contract, and the Contractor shall be prepared to undertake and complete any portion of the Work listed in the Provisional Items if required.

E3.2 Notwithstanding E3.1, the Contractor shall not perform Work included in the Provisional Items without prior authorization from the Contract Administrator. All Work included in the Provisional Items will be carried out within the construction areas shown on the drawings.

E3.3 Notwithstanding C7, the City reserves the right to diminish all or any portion of the Work listed in the Provisional Items and no claim shall be made for damages on the grounds of loss of anticipated profit for any other reason.

E4. CASH ALLOWANCE FOR ADDITIONAL WORK

E4.1 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.

E4.2 A cash allowance has been included on Form B: Prices.

E4.3 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.

E4.4 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.

E4.5 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.

E4.6 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.

E4.7 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.

E5. TRAFFIC CONTROL

E5.1 Further to clauses 3.6, 3.7 and 3.8 of CW 1130:

(a) In accordance with the Manual of Temporary Traffic Control on City Streets (MTTC), the Contractor ("Construction Agency" in the manual) shall be responsible for supplying, placing, maintaining and removing the appropriate temporary traffic control devices as specified by the MTTC, the Contract Drawings, Staging Plans, and Traffic Management Plans or by the Traffic Management Branch of the City of Winnipeg Public Works Department. The Contractor shall bear all costs associated with the supply, placement and maintenance of temporary traffic control devices by their own forces or subcontractor.

(b) In addition, the Contractor shall be responsible for removing, placing, and maintaining all regulatory signing including but not limited to:

(i) Parking restrictions,

(ii) Stopping restrictions,

(iii) Turn restrictions,

(iv) Diamond lane removal,

(v) Full or directional closures on a Regional Street,

(vi) Traffic routed across a median,

(vii) Full or directional closure of a non-regional street where there is a requirement for regulatory signs (turn restrictions, bus stop relocations, etc.) to implement the closure.

(viii) Approved Designated Construction Zones with a temporary posted speed limit reduction. Traffic Services will be responsible for placing all of the advance signs and 'Construction Ends' (TC-4) signs. The Contractor is still responsible for all other temporary traffic control including but not limited to barricades, barrels and tall cones.

(c) Where directed by the Contract Administrator, the Contractor shall construct and maintain temporary asphalt ramps to alleviate vertical pavement obstructions such as manholes and planing drop-offs to the satisfaction of the Contract Administrator.

E5.2 Submissions

E5.2.1 Traffic Management Plans

(a) The Contractor shall submit a detailed Traffic Management Plan for works at sites identified below. The Traffic Management Plan shall be submitted a minimum of fifteen (15) Business Days prior to commencement of work on each site to allow sufficient time for review by the Contract Administrator and Traffic Management department. Traffic Management Plans shall include, but not necessarily be limited to, the following:

(i) Details of lane closures on regional and non-regional streets; detours; access accommodations for local businesses; and access accommodations for pedestrians throughout any and all stages of construction;

(ii) Traffic control coordination with flow bypass works, including traffic ramp locations;

(iii) construction and flow bypass staging/schedule.

(iv) bike route accommodation or detour plans, where required;

(b) Traffic Management Plans shall be submitted for the following locations:

(i) S-MA00010672 (Mountain Av), S-MA00010655 (Radford St), and S-MA00010702 (Tinniswood St);

(ii) S-MA00015413 (Redwood Av);

(iii) S-MA20018248 (Sherbrook St) bike lane detour plan, if required;

(c) Submitted Traffic Management Plans are subject to review, comment, and approval by the Traffic Management Department.

(d) Any changes to an approved Traffic Management Plan must be submitted to the Contract Administrator a minimum of five (5) Business Days prior to the required change for approval.

E5.2.2 Lane Closure Requests

(a) Further to Section 2.01 of the MTTC, the Contract Administrator will submit requests in the Lane Closure App on behalf of the Contractor ("Construction Agency" in the manual) unless otherwise approved by the Contract Administrator. The Contractor shall submit a detailed traffic control plan for works occurring at each separate site. The traffic control plan(s) shall be submitted a minimum of five (5) Business Days prior to commencement of work on each site. Where proposed traffic control plans include a full closure, directional closure, or median crossover on a Regional Street, the traffic control plan(s) shall be submitted a minimum of fifteen (15) Business Days prior to commencement of work on each site. Traffic control plans shall include, but not necessarily be limited to the following:

(i) Details of lane closures on regional and non-regional streets; detours; access accommodations for local businesses; and access accommodations for pedestrians throughout any and all stages of construction;

(ii) Traffic control coordination with flow bypass works, including traffic ramp locations;

(iii) Construction and flow bypass staging/schedule.

(b) Requests for lane closures shall include all required information for submission required by the City's online request system. This information includes, but is not limited to:

(i) Start and end dates/times of required lane closures;

(ii) Limits of required lane closures. When requesting limits, Contractor to account for space required for advance signage, tapers, lane shifts, and any other traffic control devices/signage in accordance with the latest version of the City of Winnipeg Manual of Temporary Traffic Control on City Streets;

(iii) Limits for any parking restrictions;

(iv) Confirmation of number of lanes and location of lanes to be closed;

(v) Any turning restrictions;

(vi) Any signal alterations; and

(vii) Any transit impacts, including stop ID numbers for stops impacted.

(c) A link to the City Lane Closures request site can be found here:

https://laneclosures.winnipeg.ca/login

(d) All submitted traffic control plans are subject to review and acceptance by City of Winnipeg Traffic Management and Traffic Services divisions. Depending on the requested closure requirements and street(s) being affected, the City may require proposed closures to be completed on weekends or at night.

(e) If the Contractor is requesting traffic control devices, signage or barricades to be installed by the City of Winnipeg Traffic Services, or due to the complexity of the closure the City requires City of Winnipeg Traffic Services to be used, the Contractor shall be responsible for contacting and coordinating timelines for installation of the required traffic control devices, signage or barricades. Note that if utilizing Traffic Services, the Contractor shall contact in advance to verify that City staff are available to meet proposed timelines for placement of traffic control devices, signage and barricades.

E5.3 General Requirements

E5.3.1 Further to Section 3.7 of CW 1130 of the General Requirements the Contractor shall be responsible to redirect and maintain traffic with appropriate signing in accordance with The City of Winnipeg, "Manual of Temporary Traffic Control in Work Areas on City Streets" at all times during construction.

E5.3.2 Intersecting private approach access shall be maintained at all times unless excavation operations require temporary closure.

(a) Should the Contractor be unable to maintain pedestrian or vehicular access to a residence or business, he/she shall review the planned disruption with the business or residence and the Contract Administrator and take reasonable measures to minimize the impact. The Contractor shall provide a minimum of 24 hours notification to the affected residence or business and the Contract Administrator, prior to disruption of access.

E5.3.3 The Contractor shall maintain access to all businesses during business hours, except where written authorization has been provided by the business.

E5.3.4 The Contractor shall maintain access to all schools, community centres, and other public buildings at all times.

E5.3.5 Bus traffic must be maintained at all times or as accepted by the Contract Administrator and Winnipeg Transit. Winnipeg Transit shall have the authority to determine the level of accommodation at bus stops in work zones. Bus stops may be closed, relocated, or maintained in a work zone at Winnipeg Transit's discretion.

E5.3.6 Ambulance/emergency vehicle access must be maintained at all times.

E5.3.7 Designated, permanent, and/or temporary bicycle routes shall be safely maintained throughout the work, or temporary traffic control put in place to reroute bicycle traffic around the work area. Temporary traffic control chosen for the closure or modification of an active transportation route shall match the level of safety provided by the route that is being closed or modified.

E5.3.8 Further to Section 3.6 of CW 1130 of the General Requirements, the Contractor shall maintain safe pedestrian crossings at intersections at all times. If possible, only one pedestrian crossing at an intersection is to be blocked by construction at any one time. If more than one pedestrian crossing is blocked by construction at an intersection at the same time the Contractor shall provide flag persons to safely escort pedestrians across the intersection. The Contractor shall leave pedestrian crossing locations safe and free of equipment that may hamper pedestrians when no construction activities are being performed at a particular crossing location.

E5.3.9 Further to Clause 3.7 of CW 1130 of the General Requirements, should the Contractor be unable to maintain pedestrian or vehicular access to a residence or business, he/she shall review the planned disruption with the business or residence and the Contract Administrator, and take reasonable measures to minimize the impact. The Contractor shall provide a minimum of 24 hours notification to the affected residence or business and the Contract Administrator, prior to disruption of access.

E5.3.10 The Contractor is responsible for maintaining safe vehicular and pedestrian traffic through their work site as identified herein. The Contractor shall rectify any unsafe conditions immediately upon notification. This could include but is not limited to, providing flag persons, clearing debris and snow from sites, moving equipment, and erecting additional signage.

E5.3.11 During the project, temporary snow fence shall be installed adjacent to existing and temporary sidewalks as necessary to prevent access to the construction area and to provide separation from the excavation area. The Contractor shall be responsible for maintaining the snow fence in a proper working condition. No measurement for payment shall be made for this work.

E5.3.12 The Contractor shall not park company or private vehicles inside the barricaded work zone in a manner that will block sightlines for vehicles and pedestrians approaching and crossing intersections.

E5.3.13 Flag persons may be necessary to maintain the flow of traffic during certain work operations.

E5.3.14 Notwithstanding the requirements noted herein and CW 1130, the Contractor shall maintain the minimum site-specific traffic control requirements outlined in Appendix C and as indicated on the Drawings.

E5.4 Regional Streets

E5.4.1 Construction activities on Regional Streets shall be restricted to the approved closed lanes between 07:00 to 09:00 hours and 15:00 to 18:00 hours Monday to Friday and other hours as directed by the Contract Administrator, unless otherwise approved by Traffic Management.

E5.4.2 Preparation work for CIPP liner installation shall be done on a weekend or on a weekday between 09:00 and 15:00 hours, or after 18:00 hours and completed by 07:00 hours the following day, including traffic barricade removal.

E5.4.3 Regional Streets impacted by the work of this Contract are:

(a) Archibald St
(b) Balmoral St
(c) Cumberland Av
(d) Ellice Av
(e) Grant Av
(f) Grant Av
(g) McGregor St
(h) Mountain Av
(i) Pioneer Av
(j) Provencher Bv
(k) Redwood Av
(l) Sargent Av
(m) Sherbrook St

E5.4.4 Notwithstanding the requirements noted herein and of CW 1130, the Contractor shall maintain the specific minimum requirements as outlined in Appendix C during the CIPP liner installations, bypass pumping, and pavement restorations.

E5.4.5 The Contractor will have access to the open lane(s) of traffic provided flag persons are used in accordance with the most current edition of The City of Winnipeg Manual for Temporary Traffic Control on City Streets to maintain traffic safety.

E5.4.6 Preparation work for CIPP liner installation on Regional streets shall be done on a weekend or on a weekday between 09:00 hours and 15:00 hours or after 18:00 hours and completed by 07:00 hours the following day including traffic barricade removal.

E5.4.7 Further to E5.4.6, should the City of Winnipeg or the Contract Administrator require that the Work on a Regional Street be carried out at night, on weekends, on public holidays, or that Work otherwise be restricted or suspended during peak traffic hours, the Contractor shall comply without any additional compensation being considered to meet these requirements.

(a) The following regional street locations shall be completed over night or on the weekend:
    (i) S-MA00010672 (Mountain Av);

(ii) S-MA00010655 (Radford St @ Mountain Av);
(iii) S-MA00010702 (Tinniswood St @ Mountain Av);
(iv) S-MA70020673 (Pioneer Av);
(v) S-MA00015413 (Redwood Av);
(vi) S-MA20018248 (Sherbrook St);

E5.4.8 The City reserves the right to restrict, reject, or cancel Regional Street lane closures at any time due to the occurrence of special events or conflicting third party work.

E5.5 Non-Regional Streets

E5.5.1 Traffic Control on Non-Regional Streets during construction shall be in accordance with the Manual of Temporary Traffic Control, and including but not limited to the following:

(a) Maintain one lane of traffic with street signed as “Road Closed – No Exit”;
(b) Intersecting streets and private approaches will be maintained at all times; and
(c) Bus traffic will be maintained at all times.
(d) A minimum of one lane of traffic shall be maintained on one-way and dead end residential streets at all times.
(e) Where required, the Contractor shall provide notice of complete street shutdowns complete with dates and duration a minimum of five (5) Business Days prior to the street closures.

E5.5.2 Further to E5.1 and E5.5.1, should the City of Winnipeg or the Contract Administrator require that the Work on a Non-Regional Street be carried out at night, on weekends, on public holidays, or that Work otherwise be restricted or suspended during peak traffic hours, the Contractor shall comply without any additional compensation being considered to meet these requirements.

(a) The following non-regional street locations should be completed outside of weekday peak periods, if possible:
(i) S-MA70009101 (Furby St at Ellice Av);
(ii) S-MA00012028 (Kildarroch St at Mountain Av);
(iii) S-MA20016866 (McMicken St at Sargent Av);
(b) The following school zone locations shall be completed outside of typical weekday school hours:
(i) S-MA60005511 (Brock St);
(ii) S-MA50002619 (Eugenie St);
(iii) S-MA50002632 (Horace St);
(iv) S-MA50004492 (Rue Aubert);
(v) S-MA60013016 (Waterford Av);
(vi) S-MA60001505 (Westgrove Way);

E5.6 Regulatory Signage

(a) Further to E5.1(b), the Contractor shall make arrangement with the Traffic Services Branch of the City of Winnipeg to supply regulatory signs as required.
(b) The Contractor shall remove and stockpile any regulatory signage not required during construction such as but not limited to parking restrictions, turn restrictions and loading restrictions.
(c) Further to E5.1(b)(iii) and E5.1(b)(iv) the Contractor shall make arrangements with the Traffic Services Branch of the City of Winnipeg to reinstall the permanent regulatory signs after the Contract Work is complete. At this time the Contractor shall make arrangements to drop off the stockpiled materials to Traffic Services at 495 Archibald Street.

E5.7 Maintenance of Traffic Control

(a) Upon request from the Contract Administrator, the Contractor shall provide records demonstrating that the Site has been maintained.

(b) If the Contract Administrator determines that the Contractor is not performing Traffic Control in accordance with this specification, Traffic Services Branch may be engaged to perform the Traffic Control. In this event the Contractor shall bear the costs associated charged to the project by the Traffic Services Branch of the City of Winnipeg in connection with the required Works undertaken by the Contractor.

E5.8 Measurement and Payment

(a) Unless indicated otherwise on Form B, traffic management as outlined herein will be considered incidental to the Work and will not be measured for payment. No separate payment will be made.

(b) Where identified for payment in Form B, Traffic Control installation and maintenance will be measured and paid on a Lump Sum basis at the Contract Lump Sum price for each individual site. Payment shall include all rental costs, prep work, setup, maintenance, removal and any other efforts required to maintain the closure for the duration of the Work. No additional payments will be made for additional expenses incurred in the installation, maintenance, modification, or removal of the closure, including additional costs incurred due to delays in completing the sewer rehabilitation work resulting from the Contractor's means and methods.

(c) Payment for Traffic Control will be made in full upon completion of the work and removal of the lane closure to the satisfaction of the Contract Administrator and City of Winnipeg Traffic Management Dept.

E6. SHOP DRAWINGS

E6.1 Description

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

(b) The term "Shop Drawings: means drawings, diagrams, illustrations, schedules, performance charts, brochures, and other data, which are to be provided by the Contractor to illustrate details of a portion of the Work.

E6.2 Submit all Shop Drawings in accordance with CW 1110 except as modified herein.

E6.3 The Contractor shall submit specified Shop Drawings to the Contract Administrator for review. All submissions must be in metric units. Where data is in imperial units, the correct metric equivalent shall also be shown on all Shop Drawings.

E6.4 Submit Expedited Shop Drawing submissions, if required, within five (5) Business Days of a request as indicated in E6, or receipt of Notice of Award in accordance with B19, whichever is earlier.

E6.5 Allow for a five (5) Business Days period for review by the Contract Administrator of each individual submission and re-submission, unless noted otherwise in the Contract Documents.

E6.6 Shop Drawings not meeting the requirements of CW 1100 or the requirements specified herein will be returned to the Contractor without review for resubmission.

E6.7 Shop drawing submissions will be limited to two (2) reviews per shop drawing. This shall include a review of the initial submission and a review of the revised submission. Costs associated with subsequent reviews will be charged to the Contractor.

E6.8 Measurement and Payment

(a) The provision of Shop Drawings will be considered incidental to the Work and will not be measured for payment. No additional payment will be made.

E7. CONFINED SPACE ENTRY

E7.1 Description

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

E7.2 General

(a) 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 (PPE).

(b) 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 PPE.

(c) The Contractor is responsible for all safety and confined space support throughout the project.

E7.3 Methods

E7.3.1 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 Contractors 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.

E7.3.2 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 Contactor 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.

