THE CITY OF WINNIPEG

TENDER

TENDER NO. 628-2021

2020-2021 OUTFALL PROGRAM – CONTRACT 2

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PART B - BIDDING PROCEDURES

B1. CONTRACT TITLE

B1.1 2020-2021 OUTFALL PROGRAM – CONTRACT 2

B2. SUBMISSION DEADLINE

B2.1 The Submission Deadline is 12:00 noon Winnipeg time, November 23, 2021.

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

B3. SITE INVESTIGATION

B3.1 The Bidder is advised that access to the 2782 Assiniboine Avenue Outfall, 300 Dunkirk Drive Outfall, and Barker Boulevard Outfall Sites are restricted as private property authorization and/or gated access is required. As such, the Contract Administrator or an authorized representative will be available on November 10, 2021 during the noted timeslots to provide Bidders access to the Sites. Viewing of the Sites is not mandatory and is intended to further supplement the Site photos included in the appendices and provide Bidders a better look at access constraints and existing conditions.

Site	Date/Time
2782 Assiniboine Avenue Outfall	November 10, 2021 from 9:00AM to 9:30AM
Barker Boulevard Outfall	November 10, 2021 from 10:00AM to 10:30AM
300 Dunkirk Drive Outfall	November 10, 2021 from 11:30AM to 12:00PM

B3.2 Further to B3.1, the Bidder is advised that access to the below listed Sites is restricted as private property authorization is required. As such, the Contract Administrator has coordinated with the private property owners to allow Bidders to view the below identified Sites on their own without making an appointment **only during the designated timeslots and dates identified below**. **Accessing the private properties outside of these dates and associated timeslots is not permitted.** At a minimum, the Bidder's personnel viewing the sites shall ensure they are wearing high visibility vests to clearly identify themselves as contractor personnel. Viewing of the Sites is not mandatory and is intended to further supplement the Site photos included in the appendices and provide Bidders a better look at access constraints and existing conditions.

Site	Date/Time
Eastwood Drive Outfall	November 12, 2021 from 9:00AM to 12:00PM
Wellington Crescent Outfall	November 12, 2021 from 9:00AM to 12:00PM
Vialoux Drive Outfall	November 12, 2021 from 9:00AM to 12:00PM

B3.3 Further to B3.1 and B3.2, the Bidder may view all other Sites without making an appointment, however access is constrained to the City owned right-of-ways and easement extents identified on the Drawings. Bidders may not trespass on private property.

B3.4 The Bidder shall not be entitled to rely on any information or interpretation received at the Site investigations unless that information or interpretation is the Bidder's direct observation, or is provided by the Contract Administrator in writing.

B4. ENQUIRIES

B4.1 All enquiries shall be directed to the Contract Administrator identified in D6.1.

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

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

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

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

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

B5. CONFIDENTIALITY

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

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

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

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

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

B6. ADDENDA

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

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

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

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

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

B6.6 Notwithstanding B4, enquiries related to an Addendum may be directed to the Contract Administrator indicated in D6.

B7. SUBSTITUTES

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

B8. BID COMPONENTS

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

(a) Form A: Bid/Proposal;

(b) Form B: Prices;

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

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

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

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

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

B9. BID

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

B10. PRICES

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

B10.1.1 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 in D27. Any such costs shall be determined in accordance with D27.

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) Tri-Core Projects Ltd.
  (i) Constructability review of outfall HDD cleaning sites and 2782 Assiniboine Avenue rehabilitation site

(b) Quantum Utilities Ltd.
  (i) Constructability review of outfall HDD cleaning sites

(c) Accurate HD Ltd.
  (i) Constructability review of outfall HDD cleaning sites

(d) Maple Leaf Construction Ltd.
  (i) Constructability review of 2782 Assiniboine Avenue rehabilitation site

(e) IPEX Inc.
  (i) Constructability review of 2782 Assiniboine Avenue rehabilitation site and product information

(f) Armtec
  (i) Material and product information

B12. CONFLICT OF INTEREST AND GOOD FAITH

B12.1 Further to C3.2, Bidders, by responding to this Tender, declare that no Conflict of Interest currently exists, or is reasonably expected to exist in the future.

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

(a) other commitments;

(b) relationships;

(c) financial interests; or

(d) involvement in ongoing litigation;

that could or would be seen to:

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

B13. QUALIFICATION

B13.1 The Bidder shall:

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

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

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

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

(a) be responsible and not be suspended, debarred or in default of any obligations to the City. A list of suspended or debarred individuals and companies is available on the Information Connection page at The City of Winnipeg, Corporate Finance, Materials Management Division website 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) upon request of the Contract Administrator, provide the Security Clearances in accordance with PART F - ;

B13.4 Further to B13.3, the Bidder shall provide their HDD Outfall Cleaning methodology (Form L: Proposed HDD Outfall Cleaning Methodology) in advance of the Pre-Award meeting demonstrating they understand the requirements listed in E31 and B13.1(c).

(a) The Bidder and/or any proposed Subcontractor undertaking the HDD Outfall Cleaning Work, shall within three (3) Business Days of a request by the Contract Administrator, provide proof satisfactory to the Contract Administrator to demonstrate that they have the capabilities to carry out the HDD Outfall Cleaning work, as described in their proposed HDD Outfall Cleaning Methodology (Form L: Proposed HDD Outfall Cleaning Methodology).

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

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

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

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

(b) a report or letter to that effect from an independent reviewer acceptable to the City. (A list of acceptable reviewers and the review template are available on the Information Connection page at The City of Winnipeg, Corporate Finance, Materials Management Division website at http://www.winnipeg.ca/matmgt/.

B13.6 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 its Bid Submission bid security in the form of a digital bid bond, in the amount of at least ten percent (10%) of the Total Bid Price, and agreement to bond of a company registered to conduct the business of a surety in Manitoba, in Form G1: Bid Bond and Agreement to Bond, available on The City of Winnipeg, Corporate Finance, Materials Management Division website at https://www.winnipeg.ca/MatMgt/templates/files/eBidsecurity.pdf.

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

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

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

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

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

(e) The results of the verification must provide a clear, immediate and printable indication of pass or fail regarding B14.2(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 his/her Bid without penalty at any time prior to the Submission Deadline.

B18. EVALUATION OF BIDS

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

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

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

(c) Total Bid Price;

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

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

B18.3 Further to B18.1(b), the Award Authority shall reject any Bid submitted by a Bidder who does not demonstrate, in his/her Bid or in other information required to be submitted, that he/she is qualified.

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

B18.4.1 Bidders are advised that the calculation indicated in B18.4 will prevail over the Total Bid Price entered in MERX.

B19. AWARD OF CONTRACT

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

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

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

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

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

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

(d) only one Bid is received; or

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

B19.3 If funding for the Work is provided to the City of Winnipeg by the Government of Manitoba and/or the Government of Canada, Bidders are advised that the terms of D27 shall immediately take effect upon confirmation of such funding, regardless of when funding is confirmed.

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

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

PART C - GENERAL CONDITIONS

C0. GENERAL CONDITIONS

C0.1 The *General Conditions for Construction* (Revision 2020-01-31) are applicable to the Work of the Contract.

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

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

PART D - SUPPLEMENTAL CONDITIONS

GENERAL

D1. GENERAL CONDITIONS

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

D2. BACKGROUND AND PROJECT INFORMATION

D2.1 This Tender includes twenty-one (21) outfall Sites within the City of Winnipeg. Eight (8) of the Sites are Renewal and Rehabilitation sites that include some level of repairs or replacements to the pipe or the surrounding area; three (3) of the Sites are Erosion Protection sites where the work is primarily bank improvements with minor pipe modifications; and ten (10) of the Sites are Cleaning sites that involve primarily outfall cleaning and inspection.

D2.2 For outfall Sites where access and/or pipe alignments are along private properties, the City has initiated Private Property Authorization Agreements with the property owners (as required). This includes the following outfall Sites:

- 937 Wellington Crescent Outfall
- 2782 Assiniboine Avenue Outfall
- 50 Eastwood Drive Outfall
- 300 Dunkirk Drive Outfall
- 1 Hart Avenue Outfall
- 2464 Assiniboine Crescent Outfall
- 3087 Vialoux Drive Outfall

(a) While the private property authorization process is ongoing, it is expected that the private property authorization agreements will be in place for construction to be completed as part of the winter 2021/2022 Works.

D2.3 A cleaning method using Horizontal Directional Drilling (HDD) equipment is proposed to be used on six of the outfall Sites, including:

- Metcalfe Avenue Outfall
- Hart Avenue Outfall
- Selkirk Avenue Outfall
- Waterfront Drive & McDermot Avenue Outfall
- Granite Way Outfall
- Bredin Drive Outfall

(a) The HDD cleaning method was previously tested and proved to be successful as part of 2020-2021 Outfall Program – Contract 1. The intention of HDD outfall cleaning is to use an alternative method to standard pipe cleaning to remove large amounts of sediment from within outfall pipes using trenchless HDD equipment and appropriate cleaning head attachments, or an approved equivalent method in accordance to B7. The main goal of HDD outfall cleaning is to remove the majority of sediment from within the outfall pipe. Once the majority of sediment is removed, standard pipe cleaning methods shall be used to supplement and complete the sewer cleaning works to the satisfaction of the Contract Administrator. Reference E31 for more information.

(b) The outfall Sites identified above have varying levels of debris and sediment within the outfall pipes, most of which have been observed to be over 50% filled with sediment and debris.

(c) Additional Site photos of the outfall cleaning locations requiring private property access were taken from July 2020 to March 2021, and are included in Appendix C. These photos

include a look at Site access and existing sediment/debris levels within the outfall pipes. Bidders may also view the Sites on their own as indicated in B3.

(d) Isometric drawing information of the existing pump stations and chambers for the outfall Sites where applicable are provided in Appendix A.

D2.4 There is currently on-going construction along the St. Vital Bridge and riverbank north of Kingston Row as part of the Baltimore Forcemain Pipe Crossing the St. Vital Bridge project. The forcemain project is expected to be completed, with all temporary fencing along the riverbank removed, by December 15, 2021. As such, it is expected that the Works for the Kingston Row/Dunkirk Drive Outfall and 143 Kingston Row Outfall sites can be completed as part of the winter 2021/2022 Works by the critical dates identified herein.

D2.5 The Rivers and Creeks in Winnipeg are regulated in the summer at the approximate ASRL listed on the drawings and efforts are made to lower the river to the AWRL in the winter months. However, annual flooding occurs in the Red River Valley and water levels can fluctuate greatly from year to year and month to month and no guarantees are made that the water level will be at the levels indicated on the Drawings. For more information on past river levels within the City of Winnipeg, visit https://winnipeg.ca/waterandwaste/flood/riverLevels.stm

D2.6 Copies of DFO Request for Review and Transport Canada documentation will be provided to the Contractor upon project award. All DFO and Transport Canada measures, laws, and regulations are to be adhered to during construction.

D2.7 Copies of City of Winnipeg Waterway Permit documentation will be provided to the Bidder upon project award. All measures and requirements identified on permits shall be adhered to during construction.

D3. FORM OF CONTRACT DOCUMENTS

D3.1 Notwithstanding C4.1(c) and C4.4, the Contract Documents will be provided to the Contractor electronically and there will be no requirement for execution and return to the City by the Contractor. Accordingly, the provisions under C4.4(a) and C4.4(b) are no longer applicable.

D4. SCOPE OF WORK

D4.1 The Work to be done under the Contract shall consist of:

Renewal and Rehabilitation Sites

(a) Kingston Row & Dunkirk Drive Outfall (S-MA50017492)
  (i) Removal and replacement of (+/-) 25.0 m of existing 600 mm diameter CMP with (+/-) 25.0 m of 600 mm diameter CMP (2.8mm) c/w polymer coating
  (ii) Construction of a new reinforced concrete collar
  (iii) Chamber manhole cleaning (as required)
  (iv) Installation of 600 mm diameter debris grate
  (v) Installation of rockfill riprap
  (vi) Site Restoration

(b) 143 Kingston Row Outfall (S-MA50014591)
  (i) Removal of (+/-) 17.2 m of existing 800 mm diameter CMP and installation of (+/-) 17.2 m of 900 mm diameter CMP (2.8mm) c/w polymer coating
  (ii) Sewer cleaning (as required)
  (iii) Construction of a new reinforced concrete collar
  (iv) Installation of 900 mm diameter debris grate
  (v) Installation of rockfill riprap
  (vi) Site Restoration

(c) 691 Tache Avenue Outfall (S-MA70047759)

(i) Installation of two (2) 1050 mm diameter internal slip joints (custom fit to pipe)
(ii) Sewer cleaning (as required)
(iii) Removal of existing pipe internal bracing
(iv) Removal and re-installation of existing debris grate (as required)
(v) Site Restoration

(d) 50 Eastwood Drive Outfall (S-MA40000014)
(i) Removal and replacement of (+/-) 4.0 m of existing 525 mm diameter CMP with (+/-) 4.0 m of 525 mm diameter CMP (2.0mm) c/w polymer coating
(ii) Installation of 13.9 m – 450 OD HDPE DR17 Liner Pipe
(iii) Sewer cleaning (as required)
(iv) Construction of two (2) new reinforced concrete collars
(v) Removal and re-installation of existing debris grate
(vi) Removal and replacement of installation of rockfill riprap
(vii) Site restoration

(e) Assiniboine Crescent/Windham Road Outfall (S-MA20005071)
(i) Removal of (+/-) 12.8 m existing 750 mm diameter CMP and (+/-) 13.7 m of existing 750 mm diameter concrete outfall and installation of (+/-) 26.5 m of 900 mm diameter (2.8mm) c/w polymer coating
(ii) Construction of a new reinforced concrete collar
(iii) Installation of 900 mm diameter debris grate
(iv) Installation of rockfill riprap
(v) Site Restoration

(f) 2782 Assiniboine Avenue Outfall (S-MA70073365)
(i) Removal and replacement of (+/-) 3.0 m of existing 750 mm diameter CMP with (+/-) 3.0 m of 750 mm diameter CMP (2.0mm) c/w polymer coating
(ii) Installation of (+/-) 18.6 m – 600 mm diameter fold and form PVC liner (min. 8.7mm thick)
(iii) Sewer cleaning (as required)
(iv) Internal polyurethane injection within 1200x900 mm diameter egg concrete sewer (as directed by the Contract Administrator)
(v) Construction of a new reinforced concrete collar
(vi) Removal and replacement of rockfill riprap
(vii) Removal and re-installation of existing debris grate
(viii) Site Restoration