E7.3.3 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.

E7.4 Measurement and Payment

E7.4.1 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.

E8. FLOW CONTROL

E8.1 Description

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

E8.2 Submittals

(a) Submit a written flow control plan for sewers to be lined for review by the Contract Administrator in accordance with E6, a minimum of five (5) Business Days prior to undertaking the work. Flow bypass plans shall meet the requirements outlined herein.

E8.3 Flow Control Plans

E8.3.1 Flow control plans shall include the following:

(a) A description and sketch detailing the arrangement of the proposed flow control measures.

(b) 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) Traffic Ramps (where required)

(iv) Pumps (where required)

(c) Identify suction and discharge manholes.

(d) A detailed procedure for installation and removal of the flow control measures.

(e) Monitoring plan (if required). Note: all plans shall include a 24 hr contact person.

(f) Means and methods for dealing with excessive flows or wet weather events.

(g) Means and methods for bypassing flows from apartment complexes and commercial buildings.

(h) Supply of temporary washroom facilities where required.

E8.3.2 A tabular flow control plan with multiple sewer locations is acceptable for assets 450 mm in diameter and smaller. All other submissions shall be prepared on an individual sewer/liner installation basis.

E8.3.3 Supplementary Submissions

(a) Where identified, supplementary flow control submissions shall be submitted in conjunction with the flow control plan. The supplementary submissions shall include system curves for the flow bypass arrangement demonstrating the ability of the proposed arrangement to meet the identified flow requirements. The submission shall include the following minimum information:

(i) a sketch showing all major components of the flow bypass setup;

(ii) suction manhole depths;

(iii) a table showing bypass piping diameters, length, materials, fittings, static lift, etc., used to develop a system curve. The table shall be complete with minor loss coefficients; and

(iv) provision of the system curves plotted with the pump curves, demonstrating the pumping capacity of the proposed system, and inclusive of the pump name plate data complete with nominal capacity, total dynamic head, and power.

(b) The following locations require supplementary flow control submissions:

(i) N/A

E8.3.4 Flow control plans for the following locations shall be prepared and stamped by a professional Engineer, registered in the Province of Manitoba and experienced in the design and implementation of temporary flow bypass works:

(a) N/A

E8.3.5 Advanced Flow Control Plans

(a) Where the proposed flow control plan includes changes to the operation of the City's collection system, the Contractor shall submit their flow control plans a minimum of twenty (20) Business Days prior to commencement of the work to permit review by the Contract Administrator and the City. Changes to the City's collection system may include but are not limited to raising of outfall weirs, closure of outfall gates, or changes to City pump station operations. The Contractor shall be aware that changes to the operation of the City's collection system may require extensive review by both the Contract Administrator and the City and may result In the Contractor having to implement additional measures to maintain an acceptable operational risk profile for the City's collection system.

(b) The following locations require the submission of advanced flow control plans:

(i) N/A

E8.3.6 The Contractor shall be aware that flow control plans which deviate significantly from tendered flow control requirements and/or require a review of changes to the operation of the City's collection system can require significant review efforts by the Contract Administrator and City. Costs associated with these reviews may be charged back to the Contractor if the submitted plans are deemed to be a significant deviation from the tendered conditions. The Contractor Administrator will advise the Contractor prior to undertaking reviews for which costs will be charged back to the Contractor.

E8.4 Mainline Sewer Flows

E8.4.1 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 E8.6.

E8.4.2 The Contractor shall determine appropriate sewer bypass flows for sewer assets meeting the following criteria.

(a) WWS smaller than 300 mm in diameter.

(b) CS 450 mm in diameter and smaller.

E8.4.3 For sewers larger than those listed in E8.4.2, the following estimated flows have been provided the purposes of designing flow bypass arrangements:

(a) S-MA50015607 (Pilgrim Ave): 0.23 L/s (ADWF)

E8.4.4 The estimated flows provided herein are based on the City's sewer collection system hydraulic model. The Contractor shall be responsible to confirm these flows prior to submission of the flow bypass plan and report any discrepancies to the Contractor Administrator.

E8.4.5 Notwithstanding E8.4.2 and E8.4.3 the following assets may exhibit intermittent flows resulting from the operation of upstream pump stations. The following information has been provided for the purposes of sizing bypass systems:

(a) N/A

E8.4.6 The following additional site-specific information is provided for the Contractors use and shall be reviewed and incorporated into the Contractor's flow control plans:

(a) A review of combined sewer overflow locations and elevations have been included in Appendix D. The Contractor shall take note of limited freeboard upstream of select sewers and incorporate appropriate control measures into their flow control plans.

E8.5 Sewer Services

E8.5.1 Intermittent/short term flow blockages (i.e. up to 1 day, intermittently) of live sewer services will be permitted on the proviso that building occupants are informed of the blockage and adequate steps are undertaken to ensure sewer service backups do not occur. The Contractor shall be responsible for any damages occurring from sewer service blockages in instances where inadequate or improper notice has been provided.

E8.5.2 Provide temporary indoor portable toilets for residential homes and for each apartment in small apartment buildings (10 or less apartments) instead of temporary sewer service bypass pumping where feasible and approved by the building owner and the Contract Administrator.

E8.5.3 Provide temporary indoor or outdoor toilet facilities for smaller commercial properties such as strip malls instead of temporary sewer service bypass pumping where feasible and approved by the building owner and the Contract Administrator. One toilet facility to be provided for each business in a strip mall.

E8.5.4 Provide necessary supplies for portable toilets and clean as often as required while in use. Remove portable toilets and outdoor toilets promptly once sewer service is reinstated.

E8.5.5 Expose sewer services for facilities with a high volume of effluent discharge that have no feasible means of intercepting the flow within the building or at a location outside the building agreed upon by the Contract Administrator and drain or pump the sewer service from that location until the sewer service is reinstated.

E8.5.6 Excavate for sewer service exposure in accordance with CW 2030. Repair and backfill exposed sewer services in accordance with CW 2130.

E8.6 Manholes

E8.6.1 Flow control may be required to isolate manholes to complete the specified manhole rehabilitation works. Flow control methods may include flow through inflatable plugs, flumes, or other means of conveying flows through the work zone.

E8.6.2 Any flow control methods employed must meet the flow capacity and any other performance requirements identified herein.

E8.7 Methods

E8.7.1 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.

E8.7.2 Maintain existing sewer flows from upstream sewers during construction around the sewers being lined.

E8.7.3 Where rehabilitation work will result in the complete blockage of a combined sewer for any period of time (e.g. CIPP liner installation) the Contractor shall provide a minimum bypass pumping capacity of 2.75 times the estimated average day flows as provided herein or measured by the Contractor.

E8.7.4 Erection of scaffolding overtop of active roadways will not be permitted for the purposes of flow control.

E8.7.5 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.

E8.7.6 Provide security personnel for locations where by-pass pumping requires normally secure or locked doors and access areas to be left open or unlocked.

E8.7.7 Ensure all flow control components and materials are removed from the sewer system upon completion of the work.

E8.7.8 The Contractor shall put in place measures to prevent the spill of wastewater and styrene laden water from CIPP installation operations to the environment. When working in LDS, near outfalls (all sewers), 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.

E8.7.9 The Contractor shall demonstrate that the installed flow bypass system operates as intended and is capable of conveying the incoming flows prior to lining.

E8.7.10 Storage in the upstream system will be limited to the obvert of the pipe immediately upstream of any manhole being used for pumping. Upstream storage as a means of buffering incoming flows is not an acceptable method of flow control.

E8.8 Weather

E8.8.1 Environment Canada shall be used as the baseline weather forecast for planning and scheduling of Work.

(a) Environment Canada for Winnipeg, MB: https://weather.gc.ca/city/pages/mb38_metric_e.html

(b) Please note the above hyperlink to Environment Canada is correct at the time of Tender issuance, however this may change during the course of the Contract.

E8.8.2 The Contractor can contact to the Contract Administrator to confirm any changes as necessary.

E8.8.3 The Contractor shall review the Environment Canada weather forecast at a minimum once daily, and prior to Work commencing on site each day.

E8.8.4 When forecasted wet weather exceeds 5 mm, delay installation of liners and/or secure existing work sites.

E8.8.5 Where wet weather equal to or less than 5 mm of rainfall is forecasted, Work may proceed under the following conditions:

(a) Mainline diameters equal to or less than 400 mm:

(i) The Contractor has reviewed the forecasted rainfall event and provides written confirmation to the Contract Administrator that the proposed flow control measures provided are able to accommodate anticipated flows.

(b) Mainline diameters greater than 400 mm:

(i) The Contractor demonstrates to the Contract Administrator via numerical calculations that the proposed bypass system is capable of accommodating anticipated flows.

(ii) Upon request, the Contract Administrator will provide the Contractor with a map of the estimated catchment area to aid in the assessment.

(iii) Catchment area maps can be provided within 3 Business Days of a request.

(iv) Estimated catchment maps, if provided, are based on readily available information. There is no guarantee regarding accuracy of the information.

E8.8.6 The Contractor shall advise immediately of any weather-related delays.

E8.8.7 The Contractor shall schedule Work according to the weather.

E8.8.8 Delay claims due to wet weather shall be communicated to the Contract Administrator within five (5) Business Days after the date of the wet weather event.

E8.8.9 The Contract Administrator will review all claims with regards to wet weather delays in accordance with the General Conditions. Claims shall be reviewed within five (5) Business Days of receipt and may include discussions with the Contractor to ascertain the costs and reasoning associated with the work delay. A Change Order will be processed upon approval of the delay. If further time is required for due consideration by the Contract Administrator, a timeline will be established with the Contractor where no additional claims shall be made outside of the agreed upon response window.

E8.9 Measurement and Payment

E8.9.1 Mainline Sewer Rehabilitation

(a) Flow control measures for mainline sewers will be measured on a unit basis based on the diameter of the sewer being lined, except where specific site locations have been identified for measurement on a lump sum basis. The number of units to be paid will be equal to the number of liner installations where flow control measures are utilized. Utilization of flow control shall constitute the deployment of pumps or hauling of sewage to bypass flows around a sewer being lined. Flow control will not be measured for payment where no flow control measures are utilized.

(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 and flow diversions;

(iv) Supply, mobilization, monitoring, operation, and demobilization of pumps and hoses;

(v) Hydrovac, hauling, and disposal of sewage where required for flow control purposes;

(vi) Supply, installation, and removal of traffic ramps and associated materials required for flow control works;

(vii) Any and all other plant, materials, and labour required to complete the work as specified herein and identified on reviewed flow control plans.

(c) Only one unit of flow control will be paid for each sewer segment and will include all occurrences of mainline and sewer service flow control requirements for the sewer segment.

(d) Where flow control is measured and paid on a lump sum basis:

(i) 25% payment for the Contract Lump Sum price for each respective site will be paid when flow control measures have been mobilized to that site and are in operation.

(ii) 100% of the Contract Lump Sum price for each respective site will be paid subsequent to the completion of the liner installation and demobilization of flow control measures from that site.

(e) Where no flow control measures are undertaken, no payment will be made for this item of work.

(f) The supply of temporary washroom facilities and flow control measures for sewer services shall be considered incidental to installation of the liner and will not be measured for payment. No additional payment will be made.

(g) No additional payments will be made for additional Flow Control costs, including equipment, material, rentals, or labour, due to delays in the Work caused by the Contractor's own means and methods.

E9. SEWER INSPECTIONS

E9.1 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.

E9.2 Methods

E9.2.1 Verification of Existing Sewer Dimensions

(a) Verify sewer dimensions and depths prior to design as follows:

(i) Measure the distance from the center of the start manhole to center of the finish manhole using a steel tape, laser distance finder, or similar suitable measuring process. Length measurements must be accurate as they will be utilized for evaluating liner designs, and for payment, where applicable.

- The Contract Administrator will review submitted lengths from the pre-design and/or pre-lining inspections in conjunction with the submitted inspections to determine payment lengths for all applicable length-based pay items as defined herein. These lengths will be reviewed with the Contractor for the first Progress Estimate and used for the remainder of the project except where noted.

(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 E9.2.2(b) 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.

E9.2.2 Perform the following sewer inspections in accordance with CW 2145 and as outlined herein:

(a) Pre-Repair Inspection (where specified and as deemed necessary):

(i) Perform prior to undertaking cleaning, repairs, or prep-work.

(ii) Except where identified in Appendix A, pre-repair inspections are not a pay item and shall be considered incidental to the cleaning and prep work operations.

(iii) Except where identified in Appendix A, submission of the pre-repair inspection is only required where sewer conditions differ from those identified during tendering and additional prep work was undertaken to complete the rehabilitation work.

(iv) Where identified in Appendix A, pre-repair inspections shall be completed and submitted to the Contract Administrator for review prior to undertaking repairs or prep-work on the identified assets.

(v) Coding of pre-repair submissions is not required.

(b) Pre-Design Inspection (where specified):

(i) Perform where identified in Appendix A prior to preparing the liner design.

(ii) Sewer must be completely cleaned to facilitate inspection.

(iii) 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.

(iv) The following methods may be employed (the Contractor shall confirm an acceptable pre-design inspection method for the rehabilitation technology being employed):

- Hand measurements
- Laser profiling
- Templating (Rigid liner installation only)

(v) 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.

(vi) 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 E9.2.1.

(vii) 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.

(viii) Laser profiling technology must have sufficient accuracy and replicability as per E9.7 and must capture the entire circumference of the pipe.

(ix) No coding of the submission will be required.

(c) 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.
- Condition of the sewer pipe is consistent with the design conditions and the Specifications. The Contractor shall advise the Contract Administrator of any condition that is contrary to the design conditions or assumptions made that may affect either long or short term performance of the liner prior to commencing lining.

(iii) 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.

(v) The sewer service report shall be submitted with the pre-lining inspection.

(d) 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. 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.

(e) Post-Design Inspection (where specified):

(i) Perform where specified in Appendix A subsequent to installing the liner.

(ii) Intent is to confirm the continuous or discontinuous (every 5 metres minimum) measurement of the height and width of large diameter and non-circular liners along the entire length of the sewer to confirm that the liner is consistent with the expected post-lining diameter or dimensions.

(iii) The following methods may be employed:

- Hand measurements
- Laser profiling

(iv) Perform while flow control measures are in place.

(v) 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.

(vi) Laser profiling technology must have sufficient accuracy and replicability as per E9.7 and must capture the entire circumference of the pipe.

(vii) Post-Design inspection shall be submitted within fifteen (15) Business Days of completion of the liner installation. Total Performance for the project will not be granted prior to submission and acceptance of the Post-Design inspection CCTV and associated reports.

(viii) No coding of the submission will be required.

(f) Warranty Inspection:

(i) If not identified in Appendix A, the Contract Administrator will provide a list of Warranty Inspections to be completed based on the results of the lining work.

(ii) Perform before expiration of the warranty period and final acceptance but not prior to 10 months after installation of the liner.

(iii) Sewer shall be completely cleaned to facilitate the inspection.

(iv) 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.

(v) Undertake sewer cleaning in accordance with CW 2140 as required to obtain a satisfactory inspection.

(vi) Full coding required.

E9.2.3 Submit all inspection videos to the Contractor Administrator for review in accordance with CW 2145 and as specified herein.

E9.3 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.

E9.4 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 with the pre-lining inspection. Pre-lining inspections will not be reviewed without submission of the sewer service report. 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.

E9.5 Amendments and Supplements to CW 2145 for Sewer Inspections:

E9.5.1 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.

E9.5.2 Replace Clause 3.11.1 with: Capture the inspections in digital format in colour from the live video source on HDD to the following minimum requirements.

(a) For sewer diameters less than 1800mm in height the minimum camera lens and recording requirements will be:
  (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.

(b) For sewer diameters 1800mm in height and larger, the minimum camera lens and recording requirements will be:
  (i) XDVD MPEG-2 or MPEG-4 format (MPEG-4 preferred).
  (ii) Picture Size: 1024x768 (or greater) @ 29.97 (minimum) frames per second.
  (iii) Data/Bit Rate: 6.0 M-bits/sec.

(c) The use of Side Wall Scanning technologies resolution shall be at a level of resolution as per E9.6.3 to ensure pipe wall loss clarity is provided within the imagery. Viewing software shall be provided at no cost to the City or the Contract Administrator to ensure the user has full autonomy when viewing the sewer pipe. Pre-recorded video shall also be submitted for Side Wall Scanning technologies in addition to specialty autonomous viewing software and data. No water droplets, debris marks or similar shall exist on the lens that would cause image blur or inhibit the clear and uninterrupted view of the pipe during the inspection. Side Wall Scanning technology platforms shall be used having sufficient illumination within given diameters as per the camera manufacturer's recommendations.

E9.5.3 Further to Clause 3.8 and E9.6.3 video imagery must not contain black or other coloured or other erroneous columns or bands where formatting of lesser resolution camera lens recordings have been resized to meet the Picture Size requirements of this specification. Video will be reviewed by the Contract Administrator with the potential for rejection if these bands or columns are observed.

E9.6 Sewer Inspection Equipment

E9.6.1 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.

E9.6.2 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 E9.6.3.

E9.6.3 In-Line CCTV Inspection Platform Minimum Requirements

(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 600 m upstream or downstream from a single access point.

(c) Operable in sewers of various cross-section, and constructed of standard pipe materials including brick, clay, concrete, PVC, HDPE, and steel.

(d) Tethered to facilitate the conveyance and 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 at the widest horizontal viewing angle and the pipe's side periphery.
  (i) Lighting for the camera shall be waterproof and suitable to allow a clear picture of the entire periphery of the pipe. The camera shall be operative and provide a clear picture in 100 percent humidity conditions.
  (ii) An unclear picture due to excessive lighting (image flare), the lack of lighting or the presence of fog, steam, or excessive humidity will be considered unsatisfactory. The Contractor is responsible for identifying and implementing

corrective actions to obtain suitable video quality, such as using fans or ventilation systems to dissipate the fog or by the heating of incoming air to mitigate fog.

(iii) Light heads shall be changed upon the request of the Contract Administrator.

(f) A blurred picture due to fats, oil or grease or a failure in one or all of the primary colour additives, Red, Green, Blue (RGB) visuals will be considered unsatisfactory. The Contractor is responsible for identifying and implementing corrective actions to obtain suitable video quality, such as cleaning the sewer mainline, having the camera lens cleaned prior to reinspection of the mainline.

(g) The Contractor is responsible for presenting issues regarding questionable video quality immediately to the attention of the Contract Administrator.

E9.7 Three-Dimensional (3D) Laser Scanning Inspection

E9.7.1 "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.

E9.7.2 Three-Dimensional (3D) LASER scanning equipment shall provide an accurate determination of pipe geometry (features and defects) above the fluid level.

(a) Field 38 – 43 data shall be collected using a hand-held GPS device to achieve Nearest (N) or sub-meter (M) accuracies dependent upon available satellite coverage.

E9.7.3 Minimum equipment requirements are:

(a) The laser shall be Class 1; eye-safe for operator safety.

(b) Surface measurements accurate to 5mm at 3 metres in 1200mm pipes and larger.

(c) Precision ovality / deflection detailed range laser measurement scans accurate to ±1%.

(d) 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.

E9.7.4 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.

E9.7.5 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.

E9.8 Catch Basin Lead Inspections and Cleaning

E9.8.1 This specification shall cover the cleaning and inspection of catch basin leads connected to sewers included in this contract for the purpose of determining whether the catch basin lead requires repair work.

E9.8.2 The Contractor shall clean and inspect catch basin leads where indicated for repair on the drawings, and/or as directed by the Contract Administrator.

(a) Clean catch basin leads in accordance with CW 2140.

(b) Perform CCTV inspection from catch basin to mainline sewer in accordance with CW 2145. No coding of the submission will be required.

E9.8.3 Catch basin lead repairs in accordance with E13.4.

E9.9 Measurement and Payment

E9.9.1 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.

E9.9.2 Sewer and catch basin lead 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 Contractors calibrated inspection equipment or as determined by the Contract Administrator.

(b) Pre-repair videos submitted for the purpose of verifying tendered EPR extents will be considered incidental to the Work of External Point Repairs and will not be measured for payment.

(c) Pre-lining, post-lining, and warranty inspections will not be paid for where re-inspections are required due to the need for additional work and further verification of the installed liner.

E9.9.3 Sewer Service Reports

(a) The provision of sewer service reports will be considered incidental to the Work 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.

E9.9.4 Sewer Inspection Reports

(a) The provision of sewer inspection reports will be considered incidental to the Work and will not be measured for payment. No separate payment will be made.

E10. DIGITAL PANORAMIC MANHOLE INSPECTIONS

E10.1 Description:

(a) This Specification describes the requirements for obtaining digital panoramic manhole inspections.

E10.2 General

E10.2.1 Digital panoramic manhole inspections shall be required in accordance with CW 2145 for all manholes that are removed or modified to allow for CIPP liner installation, all new manhole installations, and all locations where new manhole risers are installed or replaced.

E10.3 Digital Panoramic Manhole Inspection

E10.4 Amendments and Supplements to CW 2145 for Digital Panoramic Manhole Inspections:

E10.4.1 Notwithstanding and further to CW 2145, inspect manholes using digital panoramic manhole inspection system such as the IBAK PANORAMO SI, RST Helix or equivalent shall meet the following criteria:

(a) The Contractor shall provide the database data of the inspection(s).

(b) Manhole condition coding shall be submitted to the Contract Administrator in accordance with E9.

E10.4.2 Further to Section 3.6, Field 34-37 of the Measurements section shall be measured in whole numbers and expressed in millimetres.

E10.5 Measurement and Payment

E10.5.1 Digital panoramic manhole inspections will be measured and paid for in accordance with CW 2145.

E10.5.2 The provision of manhole inspection reports will be considered incidental to the Work and will not be measured for payment. No separate payment will be made.

E11. EXCAVATIONS AND PIPELINE ACCESS

E11.1 Description

(a) This Specification shall cover excavations, shoring, modifications to and construction of new manholes as required for pipeline access to facilitate the proposed rehabilitation work.

E11.2 Submittals

(a) A work plan shall be provided for each excavation and/or manhole slated for installation, disassembly and/or reconstruction to facilitate liner installation. Work plans are not required where only the manhole frame and cover are being removed. The work plan shall include the following:

(i) Limits of excavation (width, length, depth);

(ii) means of shoring the excavation;

(iii) services to be disrupted. Means of maintaining or otherwise dealing with service flows;

(iv) manhole work to be undertaken; and

(v) other information required to describe the work.

(b) Shop Drawings for excavation shoring (where required) shall be prepared and submitted in accordance with E6 a minimum of five (5) Business Days prior to undertaking the excavation and shoring installation. Where required by Workplace Safety and Health regulation, shoring Shop Drawings shall be sealed by a Professional Engineer, registered in the Province of Manitoba, experienced in the design of excavation shoring systems.

E11.3 Shoring Design

(a) Shoring shall be provided for excavations in accordance with CW 2030.

(b) Excavation shoring shall be designed to accommodate completion of the Work.

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

E11.4 Materials

(a) All materials shall conform to City of Winnipeg Standard Construction Specifications.

E11.5 Methods

E11.5.1 Manhole Modifications to Facilitate Liner Installation

(a) If required to complete the work, the Contractor may choose to remove and replace manholes or portions of manholes (e.g. the upper portions of the existing manholes) to permit access to the existing sewers.

(i) The Contractor may reuse existing pre-cast concrete manhole components when found to be in good condition. The Contractor shall replace all other manhole components and pre-cast concrete manhole components found to be in a deteriorated condition.

(ii) Where manhole stacks are to be replaced on existing manhole base, and sizes are not noted on the drawings, the new manhole stack shall be the largest practical nominal size up to 1200 mm without exceeding the existing manhole base dimensions.

(iii) Where manholes are removed down to the sewer with modification of the existing manhole base, the manhole shall be reconstructed as per the Drawings.

(iv) Select existing manholes and chambers may not be modified or excavated as shown on the Drawings and as follows:

- N/A

(b) All manhole works shall conform to CW2130.

E11.5.2 Excavation

(a) The Contractor is responsible for locating the existing sewer and all other buried utilities and shall take all steps to locate the existing sewer prior to excavation and installation of shoring.

(b) Construction materials and excavation spoils shall not be stockpiled over pipelines.

(c) Carefully excavate to expose existing pipelines.

(d) Only smooth-edged buckets may be utilized for excavations within 1.5 m of the existing sewer.

(e) The existing sewer shall be located prior to proceeding with excavations within 1.0 m of the pipe. Final excavation (within 300 mm of the pipe wall) shall be completed using soft dig or hand excavation methods to prevent damage to the pipe.

(f) Excess excavation materials shall be disposed of off site.

(g) Any services severed during excavation and shoring installation must be rerouted or otherwise bypassed in accordance with E8.5.

E11.5.3 Shoring Installation

(a) Piles (if used) shall be installed with a minimum of 500 mm of clear separation between the pile and the outside of the existing sewer wall.

(b) Piles (if used) shall be pre-bored to a depth below the invert of the sewer. Pre-bored holes shall be filled with a flowable low strength cementitious material after installation of piles to prevent movement of existing soils around the pipe, permit excavation/installation of shoring, and removal of piles.

(c) Excavation and shoring installation shall not initiate movement or otherwise destabilize soils sounding brick and concrete sewers greater than 1200 mm in diameter.

(d) Locate the extents of the existing sewer prior to pre-boring and installing shoring using soft dig methods. Please note the wall thicknesses and outside diameter of the existing trunk sewers are unknown.

(e) Construction Vibrations

(i) The Contractor shall use means and methods that will limit vibrations at locations adjacent to utilities and structures.

E11.5.4 Demolition

(a) Carefully remove, expose, and demolish existing manholes and sewers as required. The use of pneumatic breakers is prohibited. Tops of sewers may be saw cut or removed using small hand held jack hammers. Final openings in the existing sewers shall be neatly cut square to the existing pipe.

E11.5.5 New Manholes

(a) Construct new cast-in-place or pre-cast manhole bases as shown on the drawings after completion of the liner installation.

(b) Complete cast-in-place concrete and reinforcing steel work as shown on the Drawings and in accordance with E15 and E16.

(c) Manholes shall be constructed as shown on the Drawings and in accordance with CW2130.

E11.5.6 Shoring Removal

(a) Shoring systems shall be completely removed upon completion of the works.

(b) Care shall be taken to remove the shoring system and backfill the trench in such a way as to not create voids. If the shoring system requires removal after backfill is in place, resulting voids shall be filled with flowable cement slurry.

E11.5.7 Backfill

(a) Backfill within 1.0 m of existing and proposed pavements shall be completed to CW 2030, Class 1 standards. Granular Class 2 backfill shall extend to the underside of the stabilized fill.

(b) Backfilling with frozen materials will not be permitted.

E11.6 Measurement and Payment

E11.6.1 Pipeline Access

(a) Pipeline access, unless otherwise identified in Form B, will be considered incidental to "Full Segment CIPP Lining" and will not be measured for payment. No additional payment will be made.

(b) Where identified for payment in Form B, pipeline access will be paid on a Lump Sum basis for each identified asset at the Contract Unit Price for "Pipeline Access" as listed in the Form B: Prices.

(c) Payment for "Pipeline Access" shall include all costs associated with providing access to the pipeline to accommodate sewer rehabilitation, including but not limited to: excavations, shoring, demolition, manhole modifications including replacement of manhole risers (if required), manhole replacement, new manhole installations, trunk sewer closures, backfill, and all other materials, labour, and equipment required to complete the work as specified. Payment will be made on the following schedule:

(i) 50% payment of the Pipeline Access Modifications lump sum price for each site or asset will be paid upon commencement of the liner installation for each site.

(ii) 100% payment of the Pipeline Access Modifications lump sum price for each site or asset will be paid upon completion and acceptance of backfill and manhole restoration at each site.

E11.6.2 Provisional – Replacement of Existing Concrete Manhole Risers

(a) Replacement of existing concrete manhole risers will be measured on a vertical meter basis and paid for at the Contract unit price for "Remove and Replace Existing Pre-Cast Concrete Risers" for each respective size. The quantity to be paid will be the total vertical meters of riser replacement completed in accordance with this specification, accepted and measured by the Contract Administrator.

(b) Provisional replacement of existing concrete manhole risers will only be measured for payment at locations accepted by the Contract Administrator in advance of the Work. Riser replacement will not be measured for payment where manhole demolition and reconstruction is required to facilitate pipeline access.

(c) Payment for "Remove and Replace Existing Pre-Cast Concrete Risers" shall include all materials, equipment and labour required to complete the work as specified.

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

E12.1 Description

(a) Proposed Work has the potential to require excavation in proximity to existing critical water infrastructure. This Specification shall apply for all Work to be carried out in close proximity to critical water infrastructure.

(b) “Close proximity” shall be deemed to be any construction activity within a 5 m horizontal offset from the centreline of an aqueduct, feeder main, large diameter water main, valve chambers, or any other critical infrastructure identified below.

E12.2 Critical Water Infrastructure

E12.2.1 Aqueducts, feeder mains, and large diameter water mains are a critical components of the City of Winnipeg’s regional water supply and distribution system and work in close proximity to critical water infrastructure shall be undertaken with an abundance of caution. Feeder mains and large diameter water mains cannot typically be taken out of service for extended periods to facilitate construction and inadvertent damage caused to the pipe would likely have catastrophic consequences.

E12.2.2 The following critical water infrastructure has been identified within the project limits:

(a) Chalmers & Nottingham Feeder Main (750 mm)
  (i) Chalmers Ave (Sheet 9)
  (ii) Nottingham Ave (Sheet 39);

(b) St Boniface Feeder Main (400 mm)
  (i) Cherrier St (Sheet 10);

(c) St Vital Feeder Main (400 mm)
  (i) Eugenie Street (Sheet 18);
  (ii) Horace Street (Sheet 28);

(d) Speers Road Feeder Main (900 mm)
  (i) Halliday Bay (N. Leg) (Sheet 21);
  (ii) Halliday Bay (S. Leg) (Sheet 22);
  (iii) Speers Road (Sheet 51);

(e) Disraeli & Henderson Feeder Main (400 mm)
  (i) Noble Ave (Sheet 38);

(f) Kildonan Feeder Main (600 mm)
  (i) Redwood Ave (Sheet 46);

(g) Branch I Aqueduct
  (i) Rue Aubert (Sheet 47);
  (ii) Tache Ave (Sheet 53);

E12.2.3 Based on the proposed Work at the time of Tender, exploratory excavations are required at the following locations:

(a) N/A

E12.2.4 Based on the proposed Work at the time of Tender, engineered shoring is required at the following locations:

(a) N/A

E12.3 General Considerations for Work in Close Proximity to Critical Water Infrastructure

E12.3.1 Where Work requiring excavation is identified in close proximity to critical infrastructure, as defined in E12.1, the Contractor shall immediately notify the Contract Administrator for discussion and review as required herein.

E12.3.2 Work around critical water infrastructure shall be planned and implemented to minimize the time period that Work is carried out in close proximity the pipeline/structure and to ensure that the pipeline/structure is not subjected to excessive construction related loads, including excessive vibrations and/or concentrated or asymmetrical lateral loads during backfill placement.

E12.3.3 Large diameter pressure pipe generally has limited ability to withstand increased earth and live loading. Therefore, every precaution must be undertaken to ensure that applied loading during all phases of construction is within accepted loading parameters.

E12.4 Submissions

E12.4.1 Submit proposed construction equipment specifications to the Contract Administrator for review a minimum of five (5) Business Days prior to construction. The equipment submission shall include:

(a) equipment operating and payload weights;

(b) equipment dimensions, including wheel or track base, track length or axle spacing, track widths or wheel configurations; and

(c) load distributions in the intended operating configuration.

E12.4.2 Submit a construction method statement to the Contract Administrator a minimum of five (5) business days prior to construction. The construction method statement shall contain the following minimum information:

(a) proposed construction plan including excavation locations, haul routes, excavation equipment locations, and loading positions;

(b) excavation plans, including shoring designs, for excavations occurring in close proximity to feeder mains (within 5 m horizontal of the pipe's centerline) where the excavation/shoring system is to be extended below the top of the feeder mains embedment zone (150 mm above the pipe); and,

(c) any other pertinent information required to accurately describe the construction activities in close proximity to the feeder main and permit the Contract Administrator to review the proposed construction plans.

E12.4.3 Submit engineered shoring designs where required by the Work, or as determined by the Contract Administrator. Shop Drawings for engineered shoring designs shall be submitted in accordance with E6 and shall be sealed by a Professional Engineer registered and licensed to practice in the Province of Manitoba, and experienced in the structural design of shoring systems.

E12.4.4 Submit the following documentation for inclusion in the City's feeder main shutdown protocol for each planned feeder main shutdown a minimum of twenty (20) Business Days prior to the proposed shutdown and the Contractor should allow for a ten (10) Business Day review period by the City once accepted by the Contract Administrator.:

(a) a detailed schedule for the work, including a step by step list of a tasks to be undertaken during the shutdown;

(b) a contingency plan for any problems, issues, or unforeseen circumstance that might occur. The contingency plan shall include a detailed procedure and schedule for putting the feeder main back into service on an emergency basis; and,

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

E12.5 Exploratory Excavations

E12.5.1 Where required, the Contractor shall complete exploratory excavations to verify the location and depth of the critical water infrastructure prior to the Work, and to determine the excavation methods to be used to complete the proposed Work in accordance with E12.9.

E12.5.2 Concrete demolition and removal for exploratory excavations shall be completed in accordance with E12.9.

E12.5.3 Exploratory excavations shall be completed using soft dig or vacuum excavation methods to minimize the potential for any damage to the pipe.