(g) 3145 Ness Avenue Outfalls (S-MA20000077 and S-MA20000072)
(i) Removal of (+/-) 2.0 m of existing 1050 mm diameter concrete and (+/-) 12.9 m of existing 1050 mm diameter CMP and installation of (+/-) 14.9 m of 1200 mm diameter CMP (2.8mm) c/w polymer coating
(ii) Removal of (+/-) 12.0 m of existing 600 mm diameter CMP and installation of (+/-) 12.0 m of 600 mm diameter CMP (2.0mm) c/w polymer coating
(iii) Construction of two (2) new reinforced concrete collars
(iv) Installation of 600 mm diameter debris grate
(v) Installation of rockfill riprap
(vi) Site Restoration

(h) 937 Wellington Crescent Outfall (S-MA60007249)
(i) Installation of four (4) internal pipe sleeves within 750 mm diameter concrete outfall
(ii) Sewer cleaning (as required)
(iii) Installation of 750 mm diameter debris grate

(iv) Installation of rockfill riprap
(v) Site Restoration

Cleaning Sites

(i) 300 Dunkirk Drive Outfall (S-MA50011492)
  (i) Standard sewer cleaning and CCTV inspection of outfall
  (ii) Installation of 1350 mm debris grate
  (iii) Site Restoration

(j) Sturgeon Road Outfall (S-MA20003873)
  (i) Standard sewer cleaning and CCTV inspection of outfall
  (ii) Site Restoration

(k) 242 Metcalfe Avenue Outfall (S-MA70011115)
  (i) HDD Outfall Cleaning
  (ii) Additional standard sewer cleaning (as required) and CCTV inspection of outfall
  (iii) Installation of 2100 mm diameter debris grate
  (iv) Site Restoration

(l) 1 Hart Avenue Outfall (S-MA70043042)
  (i) HDD Outfall Cleaning
  (ii) Additional standard sewer cleaning (as required) and CCTV inspection of outfall
  (iii) Removal and re-installation of existing debris grate
  (iv) Site Restoration

(m) 108 Selkirk Avenue Outfall (S-MA70007427)
  (i) HDD Outfall Cleaning
  (ii) Additional standard sewer cleaning (as required) and CCTV inspection of outfall
  (iii) Removal and re-installation of existing debris grate
  (iv) Site Restoration

(n) Waterfront & McDermot Avenue Outfall (S-MA70145080)
  (i) HDD Outfall Cleaning
  (ii) Additional standard sewer cleaning (as required) and CCTV inspection of outfall
  (iii) Site Restoration

(o) Granite Way Outfall (S-MA20014505)
  (i) HDD Outfall Cleaning
  (ii) Additional standard sewer cleaning (as required) and CCTV inspection of outfall
  (iii) Installation of 1800 mm diameter debris grate
  (iv) Site Restoration

(p) 2464 Assiniboine Crescent Outfall (S-MA20005373)
  (i) Installation of temporary sewer plug
  (ii) Standard sewer cleaning and CCTV inspection of outfall
  (iii) Removal and re-installation of existing debris grate
  (iv) Site Restoration

(q) 745 Tache Avenue Outfall (S-MA70017688)
  (i) Standard sewer cleaning and CCTV inspection of outfall
  (ii) Site Restoration

(r) 3087 Vialoux Drive Outfall (S-MA60003875)
  (i) Standard sewer cleaning and CCTV inspection of outfall
  (ii) Site Restoration

Erosion Control Sites

(s) 300 Bredin Drive Outfall (S-MA40005212)
- (i) Removal of (+/-) 9.7 m of existing 900 mm diameter CMP
- (ii) HDD Outfall Cleaning
- (iii) Additional standard sewer cleaning (as required) and CCTV inspection of outfall
- (iv) Installation of rockfill riprap
- (v) Installation of 900 mm diameter debris grate
- (vi) Site Restoration

(t) 521 St. John Ambulance Way Outfall (S-MA20011467)
- (i) Riverbank regrading
- (ii) Installation of rockfill riprap
- (iii) Site Restoration

(u) 63 Barker Boulevard Outfall (S-MA70007410)
- (i) Installation of rockfill riprap
- (ii) Installation of 1800 mm diameter debris grate
- (iii) Site Restoration

D4.2 The following shall apply to the Work:

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

(b) Universal Design Policy
http://clkapps.winnipeg.ca/DMIS/DocExt/ViewDoc.asp?DocumentTypeId=2&DocId=3604

D5. DEFINITIONS

D5.1 When used in this Tender:

(a) "**ASRL**" means Average Summer River Level;

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

(c) "**AWRL**" means Average Winter River Level;

(d) "**Controlled Low Strength Material (CLSM)**" means cement stabilized fill, in accordance with CW 2160.

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

(f) "**OHWM**" means Ordinary High Water Mark (1:2 Year Flood Level);

D6. CONTRACT ADMINISTRATOR

D6.1 The Contract Administrator is KGS Group, represented by:

Nicole Vidal, C.E.T.
Municipal Technologist

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

D6.2 At the pre-construction meeting, the Contract Administrator will identify additional personnel representing the Contract Administrator and their respective roles and responsibilities for the Work.

D7. CONTRACTOR'S SUPERVISOR

D7.1 At the pre-construction meeting, the Contractor shall identify his/her designated supervisor and any additional personnel representing the Contractor and their respective roles and responsibilities for the Work.

D8. NOTICES

D8.1 Except as provided for in C22.4, all notices, requests, nominations, proposals, consents, approvals, statements, authorizations, documents or other communications to the Contractor shall be sent to the address or facsimile number identified by the Contractor in Paragraph 2 of Form A: Bid/Proposal.

D8.2 All notices, requests, nominations, proposals, consents, approvals, statements, authorizations, documents or other communications to the City, except as expressly otherwise required in D8.3 or elsewhere in the Contract, shall be sent to the attention of the Contract Administrator identified in D6.

D8.3 All notices, requests, nominations, proposals, consents, approvals, statements, authorizations, documents or other communications required to be submitted or returned to the City Solicitor shall be sent to the following facsimile number:

The City of Winnipeg
Legal Services Department
Attn: Director of Legal Services

Facsimile No.: 204 947-9155

D9. FURNISHING OF DOCUMENTS

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

SUBMISSIONS

D10. AUTHORITY TO CARRY ON BUSINESS

D10.1 The Contractor shall be in good standing under The Corporations Act (Manitoba), or properly registered under The Business Names Registration Act (Manitoba), or otherwise properly registered, licensed or permitted by law to carry on business in Manitoba, or if the Contractor does not carry on business in Manitoba, in the jurisdiction where the Contractor does carry on business, throughout the term of the Contract, and shall provide the Contract Administrator with evidence thereof upon request.

D11. SAFE WORK PLAN

D11.1 The Contractor shall provide the Contract Administrator with a Safe Work Plan at least five (5) Business Days prior to the commencement of any Work on the Site but in no event later than the date specified in C4.1 for the return of the executed Contract Documents, if applicable.

D11.2 The Safe Work Plan should be prepared and submitted in the format shown in the City's template which is available on the Information Connection page at The City of Winnipeg, Corporate Finance, Materials Management Division website at http://www.winnipeg.ca/matmgt/Safety/default.stm

D11.3 Notwithstanding B13.4 at any time during the term of the Contract, the City may, at its sole discretion and acting reasonably, require an updated COR Certificate or Annual Letter of good Standing. A Contractor, who fails to provide a satisfactory COR Certificate or Annual Letter of good Standing, will not be permitted to continue to perform any Work.

D12. INSURANCE

D12.1 The Contractor shall provide and maintain the following insurance coverage:

(a) commercial general liability insurance, in the amount of at least two million dollars ($2,000,000.00) inclusive, with The City of Winnipeg added as an additional insured, with a cross-liability clause, such liability policy to also contain contractual liability, unlicensed motor vehicle liability, non-owned automobile liability, broad form property damage cover and products and completed operations, to remain in place at all times during the performance of the Work and throughout the warranty period;

(b) 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.

D12.2 Deductibles shall be borne by the Contractor.

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

D12.4 The Contractor shall not cancel, materially alter, or cause each policy to lapse without providing at least thirty (30) Calendar Days prior written notice to the Contract Administrator.

D13. CONTRACT SECURITY

D13.1 The Contractor shall provide and maintain the performance bond and the labour and material payment bond until the expiration of the warranty period in the form of:

(a) a performance bond of a company registered to conduct the business of a surety in Manitoba, in the form attached to these Supplemental Conditions (Form H1: Performance Bond), in the amount of fifty percent (50%) of the Contract Price; and

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

D13.1.1 Where the contract security is a performance bond, it may be submitted in hard copy or digital format. If submitted in digital format the contract security must meet the following criteria:

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

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

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

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

(e) the results of the verification must provide a clear, immediate and printable indication of pass or fail regarding D13.1(b).

D13.1.2 Digital bonds failing the verification process will not be considered to be valid and may be determined to be an event of default in accordance with C18.1. If a digital bond fails the verification process, the Contractor may provide a replacement bond (in hard copy or digital format) within seven (7) Calendar Days of the City's request or within such greater period of time as the City in its discretion, exercised reasonably, allows.

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

D13.2 The Contractor shall provide the City Solicitor with the required performance and labour and material payment bonds within seven (7) Calendar Days of notification of the award of the Contract by way of an award letter and prior to the commencement of any Work on the Site but in no event later than the date specified in C4.1 for the return of the executed Contract Documents, if applicable.

D13.3 The Contractor shall, as soon as practicable after entering into a contract with a Subcontractor:

(a) give the Subcontractor written notice of the existence of the labour and material payment bond in D13.1(b); and

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

D14. SUBCONTRACTOR LIST

D14.1 The Contractor shall provide the Contract Administrator with a complete list of the Subcontractors whom the Contractor proposes to engage (Form J: Subcontractor List) at least two (2) Business Days prior to the commencement of any Work on the Site but in no event later than the date specified in the General Conditions for the return of the executed Contract Documents, if applicable.

SCHEDULE OF WORK

D15. EXPEDITED SHOP DRAWINGS AND UTILITY LOCATES

D15.1 Further to E8, in order to expedite Shop Drawings with critical timeliness, the lowest responsive Bidder, as outlined in B15, will be permitted, after receiving written approval from the Contract Administrator, to arrange for the preparation of Shop Drawings for the following items with critical timelines:

(a) Polymer Coated CMP (as a single submittal)

(b) HDPE Pipe Liner and Grouting Plan

(c) PVC Fold and Form Liner

(d) Slip Joints and Internal Pipe Sleeves

(e) CMP to Manhole/Chamber Connections

(f) Debris Grates

(g) Temporary Trench Shoring (as required)

D15.2 In order to expedite utility locates on outfall sites with critical timeliness, the lowest responsive Bidder, as outlined in B15, will be permitted, after receiving written approval from the Contract Administrator, to arrange for utility locates for the following outfall sites with critical timelines:

(a) The outfall sites anticipated to be undertaken in the first month of construction based on the Bidder's proposed construction schedule.

D15.3 If Award is made to the lowest responsive Bidder, then as indicated in E8.1(a)(iii), no payment for the preparation of Shop Drawings will be made.

D15.4 If Award is made to the lowest responsive Bidder, no payment for the booking of utility locates will be made.

D15.5 If no Contract is awarded, then the City of Winnipeg will pay the lowest responsive Bidder up to a maximum of five hundred dollars ($500.00) for each of the requested items identified in D15.1 for the preparation and delivery of Shop Drawings and a single payment for the booking of utility locates as per D15.2. Delivery of the Shop Drawings to the City, booking of Utility Locates, and payment of the above mentioned amounts will constitute full and final consideration of each party to the other, and neither party will have any further liability to the other with respect to this Tender.

D16. COMMENCEMENT

D16.1 The Contractor shall not commence any Work until he/she is in receipt of an award letter from the Award Authority authorizing the commencement of the Work.

D16.2 The Contractor shall not commence any Work on the Site until:

(a) the Contract Administrator has confirmed receipt and approval of:
  (i) evidence of authority to carry on business specified in D10;
  (ii) evidence of the workers compensation coverage specified in C6.15;
  (iii) the Safe Work Plan specified in D11;
  (iv) evidence of the insurance specified in D12;
  (v) the contract security specified in D13; and
  (vi) the Subcontractor list specified in D14.

(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.

D16.3 The Contractor shall commence the Work on the Site within seven (7) Working Days of receipt of the award letter.

D16.4 Work on this project, with the exception of restorations (landscaping, topsoil, seed, sod, pavement restorations, and tree planting) is limited to the period between December 1 to March 15 of any given year, or as authorized by the Contract Administrator.

D16.5 Work shall not commence until the Contract Administrator provides in writing that private property authorization agreements are in place for the following outfall sites:

(a) 937 Wellington Crescent Outfall
(b) 2782 Assiniboine Avenue Outfall
(c) 50 Eastwood Drive Outfall
(d) 300 Dunkirk Drive Outfall
(e) 1 Hart Avenue Outfall
(f) 2464 Assiniboine Crescent Outfall
(g) 3087 Vialoux Drive Outfall

D16.6 Thawing/heating and hoarding of the outfall pipes (as required) shall be the first items initiated as part of the Work.

D16.7 The Bredin Drive Outfall shall be the first outfall cleaning and inspection initiated as part of the Work, so as to allow for manufacture of pipe end replacement if required (provisional items included in contract).

D16.8 The Contractor shall complete the verification of pipe measurements for the Waterfront Drive/McDermot Street Outfall early on in the project, including verifying size, gauge, and plate pattern, so as to allow for manufacture and delivery of replacement SPCSP plate to achieve the contract critical dates identified in D17 herein.

D16.9 Pipe measurement verifications of the 691 Tache Avenue Outfall and Wellington Crescent Outfall shall be the first renewal site items initiated as part of the Work, so as to allow for

manufacture and delivery of slip joints and internal pipe sleeves to achieve the contract critical dates identified in D17 herein.

D17. SUBSTANTIAL PERFORMANCE

D17.1 The Contractor shall achieve Substantial Performance by March 15, 2022.

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.

D18. TOTAL PERFORMANCE

D18.1 The Contractor shall achieve Total Performance by June 30, 2022.

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.

D19. LIQUIDATED DAMAGES

D19.1 If the Contractor fails to achieve Substantial Performance or Total Performance in accordance w ith 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 – one thousand eight hundred dollars ($1800.00);

(b) Total Performance – eight hundred dollars ($800.00).

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. COVID-19 SCHEDULE DELAYS

D20.1 The City acknowledges that the schedule for this Contract may be impacted by the COVID-19 pandemic. Commencement and progress of the Work shall be performed by the Contractor with due consideration to the health and safety of workers and the public, directives from health authorities and various levels of government and in close consultation with the Contract Administrator.

D20.2 If the Contractor is delayed in the performance of the Work by reason of the COVID-19 pandemic, the Work schedule may be adjusted by a period of time equal to the time lost due to such delay and costs related to such delay will be determined as identified herein.