E12.6 Feeder Main Shutdowns

E12.6.1 Note, feeder mains and large diameter water mains cannot typically be taken out of service on short notice to facilitate unplanned construction. Shutdown of any critical water infrastructure is at the discretion of the Superintendent of Water Distribution Operations, and no claim for delay will be considered if the City is unable to complete a shutdown in accordance with the Contractor's proposed schedule.

E12.6.2 The Contractor shall review the proposed Work with the Contract Administrator and the City and determine whether a shutdown of the pipeline is required to safely execute the Work. A minimum of fifteen (15) Business Days shall be allowed for review prior to consideration of any proposed shutdown.

E12.6.3 Where authorized to proceed, the Contractor shall schedule the work to minimize the duration of all shutdowns.

E12.6.4 Feeder main shutdowns and disassembly of feeder main components will not be permitted until all required submissions and protocols have been reviewed and accepted by the Contract Administrator and City. Further, all materials required to reinstate the feeder main shall be on site, inspected, and test fit prior to disassembly.

E12.6.5 Isolation of feeder main crossings will be completed by City forces using mainline valves and secondary valves wherever possible.

E12.6.6 The Contractor shall be responsible for dewatering the feeder main.

E12.7 Lock-out and Tag-out Procedures

E12.7.1 The City of Winnipeg will endeavor to provide redundant valve closures (double blocking) of pressurized pipelines that enter the work space where possible. However, there are locations within the system where it is impractical to provide double blocking without widespread service disruption. Where regional water system network does not allow double blocking, non-redundant valve closures (single blocking) will be provided.

E12.7.2 At locations where only single valve blocking is practical, additional safety measures and monitoring may be required in order to provide a safe work environment for employees. Development of adequate safety plans in accordance to the Workplace Safety and Health Act and Regulation 217/06 are the responsibility of the Contractor, but as a minimum shall include:

(a) Provision of adequate egress from confined spaces including removal of removable roof slabs and manhole covers, and provision of ladders and other means of site exit

(b) Use of body harnesses and safety hoisting equipment at all times when pressurized systems are disassembled and protected only by single block valves.

(c) Monitor and assess water leakage in closed system prior to disassembly of system. Monitor water leakage rate and advise Contract Administrator immediately of change in inflow rates. Evacuate confined space if necessary.

E12.7.3 The Contractor, City of Winnipeg Water and Waste Department, and Contract Administrator will all be required to lock out all valves closed in order to facilitate this work. Where site access and lockout space on system valves is limited, the following lockout/tag out procedures will be implemented;

(a) lockout locations for valves will be identified by the City;

(b) City of Winnipeg will provide a single lock, chains and other devices to adequately secure valves within pits and chambers. The Contractor has the right to inspect the installation and satisfy that the lockout system is adequate. All locks utilized will be commonly keyed;

(c) key(s) for single locked valves will be placed in secure lock box at the site. City staff, Contractors, and Contract Administrator will place personal/company locks complete with identification and tag out information on this lock box;

(d) key(s) placed within the secure lock box will not be removed until all City staff, Contractor, and Contract Administrator locks have been removed from the lock box, and verified that the work is completed; and,

(e) City staff will then unlock all valves, and will commence with restoration of the systems to service.

E12.8 Pre-Work, Planning and General Execution

E12.8.1 No work shall commence in close proximity to feeder mains, large diameter watermains, chambers, and other critical infrastructure until the equipment specifications and construction method statement have been submitted and accepted, and feeder main locations have been clearly delineated in the field. Work over feeder mains shall only be carried out with equipment that has been reviewed and quantified in terms of its loading implications on the pipe.

E12.8.2 Notify the Contract Administrator five (5) Business Days prior to commencement of any work near the critical water infrastructure.

E12.8.3 The Drawings provide the location of feeder mains, chambers, and critical pipelines at each site. Pipe locations noted on the Drawings are based on available record drawings.

E12.8.4 The Contractor shall conduct exploratory excavations to locate the critical infrastructure and confirm the position horizontally and vertically (if required) prior to undertaking work in close proximity to said infrastructure. Visually delineate all critical infrastructure identified herein on Site by use of paint, staking/flagging, construction fencing, snow fencing, or other suitable methods

E12.8.5 Only utilize construction practices and procedures that do not impart excessive vibratory loads on feeder mains and chambers or that would cause settlement of the subgrade below feeder mains and critical pipelines.

E12.8.6 Where the existing road structure must be removed, crossing of critical infrastructure shall be prohibited from the time the existing roadway structure is removed until the completion of granular base construction. At all times prior to completion of final paving; reduce equipment speeds to levels that minimize the effects of impact loading to the critical infrastructure.

E12.8.7 Only equipment and construction practices stipulated in the accepted construction method statement and the supplemental requirements noted herein may be utilized in close proximity to feeder mains, chambers, and other critical infrastructure identified herein.

E12.8.8 Construction operations should be staged in such a manner as to limit multiple construction loads at one time, (e.g., offset crossings sufficiently from each other, rollers should remain a sufficient distance behind spreaders to limit loads. A reasonable offset distance is 3 m between loads).

E12.8.9 Granular material, construction material, soil, and/or other material shall not be stockpiled on the pipelines or within 5 m of any critical infrastructure identified herein.

E12.8.10 The Contractor shall ensure that all crew members understand and observe the requirements of working near feeder mains, valve chambers, and critical infrastructure. Prior to commencement of on-Site work, the Contractor shall jointly conduct an orientation meeting with the Contract Administer, all superintendents, foreman, and heavy equipment operators to make all workers on the Site fully cognizant of the limitations of altered loading on, the ramifications of inadvertent damage to, and the constraints associated with work in close proximity to feeder mains and critical pipelines. New personnel introduced after commencement of the Project need to be formally orientated as outlined herein. It is recommended that restrictions associated with the crossing, consistent with the Contractor’s submitted method statement be posted on Site and near the crossing.

E12.9 Demolition, Excavation, and Shoring

E12.9.1 Use of pneumatic concrete breakers within 5 m of a feeder main, valve chamber, or other critical pipeline is prohibited. Pavement shall be full depth sawcut and carefully removed. Use of hand held jackhammers for pavement removal will be allowed.

E12.9.2 Offset excavation equipment a minimum of 3 m from the centerline of critical pipelines when undertaking excavations where there is less than 2.4 m of earth cover over the pipeline.

E12.9.3 Equipment should not be allowed to operate while positioned directly over a feeder main or critical pipeline except were permitted herein, outlined in the reviewed and accepted construction method statement.

E12.9.4 Utilize only smooth-edged excavation buckets, soft excavation, or hand excavation techniques where there is less than 1.5 m of earth cover over the pipeline. Where there is less than 1.0 m of soil cover above the pipeline, provide full time supervision and complete the excavation utilizing hand excavation or soft excavation methods.

E12.9.5 Excavations within 3 m of the outside edge of a feeder main (hydrovac holes for confirming trenchless installations excluded) and which extend below the obvert of the feeder main shall utilize shoring methods that precludes the movement of native in-situ soils (i.e. a tight shoring system).

(a) Shoring shall be designed and constructed as required based on the nature and condition of the existing soils at each site, to prevent caving, loss of ground, surface settlement, or squeezing of the soil beyond the lines of the excavation.

(b) Material used to construct shoring shall be in like-new condition and free from defects that might impair its strength or suitability for the Work.

(c) Shoring shall not touch the pipe and must be restrained from inadvertent movement which could result in damage to the pipe.

(d) The shoring designer shall inspect the shoring system during construction and certify in writing to the Contract Administrator that construction is in conformance with the design.

(e) Where required for shoring installation, pre-bore all piles to below the invert of critical infrastructure within 5 m (horizontally) of the pipeline’s outside edge.

(f) Offset pile driving equipment a minimum of 3 m (horizontally) from the centerline of the pipeline during piling operations.

E12.9.6 Excavations within 3 m of the outside edge of a feeder main and which extend below the springline of the pipe may require the design and installation of engineered shoring. Engineered shoring shall be provided in accordance with E12.10.

E12.10 Engineered Shoring

E12.10.1 Further to the general requirements of E12.9.5, the design of engineered shoring and bracing shall be based on the existing ground and site conditions as required to prevent the loss of bedding material below the pipe springline.

E12.10.2 Engineered shoring shall be designed and sealed by a Professional Engineer registered and licensed to practice in the Province of Manitoba, and experienced in the structural design of shoring systems.

E12.10.3 Shop Drawings, including drawings and design calculations for the proposed shoring system, shall be submitted in accordance with E6. Design calculations shall demonstrate the suitability of the shoring system for the soil conditions at each location.

E12.11 Construction

E12.11.1 Install pipes to the grades shown on the Drawings. A minimum clear separation distance (outside to outside of pipe wall) of 500 mm shall be maintained between crossing pipes and the critical pipelines, or as shown on the drawings, whichever is greater.

E12.11.2 The Contractor shall locate critical pipelines and confirm their position horizontally and vertically prior to commencing the Work to ensure proper clearances are maintained. Under no circumstances should Work proceed prior to visually locating the pipe.

E12.11.3 No trenchless excavation methods involving soil displacement (plugs) shall be permitted in the vicinity of critical pipelines.

E12.11.4 Where excavation is required within the critical pipeline's embedment zone, the Contractor shall take steps to ensure the granular embedment material sounding the pipeline remains stable during the work.

E12.12 Subgrade Construction

E12.12.1 Backfill for excavations within close proximity to critical infrastructure shall be completed in accordance with CW 2030 using Class 2 backfill.

E12.12.2 Flood tamping is not permitted in a zone within 2.5m (horizontal offset) from the edge of the pipe. Granular backfill shall be placed and mechanically compacted in maximum 300mm thick lifts. Mechanical compaction equipment shall be limited to walk behind vibratory compactors only. Compaction using a backhoe / excavator bucket is not permitted due to the potential for over-compaction and vibration.

E12.12.3 Subgrade, sub-base and base course construction shall be kept in a rut free condition at all times. Construction equipment is prohibited from crossing pipelines if the grade is insufficient to support the equipment without rutting.

E12.12.4 Subgrade conditions should be inspected by personnel with competent geotechnical experience (e.g. ability to adequately visually classify soils and competency of subgrade, subbase, and base course materials). In the event of encountering unsuitable subgrade materials above a critical pipeline, proposed design revisions shall be submitted to the Contract Administrator for review to obtain acceptance from the Water and Waste Department relative to any change in conditions.

E12.12.5 Fill material shall not be dumped directly on pipelines but shall be stockpiled outside the limits noted in these recommendations and shall be carefully bladed in-place

E12.12.6 Only use compaction equipment accepted by the Contract Administrator to compact fill materials above critical pipelines. Compaction of fill materials shall be completed using static methods only, no vibratory compaction will be allowed within the limits noted in these recommendations.

E12.12.7 Construction operations shall be staged to minimize the time period between excavation to subgrade and placement of granular subbase materials. Should bare subgrade be left overnight, measures shall be implemented to protect the subgrade against inadvertent travel over it and to minimize the impact of wet weather.

E12.13 Shoring Removal

E12.13.1 Shoring systems shall be completely removed upon completion of the works.

E12.13.2 Shoring and bracing shall be removed in stages while backfilling the excavation. Care shall be taken to remove the shoring system and backfill the trench in such a way as to not create voids. If the shoring system requires removal after backfill is in place, resulting voids shall be filled with flowable cement slurry.

E12.14 Subbase and Base Course Construction

E12.14.1 Subbase or base course materials shall not be dumped directly on pipelines but shall be stockpiled outside limits noted in these recommendations and shall be carefully bladed in-place.

E12.14.2 Subbase compaction within 3 m horizontal of the centreline of a critical pipeline shall be either carried out by static methods (without vibration) or with smaller approved equipment such as hand held plate packers or smaller roller equipment.

E12.15 Paving

E12.15.1 When constructing asphalt pavements only non-vibratory compaction should be used within 3 m (horizontal) of the center of critical pipelines.

E12.16 Measurement and Payment

E12.16.1 Exploratory Excavations

(a) Exploratory excavations to locate critical water infrastructure will be measured on a unit basis per exploratory excavation required and paid for at the Contract Unit Price for “Exploratory Excavation at Critical Water Infrastructure” in Form B: Prices.

(b) Pavement restorations for exploratory excavations will be measured and paid for in accordance with E19 and E20. Restoration of pavement for exploratory excavations which falls within a pipeline access shaft will not be measured for additional payment, and shall be included in the unit price bid for “Pipeline Access” in accordance with E11.

E12.16.2 Engineered Shoring for Work in Close Proximity to Critical Infrastructure

(a) All work associated with the design and provision of engineered shoring to protect critical water infrastructure will be measured on a unit basis per excavation requiring engineered shoring, and will be paid for at the Contract Unit Price for “Engineered Shoring” in Form B: Prices.

(b) The requirement for engineered shoring will be determined by the Contract Administrator based on the findings of the exploratory excavations in advance of the Work.

(c) Engineered shoring required for pipeline access or to otherwise facilitate the Work where critical water infrastructure is not present will be considered incidental to Pipeline Access and will not be measured for payment.

E13. SEWER AND MANHOLE REPAIRS AND STABILIZATION

E13.1 Description

(a) Sewer and manhole stabilization shall mean the internal repair of sewers and manholes by man entry techniques. Repairs are varied and may consist of holes in sewers with voids, missing bricks in sewers, obstructions and manhole base or riser repairs. Sewer stabilization repairs shall be carried out in accordance with this specification and Appendix A prior to performing sewer lining.

(b) This section addresses sewer and manhole cleaning and repairs required to facilitate installation of CIPP liners.

(c) The scope of work involved in sewer stabilization is as follows:

(i) Secure the site and provide temporary traffic control.

(ii) Obtain all necessary underground clearances.

(iii) Conduct a hazard assessment, including identification and evaluation.

(iv) Develop a safe work plan.

(v) Implement the necessary procedures and controls to control hazards and maintain a safe working environment.

(vi) Enter the manhole/sewer and perform the required repairs.

(vii) Clean-up the site.

E13.2 Materials

E13.2.1 Concrete

(a) Concrete for large internal repairs to concrete and brick sewers and manholes and internal void filling shall be in conformance with Table CW 2160.1, Type B.

(b) Patching and grouting of repairs to concrete and brick sewers and manholes shall be with a fast hardening high strength concrete repairing compound designed for underwater use

(i) Approved products: Duro-Crete by C Chemicals or approved equal in accordance with B7.

(c) Flowable cement-stabilized fill for external void filling from the ground surface shall be in conformance with Table CW 2160.1, Type D.

E13.2.2 Manhole components shall conform to CW2130.

E13.3 Sewer Repairs and Preparation Work

E13.3.1 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. Copies of these video inspections are available to the Contractor upon request by providing a portable hard disk drive (HDD) to the Contract Administrator. The Contract Administrator will copy the inspections onto the HDD and make available to the Contractor for review purposes.

(b) The Contractor shall be aware that the video inspections provided were completed immediately after sewer cleaning and the amount of sediment and debris present at the time of this Bid Opportunity 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 and cleaning/preparation works evident in the existing sewer inspection videos have been provided in Appendix A.

(d) Refer to E13.3.3(b) for additional site-specific conditions.

E13.3.2 Sewer Cleaning

(a) Cleaning of sewers and manholes shall be completed in accordance with CW 2140 and this Specification.

E13.3.3 Notwithstanding E13.3.1(a), the following sewer stabilization, repairs, and preparation work can be reasonably assumed to be required and shall be completed prior to undertaking the identified rehabilitation work:

(a) General Preparation

(i) Remove loose debris, solid debris, roots, and grease in accordance with CW 2140.

(ii) Remove any remaining organic or biological materials.

(iii) Remove any loose or spalling concrete to a depth sufficient to provide a competent host pipe surface.

(iv) Remove any loose or damaged bricks and/or mortar.

(v) Remove wall encrustations throughout.

(vi) Remove encrustations at service connections.

(vii) Grout sewer services as required following encrustation removal.

(viii) Remove intruding sewer connections in accordance with CW 2140.

(ix) Reshape host sewer pipe invert to the original dimension and cross section at locations where the invert has completely deteriorated.

(b) Further to E13.3.3(a), the following site-specific repairs shall be completed prior to liner installation work:

(i) Refer to Appendix A.

(c) Further to E13.3.3(a), and unless noted otherwise on the Drawings, the following work shall be completed prior to the installation of CIPP liners:

(i) In accessible sewers (equal to or greater than 900 mm), prepare and fill all voiding, holes, and discontinuities in the host pipe wall greater than 50 mm in depth or 150 mm in diameter to provide a reasonably smooth surface against which to install the liner.

(ii) Fill voiding from any missing bricks with a cementitious repair product.

(iii) Repair any sources of infiltration to a level required to successfully complete the liner installation.

E13.3.4 The above is the minimum work program required, specific installation requirements for the chosen rehabilitation technology may require additional work beyond what has been specified herein. The Contractor is encouraged to familiarize themselves with the available CCTV data during tendering. Claims for additional costs related to prep work required to complete the installation where conditions are found to be consistent with the tendered condition of the pipeline will not be considered.

E13.4 Construction Methods

E13.4.1 Equipment Set Up

(a) In accordance with the safe work plan for the repair, the Contractor shall set up the required safety equipment and controls to safely perform the work.

(b) Specialized equipment to perform the repair work, such as lights, pressure washers, drills and chipping hammers shall in no way adversely affect the operation of the safety equipment required to perform the work.

(c) Subsequent to completion of the repairs the Contractor shall remove all equipment form the sewers and manholes.

E13.4.2 Internal Sewer Repairs

(a) The Contractor shall repair the sewer fabric to restore the structural integrity of the sewer and provide a smooth flow surface conforming to the adjacent sewer/manhole cross-section and materials.

(b) Large concrete repairs shall include a reasonable and limited level of surface preparation, including removal of unsound material and cleaning of the edges of the repair area, and setting of the required formwork and bracing. Concrete placement and finishing shall be done in accordance with CW 2160. All formwork and bracing shall be removed from the sewer/manhole at the completion of the work.

(c) Concrete patching shall include a reasonable and limited level of surface preparation, including removal of unsound material and cleaning of the edges of the repair area. The Contractor shall apply the patching material in accordance with the manufacturer’s printed instructions.

(d) Small voids in the backfill shall be filled with concrete or other approved material from the inside of the sewer prior to repairing the sewer fabric or by pressure grouting after completion of the repairs. The void shall be completely filled to prevent settlement of the backfill and provide a solid backing for the liner.

(e) Pressure grouting shall be done in accordance with the manufacturer’s printed instructions.

(f) Large voids shall be filled from the ground surface after completion of the repairs. Holes shall be cored in the pavement or the pavement shall be saw cut and removed to permit vacuum excavation from the underside of the pavement to the void. The void shall then be completely filled with flowable cement-stabilized fill.

E13.4.3 External Point Repairs

(a) The Contractor shall provide CCTV video of any proposed EPRs for review and acceptance by the Contract Administrator prior to undertaking the work to confirm the extents and location of the repair.

(b) Complete external point repairs in accordance with CW 2130.

E13.4.4 Sewer Service Grouting

(a) Sewer service grouting prior to lining shall be completed using a non-shrink, watertight cement grout, an appropriate polyurethane grout compound, or other approved grouting product, compatible with the existing host pipe. Grouting shall create a watertight and smooth inner surface for the host pipe and sewer service.

(b) Sewer service grouting post lining shall fill voids between the sewer liner and the host pipe at sewer service openings with an appropriate polyurethane or other grouting system that is compatible with the liner system to form a smooth watertight connection.

E13.4.5 Post-Liner Installation Annulus Grouting for Tight Fit Liners

(a) Complete annulus grouting where voids are evident between the liner and the host pipe.

(b) Annulus grouting post lining shall be completed using an appropriate cementitious or polyurethane grouting system that is compatible with the liner system.

(c) A cementitious grout shall be used where grouting is required to achieve long term structural performance of the liner and host pipe. In all other applications, a polyurethane grout may be used to fill voids between the liner and host pipe.

(d) Cementitious grout shall conform to the requirements of CW 2130 and CW 2160.

(e) The Contractor shall ensure short-term buckling pressures of the installed liner are not exceeded during the grouting process.

(f) A detailed grouting plan shall be submitted for all grouting operations, including the following:

(i) Proposed grouting material complete with physical characteristics.

(ii) Grouting procedure complete with estimated grouting pressures.

(iii) Allowable grouting pressure based on the buckling capacity of the installed liner.

E13.4.6 Sewer Service and Catch Basin Lead Repair

(a) Repair and restore all catch basin leads where indicated on the Drawings or as required in agreement with the Contract Administrator and reconnect to the sewer main in accordance with CW 2130.

(b) Clean all catch basin leads prior to inspection in accordance with CW 2140 and E9.8.

(c) Inspect all catch basin leads scheduled for repair in accordance with CW 2145 and E9.8. Catch basin leads shall be inspected prior to excavating to confirm the extents of repairs required. Provide a copy of the inspections and proposed repair extents to the Contract Administrator for review prior to construction.

E13.4.7 Manhole Repairs, Modifications, and Installations

(a) Complete manhole repairs, modifications, and new installations identified in the Specifications or on the Drawings shall be completed in accordance with the drawings and CW 2130.

(b) Manhole rungs removed to facilitate liner installation activities liner shall be replaced with new manhole rungs meeting the requirements of CW 2130. New manhole rungs are only required to be installed where the existing manhole diameter is 1200 mm or greater, or as directed by the Contract Administrator. Short sections of smaller diameter risers at pavement level, where the main diameter of the MH barrel is 1200 or larger shall have new manhole rungs installed where required. Review with the Contract Administrator on site prior to completing the work.

(c) Complete cast-in-place concrete and reinforcing steel work as shown on the Drawings and in accordance with E15 and E16.

E13.5 Inspections

(a) Complete panoramic manhole inspections in accordance with E10 wherever manholes are modified or repaired through the course of the work.

E13.6 Quality Control

E13.6.1 Repair Acceptance

(a) Upon completion of the designated repair the Contractor shall clean and perform the pre-lining inspection.

(b) The Contractor shall not be responsible for defects in existing un-repaired sewer lines unless those defects are a direct result of the Contractor's operation.

E13.6.2 Correction of Deficiencies

(a) The Contractor shall correct deficiencies found in the sewer repair at their own cost including the cost of re-cleaning and re-inspection to confirm that the deficiencies are rectified in accordance with these specifications.

E13.7 Measurement and Payment

E13.7.1 Sewer and Catch Basin Lead Cleaning

(a) Sewer cleaning, including catch basins will be measured and paid in accordance with CW2140, except as modified herein:

(b) The total length of cleaning to be paid will be the total length of sewer cleaned 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 cleaning is completed, the length of sewer cleaned will be the length recorded by the Contractors calibrated inspection equipment or as determined by the Contract Administrator.

(c) Only one item of payment will be made for pre-lining cleaning.

(d) 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.

E13.7.2 Sewer Preparation Work

(a) Removal of intruding sewer services and solid debris cutting will be measured and paid for in accordance with CW2140.

(b) Grease and roots cutting will be measured on a unit basis and paid for at the Contract Unit Price for "Removal of Grease and 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.

E13.7.3 Internal Sewer Repairs

(a) Internal sewer repairs will be measured on a unit basis and paid for at the Contract Unit Price for "Internal Sewer Concrete Patching" for the respective repair type. The number of units to be paid will be the total number of internal sewer repairs made in accordance with this specification, accepted and measured by the Contract Administrator.

(i) Concrete patching of sewer walls in sewers less than 900 mm in diameter up to 0.5 m from the manhole interface will be measured and paid for on a unit basis and paid for at the Contract Unit Price for "Internal Sewer Concrete Patching at Manhole Interface for Sewers Less than 900 mm in Dia – Up to 0.5 m Long".

(ii) Concrete patching of sewer walls in sewers 900 mm in diameter and greater up to 1.0 meter in length will be measured and paid for on a unit basis and paid for at the Contract Unit Price for "Internal Sewer Concrete Patching for Sewers Equal to and Greater than 900 mm in Dia – Up to 1.0 meter long".

(iii) Concrete patching of sewer walls in sewers 900 mm in diameter and greater in lengths greater than 1.0 meter in length will be measured and paid for on a linear meter basis and paid for at the Contract Unit Price for “Internal Sewer Concrete Patching for Sewers Equal to and Greater than 900 mm in Dia – Greater than 1.0 meter long”.

(iv) Cross bore grouting will be measured and paid on a lump sum basis at the Contract Unit Price for “Internal Sewer Concrete Patching for Sewers Equal to and Greater than 900 mm in Dia – Cross Bore Grouting” at the locations identified in Form B.

(b) Payment for Internal Sewer Repairs shall include all materials, equipment and labour required to complete the work as specified.

E13.7.4 Annulus Grouting

(a) Annulus voids due to the Contractor’s method of lining, deficiencies in the liner installation, or any other reason related to the Contractor’s workmanship or method of operations shall be filled at the Contractor’s expense.

(b) Repair of defective or incomplete annulus grouting shall be at the Contractors own expense.

(c) Where specified, annulus grouting will be measured and paid on a lump sum basis at the Contract Unit Price for “Annulus Grouting” at the locations identified in Form B.

E13.7.5 Manhole Modifications

(a) The completion of all manhole and sewer modifications to facilitate pipeline access will be measured and paid in accordance with E11.6.

E13.7.6 New Manhole Installation

(a) Where identified on the Drawings, the installation of new manholes will be measured and paid on a lump sum basis at the Contract Unit Price for “New Manhole on Existing Sewer” at the locations identified in Form B.

E13.7.7 Catch Basin Lead Repair

(a) Cleaning and inspection of catch basin leads scheduled for repair will be paid in accordance with E9.9.2 and E13.7.1.

(b) Restoration of catch basin leads scheduled for repair will be measured and paid on a linear meter basis at the Contract Unit Price for “Catch Basin Lead Repair” at the respective diameters and locations identified on Form B. Maximum length to be paid will be the total length of new catch basin lead installed as verified by field measurement or CCTV inspection. Payment shall include all materials, equipment, and effort required to complete the work, including excavation, backfill, and surface restoration.

E13.7.8 External Point Repairs

(a) Construction of EPRs will be measured and paid in accordance with CW 2130, except as modified herein.

(b) Maximum length of repair to be paid will be the total length of repair verified by the pre-lining CCTV inspection and accepted by the Contract Administrator.

(c) Payment will be at the Contract Unit Price(s) for each scheduled repair as identified in Form B and on the Drawings. Payment shall include all labour, equipment, and materials required to complete the work, including excavation, pipe repair, pipe connections, and backfill.

(i) 80% payment will be made upon completion of the EPR, backfill, and temporary site restoration.

(ii) 100% payment will be made upon acceptance of the EPR after submission and review of the pre-lining CCTV inspection.

(d) External Point Repairs for sewer services and catch basin leads where mainline sewer repair is not required shall include all material to complete the work, including couplers and external pipe saddles required to complete connection to the mainline sewer.

(e) Surface restoration for EPRs will be measured and paid in accordance with E20.

E13.7.9 Sewer Service and Catch Basin Lead Repair

(a) Cleaning and inspection of catch basin leads scheduled for repair shall be paid in accordance with E9.

(b) Construction of sewer service and catch basin lead repairs will be measured and paid in accordance with CW 2130.

E13.7.10 Provisional - Sewer Service Grouting

(a) Sewer service grouting will be measured on a unit basis and paid for at the Contract Unit Price for “Sewer Service Grouting (Sewer Diameter 900 mm and Greater)”. Number of units to be paid for will be the total number of sewer services grouted in accordance with this specification, accepted and measured by the Contract Administrator.

(b) If voids at sewer services are due to the Contractor’s method of reinstatement, deficiencies in the liner installation, or any other reason related to the Contractor’s workmanship or method of operations, grouting shall be completed at the Contractor’s expense.

E13.7.11 Provisional – Replacement of Manhole Rungs

(a) Replacement of existing manhole rungs will be measured and paid for in accordance with CW2130. Payment for replacement of existing manhole rungs shall include removal of existing rungs where required.

(b) Number of units to be paid for will be the total number of rungs instated in accordance with this specification, accepted and measured by the Contract Administrator.

E13.7.12 Provisional – Manhole Components

(a) The supply of replacement of existing manhole components will be measured and paid for on a unit basis for the component supplied at the applicable unit price in Form B. Payment for replacement manhole components shall include supply to site only, except where noted in Form B.

(b) Number of units to be paid for will be the total number of components supplied and/or installed in accordance with this specification, accepted and measured by the Contract Administrator.

E13.7.13 Provisional – Manhole and Catch Basin Repairs

(a) The completion of all manhole and sewer modifications to facilitate pipeline access will be measured and paid in accordance with E11.6.

(b) Where additional manhole works are required beyond what is required to facilitate lining or identified by the Contract Administrator, payment will be made in accordance with E4 and E13.7.14. Work may include additional works required due to manhole deterioration in excess of that identified at the time of tendering or additional repairs identified by the Contract Administrator through the course of the project. Confirm all extra repairs with the Contract Administrator prior to commencement.

(c) Repair of concrete manhole benching will be measured on a unit basis and paid for at the Contract Unit Price for “Repair of Concrete Benching (up to 0.5 m3)”. Payment for concrete manhole benching repair shall include all required materials and labour to complete the repair of the manhole benching identified by the Contract Administrator up to 0.5 m3 of grout. Number of units to be paid for will be the total number of repairs completed in accordance with this specification, accepted and measured by the Contract Administrator.

(d) Patching of existing manhole barrels or structure will be measured and paid on a vertical meter basis at the Contract unit price for “Patching Existing Manholes”. Payment shall include all materials, labour, and equipment required to complete the work as specified.

(e) Repointing of existing brick manholes will be measured and paid on a vertical meter basis at the Contract unit price for “Re-Pointing Existing Brickwork”. Payment shall include all materials, labour, and equipment required to complete the work as specified.

(f) Grout patching around existing manhole pipe connections will be measured on a unit basis and paid for at the Contract Unit Price for “Manhole Pipe Connection Grouting”. Payment for manhole pipe connection repairs shall include all required materials and labour to complete the repair. Number of units to be paid for will be the total number of repairs completed in accordance with this specification, accepted and measured by the Contract Administrator.

E13.7.14 Cash Allowance for Provisional Sewer and Manhole Repairs

(a) Cash allowances will be evaluated for payment in accordance E4.

(b) The Cash Allowance for Provisional Sewer and Manhole Repairs is intended to be used for the out-of-scope construction and repair of manholes and sewers not previously identified on Form B and as directed by the Contract Administrator.

(c) Post-Lining EPRs required to repair defects in the installed sewer liner caused by negligent or deficient installation procedures will not be considered for payment.

E14. CURED-IN-PLACE PIPE

E14.1 Description

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

E14.2 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 will generally be longer than ten metres in length.

(e) Non-Reinforced CIPP liners will be considered any CIPP liner constructed from non-reinforced felt.

(f) Reinforced CIPP liners will be considered any CIPP liner constructed from either a carbon fibre or glass fibre reinforced felt.

(g) Minimum material requirements for CIPP shall conform to ASTM D5813 “Standard Specification for Cured-In-Place Thermosetting Resin Sewer Pipe” and the supplemental requirements are noted herein.

E14.3 Pre-Approved CIPP Suppliers, Installers, and Materials

(a) The following is a list of sewer lining systems – suppliers, installers and materials that have been pre-approved under the City of Winnipeg “Request for Qualifications for the Supply and Installation of Cured in Pipe (CIPP)” Bid Opportunity No. 253-2006 for City of Winnipeg sewer rehabilitation projects.

Pre-Approved CIPP Suppliers and Installers

Applicant	***Insituform Technologies Limited***	***Capital Commercial Pipe Services***	***Nelson River Construction Inc.***
Contact	Andrew Foster 780-413-0200	Brian Ratchford 905-522-0522	Mike Huard 204-949-8700
Supplier	Insituform Technologies Inc.	Capital Commercial Pipe Services	C.I.P.P. Corporation
Installer	Insituform Technologies Limited	Capital Commercial Pipe Services	Nelson River Construction Inc.
Liner Name	Standard ITL CIPP & Standard ITL CIPP AISC	Capital Lining System (CIPP)	C.I.P.P. Corp Liner

E14.4 Submittals

E14.4.1 Installation of CIPP Liners shall not commence prior to submission and review of the submissions identified herein by the Contract Administrator.

E14.4.2 Provide CIPP designs for review by the Contract Administrator in accordance with E6 and a minimum of ten (10) Business Days prior to starting lining operations. CIPP shop drawings shall including the following information and shall be sealed and signed by a Professional Engineer licensed to practice in the Province of Manitoba and experienced in the design of trenchless rehabilitation systems.

(a) CIPP thickness computations including all specified design checks identified in E14.5. Identify design assumptions based on a review of the Sewer Maintenance Inspection that differ from the information provided in the Specifications for the existing sewer design conditions.

(i) Tabular design summaries are acceptable as a design submission for all small diameter liners (considered less than 450 mm in diameter). Tabular design submissions must meet all requirements outlined herein and include all design inputs and assumptions.

(ii) Design submissions for all large diameter sewers (considered equal to or greater than 450 mm in diameter) shall include all calculations and be submitted on individual calculation sheets.

(b) Name and manufacturer of the resin and felt tube proposed for each CIPP.

(c) Means of liner installation and curing method (e.g. air/steam, water, air/UV).

(d) CIPP material properties used for design.