D20.3 A minimum of seven (7) Calendar Days prior to the commencement of Work, the Contractor shall declare whether COVID-19 will affect the start date. The Contractor shall provide sufficient evidence that the delay is directly related to COVID-19, including but not limited to evidence related to availability of staff, availability of Material or work by others.

D20.4 For any delay related to COVID-19 and identified after Work has commenced, the Contractor shall within seven (7) Calendar Days of becoming aware of the anticipated delay declare the additional delay and shall provide sufficient evidence as indicated in D20.3. Failure to provide this notice will result in no additional time delays being considered by the City.

D20.5 The Work schedule, including the durations identified in D17 to D18 where applicable, will be adjusted to reflect delays accepted by the Contract Administrator. No additional payment will be made for adjustment of schedules except where seasonal work, not previously identified in the Contract, is carried over to the following construction season.

D20.6 Where Work not previously identified is being carried over solely as a result of delays related to COVID-19, as confirmed by the Contract Administrator, the cost of temporary works to maintain the Work in a safe manner until Work recommences, will be considered by the Contract Administrator. Where the Work is carried over only partially due to COVID-19, a partial consideration of the cost of temporary works will be considered by the Contract Administrator.

D20.7 Any time or cost implications as a result of COVID-19 and in accordance with the above, as confirmed by the Contract Administrator, shall be documented in accordance with C7.

D21. SCHEDULED MAINTENANCE

D21.1 The Contractor shall perform the following scheduled maintenance in the manner and within the time periods required by the Specifications:

(a) Watering and maintenance of all new trees and vegetation until established as specified in E37;

(b) Acceptance of installed sod.

D21.2 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

D22. JOB MEETINGS

D22.1 Regular weekly job meetings will be held at the Site. These meetings shall be attended by a minimum of one representative of the Contract Administrator, one representative of the City and one representative of the Contractor. Each representative shall be a responsible person capable of expressing the position of the Contract Administrator, the City and the Contractor respectively on any matter discussed at the meeting including the Work schedule and the need to make any revisions to the Work schedule. The progress of the Work will be reviewed at each of these meetings.

D22.2 The Contract Administrator reserves the right to cancel any job meeting or call additional job meetings whenever he/she deems it necessary.

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

D23.1 Further to C6.26, the Contractor shall be the Prime Contractor and shall serve as, and have the duties of the Prime Contractor in accordance with The Workplace Safety and Health Act (Manitoba).

D24. THE WORKPLACE SAFETY AND HEALTH ACT (MANITOBA) – QUALIFICATIONS

D24.1 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 its sole discretion and acting reasonably, require updated proof of compliance, as set out in B13.4.

MEASUREMENT AND PAYMENT

D25. PAYMENT

D25.1 Further to C12, the City may at its option pay the Contractor by direct deposit to the Contractor's banking institution.

WARRANTY

D26. WARRANTY

D26.1 Notwithstanding C13.2, the Contract Administrator may permit the warranty period for a portion o r portions of the Work to begin prior to the date of Total Performance if:

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

D26.1.1 In such case, the date specified by the Contract Administrator for the warranty period to begin shall be substituted for the date specified in C13.2 for the warranty period to begin.

D26.1.2 For the purpose of contract security, the warranty period shall be one (1) year.

THIRD PARTY AGREEMENTS

D27. FUNDING AND/OR CONTRIBUTION AGREEMENT OBLIGATIONS

D27.1 In the event that funding for the Work of the Contract is provided to the City of Winnipeg by the Government of Manitoba and/or the Government of Canada, the following terms and conditions shall apply, as required by the applicable funding agreements.

D27.2 Further to D27.1, in the event that the obligations in D27 apply, actual costs legitimately incurred by the Contractor as a direct result of these obligations ("Funding Costs") shall be determined by the actual cost to the Contractor and not by the valuation method(s) outlined in C7.4. In all other respects Funding Costs will be processed in accordance with Changes in Work under C7.

D27.3 For the purposes of D27:

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

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

D27.4 Modified Insurance Requirements

D27.4.1 If not already required under the insurance requirements identified in D12, the Contractor will be required to provide wrap-up liability insurance in an amount of no less than two million dollars ($2,000,000) inclusive per occurrence. Such policy will be written in the joint names of the City, Contractor, Consultants and all sub-contractors and sub-consultants and include twelve (12) months completed operations. The Government of Manitoba and its Ministers, officers, employees, and agents shall be added as additional insureds.

D27.4.2 If not already required under the insurance requirements identified in D12, the Contractor will be required to provide builders' risk insurance (including boiler and machinery insurance, as applicable) providing all risks coverage at full replacement cost, or such lower level of insurance that the City may identify on a case-by-case basis, such as an installation floater.

D27.4.3 The Contractor shall obtain and maintain third party liability insurance with minimum coverage of two million dollars ($2,000,000.00) per occurrence on all licensed vehicles operated at the Site. In the event that this requirement conflicts with another licensed vehicle insurance requirement in this Contract, then the requirement that provides the higher level of insurance shall apply.

D27.4.4 Further to D12.3, insurers shall provide satisfactory Certificates of Insurance to the Government of Manitoba prior to commencement of Work as written evidence of the insurance required. The Certificates of Insurance must provide for a minimum of thirty (30) days' prior written notice to the Government of Manitoba in case of insurance cancellation.

D27.4.5 All policies must be taken out with insurers licensed to carry on business in the Province of Manitoba.

D27.5 Indemnification By Contractor

D27.5.1 In addition to the indemnity obligations outlined in C17 of the General Conditions for Construction, the Contractor agrees to indemnify and save harmless the Government of Canada and the Government of Manitoba and each of their respective Ministers, officers, servants, employees, and agents from and against all claims and demands, losses, costs, damages, actions, suit or other proceedings brought or pursued in any manner in respect of any matter caused by the Contractor or arising from this Contract or the Work, or from the goods or services provided or required to be provided by the Contractor, except those resulting from the negligence of any of the Government of Canada's or the Government of Manitoba's Ministers, officers, servants, employees, or agents, as the case may be.

D27.6 Records Retention and Audits

D27.6.1 The Contractor shall maintain and preserve accurate and complete records in respect of this Contract and the Work, including all accounting records, financial documents, copies of contracts with other parties and other records relating to this Contract and the Work during the term of the Contract and for at least six (6) years after Total Performance. Those records bearing original signatures or professional seals or stamps must be preserved in paper form; other records may be retained in electronic form.

D27.6.2 In addition to the record keeping and inspection obligations outlined in C6 of the General Conditions for Construction, the Contractor shall keep available for inspection and audit at all reasonable times while this Contract is in effect and until at least six (6) years after Total Performance, all records, documents, and contracts referred to in D27.6.1 for inspection, copying and audit by the City of Winnipeg, the Government of Manitoba and/or the Government of Canada and their respective representatives and auditors, and to produce them on demand; to provide reasonable facilities for such inspections, copying and audits, to provide copies of and extracts from such records, documents, or contracts upon request by the City of Winnipeg, the Government of Manitoba, and/or the Government of Canada and their respective representatives and auditors, and to promptly provide such other information and explanations as may be reasonably requested by the City of Winnipeg, the Government of Manitoba, and/or the Government of Canada from time-to-time.

D27.7 Other Obligations

D27.7.1 The Contractor consents to the City providing a copy of the Contract Documents to the Government of Manitoba and/or the Government of Canada upon request from either entity.

D27.7.2 If the Lobbyists Registration Act (Manitoba) applies to the Contractor, the Contractor represents and warrants that it has filed a return and is registered and in full compliance

with the obligations of that Act, and covenants that it will continue to comply for the duration of this Contract.

D27.7.3 The Contractor shall comply with all applicable legislation and standards, whether federal, provincial, or municipal, including (without limitation) labour, environmental, and human rights laws, in the course of providing the Work.

D27.7.4 The Contractor shall properly account for the Work provided under this Contract and payment received in this respect, prepared in accordance with generally accepted accounting principles in effect in Canada, including those principles and standards approved or recommended from time-to-time by the Chartered Professional Accountants of Canada or the Public Sector Accounting Board, as applicable, applied on a consistent basis.

D27.7.5 The Contractor represents and warrants that no current or former public servant or public office holder, to whom the Value and Ethics Code for the Public Sector, the Policy on Conflict of Interest and Post Employment, or the Conflict of Interest Act applies, shall derive direct benefit from this Contract, including any employment, payments, or gifts, unless the provision or receipt of such benefits is in compliance with such codes and the legislation.

D27.7.6 The Contractor represents and warrants that no member of the House of Commons or of the Senate of Canada or of the Legislative Assembly of Manitoba is a shareholder, director or officer of the Contractor or of a Subcontractor, and that no such member is entitled to any benefits arising from this Contract or from a contract with the Contractor or a Subcontractor concerning the Work.

FORM H1: PERFORMANCE BOND
(See D13)

KNOW ALL MEN BY THESE PRESENTS THAT

_____
(hereinafter called the "Principal"), and

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

_____

_____ dollars ($_____.____)

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

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

TENDER NO. 628-2021

2020-2021 OUTFALL PROGRAM – CONTRACT 2

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

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

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

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

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

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

_____ day of _____ , 20____ .

SIGNED AND SEALED
in the presence of:

_____
(Witness as to Principal if no seal)

_____
(Name of Principal)

Per: _____ (Seal)

Per: _____

_____
(Name of Surety)

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

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

KNOW ALL MEN BY THESE PRESENTS THAT

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

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

_____

_____ dollars ($_____.____)

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

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

TENDER NO. 628-2021

2020-2021 OUTFALL PROGRAM – CONTRACT 2

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

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

(a) A claimant is defined as one having a direct contract with the Principal for labour, service and material, or any of them, used or reasonably required for use in the performance of the contract, labour, service and material being construed to include that part of water, gas, power, light, heat, oil, gasoline, telephone service or rental of equipment (but excluding rent of equipment where the rent pursuant to an agreement is to be applied towards the purchase price thereof) directly applicable to the Contract;

(b) The above-named Principal and Surety hereby jointly and severally agree with the Obligee that every claimant as herein defined, who has not been paid in full before the expiration of a period of ninety (90) days after the date on which the last of such claimant’s work, labour or service was done or performed, or materials were furnished by such claimant, may sue on this bond, prosecute the suit to final judgment for such sum or sums as may be justly due claimant, and have execution thereon;

(c) No suit or action shall be commenced hereunder by any claimant

(ii) unless claimant shall have given written notice to the Principal and the Surety above-named, within one hundred and twenty (120) days after such claimant did or performed the last of the work, labour or service, or furnished the last of the materials for which said claim is made, stating with substantial accuracy the amount claimed and the name of the party to whom the materials were furnished, or for whom the work, labour or service was done or performed. Such notice shall be served by mailing the same by registered mail to the Principal, and Surety, at any place where an office is regularly maintained for the transaction of business, or served in any manner in which legal process may be served in the Province of Manitoba;

(iii) after the expiration of one (1) year following the date on which Principal ceased work on said Contract; including work performed under the guarantees provided in the Contract;

(iv) other than in a court of competent jurisdiction in the Province of Manitoba.

(d) The amount of this bond shall be reduced by and to the extent of any payment or payments made in good faith hereunder, inclusive of the payment by Surety of mechanics liens which may be filed of record against said improvement, whether or not claim for the amount of such lien be presented under and against this bond.

(e) The Surety shall not be liable for a greater sum than the specified penalty of this bond.

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

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

_____ day of _____ , 20____ .

SIGNED AND SEALED
in the presence of:

_____
(Witness as to Principal if no seal)

_____
(Name of Principal)

Per: _____ (Seal)

Per: _____

_____
(Name of Surety)

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

FORM L: PROPOSED HDD OUTFALL CLEANING METHODOLOGY
(See B13)

2020-2021 OUTFALL PROGRAM – CONTRACT 2

Briefly describe your proposed outfall HDD cleaning methodology, including proposed equipment and materials to be used. Attach documents as required.

FORM J: SUBCONTRACTOR LIST
(See D14)

2020-2021 OUTFALL PROGRAM – CONTRACT 2

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 its entirety, whether or not specifically listed on Form B: Prices, shall apply to the Work.

E1.2.1 *The City of Winnipeg Standard Construction Specifications* is available on the Information Connection page at The City of Winnipeg, Corporate Finance, Materials Management Division website at http://www.winnipeg.ca/matmgt/Spec/Default.stm

E1.2.2 The version in effect three (3) Business Days before the Submission Deadline shall apply.

E1.2.3 Further to C2.4(d), Specifications included in the Tender shall govern over *The City of Winnipeg Standard Construction Specifications*.

E1.3 Bidders are reminded that requests for approval of substitutes as an approved equal or an approved alternative shall be made in accordance with B7. In every instance where a brand name or design specification is used, the City will also consider approved equals and/or approved alternatives in accordance with B7.

E1.4 The following are applicable to the Work:

Drawing No.	Drawing Name/Title
1-0303O-D0008-001	COVER SHEET
1-0303O-D0009-001	INDEX PAGE
1-0303O-C0040-001	KINGSTON ROW & DUNKIRK DRIVE OUTFALL – PLAN AND PROFILE – S-MA50017492
1-0303O-C0041-001	143 KINGSTON ROW OUTFALL – PLAN AND PROFILE – S-MA50014591
1-0303O-C0042-001	691 TACHE AVENUE OUTFALL – PLAN AND PROFILE – S-MA70047759
1-0303O-C0043-001	50 EASTWOOD DRIVE OUTFALL – PLAN AND PROFILE – S-MA40000014
1-0303O-C0044-001	ASSINIBOINE CRESCENT/WINDHAM ROAD OUTFALL – PLAN AND PROFILE – S-MA20005071
1-0303O-C0045-001	2782 ASSINIBOINE AVENUE OUTFALL – PLAN AND PROFILE – S-MA70073365
1-0303O-C0046-001	3145 NESS AVENUE OUTFALL A – PLAN AND PROFILE – S-MA20000077
1-0303O-C0047-001	3145 NESS AVENUE OUTFALL B – PLAN AND PROFILE – S-MA20000072
1-0303O-C0048-001	937 WELLINGTON CRESCENT OUTFALL – PLAN AND PROFILE – S-MA60007249
1-0303O-C0049-001	300 DUNKIRK DRIVE OUTFALL – PLAN AND PROFILE – S-MA50011492
1-0303O-C0050-001	STURGEON ROAD OUTFALL – PLAN AND PROFILE – S-MA20003873
1-0303O-C0051-001	METCALFE AVENUE OUTFALL – PLAN AND PROFILE – S-MA70011115
1-0303O-C0052-001	HART AVENUE OUTFALL – PLAN AND PROFILE – S-MA70043042
1-0303O-C0053-001	SELKIRK AVENUE OUTFALL – PLAN AND PROFILE – S-MA70007427
1-0303O-C0054-001	WATERFRONT DRIVE & MCDERMOT AVENUE OUTFALL – PLAN AND PROFILE – S-MA70145080
1-0303O-C0055-001	GRANITE WAY OUTFALL – PLAN AND PROFILE – S-MA20014505
1-0303O-C0056-001	2464 ASSINIBOINE CRESCENT OUTFALL – PLAN AND PROFILE – S-MA20005373
1-0303O-C0057-001	745 TACHE AVENUE OUTFALL – PLAN AND PROFILE – S-MA70017688
1-0303O-C0058-001	VIALOUX DRIVE OUTFALL – PLAN AND PROFILE - S-MA60003875
1-0303O-C0059-001	BREDIN DRIVE OUTFALL – PLAN AND PROFILE - S-MA40005212
1-0303O-C0060-001	ST JOHN AMBULANCE WAY OUTFALL – PLAN AND PROFILE – S-MA20011467
1-0303O-C0061-001	BARKER BOULEVARD OUTFALL – PLAN AND PROFILE – S-MA70031713
1-0303O-C0062-001	MISCELLANEOUS DETAILS – SHEET 1
1-0303O-C0062-002	MISCELLANEOUS DETAILS – SHEET2

E2. ALLOWANCE FOR SOILS INVESTIGATION

E2.1 Description

E2.1.1 The Contractor may complete a one (1) day drilling and sampling program to investigate subsurface soil and groundwater conditions at the Kingston Row and Dunkirk Drive Outfall site for the purpose of verifying soil conditions to facilitate design of temporary shoring.