(e) Host pipe measurements identified in E9.2.1 including the following:

(i) Sewer length;

(ii) Host pipe dimensions;

(iii) Sewer invert depths

(f) Liner sizing. Identify under-sizing from the measured circumference and anticipated liner stretch to form a close fit with the host pipe.

(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.

E14.4.3 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, provide a representative sample from each batch of resin to be used on the project before adding the catalyst at the wet-out facility.

(c) The Contract Administrator will arrange and pay for an infrared analysis of the samples, if required for the project.

E14.4.4 Submit a liner impregnation protocol that provides information on the following a minimum of five (5) Business Days prior to wet out of 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%) into cracks and joints of the host pipe.

(e) Roller gap setting required to provide the final installed CIPP thickness based on the proposed volume of resin.

(f) Details of the wet-out procedure for internal point repair CIPP.

(g) Details of the field wet-out procedure for TPR's.

E14.4.5 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 and sewer service flow control arrangements in accordance with E8. Note, flow control plans may be submitted separate from the liner installation protocol.

(b) Installation and curing method complete with proposed equipment.

(c) A full curing protocol, including:

(i) Curing times (heat up, curing, cool down)

(ii) Curing temperatures

(iii) Inversion and cure pressures (maximum and minimum)

(iv) Rate of travel of the UV light train and amount of lamps in operation in the case of UV cures.

(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) Tabular installation protocols showing multiple installations are acceptable for all small diameter liners (considered to be less than 450 mm in diameter), provided they meet all other requirements outlined herein.

(ii) Installation protocols for all large diameter sewers (considered equal to or greater than 450 mm in diameter) shall be submitted as individual submissions.

E14.4.6 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 utilized.

(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.

E14.4.7 Submit a styrene management plan in accordance with E14.7.9 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.

E14.5 Design of CIPP Liners

E14.5.1 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) Additional design objectives for internal point repair CIPP include.

(i) Providing a smooth transition between the internal point repair CIPP and the host pipe to prevent the build-up of solids and minimize wear on the repair due to routine sewer cleaning and other maintenance activities.

(ii) Filling any existing voids outside the sewer at the point of repair.

(l) Select a CIPP product and construction approach for rehabilitation with the intent towards maximizing the achievement of these design objectives.

E14.5.2 General

(a) Chemical and mechanical properties of the liner based on the waste stream to establish and minimum design life of 50 years.

(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) Design features of internal point repair CIPP shall include:

(i) Design internal point repair CIPP as a gravity pipe in a fully deteriorated pipe condition and the depth of cover calculated based on the specific location of the repair in the sewer or sewer service.

(ii) Tapered end sections to promote a smooth transition from the repair to the host pipe.

(iii) A means to facilitate flow through by-pass of existing dry weather flow during the course of the repair.

(d) 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 and approved for use in the pre-qualification process. A minimum test length of 10,000 hours is required. The Contractor shall provide supporting long term test data conforming to ASTM D2990 for any resin and felt composites not approved for use in the prequalification process. Where long-term flexural strength creep retention testing data is not available, long-term flexural modulus creep retention values shall be utilized for design for both properties.

(e) 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 not approved for use in the prequalification process.

E14.5.3 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) 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) assuming a flexible pavement condition.

(d) 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.

E14.5.4 Hydraulic Design Checks

(a) Perform a design check to confirm that the full flow hydraulic capacity of the CIPP will be equal to or greater than the existing sewer. Use “Manning’s” formula with assumed ‘n’ value of 0.012 for the CIPP and 0.014 for the existing sewer. Report any sewers showing a decrease in post lining flow capacity from existing conditions.

E14.5.5 Circular CIPP Design – Minimum Design Assumptions

(a) An enhancement factor (K) of 7, assuming a close fit with the host pipe.

(b) Minimum factor of safety (N) of 2 for restrained buckling analysis.

(c) Modulus of soil reaction (E’s) will be assumed to be 6900 kPa unless otherwise specified.

(d) The following minimum values for ovality of the existing sewer shall be used unless otherwise specified or as determined from observation of the maintenance inspection:

(i) Partially deteriorated design – 3%

(ii) Fully deteriorated design – 2%

E14.5.6 Circular CIPP Design - Partially Deteriorated Condition

(a) Design CIPP for partially deteriorated pipe condition in accordance with Appendix X1 of ASTM F1216 and the following minimum design checks:

(i) Determine wall thickness by restrained buckling analysis.

(ii) Determine whether wall thickness will be governed by long-term flexural stress.

(iii) Determine whether any localized thickening is required for missing segments or holes in the host pipe.

(iv) Perform supplemental design checks where the host pipe has invert “flats” to determine whether wall thickness will be governed by one of the following:

- Buckling by assuming the flat functions as a pin-ended strut.
- Stress, by assuming the flat functions as a pinned member, subjected to axial and transverse loads.
- Deflection by assuming that allowable deflection is limited to 3% of the length of the flat.

E14.5.7 Circular Design – Fully Deteriorated Condition

(a) Design CIPP for fully deteriorated pipe condition in accordance with Appendix X1 of ASTM F1216 and the following minimum design checks:

(i) Determine wall thickness by restrained buckling analysis.

(ii) Check minimum wall thickness requirements.

(b) Applied external loads shall be estimated in accordance with Appendix X1 of ASTM F1216.

E14.5.8 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 E13.3.1(a) regarding obtaining copies of the existing inspections.

(b) The site-specific design conditions and repair requirements applicable to each CIPP lining location are shown in Appendix A and Appendix B.

E14.6 Materials

E14.6.1 Non-Reinforced CIPP Products

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

E14.6.2 Reinforced CIPP Products

(a) Reinforced CIPP products shall conform to the requirements of ASTM F2019 and D5813. Notwithstanding ATSM 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.

E14.7 Construction Methods

E14.7.1 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 E9.2.1.

E14.7.2 Sewer Cleaning

(a) Remove loose debris, solid debris, roots, and grease in accordance with E13 and CW 2140 in order to adequately prepare the sewer for lining.

E14.7.3 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 repairs as indicated in Appendix A - Host Pipe Conditions and Inspections in accordance with E13 of this specification.

(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.

(iv) Remove intruding sewer services in accordance with CW 2140.

(v) Sewer service grouting in accordance with E13.

E14.7.4 Manhole and Catch Basin Modifications

(a) Remove and replace manhole frames, covers, rungs and risers required to facilitate the CIPP installation in accordance with E13 and CW 2130.

E14.7.5 Continuous Temperature Monitoring

(a) 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. 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; and/or

(iii) as specified in E14.8 and/or on the Drawings.

E14.7.6 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) Extend limits for internal point repairs a minimum of 300 millimetres in each direction beyond the limits of the defect to be repaired. Extend internal point repairs that terminate at sewer service services a minimum distance of 300 millimetres beyond the limit of the service.

(g) Ensure termination points of internal point repairs provide a smooth and uniform flow transition to the host pipe for the full circumference of the repair.

E14.7.7 Reinstatement of Sewer Services

(a) Reinstate all active and indeterminate sewer services including CB leads and utility drains to 100% of the original cross-sectional area.

(b) Cut out openings for sewer services from inside the lined sewer by manual means or with a television camera and a remote-controlled cutting device.

(c) Remove sharp edges from opening cut outs and provide a smooth rounded lip.

(d) Sewer Service Grouting

(i) Sewer service grouting may be required if visible voiding is present at the service during the review of Post Lining Video Inspection.

(ii) Complete sewer service grouting in accordance with E13.

(e) Ensure that all cut-outs for sewer connections are removed from the sewer and are prevented from being washed into the sewer system downstream of the repair location. Damages resulting from failure to capture CIPP cut-outs will be the direct responsibility of the Contractor.

E14.7.8 Annulus Grouting

(a) Complete annulus grouting in accordance with E13 where identified by the Contract Administrator during the Post Lining Video inspection.

E14.7.9 Styrene Management

(a) Under no circumstances shall cure water or condensate containing styrene be discharged into a land drainage 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) in accordance with E14.4.7 for each identified site a minimum of five (5) Business Days prior to lining.

(i) Styrene Management Plans are required for the following locations:

- S-MA60018036 (Belair Rd);
- S-MA60017613 (Easement E of Sandra Bay);
- S-MA60022542 (La Grave St);
- S-MA60012800 (Waterford Ave);
- S-MA60013016 (Waterford Ave);

(d) Irrespective of the need for a styrene management plan, the contractor shall not discharge styrene laden waters to a water course, land drainage sewer, or other surface drainage feature.

(e) The Contractor’s Styrene Management Plans shall include at least one of the following methods of control:

(i) Use of styrene fee 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;

(iv) On-site monitoring to verify no residual styrene is discharged to the environment where UV curing methods are used;

(f) 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 the liner installation.

E14.7.10 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. 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.

(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.

E14.7.11 CIPP Samples for Quality Assurance Purposes

(a) 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.

(b) The Contractor shall provide the following samples from each CIPP liner:

(i) Confined test sample in accordance with E14.7.11(j);

(ii) Plate sample in accordance with E14.7.11(k).

(c) 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 E14.7.11(e) of this specification will be used to confirm flexural strength and flexural modulus.

(d) 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.

(e) Where plate sample test results are used for confirmation of CIPP physical strengths and/or design reconciliation purposes, they will be reduced by the statistical difference between plate and pipe sample testing results on the project as described in E14.7.11(d). 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.

(f) In larger sewer sizes where it is not possible to provide a full diameter confined test sample, and where requested by the Contract Administrator, the Contractor shall cut a sample directly from the installed CIPP liner in accordance with E14.7.11(l).

(g) 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 Clauses E14.7.1 and E9.2.1 of this specification to confirm in-place liner thickness.

(h) The Contract Administrator will review CIPP liner thickness results taken from test plates or unconfined samples on a case-by-case basis. Liner thickness results of test plate samples will not be considered where confined test samples have also been taken.

(i) All samples shall be clearly and legibly labelled as follows:
  (i) City of Winnipeg tender number
  (ii) City of Winnipeg asset number
  (iii) Date of installation
  (iv) Street name

(j) Confined Test Samples
  (i) Provide necessary forms of the same diameter as the host pipe and secure a minimum 300 millimetre long full diameter confined test sample from each CIPP and internal point repair. Large diameter CIPP liners utilizing reinforcing may require a longer sample length, confirm with the Contract Administrator.
  (ii) Locate the test sample from inside an intermediate manhole or at a termination point and invert through the form.
  (iii) Confined test sample forms shall be covered with sandbags or a similar medium to form a heat sink that approximates the install conditions of the CIPP liner in the host sewer.
  (iv) Cut the CIPP sample to coincide with multi-piece form if used for CIPP larger than 450 millimetres in diameter to facilitate removal from the manhole.
    - Identify the sewer where the liner sample is from on the form or sample itself if no form and provide to the Contract Administrator intact in the form.

(k) 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) All test plate samples shall be a minimum of 300mm x 300mm.
  (iv) Further to and notwithstanding E14.7.11(k)(iii), test plates for unreinforced liners shall be sized such that a minimum of 5 test coupons can be produced with a minimum 16:1 length to thickness (span to depth) ratio for testing in accordance with ASTM D790. Test plate sample size shall account for the

removal of damaged or untestable edge imperfections in the liner prior to testing.

(v) Further to and notwithstanding E14.7.11(k)(iii), test plates for reinforced liners shall be sized such that a minimum of 5 test coupons can be produced with a minimum 32:1 length to thickness (span to depth) ratio for testing in accordance with ASTM D790. 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 the CIPP installation.

- Width: 13 times the thickness of the liner
- Length: 35 times the thickness of the liner

(vi) Prepare test plate samples on-site from the actual CIPP and cure in the following manner:

- For the full duration and comparable temperature as the liner being installed, and
- In a clamped mold placed in the downtube or manhole for water-cured liners, or
- In a clamped mold placed in a container filled with uniformly distributed steam from the installation manhole for steam-cured liners.

(l) Direct Samples

(i) Where directed by the Contract Administrator, the Contractor shall obtain a sample of the installed CIPP liner from within the host pipe.

(ii) All direct samples of the CIPP liner shall be a minimum of 300mm x 300mm.

(iii) Further to and notwithstanding E14.7.11(l)(ii), direct samples for unreinforced liners shall be sized such that a minimum of 5 test coupons can be produced with a minimum 16:1 length to thickness (span to depth) ratio for testing in accordance with ASTM D790. Direct sample size shall account for the removal of damaged, uneven, or untestable edge imperfections in the liner prior to testing.

(iv) Further to and notwithstanding E14.7.11(l)(ii), direct samples for reinforced liners shall be sized such that a minimum of 5 test coupons can be produced with a minimum 32:1 length to thickness (span to depth) ratio for testing in accordance with ASTM D790. Circumferential reinforcing fibres shall be orientated in the long dimension of the sample. Minimum dimensions for direct samples shall be as follows, and shall account for the removal of damaged, uneven, or untestable edge imperfections in the liner prior to testing.

- Width: 13 times the thickness of the liner
- Length: 35 times the thickness of the liner

(v) Cut the test sample from a location where no defects were noted in Appendix A – Host Pipe Conditions and Inspections and 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.

(vi) 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.

(vii) Where direct samples are taken and repaired, the Contractor shall submit CCTV inspection video clearly showing the sample location repair.

E14.7.12 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.

E14.7.13 Post Construction Design Review and Reconciliation for Total Performance

(a) The Contract Administrator will review quality assurance testing results and inspection videos to confirm that the completed CIPP meets the 50-year design life structural requirements prior to issuance of Total Performance. 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 indicating low material properties or thicknesses will be flagged for design reconciliation by the Contractor.

(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 to assess the structural and performance ramifications of the defects, taking into account the condition of the host pipe prior to lining, the CIPP installation conditions, and the long-term use of the sewer.

(b) When any of the sample test results (flexural modulus, flexural strength or thickness) or defects in the installed liner are not in accordance with the design submissions, then the liner shall be deemed apparently deficient until the sample test results are reconciled, if possible, as described herein. If, after reconciliation, the liner is still found to be deficient, the Contractor shall provide a plan for remedial action that is acceptable to the Contract Administrator.

(c) Where a CIPP liner has been deemed deficient, the Contractor shall:

(i) Complete a design reconciliation in accordance with E14.7.13(d) for each installed liner where sample test results indicate material properties or installed liner thicknesses lower than the required minimums in the accepted design submissions.

(ii) Perform a review of the liner design conditions to confirm that the assumed design conditions are reflective of the actual installed conditions, such as confirmation of actual host pipe ovality, determination of a more representative groundwater elevation locally through monitoring, and/or supplemental strength testing and thickness measurements of the installed liner.

(iii) 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 mm beyond each side of the cut section.

(iv) 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 50-year design life requirement.

(v) Review all proposed remedial actions with the Contract Administrator prior to implementation.

(vi) The Contractor shall perform further testing, monitoring, reconciliation calculations and structural remediation at their own cost.

(d) Design Reconciliation

(i) The designs for each liner found to be apparently deficient shall be revisited using the reported material properties from the quality assurance testing.

(ii) Design reconciliation calculations shall be completed in accordance with the design requirements found herein, originally submitted designs, and the observed site conditions. Any deviations from previously accepted design conditions required to reconcile the design calculations shall be clearly identified and come complete with justification and backup for the deviation from the original design.

(iii) Short-term CIPP strength values shall be reduced to account for creep based on the creep retention values recommended in the pre-qualification submissions to assess the suitability of the liner to meet the 50-year design life requirement. Refer to E14.5.2(d).

(iv) In all cases, testing results from pipe samples shall govern over the results from plate samples for a given liner. The results from plate sample testing shall be reduced as per E14.7.11(e) for reconciliation purposes.

(v) The use of full enhancement factors in this analysis will be limited to liners that are confirmed by visual classification to be close-fit liners based on the post-lining sewer inspection.

(vi) Design reconciliation calculations shall be submitted in accordance with E6 and sealed by a Professional Engineer licensed in the Province of Manitoba and experienced in the design of CIPP liners.

E14.8 Site Specific Design and Installation Considerations

E14.8.1 Site specific design and installation conditions have been identified for the assets listed below:

(a) Blind Shots - The following assets have been identified as terminating directly into the downstream sewer:

(i) N/A

(b) Existing Sewer Conditions – The following existing sewer conditions are drawn to the Contractor's attention:

(i) S-MA20016753 (Balmoral St)

- A defective sewer service is noted at 2.4m D/S @ 2:00. Contractor shall confirm whether the service is active. If active, reconnect the service to the main. If abandoned, line through with no external repair.

(ii) S-MA50002509 (Cherrier St)

- EPR to be installed from 0.0 to 1.9 m U/S;

(iii) S-MA70009101 (Furby St):

- Sewer service reconnection required at 8.1m D/S @ 1:00;

(iv) S-MA50006248 (Halliday Bay S. Leg):

- Deteriorated invert noted at 93.0-95.0 m D/S. A pre-repair inspection is required to determine the condition of the pipe prior to the Work. Line through, if possible, to avoid an EPR in proximity to the Speers Road Feeder Main;

(v) S-MA40013684 (Harvard Av W):

- Hole at 12:00 noted at 26.7-28.4 m D/S. A pre-repair inspection is required to determine the condition of the pipe. Line through if possible.
- EPR to be installed from 59.3 to 60.5 m U/S with 1 service reconnection.