E2.1.2 Further to C3.1, any test borings made by the Contractor shall be done in accordance with the requirements of the appropriate authority of the City of Winnipeg. Contractors shall notify the Contract Administrator prior to starting any soil boring operation.

E2.2 Construction Methods

E2.2.1 A total of one (1) test hole at a location chosen by the Contractor shall be drilled to practical power auger refusal using either solid or hollow stem augers depending on site conditions. Drilling shall be completed by a suitable contractor specializing in geotechnical soil investigation and sampling.

E2.2.2 Drilling shall be supervised by a suitable company with experience in geotechnical soil investigation and analysis.

E2.2.3 Soil sampling shall be performed at 1.5 m intervals and at any change in soil stratigraphy within overburden materials. Standard Penetration Tests (SPTs) shall be completed at 1.5 m increments down to the appropriate bearing stratum. Clay soil samples shall be tested in the field with a field Torvane to estimate the undrained shear strength, while SPTs shall be completed in granular soils to determine density. The colour, moisture content, consistency, density, plasticity and grain size of the soil samples shall be detailed on the test hole log.

E2.2.4 The test holes shall be backfilled to grade with bentonite chips and auger cuttings. The test hole locations and elevation shall be recorded with survey grade Global Positioning System equipment.

E2.2.5 The depth to groundwater shall be noted during the drilling and shall be examined for evidence of groundwater inflows, sloughing and squeezing both during and upon the completion of the drilling.

E2.2.6 Detailed test hole logs of the encountered stratigraphy incorporating field observations, laboratory test results and estimated depth of groundwater shall be prepared.

E2.2.7 All test hole log information and coordinates of each test hole shall be provided to the Contract Administrator.

E2.3 Measurement and Payment

(a) The cost for soil investigation shall be paid for under the Contract Unit Price for “Allowance for Soils Investigation”. Costs will be based on actual invoiced costs to complete the soil investigation with allowable mark-ups in accordance with the General Conditions

E3. OFFICE FACILITIES

E3.1 Contractor shall supply one (1) office facility to be located at a Site specified by the Contract A dministrator.

E3.2 The Contractor shall relocate the office facility during construction to an alternate Site upon request of the Contract Administrator up to three (3) times. Relocation of the office facility will be considered incidental to Supply of Office Facilities, and no separate payment for relocation will be made.

E3.3 The Contractor shall supply office facilities meeting the following requirements:

(a) To reduce the risk of spread of Covid-19, the field office shall be for the exclusive use of the Contract Administrator and City staff. The site office may be used for site meetings and shall be wide and large enough to accommodate up to 8 people while allowing for 2 meter physical distancing to be maintained at all times.

(b) The building shall be equipped with appropriate cleaning products, including hand sanitizer.

(c) The building shall be conveniently located near an active Work Site.

(d) The building shall have a minimum floor area of 25 square metres, two windows and a door entrance with a suitable lock.

(e) The building shall be suitable for all weather use. It shall be equipped with an electric heater and air conditioner so that the room temperature can be maintained between 16-25 ^{o}C.

(f) The building shall be adequately lighted with fluorescent fixtures and have a minimum of three wall outlets.

(g) The building shall be furnished with two desks, table 3m x 1.2m, one two drawer legal size filing cabinet, and a minimum of 12 chairs.

(h) **A separate portable toilet shall be located near the field office building and shall be for the exclusive use of the Contract Administrator. The toilet shall have a locking door and equipped with hand sanitizer at all times**.

(i) The field office building and the portable toilet shall be cleaned regularly and at minimum on a weekly basis immediately prior to each Site meeting. The Contract Administrator may request additional cleaning when the Contract Administrator deems it necessary.

E4. TRUCK WEIGHT LIMITS

E4.1 The City shall not pay for any portion of material which results in the vehicle exceeding the maximum gross vehicle weight allowed under The City of Winnipeg Traffic By-Law, unless such vehicle is operating under special permit.

E5. DANGEROUS WORK CONDITIONS

E5.1 Further to clause C 6.24 of the General Conditions, the Contractor shall be aware that underground chambers, manholes, and sewers are considered a confined space and shall follow the "Guidelines for confined Entry Work" as published by the Manitoba Workplace Safety and Health Division.

E5.2 The Contractor shall be aware of the potential hazards that can be encountered in gate chambers, manholes and sewers such as explosive gases, toxic gases and oxygen deficiency.

E5.3 The air in a confined space must be tested before entry and continuously during the time that personnel are inside the space. Equipment for continuous monitoring of gases must be explosion-proof and equipped with a visible and audible alarm. The principal tests are for oxygen deficiency, explosion range and toxic gases. Testing equipment must be calibrated in accordance with manufacturer's specifications.

E5.4 The Contractor shall ventilate all confined spaces including underground chambers, tunnels, pipes, and shafts as required and approved by the Manitoba Workplace Safety and Health Act (the “Act”). If no ventilation is supplied, a Worker must wear a respirator or supplied air to enter the confined space.

E5.5 Workers must always wear a respirator or supplied air when entering a chamber, manhole or sewer where live sewage is present.

E5.6 The Contractor shall always have a photoionization detector (PID) on Site to monitor potential hydrocarbon vapours in the confined spaces. The gas detector and safety equipment conforming to the Act shall be made available to the Contract Administrator for his/her use

during inspections. In addition, the Contract Administrator shall collect discrete air samples for laboratory analysis.

E5.7 The Contract Administrator may issue a Stop Work order to the Contractor if the above guidelines are not being followed. The Contractor shall not resume his operations until the Contract Administrator is satisfied the Contractor is following the appropriate procedures. The Contractor shall have no claim for extra time or costs due to the Stop Work order for not following these safety guidelines.

E6. WATERWAY BY-LAW AND PERMITS

E6.1 The Contractor shall note that all Works fall within 107 meters (350 feet) of the regulated summer water level of the Red River and Assiniboine River and 76.2 (250 feet) of Sturgeon Creek and are within the jurisdiction of the Waterway By-law. The Contract Administrator will apply and arrange for payment by the City for the required Waterway Permits for the permanent Work. The Contractor shall adhere to restrictions imposed by the permit.

E6.2 The Contractor shall be responsible to apply and pay for Waterway Permits for all temporary Works, including construction of temporary access ramps as outlined in E12.

E6.3 Under no circumstances will stockpiling of any material be permitted within 107 m (350 feet) of the regulated summer water level of the Red River and Assiniboine River and or within 76.2 m (250 feet) of the regulated summer water level of Sturgeon Creek.

E7. ENVIRONMENTAL PROTECTION PLAN

E7.1 The Contractor shall plan and implement the Work of this Contract strictly in accordance with the requirements of the Environmental Protection Plan as herein specified.

E7.2 The Contractor is advised that at least the following Acts, Regulations, and By-laws apply to the Work and are available for viewing at the office of the Contract Administrator.

(a) Federal
  (i) Canadian Environmental Assessment Act (CEAA) c.37
  (ii) Transportation of Dangerous Goods Act and Regulations c.34
  (iii) The Fisheries Act
  (iv) Navigable Waters Protection Act

(b) Provincial
  (i) The Dangerous Goods Handling and Transportation Act D12
  (ii) The Endangered Species Act E111
  (iii) The Environment Act c.E125
  (iv) The Fire Prevention Act F80
  (v) The Manitoba Heritage Resources Act H39.1
  (vi) The Manitoba Noxious Weeds Act N110
  (vii) The Manitoba Nuisance Act N120
  (viii) The Public Health Act c.P210
  (ix) The Workplace Safety and Health Act W210
  (x) And current applicable associated regulations.
  (Note: Provincial regulations updated as of September 1999)

(c) Municipal
  (i) The City of Winnipeg By-law No. 1/2008
  (ii) And any other applicable Acts, Regulations, and By-Laws.

E7.3 The Contractor is advised that the following environmental protection measures apply to the Work.

(a) Materials Handling and Storage

(i) Construction materials shall not be deposited or stored on riverbanks or river shorelines unless written acceptance from the Contract Administrator is received in advance.

(ii) Construction materials and debris shall be prevented from entering the Red River, Assiniboine River, and Sturgeon Creek. In the event that materials and/or debris inadvertently enter the watercourse, the Contract shall be required to remove the material and restore the watercourse to its original condition.

(b) Fuel Handling and Storage

(i) The Contractor shall obtain all necessary permits from Manitoba Conservation for the handling and storage of fuel products and shall provide copies to the Contract Administrator.

(ii) All fuel handling and storage facilities shall comply with The Dangerous Goods and Transportation Act Storage and Handling of Petroleum Products Regulation and any local land use permits.

(iii) Fuels, lubricants, and other potentially hazardous materials as defined in The Dangerous Goods and Transportation Act shall be stored and handled within the approved storage areas.

(iv) In accordance with Section 2.5 (Construction: General Guidelines) of the Manitoba Stream Crossing Guidelines for the Protection of Fish and Fish Habitat, (DFO and DNR, 1996), the Contractor shall ensure that any temporary fuel storage areas established for construction of the project are contained by an impermeable dike and are located a minimum distance of 100 metres away from the high water line of the Red River, Assiniboine River, and Sturgeon Creek. Dikes shall be designed, constructed, and maintained to retain not less than 100% of the capacity of the total number of containers or 110% of the largest container, whichever is greatest. The dikes shall be constructed of clay or similar impervious material. If this type of material is not available, the dike shall be constructed of locally available material and lined with high density polyethylene (HDPE). Furthermore, the fuel storage area(s) shall be secured by a barrier such as a high fence and gate to prevent vandalism.

(v) The Contractor shall ensure that all fuel storage containers are inspected daily for leaks and spillage.

(vi) Products transferred from the fuel storage area(s) to specific Work Sites shall not exceed the daily usage requirement.

(vii) When servicing requires the drainage or pumping of fuels, lubricating oils or other fluids from equipment, a groundsheet of suitable material (such as HDPE) and size shall be spread on the ground to catch the fluid in the event of a leak or spill.

(viii) Refuelling of mobile equipment and vehicles shall take place at least 100 metres from a watercourse.

(ix) The area around storage Sites and fuel lines shall be distinctly marked and kept clear of snow and debris to allow for routine inspection and leak detection.

(x) A sufficient supply of materials, such as absorbent material and plastic oil booms, to clean up minor spills shall be stored nearby on-site. The Contractor shall ensure that additional material can be made available on short notice.

(c) Waste Handling and Disposal

(i) The construction area shall be kept clean and orderly at all times during and at completion of construction.

(ii) At no time during construction shall personal or construction waste be permitted to accumulate for more than one day at any location on the construction Site, other than at a dedicated storage area as may be approved by the Contract Administrator.

(iii) All resulting debris shall be deposited at a Waste Disposal Ground operating under the authority of Manitoba Regulation #150/91. Exceptions are liquid industrial and hazardous wastes which may require special disposal methods (see SC:21.4 D).

(iv) Indiscriminate dumping, littering, or abandonment shall not take place.

(v) No on-site burning of waste is permitted.

(vi) Waste storage areas shall not be located so as to block natural drainage.

(vii) Run-off from a waste storage area shall not be allowed to cause siltation of a watercourse.

(viii) Waste storage areas shall be left in a neat and finished appearance and/or restored to their original condition to the satisfaction of the Contract Administrator.

(ix) Equipment shall not be cleaned near watercourses; contaminated water from onshore cleaning operations shall not be permitted to enter watercourses.

(d) Dangerous Goods/Hazardous Waste Handling and Disposal

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

(ii) The Contractor shall be familiar with The Dangerous Goods Handling and Transportation Act and Regulations.

(iii) The Contractor shall have on-site staff that is trained and certified in the handling of the dangerous/hazardous goods, when said dangerous/hazardous goods are being utilized on-site for the performance of the Work.

(iv) Different waste streams shall not be mixed.

(v) Disposal of dangerous goods/hazardous wastes shall be at approved hazardous waste facilities.

(vi) Liquid hydrocarbons shall not be stored or disposed of in earthen pits on-site.

(vii) Used oils shall be stored in appropriate drums, or tankage until shipment to waste oil recycling centres, incinerators, or secure disposal facilities approved for such wastes.

(viii) Used oil filters shall be drained, placed in suitable storage containers, and buried or incinerated at approved hazardous waste treatment and disposal facilities.

(ix) Dangerous goods/hazardous waste storage areas shall be located at least 100 metres away from the high water line and be dyked.

(x) Dangerous goods/hazardous waste storage areas shall not be located so as to block natural drainage.

(xi) Run-off from a dangerous goods/hazardous waste storage area shall not be allowed to cause siltation of a watercourse.

(xii) Dangerous goods/hazardous waste storage areas shall be left in a neat and finished appearance and/or restored to their original condition to the satisfaction of the Contract Administrator.

(e) Emergency Response

(i) The Contractor shall ensure that due care and caution is taken to prevent spills.

(ii) The Contractor shall report all major spills of petroleum products or other hazardous substances with significant impact on the environment and threat to human health and safety (as defined in Table 1 below) to Sustainable Development, immediately after occurrence of the environmental accident, by calling the 24-hour emergency phone number (204) 945-4888. The Contract Administrator shall also be notified.

(iii) The Contractor shall designate a qualified supervisor as the on-site emergency response co-ordinator for the project. The emergency response co-ordinator shall have the authority to redirect manpower in order to respond in the event of a spill.

(iv) The following actions shall be taken by the person in charge of the spilled material or the first person(s) arriving at the scene of a hazardous material accident or the on-site emergency response co-ordinator:

(i) Notify emergency-response co-ordinator of the accident:

- identify exact location and time of accident
- indicate injuries, if any

- request assistance as required by magnitude of accident (Sustainable Development 24-hour Spill Response Line (204) 945-4888, Police, Fire Department, Ambulance, company backup)

(ii) Attend to public safety:

- stop traffic, roadblock/cordon off the immediate danger area
- eliminate ignition sources
- initiate evacuation procedures if necessary

(iii) Assess situation and gather information on the status of the situation, noting:

- personnel on-site
- cause and effect of spill
- estimated extent of damage
- amount and type of material involved
- proximity to waterways, sewers, and manholes

(iv) If safe to do so, try to stop the dispersion or flow of spill material:

- approach from upwind
- stop or reduce leak if safe to do so
- dike spill material with dry, inert sorbet material or dry clay soil or sand
- prevent spill material from entering waterways and utilities by diking
- prevent spill material from entering manholes and other openings by covering with rubber spill mats or diking. Resume any effective action to contain, clean up, or stop the flow of the spilled product.

(v) The emergency response co-ordinator shall ensure that all environmental accidents involving contaminants shall be documented and reported to Sustainable Development according to The Dangerous Goods Handling and Transportation Act Environmental Accident Report Regulation 439/87.

(vi) When dangerous goods are used on-site, materials for containment and cleanup of spill material (e.g. absorbent materials, plastic oil booms, and oversized recovery drums) shall be available on-site.

(vii) Minor spills of such substances that may be contained on land with no significant impact on the environment may be responded to with in-house resources without formal notification to Manitoba Environment.

(viii) City emergency response, 9-1-1, shall be used if other means are not available.

(ix) The on-site emergency response coordinator shall contact The Canadian Coast Guard, Selkirk (204) 785-6030, if the spill material reaches and is on or in the Red or Assiniboine Rivers, or Sturgeon Creek.

Table 1 Spills that must be reported to the Manitoba Conservation as Environmental Accidents

Classification		Hazard	Reportable Quantity/Level
1		Explosives	All
2.1		Compressed Gas (flammable)	100 L*
2.2		Compressed Gas	100 L*
2.3		Compressed Gas (toxic)	All
2.4		Compressed Gas (corrosive)	All
3		Flammable Liquids	100 L
4		Flammable Solids	1 kg
5.1	PG** I & II	Oxidizer	1 kg or 1 L
	PG III	Oxidizer	50 kg or 50 L
5.2		Organic Peroxide	1 kg or 1 L
6.1	PG I	Acute Toxic	1 kg or 1 L

	PG II & III	Acute Toxic	5 kg or 5 L
6.2		Infectious	All
7		Radioactive	Any discharge or radiation level exceeding 10 mSv/h at the package surface and 200 uSv/h at 1 m from the package surface
8		Corrosive	5 kg or 5 L
9.1		Miscellaneous	50 kg (except PCB mixtures)
9.1		PCB Mixtures	500 g
9.2		Aquatic Toxic	1 kg or 1 L
9.3		Wastes (Chronic Toxic)	5 kg or 5 L

* Container capacity (refers to container water capacity)
** PG = Packing Group(s)

(f) Vegetation

(i) Vegetation shall not be disturbed without written permission of the Contract Administrator. The Contractor shall protect plants or trees which may be at risk of accidental damage. Such measures may include protective fencing or signage and shall be approved in advance by the Contractor Administrator.

(ii) Trees damaged during construction activities shall be examined by bonded tree care professionals; viable trees damaged during construction activities shall be pruned according to good practise by bonded tree care professionals. Damaged trees which are not viable shall be replaced at the expense of the Contractor.

(iii) Trees identified to be at risk by the Contract Administrator are to be strapped with 25 x 150 x 2400 millimetre wood planks, or suitably protected as approved by the Contract Administrator.

(iv) Herbicides and pesticides shall not be used adjacent to any surface watercourses.

(v) All landowners adjacent to the area of application of herbicides or pesticides shall be notified prior to the Work.

(vi) Trees or shrubs shall not be felled into watercourses.

(vii) Areas where vegetation is removed during clearing, construction, and decommissioning activities, shall be revegetated as soon as possible in accordance with the landscaping plans forming part of the contract, or as directed by the Contract Administrator.

(g) Red and Assiniboine Rivers Navigation Protection

Dangerous Goods/Hazardous Waste Handling and Disposal

(a) The Red and Assiniboine Rivers are open to navigation from approximately mid-April to mid-November, annually. During this period, it will be the responsibility of the Contractor to fully ensure the safety of river users.

(b) The Contractor shall provide, install, and maintain adequate warning signs and lighting on any structure beyond the water's edge to notify boats and other craft navigating on the Red an Assiniboine Rivers that construction is underway. These warnings shall meet the requirements of the City of Winnipeg Waterways Authority and of the Canadian Coast Guard.

(c) Prior to commencing any applicable operations over the Red or Assiniboine Rivers, the Contractor shall provide to the Contract Administrator a copy of all necessary approvals received by the Contractor.

E8. SHOP DRAWINGS

E8.1 Description

(a) This Specification shall revise, amend and supplement the requirements of CW 1110.

(i) The term 'shop drawings' means drawings, diagrams, illustrations, schedules, performance charts, brochures, and other data, including Site erection drawings which are to be provided by the Contractor to illustrate details of a portion of the Work.

(ii) The Contractor shall submit specified shop drawings to the Contract Administrator for review. All submissions must be in metric units. Where data is in imperial units, the correct metric equivalent shall also be shown on all submissions for engineering review.

(iii) Provision of Shop Drawings will be considered incidental to the price for supply and delivery of equipment and materials.

(b) Shop Drawings

(i) Original drawings are to be prepared by Contractor, Subcontractor, Supplier, Distributor, or Manufacturer, which illustrate appropriate portion of Work; showing fabrication, layout, setting or erection details as specified in appropriate sections

(ii) Shop drawings for the following structural components shall bear the seal of a registered Engineer in the Province of Manitoba.

- Reinforcing steel.
- Metal Fabrications.

(c) Contractor's Responsibilities

(i) Review shop drawings, product data and samples prior to submission and stamp and sign drawings indicating conformance to the Contract requirements.

(ii) Verify:

- Field Measurements
- Field Construction Criteria
- Catalogue numbers and similar data

(iii) Coordinate each submission with requirements of Work and Contract Documents. Individual shop drawings will not be reviewed until all related drawings are available.

(iv) Notify Contract Administrator, in writing at time of submission, of deviations from requirements of Contract Documents.

(v) Responsibility for deviations in submission from requirements of Contract Documents is not relieved by Contract Administrator's review of submission, unless Contract Administrator gives written acceptance of specified deviations.

(vi) Responsibility for errors and omissions in submission is not relieved by Contract Administrator's review of submittals.

(vii) The Contractor shall make any corrections required by the Contract Administrator and shall resubmit the Shop Drawings. The Contractor shall direct specific attention in writing or on resubmitted Shop Drawings to revisions other than the corrections requested by the Contract Administrator on previous submission.

(viii) After Contract Administrator's review and return of copies, distribute copies to subtrades as appropriate.

(ix) Maintain one (1) complete set of reviewed shop drawings, filed by Specification Section Number, at the Site of the Work for use and reference of the Contract Administrator and Subcontractors.

(d) Submission Requirements

(i) Schedule submissions at least 14 Calendar Days before dates reviewed submissions will be needed, and allow for a 10 Calendar Day period for review by the Contract Administrator of each individual submission and re-submission, unless noted otherwise in the Contract Documents.

(ii) Submit one original print and one digital PDF copy of shop drawings. The Contractor is advised that the Contract Administrator will retain the original copy and return one digital PDF copy to the Contractor

(iii) Accompany submissions with transmittal letter, containing:

- Date
- Project title and Bid Opportunity/Tender number
- Contractor's name and address
- Number of each shop drawing, product data and sample submitted
- Specification Section, Title, Number and Clause
- Drawing Number and Detail/Section Number
- Other pertinent data

(iv) Submissions shall include:

(a) Date and revision dates.
(b) Project title and Bid Opportunity/Tender number.
(c) Name of:
  (a) Contractor
  (b) Subcontractor
  (c) Supplier
  (d) Manufacturer
  (e) Separate detailer when pertinent
(d) Identification of product of material.
(e) Relation to adjacent structure or materials.
(f) Field dimensions, clearly identified as such.
(g) Specification section name, number and clause number or drawing number and detail/section number.
(h) Applicable standards, such as CSA or CGSB numbers.
(i) Contractor's stamp, initialed or signed, certifying review of submission, verification of field measurements and compliance with Contract Documents.

(e) Other Considerations

(i) Fabrication, erection, installation or commissioning may require modifications to equipment or systems to conform to the design intent. Revise pertinent shop drawings and resubmit.

(ii) Material and equipment delivered to the Site of the Works will not be paid for at least until pertinent shop drawings have been submitted and reviewed.

(iii) Incomplete shop drawing information will be considered as stipulated deductions for the purposes of progress payment certificates.

(iv) No delay or cost claims will be allowed that arise because of delays in submissions, re-submissions and review of shop drawings.

E9. FLOW CONTROL

E9.1 Description

E9.1.1 During winter months land drainage and storm relief sewers can receive flow of an undetermined amount from groundwater infiltration, water main breaks, snow melt and other unforeseen sources.

E9.1.2 Provide flow control measures to contend with and maintain flow in the existing sewers directed to the outfall pipe being repaired, replaced, cleaned, and/or inspected. Flow control measures shall include but not be limited to diversions, flumes and by-pass pumping.

E9.1.3 Discharge hoses for by-pass pumping shall not be laid across vehicle or pedestrian traffic areas and must be protected from freezing during winter months. Pumping equipment if used, shall be set-up in a location and in such a way to not be a noise problem for nearby residences

E9.1.4 Provide a flow control plan for each site to the Contract Administrator for review and approval before removing any existing sewer pipe and/or commencing outfall cleaning work.

E9.1.5 In the event the flow in the sewer system is expected to exceed the sewer capacity due to spring runoff, the Contract Administrator may suspend Work activities that require temporary by-pass pumping and temporary shutdown of the Site. Suspension of these activities will continue until the high flow diminishes in the sewer.

E9.1.6 If in the opinion of the Contract Administrator suspension of Work activities that require temporary by-pass pumping and temporary shutdown of the Site may cause a delay in completion of the Work through no fault of the Contractor, the completion date of the Work may be adjusted accordingly.

E9.2 Payment

E9.2.1 Payment for flow control shall be included under the item “Site Development and Restoration”.

E10. WORK PRACTICES ON ASBESTOS CEMENT PIPE

E10.1 Further to BC.6.28(d) the Contractor’s attention is directed to the possible health dangers associated with working with asbestos-cement pipe and all work associated with existing asbestos cement pipe shall conform to the following publications:

E10.1.1 “Guidelines for Working with Asbestos” by Manitoba Department of Labour and Immigration, Workplace Health and Safety Branch. http://wwwgov.mb.ca/labour/safety/publication.html

E10.1.2 “Work practices for Asbestos –Cement Pipe”, AWWA No. M16, published by American Water Works Association. http://www.awwa.org/.

E10.1.3 Recommended Work Practices for AC Pipe, 1977, published by the AC Pipe producers Association.

E11. CHANNEL PROTECTION

E11.1 The ice surface and riverbank channel shall be cleared of construction materials prior to ice break-up. The Contractor shall clean up all materials, including but not limited to: soil, snow fence, construction debris, etc. from this construction activity. All items that will have an adverse impact on the channel shall be removed. Channel Protection shall be considered incidental to the Works of this Contract and no measurement or payment will be made for this item.

E12. SITE DEVELOPMENT AND RESTORATION

E12.1 Description

E12.1.1 This Specification shall cover all aspects of the Site Development and Restoration Work, including but not limited to mobilization and demobilization, heating, hoarding, thawing, and dewatering of outfall pipes, erection, maintenance and removal of safety fencing, removal and re-installation of existing debris grates, field cutting/bevelling existing pipe ends, removal of existing internal pipe bracing to facilitate Work as required, swamp mats and/or other materials as required for access, traffic control and signage, sediment control Works, snow clearing, flow control, temporary cofferdams, protection and pruning of existing trees as required, removal of fallen trees and debris, removal and reinstallation of site furniture, office facilities, general access development, access maintenance and removal (including permits required for temporary access works), and Site Restoration.

E12.1.2 The Tender quantities for each Site listed on Form B: Prices include an estimated quantity of Topsoil, Seeding, and Sodding based on pipe trench installation and/or geotechnical stability Works. All Topsoil, Seeding, and Sodding beyond the quantities listed on Form B:

Prices will be considered incidental to Site Development and Restoration, and no additional payment will be made for the additional quantities.

E12.1.3 Additional Site specific works included within this specification are the:

(a) Temporary removal, relocating, and replacing existing site furniture, fencing, temporary structures, and their associated foundations, and other obstructions within easement right-of-ways or as required for site access to complete the Work.

(b) Heating/hoarding, thawing, de-icing, and de-watering of outfall pipes as required to complete outfall cleaning and repairs.

(c) Works and permits associated with temporary supporting, raising and/or relocating overhead power lines and/or light standards as required to facilitate the Works. Contact the local Manitoba Hydro Office to arrange for Manitoba Hydro Staff to lift power lines, temporarily support utilities, and/or relocate utilities as required. Only Manitoba Hydro staff will be permitted to lift power lines.

E12.2 Materials

E12.2.1 Equipment

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

E12.3 Construction Methods

E12.3.1 Site and Construction Access

(a) The Contractor shall be responsible to develop suitable Site access. This includes but is not limited to, temporary bridging over structures, temporary removal and reinstallation of safety fencing, any landscaping and grading repairs, restoration of vegetation, etc. necessary to restore any Site and construction access areas to their pre-existing condition. Prior to commencing construction, the Contractor shall submit their site access plan to the Contract Administrator for approval.

(b) All construction access ramps from the top bank area down to the edge of the river or creek shall be constructed by excavating to the necessary ramp grade and disposing of the material off Site. Under no circumstances will the excavated material or any additional materials be placed as fill in the ramp area. Detailed construction access ramp drawings are to be submitted to the Contract Administrator for approval a minimum of seven (7) days prior to any construction activity on Site. Where access ramps cross over existing pipe alignments and/or where equipment is required to cross over existing pipe alignments, pipe loading calculations (as required) shall be the responsibility of the Contractor.