(vi) S-MA40013595 (Madeline St):

- EPR to be installed from 7.5 to 8.0 m D/S;

(vii) S-MA20016866 (McMicken St):

- A new upstream manhole and CB lead connections has been completed previously by others, but is not shown in the available CCTV record.

(viii) S-MA60012734 (Parker Ave):

- Debris is noted in the historical CCTV records at a joint at 16.4 m D/S. To be removed prior to lining.
- A hole is noted at 30.1 m D/S @ 6:00-9:00. Line through if possible.

(ix) S-MA50004492 (Rue Aubert):

- PVC sewer segment with cracking and high ovality noted at 84.3-90.0 m D/S. A pre-repair inspection is required to determine the condition of the

pipe prior to the Work to avoid an EPR in proximity to the Branch I Aqueduct. Line through if possible.

(x) S-MA50003017 (Rue Langevin):

- A siphon crossing has been installed on S-MA50003017 crossing underneath a water main at the intersection of Rue Langevin and Hamel Ave.
- A new manhole is to be installed on the north side of the siphon crossing to facilitate CIPP lining from S-MH50002549 to the new manhole.
- A 1.5m TPR is to be installed in a section of cracked pipe at the south side of the siphon crossing and transition to existing sewer. No other repairs are expected on the south sewer segment.

(xi) S-MA20016780 (Spence St):

- EPR to be installed from 19.3 to 21.4 m D/S with 3 service reconnections.

(xii) S-MA60001505 (Westgrove Way):

- EPR to be installed from 51.8 to 52.8 m D/S.

(c) Construction Impacts – The following site conditions and related controls are drawn to the Contractor's attention:

(i) S-MA40008893 (Chalmers Ave) is located near the Chalmers & Nottingham Feeder Main. No external repairs are anticipated on this sewer.

(ii) S-MA50002509 (Cherrier St) is located near the St. Boniface Feeder Main.

- An EPR is required at the upstream end of the pipe, but is not expected to be in close proximity to the feeder main.
- Refer to section E12.

(iii) S-MA50002619 (Eugenie St): is located near the St. Vital Feeder Main. No external repairs are anticipated on this sewer.

(iv) S-MA50006244 (Halliday Bay N. Leg) is located near the Speers Road Feeder Main. No external repairs are anticipated on this sewer.

(v) S-MA50006248 (Halliday Bay S. Leg) is located near the Speers Road Feeder Main.

- A provisional EPR may be required at 93.0-95.0 m D/S, but is not expected to be in close proximity to the feeder main.
- Refer to section E12.

(vi) S-MA50002632 (Horace St) is located near the St. Vital Feeder Main. No external repairs are anticipated on this sewer.

(vii) S-MA40008647 (Nobel Av) is located near the Disraeli/Henderson Feeder Main. No external repairs are anticipated on this sewer.

(viii) S-MA40007670 (Nottingham Av) is located near the Chalmers & Nottingham Feeder Main. No external repairs are anticipated on this sewer.

(ix) S-MA00015416 (Redwood Av) is located near the Kildonan Feeder Main. No external repairs are anticipated on this sewer.

(x) S-MA50004492 (Rue Aubert) is located in close proximity to the Branch I Aqueduct.

- A provisional EPR may be required at 84.3-90.0 m D/S, but is not expected to be in close proximity to the aqueduct.
- Refer to section E12.

(xi) S-MA50005031 (Speers Rd) is located near the Speers Road Feeder Main. No external repairs are anticipated on this sewer.

(xii) S-MA50004406 (Tache Av) is located in close proximity to the Branch I Aqueduct and the Tache Booster Pumping Station. No external repairs are anticipated on this sewer.

E14.9 Measurement and Payment

E14.9.1 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.

E14.9.2 Sewer Cleaning

(a) Sewer cleaning will be measured and paid for in accordance with E13.

E14.9.3 Sewer Preparation and Repairs Prior to Lining

(a) Internal sewer pipe repairs will be measured and paid for in accordance with E13 for the type of work done.

E14.9.4 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 Lining”, “Partial Full Segment CIPP Lining” or “Internal Point Repair CIPP Lining”. Length to be paid 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 centerline of the pipe from center to center of manholes. The maximum length to be paid will be the manhole-to-manhole sewer length provided by the Contractor.

(c) Partial full segment CIPP measurement will be made from the center of one manhole to the termination point of the CIPP as measured by the post lining video inspection. Partial full segment CIPP installed beyond the limits identified by the Contract Administrator during review of the pre-lining video shall not be measured for payment.

(d) CIPP point repairs will be measured by the post lining video inspection. CIPP point repairs installed beyond the limits identified by the Contract Administrator during review of the pre-lining video shall not be measured for payment.

(e) Payment for CIPP lining will be made on the following schedule:

(i) 80% of the payment will be made upon satisfactory completion of the CIPP installation work for each liner.

(ii) The remaining 20% of the payment will be made upon confirmation of the CIPP strength and delivery and acceptance of all required submissions, shop drawings, and reports and rectification of all identified defects.

(f) 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.

E14.9.5 Reinstatement of Sewer Services

(a) Reinstatement of sewer services will be measured on a unit basis and paid for at the Contract Unit Price for “Reinstatement of Sewer Services”. Number of units to be paid for will be the total number of units reinstated in accordance with this specification, accepted and measured by the Contract Administrator.

(b) Payment for sewer service reinstatement will occur after confirmation of sewer service reinstatement via review of the Post-Lining CCTV video. Payment will not be made until the Post-Lining inspection videos have been submitted and reviewed.

E14.9.6 Sewer Service and Annulus Grouting

(a) Sewer service and annulus grouting will be measured and paid for in accordance with E13 for the type of work done.

E14.9.7 Quality Control Records

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

E14.9.8 Test Samples

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

E14.9.9 Continuous Temperature Monitoring

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

E14.9.10 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 will be made.

E15. CAST-IN-PLACE CONCRETE

E15.1 Description

(a) This Specification shall cover the construction of cast-in-place concrete trunk sewer closures and manhole reconstructions.

(b) All cast-in-place concrete shall be carried out in accordance with CW 2160 and CSA A23.1, except as amended or supplemented herein.

E15.2 Submissions

E15.2.1 Construction Method Submission

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

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

(i) Construction sequence to be followed including all methods to be employed to ensure no damage occurs to existing structures or adjacent properties within or adjacent to excavation.

(ii) Proposed method of construction.

(iii) Specialized equipment to be used.

(iv) Any design revisions proposed to accommodate the Contractor's proposed construction method.

(v) Flow control considerations including details on the Contractor's proposed method of flow control.

(vi) The Contractor shall respond to any concerns that may be raised by the Contract Administrator after review of the Construction Method submission.

E15.3 Materials

(a) Structural Concrete Mix Design

(i) Provide concrete mixed in accordance with requirements of CW 2160 and CSA-A23.2. Concrete shall conform to requirements of Type A concrete in accordance with Table CW 2160.1.

(ii) Structural concrete design shall be in accordance with performance specification having the following properties:

- Class of Exposure: S-1
- Minimum Compressive Strength @ 28 days: 35 MPa

(b) Polyurethane sealant for manhole construction

(i) Shall be non sag, polyurethane sealant; Sikaflex 2C NSL, or approved equal in accordance with B7. Colour: Precast.

(c) Hydrophilic Waterstop

(i) One-part polyurethane, extrudable swelling waterstop (bentonite-free). Sikaswell S-2 or approved equal in accordance with .

E15.4 Construction Methods

E15.4.1 Forming

(a) The Contractor shall be responsible for the design and installation of all necessary shoring, bracing and formwork.

(b) All shoring shall conform to CW 2160, CSA S269.3 and CSA C23.1.

E15.4.2 Cast-in-Place Concrete

(a) All cast-in-place concrete shall conform to CW 2160, and CSA A23.1.

E15.5 Measurement and Payment

(a) Supply and placement of cast-in-place concrete will be considered incidental to the Work and will not be measured for payment. No separate payment will be made.

E16. REINFORCING STEEL

E16.1 Description

(a) This Specification shall cover all reinforcing steel work, in accordance with Specification CW 2160, except as amended or supplemented herein.

E16.2 Submittals

(a) The Contractor shall submit reinforcing steel Shop Drawings in accordance with E6 a minimum of ten (10) Business Days prior to the fabrication of any reinforcing steel.

E16.3 Materials

E16.3.1 Reinforcing Steel

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

E16.3.2 Bar Accessories

(a) Bar accessories shall be of type approved by the Contract Administrator. They shall be made from a non-corroding material, and they shall not stain, blemish, or spall the concrete surface for the life of the concrete. Bar chairs are to be PVC; galvanized bar chairs are not acceptable.

(b) Bar accessories shall include bar chairs, spacers, clips, wire ties, wire (18 gauge minimum), or other similar devices that may be approved by the Contract Administrator. Bar accessories are not shown on the Contract Drawings. The supply and installation of bar accessories shall be considered incidental to the supply and placing of reinforcing steel.

E16.4 Construction Methods

E16.4.1 Placing of Reinforcing Steel

(a) Placement of reinforcing steel shall be completed in accordance with CW 2160, CSA A23.1, and CSA A23.3.

(b) Lap splices in accordance with CSA A23.3

(c) Reinforcing steel shall be placed accurately in the positions shown on the Contract Drawings. Carefully adjust the location of reinforcing steel adjacent to openings to

frame those openings in accordance with good practice, and maintain the bar spacing intent.

(d) Splices in reinforcing steel shall be made only where indicated on the Contract Drawings. Prior approval of the Contract Administrator shall be obtained where, in the opinion of the Contractor, other splices must be made. All splices shall have laps of at least 40 bar diameters. Welded splices shall not be used.

(e) A minimum of twenty-four (24) hours notice shall be given to the Contract Administrator prior to the pouring of any concrete to allow for inspection of reinforcing steel.

E16.4.2 Quality Control

(a) The Contractor shall provide, without charge, the samples of reinforcing steel required for quality control tests and provide such assistance and use of tools and construction equipment as is required.

E16.5 Measurement and Payment

(a) Supply and placement of reinforcing steel will be considered incidental to the Work and will not be measured for payment. No separate payment will be made.

E17. SUSPENSION OF WORK ACTIVITIES WHEN SEWER CONTROL GATES ARE ACTIVATED DURING PERIODS OF HIGH RIVER LEVELS

E17.1 The Contractor is advised that as the elevation of the Red and Assiniboine Rivers rise from the normal winter or summer levels due to spring runoff or periods of heavy rainfall the City is required to close various control gates located on sewer system outfalls. Similarly, as the elevation of the rivers drop to normal levels, the City is required to open the control gates that have been closed. Control gates begin to be closed when river levels reach elevation 224.51 (James Avenue 9.0). As well, higher river levels can cause the level of flow in sewers to be higher than normal.

E17.2 In the event the Red and Assiniboine Rivers rise to an elevation where the City has to begin closing control gates, the Contract Administrator will direct that work activities in any sewers affected by the gate closure be suspended and the risk of runoff causing flooding in the sewer evaluated. Work will continue to be suspended as long as there is a risk of the sewer being flooded while the control gate is closed unless the Contractor provides flow control measures approved jointly by the Contract Administrator, City of Winnipeg Collection System and Flood Control Branch and Local Services Branch.

E17.3 Similarly, as river elevations drop and the City has to open control gates that have been closed, the Contract Administrator will direct that work activities in any sewers affected by the control gate opening be suspended due to the risk of the river flooding the sewer once the gate is opened. Work will continue to be suspended as long as the sewer is being flooded from the river unless the Contractor provides flow control measures approved jointly by the Contract Administrator, City of Winnipeg Collection System and Flood Control Branch and Local Services Branch.

E17.4 The Contractor will have no claim for extra Work or compensation as a result of suspension of Work due to the City closing and opening control gates during periods of rising and dropping river levels. If in the opinion of the Contract Administrator the suspension will cause the completion of the Work to occur after the specified date for Substantial Performance and the Contractor’s schedule would have reasonably permitted completion of the Work before the required date, the date for Substantial Performance will be adjusted accordingly.

E17.5 The flood activation elevations for each site will be available upon request prior to construction.

E18. WATER SUPPLY

E18.1 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.

E18.2 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 Buisness 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.

E18.3 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.

E18.4 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.

E18.5 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.

E18.6 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.

E18.7 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) 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.

E19. TEMPORARY RESTORATION

E19.1 Description

E19.1.1 This Specification shall cover the temporary restoration roadways and boulevards. Temporary restoration is required to facilitate construction staging. Temporary restoration shall be completed as specified herein.

E19.2 General

E19.2.1 The Contractor is responsible for maintaining the roadway in an acceptable condition for traffic at all times while the Site is under the control of the Contractor. Temporary restoration of the roadway to permit traffic between completion of the sewer renewal work and permanent restoration shall be done in such a manner as to allow normal vehicle traffic. The Contractor shall be responsible for all maintenance of said temporary restoration works.

E19.2.2 Should portions of the Site be turned over to the City after completion of the sewer renewal for completion of roadway renewals in the subsequent calendar year, the restoration identified herein must be completed.

E19.2.3 In all cases, boulevards and roadways must be made safe for vehicles and pedestrians whenever the contractor is not actively working on site.

E19.3 Construction Methods

E19.3.1 Further to Clause 3.3 of CW 1130, the Contractor shall temporarily restore surfaces to the following minimum standards:

(a) Backfill and level boulevards and grassed areas to match existing surface elevations.

(b) Cap excavations in street pavement with 100 mm thick layer of “Concrete for Temporary Restoration of Utility Pavement Cuts” as specified in CW 3310.

(c) Cap excavations in sidewalk pavement with a 50 mm thick layer of “Concrete for Temporary Restoration of Utility Pavement Cuts” as specified in CW 3310 or 50 mm of asphalt paving in accordance with CW 3410.

(d) Where curb has been removed as part of the pavement cut, pour temporary curb using “Concrete for Temporary Restoration of Utility Pavement Cuts” as specified in CW 3310.

E19.3.2 Insulate temporary concrete where required during 24 hour curing period.

E19.3.3 Remove all temporary pavements prior to permanent restorations.

E19.3.4 The Contractor shall monitor and maintain temporarily restored surfaces as required until permanent restoration is complete.

E19.3.5 If, in the opinion of the Contract Administrator, temporarily restored surfaces are not being adequately maintained or were not properly constructed and pose a danger to the public, maintenance or reconstruction will be done by the City forces with no advance notification the Contractor. All costs associated with the maintenance or reconstruction of temporary pavement incurred by the City shall be deducted from future payments to the Contractor.

E19.4 Measurement and Payment

E19.4.1 Completion of all temporary restoration shall be considered incidental to the Work and will not be measured for payment. No separate payment will be made.

E20. PERMANENT RESTORATIONS

E20.1 Description

(a) This Specification shall cover the permanent restoration of all work sites.

E20.2 Further to Section 3.3 of CW 1130 of the General Requirements, permanent surface restorations including sodding and pavement works for each sewer section to be lined shall be completed within ten (10) Working Days from the date that the Work is completed on each sewer section.

E20.3 Further to E20.2, in the event that seasonal inclement weather does not allow for permanent restorations to commence within ten (10) Working Days, the Contractor shall provide and maintain temporary surface restorations until seasonal conditions allow for permanent restorations to begin. Temporary restorations shall be installed and maintained in accordance with E19, and shall be completed within ten (10) Working Days from the date that the Work is completed on each sewer section.

E20.4 If the Contract Administrator determines that restorations (temporary or permanent) are not being completed within ten (10) Working Days from the date that the renewal/repair is completed on each street, the Contract Administrator may restrict the ability of the Contractor to start Work on a new street until the noted restorations have been completed. No claim for delay

will be considered in the event that the start of Work on a new street is restricted due to failure to complete restorations (temporary or permanent) within ten (10) Working days from the date that the renewal/repair is completed on each street.

E20.5 Where excavations are to be restored with 24-hour early opening concrete, as requested by the Contract Administrator, the Contractor shall make it their first priority to backfill the excavation; pour the 24-hour concrete; where required, lay asphalt as soon as the 24-hour curing period is up, and open the lane to traffic.

E20.6 Restoration Works

(a) Reconstruct concrete pavements in accordance with CW 3230, CW3310, and SD-213A.

(b) Reconstruct asphalt pavements and overlays in accordance with CW3410 using a Type 1A asphaltic concrete pavement.

(c) Sidewalks:

(i) Reconstruct existing asphalt sidewalks with 75 mm of Type 1A asphaltic concrete pavement conforming to CW3410. The sidewalk shall be constructed with 50 mm (min) of compacted base material and 150 mm (min) of sub-base material.