(c) The Contractor is responsible for obtaining and paying for all required permits and permissions that are necessary for Site access, including a Waterways Access Permit, if required by the City of Winnipeg. Contact the Riverbank Management Contract Administrator at 204-986-5159 for information regarding Waterways Permits.

(d) The locations of the Contractor’s construction access ramps shall be restored to the same condition or better than it was prior to the initiation of any Work.

E12.3.2 Frozen Waterways Permit

The Contractor is responsible for obtaining a Frozen Waterway Permit for permission to Work on the river ice. Contact the City of Winnipeg Zoning and Permits Office.

E12.3.3 Diversion of Flows

(a) Flows such as snowmelt, rainfall, a water main break, or any other flow traveling through the outfall shall be diverted during construction as specified in E9. The cost of the flow diversion is considered incidental to Site Development and Restoration.

E12.3.4 Temporary Coffer Dam

The Contractor shall erect a temporary cofferdam to provide a safe environment to carry out the Work associated with this project (as required). Cofferdam designs shall be submitted to the Contract Administrator for approval before construction. Where clay material is used, clay shall consist of a high plasticity with a liquid limit in excess of 50%. The clay shall be free of deleterious material such as roots, organic material, ice, snow or other unsuitable materials, and may be salvaged from the on-site excavation, as approved by the Contract Administrator. Frozen material will not be accepted. Material for the cofferdam shall be inspected and approved by the Contract Administrator before construction. Cofferdam materials shall be completely removed following construction.

E12.3.5 Vegetation Removal

Some vegetation (living trees smaller than 50 mm, fallen larger trees and sod) removal may be permitted in order to facilitate Site access. Existing vegetation shall not be removed without prior approval from the Contract Administrator. The Contractor shall load and haul any removed vegetation, and dispose of the material off Site immediately upon collection. Stockpiling shall not be permitted unless written approval has been obtained from the Contract Administrator.

E12.3.6 Snow and Ice Removal

Snow cover shall be cleared from the riverbank and hauled off-site prior to placement of the rockfill riprap. The methodology to clear the snow shall be subject to the approval of the Contract Administrator.

Ice at the shoreline of the River shall be broken and cleared before the placement of riprap below ice level. Care shall be taken to ensure that the ice is removed, and does not become trapped below rockfill riprap placement.

E12.3.7 Internal Pipe Bracing Removal

The Contractor shall remove existing internal pipe bracing as required to facilitate the Work and as directed by the Contract Administrator.

E12.3.8 Field Cutting/Bevelling Existing Pipe Ends

The Contractor shall cut/bevel existing pipe ends as directed by the Contract Administrator and in accordance with the methods outlined in E17.

E12.3.9 Safety Fence

The Contractor shall erect and maintain for the duration of the project a safety fence, acceptable to the Contract Administrator, to restrict access to the Site. The fencing shall enclose the entire Site with appropriate gates or openings that are closed at the end of each Work day. Appropriate signs shall be erected to warn all recreational users of the river that an open water hazard exists. This shall include but not be limited to snowmobilers and skiers. The installed fencing shall consist of Dupont Number L70 orange plastic safety fence or approved equal in accordance with B7, with a mesh spacing of 45 mm, constructed as shown in the contract drawings. Upon completion of the Work, the fence shall be removed and disposed of off Site

E12.3.10 Environmental Regulations

(a) The Contractor shall adhere to all relevant Federal and Provincial environmental regulations.

(b) The Contractor shall plan to Work in accordance with the current environmental regulations of “Manitoba Stream Crossing Guidelines for Protection of Fish and Fish Habitat”, Fisheries and Oceans, and Manitoba Natural Resources.

(c) The Contractor shall supply, in writing, prior to commencement of Work on-site, a detailed plan for sediment control on this project.

(d) The Contractor shall ensure that sufficient supplies of suitable spill kits are on-site to cleanup minor spills, should they occur. The Contractor shall supply the name,

address and phone number of a local supplier, where additional kits are available on short notice

E12.3.11 General Site Cleanup and Restoration

(a) All areas of the construction Site shall be restored to a condition at least equivalent to its original condition prior to initiation of Work. This may include, but is not necessarily limited to the Contractor's lay down area, the removal of the Contract Administrator Site trailer, and removal of all temporary fencing.

E12.4 Method of Measurement and Payment

Site Development and Restoration

The Site development and restoration will be measured and paid for at the Contract Lump Sum Price for "Site Development and Restoration", which price shall be payment in full for supplying all materials and for performing all operations herein described and all other items incidental to the Work included in this Specification.

50% of the Site Development and Restoration unit price will be paid on the first progress payment following commencement of the work on the specific Site being developed.

The remaining 50% of the Site Development and Restoration unit price will be paid subsequent to the completion of the Work and restoration and clean-up of the Site.

E12.4.1 Topsoil and Sod

(a) Further to E12.1.2 where topsoil and sodding is required to restore the project site, access routes, and laydown areas to preconstruction conditions it shall be considered incidental to Site Development and Restoration. No separate payment shall be made for topsoil and sod in these areas.

E13. TREE REMOVAL

E13.1 Description

E13.1.1 This specification shall cover the removal of existing trees.

E13.1.2 The Work to be done by the Contractor under this specification shall include the furnishing of all superintendence, overhead, labour, materials, equipment, tools, supplies and all things necessary for and incidental to the satisfactory performance and completion of all Work as hereinafter specified.

E13.2 Materials

E13.2.1 Existing Trees to be Removed

The existing trees to be removed include, but not limited to ash, elm, cottonwood, basswood, oak, pine, maple, spruce, etc., all of which may be cut with standard chain saw equipment. The existing trees range from 50 mm to 1,000 mm diameter.

E13.3 Construction Methods

E13.3.1 Prior to commencement of the Work the Contract Administrator shall identify all trees for removal. The Contractor shall cut down only trees designated to be removed, and grub out all stumps and roots greater than 100 mm diameter. In general, the Contractor shall start at the top of the tree and remove branches or trunks not longer than 2 m. Trees are to be felled so as to land within the limits of the Works. The Contractor shall load and haul all trees, stumps, roots, logs, brush, rubbish and all other surface litter from the Site and dispose of these materials at an approved disposal Site, acceptable to the Contract Administrator.

E13.3.2 The Contractor shall take all precautions to prevent damage to structures, adjacent property and to trees and shrubs. In the event of damage, the Contractor will be held

liable, and shall be required to provide appropriate restoration at his cost, to the satisfaction of the Contract Administrator.

E13.3.3 Any trees damaged during construction activities shall be examined by a bonded tree care professional and pruned as required. Damaged trees which are not viable shall be replaced by the Contractor at his own cost.

E13.4 Measurement and Payment

E13.4.1 The removal of existing trees shall be measured on a per tree basis and paid for at the Contract Unit Price per unit for the "Items of Work" listed below. The amount to be paid shall be the total number of trees removed in accordance with this specification, accepted and measured by the Contract Administrator.

Items of Work: Tree Removal

i. 50 mm to 249 mm Diameter

ii. 250 mm to 500 mm Diameter

iii. Greater than 500 mm Diameter

E13.4.2 The removal of trees and brush less than 50 mm diameter is considered incidental to the Work and no separate measurement or payment will be made.

E14. PROTECTION OF EXISTING TREES

E14.1 Removal of some trees will be required. The Contract Administrator will identify which trees will be removed. The Contractor shall take the following precautionary steps to avoid damage from construction activities to any existing trees not marked for removal within the limits of the construction area.

E14.1.1 Do not stockpile materials and soil or park vehicles and equipment within 2 metres of trees.

E14.1.2 Strap mature tree trunks with 25 x 150 x 2400 wood planks. Smaller trees shall be similarly protected using appropriately sized wood planks.

E14.1.3 Excavations shall be carried out in a manner to minimize damage to existing root systems. Where roots must be cut to facilitate an excavation they shall be neatly pruned at the face of the excavation and coated with an appropriate wound dressing to prevent infection.

E14.1.4 Work on Site shall be carried out in a manner to minimize damage to existing tree branches. Where damage to tree branches does occur, the Contractor shall neatly prune the damaged branch.

E14.1.5 American elm trees shall not be pruned between April 1st and August 1st and Siberian elm trees between April 1st and July 1st of any year under provisions of The Dutch Elm Disease Act.

E14.2 All damage to existing trees due to construction activities shall be repaired to the requirements and satisfaction of the City of Winnipeg, Public Works Department, Forestry Branch at the Contractor's expense.

E14.3 Costs for protection of trees shall be considered incidental to Site Development and Restoration. No separate measurement or payment will be made.

E15. PROTECTION OF INSTRUMENTATION

E15.1 The Contractor shall ensure that all instrumentation as shown on the Drawings and any new instrumentation installed prior to and/or during construction are protected from damage due to construction activities. The Contractor will be responsible to replace destroyed instrumentation or repair any damages at their own cost, to the satisfaction of the Contract Administrator.

E15.2 Measurement and Payment

E15.2.1 No measurement or additional payment shall be made for the Work described in this specification for Protection of Instrumentation as this is considered incidental to the Contract.

SEWER WORK

E16. SUPPLY AND INSTALLATION OF TEMPORARY SHORING

E16.1 Description

E16.1.1 This Specification shall cover shoring requirements for the Works where required under Manitoba Acts, Regulations, and Guidelines, or as indicated on the Drawings.

E16.2 Construction Methods

E16.2.1 Excavation

(a) Remove excavated material from the Site immediately. Excavated material shall not be stockpiled on-Site or along river bank.

(b) All Working areas below grade shall be kept adequately and securely supported during and after excavation until the shoring and bracing is in place to prevent loss of ground or injury to any person from falling material.

E16.2.2 Excavation Safety Fence

(a) Further to Clause 3.1 of CW 1130, completely cover the excavation and provide a security fence to completely surround the excavation when unattended generally in accordance with the following.

(b) Safety fence installed shall be as per E12.3.7.

E16.2.3 Shoring

(a) The type, strength, and amount of shoring and bracing shall be such as the nature of the ground and attendance conditions may require, taking into account property lines, existing slopes, utilities and roadways.

(b) Shoring and bracing shall be so spaced and dimensioned as to prevent caving, loss of ground, surface settlement, or squeezing of the soil beyond the neat lines of excavation. It shall be free from defects that might impair its strength or suitability for the Work. Sheeting/shoring and bracing shall conform to the latest revisions of the “Construction Safety Act” of the Department of Labour of the Government of Manitoba and in accordance with Province of Manitoba “W210 The Workplace Safety and Health Act” and “Guidelines for Excavation Work”.

(c) Supporting design information, including soil log information and stratigraphy, and design calculations as required to facilitate review of the submission for conformance with the Contract Documents.

(d) Submit AutoCAD Shop Drawings and design calculations for the shoring/excavation system designed and sealed by a Professional Engineer registered or licensed to practice in the Province of Manitoba and experienced in the structural design of shoring systems. The designer of the shoring system shall inspect the system during construction and certify, in writing to the Contract Administrator, that construction is in conformance with the approved design.

(e) Shoring and bracing shall be installed such that the structure size and wall thickness shown on the shop drawings can be obtained subsequent to installation of the shoring system.

(f) Shoring and bracing shall be designed and installed to prevent settlement and damage to existing structures. In the event of damage, the Contractor will be held liable, and shall be required to provide appropriate restoration at his cost, to the satisfaction of the Contract Administrator.

(g) Shoring and bracing shall remain in place until concrete has attained 75% of the design strength.

E16.2.4 Monitoring Movement of Shoring

(a) The Contractor shall submit to the Contract Administrator a plan for monitoring the movement of trench shoring during construction a minimum of two (2) Working Days prior to the installation of trench shoring. The monitoring plan shall be performed by approved survey methods for vertical or horizontal movement of the shoring, acceptable to the Contract Administrator. Costs for monitoring shall be incidental to the installation of the temporary shoring.

E16.3 Measurement and Payment

E16.3.1 All costs associated with temporary shoring to meet Manitoba Safety Laws and Regulations, where required for any particular outfall site, shall be incidental to the Supply and Installation of Outfall Pipe and no separate measurement or payment will be made.

E16.3.2 Further to E16.3.1, temporary shoring for the Kingston Row/Dunkirk Drive Outfall Site, Assiniboine Crescent/Windham Road Outfall Site, 3145 Ness Avenue Outfall Site, and 50 Eastwood Drive Outfall Site is required to protect surrounding property and existing infrastructure as indicated on the Drawings. Measurement and payment for supply and installation of shoring at these sites will be measured and paid for on a lump sum basis at the unit price for “Supply and Installation of Temporary Shoring”.

E17. OUTFALL SEWER REPAIRS

E17.1 Description

This Specification shall amend and supplement Standard Specifications CW 2130, CW 2160, and CW 3610

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

E17.2 Materials

E17.2.1 Handling and Storage of Materials

All materials shall be handled and stored in a careful and professional manner, to the satisfaction of the Contract Administrator.

E17.2.2 Testing and Approval

All materials supplied under this Specification shall be subject to inspection and testing by the Contract Administrator or by the Testing Laboratory designated by the Contract Administrator. There shall be no charge to the City for any materials supplied for testing purposes.

E17.2.3 Slip Joint

(a) Shop drawings shall be submitted for all slip joints. Slip joints are to be 3 mm thick and 2 m in length. The slip joint shall be installed as shown on the drawings.

(b) Galvanizing shall be hot-dip conforming to the requirements of CSA G164-N1981, to a minimum net retention of 600g/m2. All bolts and nuts shall be galvanized steel conforming to ASTM A-325. All welding shall be fully approved by the Canadian Welding Bureau in conformance with CSA Standard W.47.1. Welding splatter and other fabricator burrs, where exposed, shall be ground off and/or field smooth, and left ready for subsequent operations. All miscellaneous metal, after fabrication, shall be hot-dip galvanized.

E17.2.4 Internal Pipe Sleeves

(a) Shop drawings shall be submitted for all internal pipe sleeves to be installed at the Wellington Crescent Outfall site. Internal pipe sleeves are to be 6 mm thick and 1.0 m in length. The internal pipe sleeves shall be installed as shown on the Drawings.

(b) Galvanizing shall be hot-dip conforming to the requirements of CSA G164-N1981, to a minimum net retention of 600g/m2. All bolts and nuts shall be galvanized steel conforming to ASTM A-325. All welding shall be fully approved by the Canadian Welding Bureau in conformance with CSA Standard W.47.1. Welding splatter and other fabricator burrs, where exposed, shall be ground off and/or field smooth, and left ready for subsequent operations. All miscellaneous metal, after fabrication, shall be hot-dip galvanized.