(ii) Reconstruct existing non reinforced concrete sidewalks with a 100 mm non-reinforced concrete conforming to CW3325 and SD-228A. The sidewalk shall be constructed with 100 mm (min) of compacted base material.

(iii) Reconstruct of the existing reinforced concrete sidewalks with a 150 mm reinforced concrete conforming to CW3235 and SD-237. The sidewalk shall be constructed with 100 mm (min) of compacted base material. To be used for private approaches.

(d) Reconstruct concrete barrier curbs in accordance with CW3240 and SD-206A.

(e) Sod all maintained grassed areas in accordance with CW3510.

E20.7 Pavement Restoration

E20.7.1 The Contractor shall follow the City of Winnipeg Street By-law No. 1481/77 and current revision of the City of Winnipeg “Street Cuts Manual” found at https://winnipeg.ca/publicworks/permitsApprovals/pdf/Street-Cuts-Manual.pdf and for all pavement restoration unless otherwise shown on the drawing or specifications or as directed by the Contract Administrator.

E20.7.2 All street segments within the work area impacted by the Work shall be maintained and restored with the following additional requirements:

(a) Review and record the condition of each street segment with the Contract Administrator and a City Representative from Public Works prior to the initiation of the work. The surface restoration required for each street segment will be agreed upon at this time.

E20.7.3 The street material and condition within the project work area are classified as follows:

Sewer ID #	Street	Block	Pavement Type	Condition
S-MA20016753	BALMORAL ST	Qu'Appelle Ave to Sargent Ave	Asphalt over Concrete	Good
S-MA40003385	BEATRICE ST	Noble Ave to Cobourg Ave	Asphalt over Concrete	Fair
S-MA60018036	BELAIR RD (S.LEG)	Brisbane Ave to Marshall Bay	Asphalt over Concrete	Good
S-MA60005511	BROCK ST	Grant Ave to Mathers Ave	Concrete	Poor

S-MA60005514	BROCK ST	Grant Ave to Fleet Ave	Asphalt over Concrete	Fair
S-MA60006579	CARPATHIA DR. (S.LEG)	Corydon Ave to Kenaston Ave	Asphalt over Concrete	New
S-MA40008893	CHALMERS AV	Brazier St to Roch St	Concrete	Good
S-MA50002509	CHERRIER ST()	Dufresne Ave to Archibald St	Asphalt over Concrete	Good
S-MA00009782	CHURCH AV	McKenzie St to McGregor St	Asphalt over Concrete	Poor
S-MA40008567	DEARBORN AV	Brazier St to Lacy St	Concrete	Poor
S-MA50007462	DES MEURONS AV	Dubuc St to Yardley St	Asphalt over Concrete	Good
S-MA50007463	DES MEURONS AV	Dubuc St to Niverville Ave	Asphalt over Concrete	Good
S-MA50007464	DES MEURONS AV	Dubuc St to Niverville Ave	Asphalt over Concrete	Good
S-MA70026779	DUBUC ST	Champlain St to Braemar Ave	Asphalt over Concrete	New
S-MA60017613	EASEMENT E OF SANDRA BY(E.LEG)	Sandra Bay (E. Leg) to Buxton Rd	Asphalt	Fair
S-MA50002619	EUGENIE ST(CL)	Des Meurons St to Youville St	Concrete	Good
S-MA20014634	FURBY ST	Portage Ave to Broadway	Asphalt over Concrete	New
S-MA70009101	FURBY ST	Ellice Ave to Sargent Ave	Asphalt	Good
S-MA50006244	HALLIDAY BY N LEG	Speers Rd to Speers Rd	Concrete	Fair
S-MA50006248	HALLIDAY BY S LEG	Speers Rd to Speers Rd	Concrete	Fair
S-MA40008936	HARBISON AV W	Brazier St to Roch St	Concrete	Good
S-MA40013684	HARVARD AV W	Bond St to Winona St	Concrete	Poor
S-MA50007504	HILL ST.	Dubuc St to Niverville Ave	Asphalt over Concrete	Fair
S-MA50007505	HILL ST.	Dubuc St to Niverville Ave	Asphalt over Concrete	Fair
S-MA50004191	HILLCREST AV	Champlain St to Niverville Ave	No Info	No Info
S-MA50002632	HORACE ST	Des Meurons St to Youville St	Asphalt over Concrete	New
S-MA00012028	KILDARROCH ST.	Church Ave to Mountain Ave	Asphalt over Concrete	Poor

S-MA60022542	LA GRAVE ST	Lemay Ave to Lord Ave	Asphalt	New
S-MA20018441	LANGSIDE ST	Cumberland Ave to Notre Dame Ave	Asphalt over Concrete	Poor
S-MA00009465	LANSDOWNE AV	Aikins St to Main St	Asphalt	New
S-MA50003618	LAWNDALE AV	Coniston St to Lyndale Dr	Asphalt over Concrete	New
S-MA40013595	MADELINE ST	Madeline St to Winona St	Asphalt over Concrete	Good
S-MA20016700	MCGEE ST	Sargent Ave to Ellice Ave	Asphalt over Concrete	Good
S-MA20016866	MCMICKEN ST	Cumberland Ave to Sargent Ave	Asphalt	New
S-MA00010672	MOUNTIAN AVE(CL)	Tinnis Wood St to Radford St	Concrete	New
S-MA40008647	NOBLE AV	Beatrice St to Henderson Hwy	Asphalt	Good
S-MA40007670	NOTTINGHAM AV	Besant St to London St	Asphalt over Concrete	Poor
S-MA60012734	PARKER AV	Daniel St to Beaumont St	Concrete	Poor
S-MA50015607	PILGRIM AV	Des Meurons St to Egerton Rd	Asphalt	Good
S-MA70020673	PIONEER AV	Main St to Westbrook St	Asphalt	New
S-MA50004770	PROVENCHER BLVD	St Jean Baptiste St to Langevin St	Asphalt over Concrete	Good
S-MA50011044	PROVENCHER BLVD	St Jean Baptiste St to Thibault St	Asphalt over Concrete	Good
S-MA00010655	RADFORD ST	Mountain Ave to Church Ave	Asphalt over Concrete	Good
S-MA00015413	REDWOOD AVE	Aikins St to Charles St	Concrete	New
S-MA50004492	RUE AUBERT	Gabrielle Roy Pl to Cir Moliere	Concrete	Good
S-MA50003017	RUE LANGEVIN	De La Cathedrale Ave to Hamel Ave	Concrete	Fair
S-MA50004710	RUE ST.JOSEPH	Provencher Blvd to Dumoulin St	Asphalt over Concrete	Good
S-MA20018248	SHERBROOK ST	Sargent Ave to Cumberland Ave	Asphalt over Concrete	Good
S-MA50005031	SPEERS RD	Monterey Rd to Crestwood Cres	Asphalt over Concrete	Good
S-MA20016780	SPENCE ST	Ellice Ave to Sargent Ave	Asphalt over Concrete	Good

S-MA50004406	TACHE AV.	Rue Hebert to Rue Messager		
S-MA00010702	TINNISWOOD ST	Mountain Ave to Church Ave	Asphalt over Concrete	Fair
S-MA60012800	WATERFORD AV.	Wicklow St to Pembina Hwy	Asphalt	New
S-MA60013016	WATERFORD AV.	Wicklow St to Pembina Hwy	Asphalt	New
S-MA60001505	WESTGROVE WAY	Peppertree Pl to Honeybourne Cres	Concrete	Poor
S-MA40013706	WHITTIER AV W	Madeline St to Winona St	Asphalt over Concrete	Poor
S-MA40011254	WILLIAM NEWTON AV	Allan St to Stadacona St	Asphalt	Good
S-MA40013685	WINONA ST	Harvard Ave W to Whittier Ave W	Asphalt over Concrete	New

E20.8 Permanent pavement restoration shall be in accordance with the City of Winnipeg Street Cuts Manual (2022) for each applicable pavement type.

(a) Construct partial slab patches in accordance with CW 3230.

(b) Construct miscellaneous concrete slab renewals in accordance with CW 3235.

(c) Construct concrete curb renewal in accordance with CW 3240.

(d) Construct asphaltic concrete patches (Type 1A) in accordance with CW 3240. Notwithstanding CW 3410, there will be no maximum width for an asphalt patch.

E20.9 Measurement and Payment

(a) Surface restoration related to damages caused by the installation of CIPP liners, or for “Pipeline Access” shall be incidental to the work and no measurement for payment will be made.

(b) Surface restorations related to external point repairs and manhole repair works identified in the Contract documents will be measured and paid in accordance with this specification.

(c) Where restoration is delayed, a holdback may be applied to subsequent progress estimates until such a time that restoration has been completed and accepted.

E20.9.1 Partial Slab Patches

(a) Partial Slab Patches shall be measured on an area basis and paid for at the Contract Unit Price per square meter for “Partial Slab Patches” at the applicable thickness, as identified in Form B. Payment shall include all materials and labour required to complete the work as specified.

(b) All cost incurred for sub base and base course materials shall be included in the unit price for “Partial Slab Patches”.

(c) No separate measurement or payment will be made for Drilled Dowels or Tie Bars, the cost for which shall be included in the prices bid for Partial Slab Patches.

(d) No differentiation will be made for full slab replacement, and any locations where full slabs are removed and replaced shall be measured and paid for at the prices bid for Partial Slab Patches.

(e) No measurement and payment for Partial Slab Patches will be made where identified as incidental or as part of Pipeline Access as outlined in E11.

E20.9.2 Miscellaneous Concrete Slab Renewal

(a) Miscellaneous Concrete Slab Renewal shall be measured on an area basis and paid for at the Contract Unit Price per square meter for “Miscellaneous Concrete Slab Renewal” for the specified concrete slab type, as identified in Form B. Payment shall include all materials and labour required to complete the work as specified.

(b) All cost incurred for sub base and base course materials shall be included in the unit price for “Miscellaneous Concrete Slab Renewal”.

(c) No differentiation will be made for the size of the Miscellaneous Concrete Slab Renewal being installed.

(d) No measurement and payment for Miscellaneous Concrete Slab Renewal will be made where identified as incidental or as part of Pipeline Access as outlined in E11.

E20.9.3 Concrete Curb Renewals

(a) Concrete Curb Renewals will be measured on a linear meter basis and paid for a the Contract Unit Price per linear meter for “Concrete Curb Renewal” for the specified curb type, as identified in Form B. Payment shall include all materials and labour required to complete the work as specified.

(b) All cost incurred for sub base and base course materials shall be included in the unit price for “Concrete Curb Renewal”.

(c) No separate measurement or payment will be made for curb ramp tie bars, the cost for which shall be included in the prices bid for Concrete Curb Renewals.

(d) No differentiation will be made for the length of the Concrete Curb Renewals being installed.

(e) No measurement and payment for Concrete Curb Renewal will be made where identified as incidental or as part of Pipeline Access as outlined in E11.

E20.9.4 Asphaltic Concrete Patches

(a) Asphaltic Concrete Patches will be measured on an area basis and paid for at the Contract Unit Price per square meter for “Asphaltic Concrete Patches”. Payment will include all materials and labour required to complete the work as specified.

(b) All cost incurred for sub base and base course materials shall be included in the unit price for “Asphaltic Concrete Patches”.

(c) No differentiation will be made for the length or width of the Asphaltic Concrete Patch being installed.

(d) No measurement and payment for Asphaltic Concrete Patches will be made where identified as incidental or as part of Pipeline Access as outlined in E11.

E20.9.5 Planing of Pavement

(a) Requirement for Planing of Pavement will be determined in the field by the Contract Administrator and Public Work Department, as per the latest version of the Street Cuts Manual.

(b) Further to CW 3450, when Planing of Pavement is required for road restorations, including planing street cuts to full lane width, or planing existing pavement between cuts for a series of road cuts, only area of existing pavement that is planed and removed will be measured for payment. If planing equipment operates over new road cuts required to install the works, no measurement for payment will be made for this area, as no pavement material is being removed.

(c) No measurement and payment for Planing of Pavement will be made where identified as incidental or as part of Pipeline Access as outlined in E11.

E21. PROTECTION OF EXISTING TREES

E21.1 The Contractor shall take the following precautionary steps to prevent damage from construction activities to existing boulevard trees within the limits of the construction area. Contact the City of Winnipeg Forestry Branch at 204-986-2004 for further information on these specifications:

(a) For trees greater than 100 mm in diameter, attach wood strapping material having a minimum thickness of 25 millimetres and minimum length of 2440 millimetres around tree trunks in a manner that will not harm the trees. Do not use nails or other fasteners that penetrate into trees. The width of strapping should suit the size of the tree being protected. Length of strapping may be reduced to suit tree being protected as approved by the Contract Administrator.

(b) For trees less than 100 mm in diameter, install snow fencing around the tree to a 2.0 meter radius complete with installation hardware. The 2.0 meter radius of the snow fencing may be reduced to suit the tree being protected as approved by the Contract Administrator.

(c) Operation of equipment within the dripline of the trees shall be kept to the minimum required to perform the work. Equipment shall not be parked, repaired, refueled; construction materials shall not be stored, and earth materials shall not be stockpiled within the driplines of the trees. The dripline of a tree shall be considered to be the ground surface directly beneath the tips of its outermost branches. The Contractor shall ensure that the operations do not cause flooding or sediment deposit on areas where trees are located.

(d) Repair, replace and maintain tree protection material during construction of the Work.

(e) Remove snow fencing and strapping material without harming trees as soon as the construction and restoration work is complete.

E21.2 Obtain approval from the Contract Administrator to excavate within 2.0 meters of a tree.

E21.3 Excavate in a manner to minimize damage to root systems. Keep exposed roots in excavations and trenches moist or shaded.

E21.4 Prune exposed roots with equipment such as trenchers, chain saws, root cutters or other methods acceptable to the Contract Administrator in a manner that will leave a neat, clean root end.

E21.5 Take precautions to ensure tree limbs overhanging the Site are not damaged by construction equipment. Consult the Forestry Branch on pruning of overhanging or damaged limbs and branches and other unanticipated problems with trees during construction of the Works.

E21.6 Elm trees are not to be pruned between April 1st and August 1st under provisions of The Dutch Elm Disease Act.

E21.7 All damage to existing trees caused by the Contractor's activities shall be repaired as required by the Contract Administrator and the Forestry Branch. Damages must be repaired by an individual with a Manitoba Arborist license or by the Forestry Branch.

E21.8 The Forestry Branch will remove and replace any trees deemed to have died or that are dying due to damage from carelessness during construction. Removal and replacement costs will be determined by size and market price. The market price will be a comparable transplantable tree of the same or different species or may be the appraised value of the existing tree, as determined by an evaluation procedure presently used by Forestry Branch in conjunction with City Claims Branch. The evaluation procedure is in accordance with current International Society of Arboriculture evaluation procedure.

E21.9 Measurement and Payment

E21.9.1 Protection of existing trees, repair of trees and pruning of damaged or overhanging limbs will be considered incidental to the Work and will not be measured for payment. Removal and replacement of existing trees by the Forestry Branch deemed to have died or that are

dying due to damage from carelessness during construction will be at the Contractor’s cost and will be invoiced or deducted from any payments owing.

PART F - SECURITY CLEARANCE

F1. SECURITY CLEARANCE

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

(a) any Work on private property;

(b) any Work within City facilities other than:

(i) an underground structure such as a manhole;

(ii) in areas and at times normally open to the public;

(c) communicating with residents and homeowners in person or by telephone;

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

(a) Sterling BackCheck – for existing account holders, log into your account to send individual invitations to employees requiring security clearance. For those that do not have an account, click on the following link to open an account: https://forms.sterlingbackcheck.com/partners/platform2-en.php?&partner=winnipegcity; or

(b) Commissionaires (Manitoba Division), forms to be completed can be found on the website at: https://www.commissionaires.ca/en/manitoba/home; or .

(c) FASTCHECK Criminal Record & Fingerprint Specialists, forms to be completed can be found on the website at: https://myfastcheck.com

F1.2 Prior to the award of Contact, and during the term of the Contract if additional or replacement individuals are proposed to perform Work, the Bidder/Contractor shall supply the Contract Administrator with a Police Information Check obtained not earlier than one (1) year prior to the Submission Deadline, or a certified true copy thereof, for each individual proposed to perform such Work.

F1.3 Any individual for whom a Police Information Check is not provided, or for whom a Police Information Check indicates any convictions or pending charges related to property offences or crimes against another person will not be permitted to perform any Work specified in F1.1.

F1.4 Any Police Information Check obtained thereby will be deemed valid for the duration of the Contract subject to a repeated records search as hereinafter specified.

F1.5 Notwithstanding the foregoing, at any time during the term of the Contract, the City may, at their sole discretion and acting reasonably, require an updated Police Information Check. Any individual who fails to provide a satisfactory Police Information Check as a result of a repeated Police Information Check will not be permitted to continue to perform any Work specified in F1.1.