E17.2.5 Internal Polyurethane Injection Repairs

(a) Existing cracks within the 2782 Assiniboine Avenue 1200x900mm egg concrete outfall shall be low pressure injected (manual dispenser) with flexible polyurethane foam. Acceptable flexible polyurethane foam injection product is SikaFix PU or approved equivalent in accordance with B7.

(b) Installation of polyurethane foam injection is to be at locations as identified by the Contract Administrator and installed in accordance with manufacturer's instructions.

(c) Installation shall use Sika Injection T's or use Sika Injection Ports and fit the fat end into 13mm holes. Attach the static mixer to the cartridge and dispense SikaFix PU using a manual dispenser. Excess SikaFix PU appearing on the crack surface shall be removed when product has stopped foaming (using appropriate tools as required).

(d) For reaction of the material to take place and the expansion mechanism to be activated, all cracks must either contain moisture or be pre-wetted.

E17.2.6 Galvanized Primer

Galvanized primer for repair of damaged coating shall be zinc rich, ready mix to CGSB-1- GP-181M.

E17.2.7 Pipe Foundation Material

(a) Where required, pipe foundation material shall be well graded 50 mm max crushed sub-base material having the following grading requirements:

Canadian Metric Sieve Size (millimeters)	Percent of Total Dry Weight Passing Each Sieve
50	100%
5	25-80%
0.8	5-18%

E17.2.8 Bedding and Backfill Material

Bedding and backfill material shall be as indicated on the Drawings. Where bedding and backfill is not shown on the Drawings, sand bedding and Modified Class 2 backfill material as per CW 2030 shall be used, modified to have 0.6 m of compacted excavated Site select material as opposed to the detailed 0.3 m of compacted excavated material.

E17.2.9 CSP Outfall Pipe wall thickness

(a) The CSP outfall thickness shall be as specified on the Drawings.

E17.2.10 Debris Grating

(a) Shop drawings shall be submitted for the debris gratings and shall be installed as shown on the Drawings. Galvanizing shall be hot-dip conforming to requirements of CSA G164- N1981 to a minimum net retention of 600g/m2. All bolts and nuts shall be typical steel, conforming to ASTM A-320 Grade B8M. All welding shall be fully approved by the Canadian Welding Bureau in conformance with CSA Standard

W47.1. Welding shall be done by currently licensed welders only. Welding splatter and other fabricator burrs, where exposed, shall be ground off and/or filed smooth, and left ready for subsequent operations. All miscellaneous metal, after fabrication, shall be hot-dip galvanized. No separate measurement will be made for hot-dip galvanizing.

E17.2.11 Clay Plug

(a) The impervious clay plug near the end of the outfall pipe shall consist of a high plasticity clay material, with a liquid limit in excess of 50%. The clay shall be free of deleterious material such as roots, organic material, ice, snow or other unsuitable materials, and may be salvaged from the on-site excavation, as approved by the Contract Administrator. Frozen material will not be accepted.

E17.2.12 Polymer Coated Pipe

(a) Pipe

Drainage pipe shall be Armtec Polymer Coated Trenchcoat Hel-Cor Lockseam Corrugated Steel Pipe (CSP) or approved equivalent in accordance with B7, of diameter, corrugation and wall thickness as shown on the Drawings.

(b) Coupling

Coupling Systems for the pipe are to be Armtec Polymer Coated Trenchcoat H500 Hugger Band Couplers complete with O-ring Elastomeric Gaskets, or approved equivalent in accordance with B7.

(c) CMP Pipe to Manhole Connection

CMP to Manhole connections shall be reinforced concrete collars as specified on the Drawings. Shop drawings for CMP to Manhole connections shall be submitted to the Contract Administrator prior to construction.

E17.2.13 Equipment

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

E17.3 Construction Methods

E17.3.1 Trench Shoring And Excavation

(a) Where required, trench excavations shall be dug and maintained using a wood or steel shoring, designed and sealed by a Structural Professional Engineer who is a practicing member of the Association of Professional Engineers and Geoscientists of the Province of Manitoba (APEGM). The Contractor shall provide AutoCAD shop drawings to the Contract Administrator, for review, prior to the start of excavation. Work must be completed in accordance with CW 2030, unless otherwise indicated by the Contract Administrator.

(b) The Contractor shall take precautionary steps to prevent damage from construction activities to adjacent private property. All damage to adjacent private property caused by the Contractor’s activities shall be repaired to, equal or better condition than prior to construction, as approved by the Contract Administrator. No separate measurement or payment will be made for the protection of adjacent private property.

E17.3.2 Pipe Foundation

(a) In-situ soils shall be excavated to the trench width and subgrade elevations specified on the Drawings.

(b) The subgrade shall be proof rolled to inspect for soft spots.

(c) Where soft spots are observed, the subgrade shall be further sub-excavated and filled with additional compacted granular material to the depths specified by the Contract Administrator.

(d) Separation geotextile shall be installed between granular material and the in-situ soils.

(e) 50 mm crushed granular material shall be placed in lifts not thicker than 150mm, and compacted to 100% Standard Proctor density.

E17.3.3 Bedding and Backfill

(a) **The Contractor shall compact bedding and backfill material to 95% Standard Proctor Density as specified on the Drawings. Where bedding and backfill is not shown on the Drawings, bedding and backfill shall be compacted in accordance with CW 2030 to achieve the specified densities. Frozen backfill material will not be accepted. The Contractor shall submit a detailed Backfilling Procedure Plan to the Contract Administrator a minimum of five (5) days prior to Construction. The Backfilling Procedure Plan submittal at a minimum shall include:**

(i) Description of Contractor's means and methods for heating, hoarding, tamping, and compacting backfill material to achieve the specified densities and ensure no frozen material is placed.

(b) Ensure bedding is thoroughly tamped and that the pipe is uniformly supported throughout and completed in accordance with CW 2030, unless otherwise indicated by the Contract Administrator.

(c) Backfill around the pipe in lifts not thicker than 300 mm, alternating from side to side. At no time should the difference in backfill elevation on either side of the pipe be greater than 450 mm. Work must be completed in accordance with CW 2030, unless otherwise indicated by the Contract Administrator.

(d) Backfilling above the pipe shall be in accordance with CW 2030 for Modified Class 2 backfill. The top 600-mm of backfill is to be Site select excavated material, as approved on Site by the Contract Administrator, not the standard 300 mm excavated material. The Contractor shall ensure the compaction equipment utilized, is consistent with degree of compactive effort required to achieve the specified densities, and adequately protects against overloading the pipe.

E17.3.4 Clay Plug

(a) Construct the impervious clay plug in lifts not exceeding 150 mm, alternating from side to side. The Contractor shall achieve 100% STDD for each lift, and shall arrange for the Contract Administrator to inspect each lift of the clay plug prior to beginning the next lift.

E17.3.5 Removal and Installation of CSP

(a) CSP field cuts shall be straight circumferential cuts. Clean all ends free of burrs etc., and touch up all areas affected by Work with galvanized primer.

(b) The Contractor shall excavate and dispose of the existing outfall piping and debris grate in accordance with the Standard Construction Specifications.

(c) All outfall pipes shall be installed as shown on the drawings and in accordance with CW 3610.

(d) All pipes shall be laid to the established line and grade.

(e) The existing outfall pipes shall be temporarily removed or otherwise protected as approved by the Contract Administrator.

(f) Work required for Supply and Installation of Outfall Pipe, where the existing pipe alignment is used, as specified on the drawings, shall include removal and disposal of the existing outfall pipe, including removal of existing debris grates, concrete collars and headwalls, slip joints, and any debris found within.

(g) Work required for Supply and Installation of Outfall Pipe, where a new pipe alignment is used, as specified on the drawings, will not include removal and disposal of the

existing outfall pipe. Removal of existing outfall pipe will be as specified on drawings and follow in accordance to E17.4.1.

E17.3.6 Connections

(a) Provide lean mix concrete pipe bedding and backfill to the lines and grades as detailed in the contract drawings.

(b) Slip joints are to be internal unless noted otherwise on the Drawings. The receiving pipes are to be cleaned of all surface debris, including but not limited to frozen backfill, ice and internal sediment.

(c) The slip joints are to be installed in locations as shown on the drawings and as directed by the Contract Administrator. Angle brackets are to be located at the 9:00 and 3:00 o'clock position unless approved otherwise by the Contract Administrator. Bolts are to be tightened evenly throughout the coupler.

E17.3.7 Polymer Coated CSP Pipe

(a) Polymer Coated pipe shall be installed in accordance with the manufacturer's instructions.

(b) All pipe and couplers shall conform to CSA G401-01 "Corrugated Steel Pipe Products".

(c) Field cutting and welding of pipe will require repairs to the polymer coating. All field welds and cuts on polymer coated pipe shall be repaired using Ranbar Tri-spec-515-7 black synthetic coating or approved equivalent in accordance with B7. Surfaces are to be clean and dry and free from grease, oil, dirt and rust. Following the repair process, the field coating must be fully cured prior to exposure to water, soil or debris.

All repairs to be in accordance with CSA G401-01, Section 5.3.

E17.3.8 Installation of Debris Grate

Debris Grates shall be installed as detailed and in the location shown on the Drawings.

E17.3.9 Shop Drawings

Submit prepared shop drawings for the: polymer coated CSP, CMP pipe to manhole reinforced concrete collar connections, temporary trench shoring, slip joints, internal pipe sleeves, and debris grate details in accordance with Clause 1.5 of CW 1110, E8, and E16.

E17.3.10 Soft Digging

Soft digging is required to confirm and verify elevations and locations of existing infrastructure where the infrastructure is in close proximity or crosses the outfall pipe alignment, or as indicated on the Drawings. Soft digging as required is considered incidental to installation of outfall pipe and the Works specified herein.

E17.4 Method of Measurement and Payment

E17.4.1 Removals

(a) Where the existing outfall pipe is being cut back to match existing riverbank contours, the removal of existing outfall pipe shall be measured on a length basis. The length to be paid for shall be the total number of linear meters of pipe removed, measured from the existing end of pipe to cut point, as applicable.

(i) Separate measurement will be made for each size and class of outfall pipe.

(b) Where the installation of new outfall pipe is offline of the existing pipe alignment, the removal of existing outfall pipe shall be measured on a length basis. The length to be paid for shall be the total number of linear metres of CMP, PVC or concrete pipe removed, measured from the cut point to either the next cut or end of pipe, as applicable.

(i) The removal of existing debris grates, slip joints, existing concrete collars and any associated excavation, pipe removal, and, where applicable, removal of backfill, shall be included in the unit price per metre for pipe removal.

(ii) Separate measurement will be made for each size and class of outfall pipe.

(c) No separate payment is to be made for pipe removal where the installation of pipe is an online replacement or where the pipe end is required to be field cut/bevelled to match existing riverbank contours.

(i) The removal of existing debris grates, slip joints, concrete collars, excavation, pipe removal, and where applicable, backfill, and field cutting/bevelling of pipe ends to match riverbank contours shall be incidental to online pipe replacement and no separate payment is to be made.

(d) Removal of existing outfall pipe, will be paid for at the Contract Unit Price for "Items of Work" listed below, measured specified herein, which price shall be payment in full for supplying all materials and performing all operations described and all other items incidental to the Work included in this Specification.

Items of Work:

Removals

a) 900 mm diameter CMP

E17.4.2 Supply and Installation of Outfall Pipe

(a) The supply and installation of new outfall pipe shall be measured on a linear basis. The length to be paid for shall be the total number of linear meters of pipe, measured from the tie-in point to the tip of the manufactured bevelled end section, horizontally above the center of the pipe installed in accordance with this Specification and acceptable to the Contract Administrator.

(b) Beveling the end section of pipe, where applicable, shall be considered incidental to the installation of the outfall pipe and no separate payment will be made.

(c) Separate measurement will be made for each size and class of outfall pipe.

(d) Supply and installation of new outfall pipe will be paid for at the Contract Unit Price for "Items of Work" listed below, measured specified herein, which price shall be payment in full for supplying all materials and performing all operations described and all other items incidental to the Work included in this Specification.

Items of Work:

Supply and Installation of Outfall Pipe

a) 525 mm diameter CMP (2.0 mm) c/w polymer coating
b) 600 mm diameter CMP (2.0 mm) c/w polymer coating
c) 600 mm diameter CMP (2.8 mm) c/w polymer coating
d) 750 mm diameter CMP (2.0 mm) c/w polymer coating
e) 900 mm diameter CMP (2.8 mm) c/w polymer coating
f) 1200 mm diameter CMP (2.8 mm) c/w polymer coating

(e) Installation of Reinforced Concrete Collar CMP to Manhole shall be included and paid for at the Contract Unit Price for "Items of Work" listed below, measured specified herein, which price shall be payment in full for supplying all materials and performing all operations described and all other items incidental to the Work included in this Specification.

Items of Work:

a) Connect 600 mm diameter CMP (2.8 mm) to Existing Manhole Chamber

E17.4.3 Supply and Installation of Pipe Fittings

(a) Pipe Fitting shall be understood to include external slip joints, internal slip joints, internal pipe sleeves and bends.

(b) Measurement and Payment will be on a per Unit basis for each diameter, material type and fitting type indicated on the Drawings. The units to be paid for shall be the total number of fittings installed in accordance with this Specification and acceptable to the Contract Administrator as computed from measurements made by the Contract Administrator.

(c) The Unit Price shall include all work and materials, including modifications to the pipe on either side of the fittings, as required, to install the fittings.

Items of Work:

a) 750 mm diameter polymer coated internal pipe sleeve

b) 1050 mm diameter polymer coated Internal Slip Joint

E17.4.4 Clay Plug

(a) Construction of the clay plug is considered incidental to installation of pipe. No separate payment will be made for installation of the clay plug.

E17.4.5 Internal Polyurethane Foam Injection

(a) Installation of polyurethane foam injection shall be measured on a linear basis, as measured and accepted by the Contract Administrator.

E17.4.6 Supply and Installation of Debris Grate

(a) The supply and installation of the Debris Grate shall be measured on a unit basis. The units to be paid for shall be the total number of Debris Grate installed in accordance with this Specification and acceptable to the Contract Administrator as computed from measurements made by the Contract Administrator.

(b) Separate measurement will be made for each size of Debris Grate.

(c) Supply and installation of Debris Grate will be paid for at the Contract Unit Price for "Supply and Installation of Debris Grate", measured specified herein, which price shall be payment in full for performing all operations described and all other items incidental to the Work included in this Specification.

Items of Work:

Supply and Installation of Debris Grate

a) 600 mm diameter Debris Grate

b) 750 mm diameter Debris Grate

c) 900 mm diameter Debris Grate

d) 1200 mm diameter Debris Grate

e) 1350 mm diameter Debris Grate

f) 1800 mm diameter Debris Grate

g) 2100 mm diameter Debris Grate

E18. ROCKFILL RIPRAP

E18.1 Description

E18.1.1 This Specification shall cover the supply and placement of rockfill riprap.

E18.2 Materials

E18.2.1 The rockfill material for use as riprap shall consist of a clean free draining, sound, dense, durable, crushed rock. The material shall be free from organics, roots, silts, sand, clay, snow, ice or any other material that would detract from the strength and drainage characteristics of clean rockfill.

E18.2.2 Individual particles shall be shaped such that no dimension is greater than two times the smallest dimension. Flat, elongated, or platy particle shapes will not be accepted.

E18.2.3 Should the Contractor choose to use limestone, it shall be durable white crystalline limestone. Softer buff to yellow dolomite or dolostone will not be accepted.

E18.2.4 The rockfill material shall meet the following requirements:

Parameter	Test Method	Specified Limit
Bulk Specific Gravity	ASTM C127	2.6 minimum
Absorption	ASTM C127	2.5 % maximum
LA Abrasion Loss	ASTM C131	32% maximum
Soundness	ASTM C88	13% maximum
Gradation	ASTM D5519	See below

E18.2.5 Rockfill riprap shall be well graded having a full range and even distribution of sizes and shall conform to the following gradation:

Canadian Metric Sieve Size (millimeters)	Percent of Total Dry Weight Passing Each Sieve
450	100%
300	35-80%
100	20-60%
50	10-30%
5	0-5%

E18.3 Submittals

E18.3.1 The Contractor shall submit the proposed supplier(s) and location of quarry Sites for supply of riprap.

E18.3.2 Representative samples of the rockfill riprap submitted for material testing purposes shall be completed as specified herein.

E18.4 Quarry Sites

E18.4.1 Contractors supplying rockfill riprap shall be responsible for demonstrating that the material is of adequate quality and volume to meet the material specifications contained herein.

E18.5 Testing and Approval

E18.5.1 All materials set forth in this Specification shall be subject to inspection and testing by the Contract Administrator or by the testing laboratory designated by the Contract Administrator. There shall be no charge for any materials taken by the Contract Administrator for testing purposes.

E18.5.2 The Contract Administrator will visit proposed quarry Sites for inspection of the proposed rockfill material and quarry faces a minimum of fourteen (14) days prior to supply and placement of riprap.

E18.5.3 No supply and placement of riprap will be permitted prior to the Contract Administrator reviewing the source.

E18.5.4 The procedures for preparation of all rockfill samples for use in material inspection and testing shall be subject to review and acceptance by the Contract Administrator for individual tests. The samples may be obtained from crushed and processed material at the sizing necessary for specific tests if the material is deemed to be representative of the riprap that will be used, subject to the acceptance of the Contract Administrator.

E18.5.5 The testing frequency necessary to confirm the material quality will be specified at the discretion of the Contract Administrator.

E18.6 Construction Methods

E18.6.1 Rockfill riprap shall be restored over the rock columns after they are backfilled to the lines and grades shown on the drawings. Riprap shall be placed over the geotextile membrane at the location of the backfilled outfall excavation as shown on the drawings.

E18.6.2 Rockfill Riprap shall be pushed or rolled into place in such a manner that the larger rocks are uniformly distributed and the smaller rocks serve to fill the places between the larger rocks such that excessive segregation of the various particle sizes does not occur.

E18.6.3 Sufficient levelling shall be done to produce a neat and uniform surface, conforming to the shape and dimensions shown on the Drawings.

E18.6.4 The allowable fill tolerances shall be within ± 50 mm of the grades and thickness shown on the Drawings, provided positive downslope grading is achieved.

E18.6.5 Provide a smooth uniform surface from the existing grade and new riprap when placing outside edges or transitions, as accepted by the Contract Administrator.

E18.6.6 Temporary stockpiling of riprap along the riverbank shall not be permitted. Material shall be placed to the required lines and grade shown the Drawing immediately upon delivery to the Site.

E18.7 Measurement and Payment

E18.7.1 The supply and placement of rockfill riprap shall be measured on a weight basis and paid for at the Contract Unit Price for “Rockfill Riprap”. The weight to be paid for shall be the total number of metric tonnes of rockfill supplied and placed in accordance with this Specification, as measured by a certified weigh scale and accepted by the Contract Administrator.

E18.7.2 The Contractor shall provide the weigh tickets to the Contract Administrator for the material supplied to the Site at the time of delivery. No payment will be made for any weigh tickets which are not supplied at the time of delivery, or which are lost.

E19. HIGH DENSITY POLYETHYLENE PIPE

E19.1 Description

E19.1.1 This Specification shall cover the requirements for the supply and installation of the 450 mm (18 inch) outside diameter HDPE DR17 liner pipe.

E19.1.2 The Work to be done by the Contractor under this Specification shall include the furnishing of all superintendence, overhead, labour, materials, and all things necessary for and incidental to the satisfactory performance and completion of all Work as hereinafter specified.

E19.1.3 Submittal

(a) The Contractor shall submit at least one (1) week prior to the commencement of Work, the HDPE pipe design, including calculations for loads, wall thickness, and other design considerations according to the manufacturer’s recommendations.

(b) The Contractor shall submit at least one (1) week prior to the commencement of Work, the installation procedure for the HDPE liner pipe including joining (as required), heat shrink sleeve installation, anticipated pushing force and pushing apparatus, lubrication, setup locations, and end treatments.

(c) The Contractor shall submit at least one (1) week prior to the commencement of Work, a proposed material and/or product which is to be used as the casing spacers.

(d) The Contractor shall submit at least one (1) week prior to the commencement of Work, a proposed method for the installation of the casing spacers.

(e) The fusing of the pipe liner must be performed by qualified personnel with a minimum of three (3) years of experience in HDPE pipe fusing. The Contractor shall submit proof of experience, in writing, within 3 days of request by the Contract Administrator. The Contractor shall submit the installation procedure at least one (1) week prior to the commencement of the Work.

E19.2 Materials

E19.2.1 Equipment

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

E19.2.2 Liner Pipe Raw Material Requirements

(a) The liner pipe shall be manufactured from a high density polyethylene material which meets or exceeds the minimum cell classification 345444C when classified in accordance with ASTM D3350.

(b) The raw material used to produce the liner pipe shall be a polyethylene compound qualified as Type II, Category 5, Class C, Grade P34 in accordance with ASTM D1248.

(c) The polyethylene raw material shall contain a minimum of 2% well dispersed finely divided carbon black for UV stabilization. Additives, which can be conclusively proven not to be detrimental to the liner pipe, may also be used provided that the pipe produced meets or exceeds all of the requirements of this specification.

(d) The liner pipe shall contain no recycled compound except that generated in the manufacturers own plant from resin of the same specification and from the same raw material supplier.

(e) The liner pipe manufacturer's Quality System shall be certified by an appropriate independent body to meet the requirements of the ISO 9002 Quality Management Program.

(f) Compliance with the requirements of Clause 13.4.4 of this specification shall be certified, in writing, by the pipe supplier, upon request.

E19.2.3 Liner Pipe Design

(a) The liner pipe shall be manufactured with dimensions and tolerances in accordance with ASTM F714, ASTM F894 or CSA B182.6.

(b) The required liner pipe structural characteristics shall be selected based on considerations of both the installation process and the anticipated traffic or service loads and other location specific conditions. These conditions normally include an evaluation of:

(i) minimum anticipated clearance between the liner and the existing CSP culvert being; rehabilitated (including allowances for joint offsets and separations and deflections);

(ii) flow capacity of the rehabilitated culvert;

(iii) external loads (earth and traffic);

(iv) construction or installation loads (push/pull forces external grouting pressure); and

(v) structural support of the culvert developed by grouting.

(c) The liner pipe should have sufficient wall stiffness to safely resist external hydrostatic pressures generated by ground water levels above the top of the pipe and/or by grouting, pressures if appropriate. When grouted, the liner pipe will react as though it was buried in soil; thus flexible pipe/soil backfill design equations apply.

E19.2.4 Liner Pipe Products

(a) Acceptable Lining Pipe Product.

450 mm (18 inch) outside diameter High Density Polyethylene (HDPE) DR17 Pipe
Trade name: **Sclairpipe**
Manufacturer: Infrapipe Solutions Ltd.

(b) The Contractor may elect to use an alternative product upon review and approval by the Contract Administrator. The Contractor shall request the Manufacturer to directly submit written information on the preparation, materials, design, performance, references, and use of proposed products.

(c) Lubricant shall be non-toxic, vegetable based, lubricating gel.

E19.2.5 Casing Spacer Products

Acceptable casing spacer materials include wood, styrofoam, HDPE casing spacers, or an approved equivalent in accordance with B7.

E19.3 Construction Methods

E19.3.1 Inspection

(a) The Contractor shall perform an inspection of the existing corrugated steel conduit with the Contract Administrator prior to attempting to install the liner pipe. The purpose of this inspection is to ensure that there are no locations within the deteriorated culvert that are so badly misaligned or deflected that the liner pipe cannot be pulled or pushed past.

(b) The Contractor shall clean the pipe in accordance with E28.

(c) The Contractor shall fill all underground voids behind existing pipe with cement stabilized fill in accordance with CW2030.

E19.3.2 Installation of Casing Spacers

The casing spacers may either be installed on the liner pipe or installed on the host pipe to ensure that the liner pipe is aligned within the host pipe as shown in the drawings.

E19.3.3 Installation of The Liner Pipe

(a) The Contractor must ensure that all obstructions and joint offsets are removed or corrected as required to facilitate the installation of the HDPE liner pipe. The Contractor will be responsible for the cleaning of all pipes as required prior to the installation of the liner pipe. The cost for cleaning shall be incidental to the cost of the installation of the HDPE pipe. The Contractor must confirm, with the HDPE pipe manufacturer, the allowable bending tolerances of the HDPE liner pipe prior to installation to ensure that pipe deflections in the existing pipe do not interfere with or prevent the installation of the liner pipe. (also refer to Guide–1/95; Guideline document from “The Society of the Plastics Inc.)

(b) The maximum push force for the installation of the HDPE pipe liner shall be 230 kN (51,600 lbs). The Contractor shall submit a proposed pushing apparatus and anticipated force as per Clause 13.2. All pulling apparatus shall have a means of monitoring the pull force exerted on the pipe.

(c) Application of the lubricant shall be as approved by the Contract Administrator.

E19.3.4 Fusing of Liner Pipe

(a) Wherever possible, the HDPE pipe should be joined by the method of thermal butt fusion, as outlined in ASTM D 2657, Heat Joining Polyolefin Pipe and fittings. Butt fusion joining of the pipe and fittings shall be performed in accordance with the procedures recommended by the manufacturer. The temperature of the heater plate shall not exceed 425 degrees Fahrenheit (+/- 25 degrees Fahrenheit). The joining interfacial pressure should not exceed 25 pounds per square inch of projected end area for European design fusion machines or 75 pounds per square inch of projected end area for American design fusion machines.

E19.3.5 Sealing the Cut Ends of the Liner Pipe

(a) All cut ends and cut-out sections of the HDPE spiral wound pipe shall be sealed by a method to be determined by the pipe supplier and approved by the Contract Administrator.

E19.4 Method of Measurement and Payment

E19.4.1 Installation of HDPE Pipe

(a) The supply and installation of HDPE Pipe shall be measured on a linear basis. The length to be paid for shall be the total number of linear meters acceptably supplied and installed complete with approved joints, grouting, construction of transitions and necessary hardware, measured horizontally, at grade, above the centre line of the pipe, as computed by measurement made by the Contract Administrator.

(b) Separate measurement will be made for each size and class of HDPE Pipe

(c) Payment for fusing, blocking, temporary bracing, internal pipe repairs, grouting and concrete transitions and pipe cleaning shall be included in the price per metre of HDPE Pipe installed.

(d) Supply and Installation of HDPE Pipe will be paid for at the Contract Unit Price for "Items of Work" listed below, measured specified herein, which price shall be payment in full for supplying all materials and performing all operations herein described and as shown on the Drawings and Details and all other items incidental to the Work included in this Specification.

Items of Work: Supply and Installation of HDPE Pipe

a) 450 mm OD HDPE DR17

E20. GROUTING

E20.1 Description

E20.1.1 This Specification shall cover the requirements for the cementitious grouting. The items specified herein include the injection grouting of conventional or cellular foam cementitious grout and general repair grout.

E20.1.2 This section also covers the requirements for furnishing, handling, transporting, storing, mixing and injecting the grouting materials, waste water and waste grout disposal; clean-up of Work areas upon completion of the Work and all such other operations as are incidental to the grouting.

E20.1.3 The Work to be done by the Contractor under this Specification shall include the furnishing of all superintendence, overhead, labour, materials, and all things necessary for and incidental to the satisfactory performance and completion of all Work as hereinafter specified.

E20.1.4 General Requirements

(a) All grouts shall be installed in accordance with the supplier's instruction and as indicated on the Contract Drawings.

(b) Grout shall be prepared according to the grout manufacturer's written instructions for placement of grout by pumping or tremie placement.

(c) The Contractor shall supply Workmen with appropriate safety equipment for performing pressure grout, and associated tasks. Supply safety devices, confined space entry equipment, drop sheets and other items to protect the Site, other contents and other personnel from contact with the Contractor's materials or equipment.

E20.1.5 Quality Assurance

(a) The applicator shall have a minimum of 3 years of experience performing similar Work and be authorized by the supplier's for performing injection of the nature specified, using the product specified or approved in accordance with B7.

(b) The specialized batching, mixing, and placing equipment shall be automated with bulk handling equipment approved by the manufacturer. Transit mixes are not acceptable for this application

(c) During all phases of grouting, the Contractor must supply and maintain a backup system, repair parts, or reserve equipment to maintain grouting operations in the event of an equipment failure, or during a time of critical operation.

E20.1.6 Submittals

(a) The Contractor shall submit **prior to commencement** a statement of qualifications of the applicator of the grout. The statement must identify the years of experience of the individuals responsible for the mix design, grout preparation and installation. Proof must be given that the applicator has experience with Work of similar nature and scope.

(b) The Contractor shall submit a grout mix design a minimum of one (1) week prior to proceeding with the Work. The mix design shall meet the specifications herein, and shall detail all components of the grout mixture. The submission shall include all written recommendations of product manufacturer for each product to be used in the mix. The submission shall also include the anticipated 28 day compressive strength.

(c) The Contractor must submit a detailed procedure for grouting a minimum of one (1) week prior to proceeding with the operation. It shall include the names of supervisory staff, equipment lists, and a list of material expected to be used during the grouting. If requested by the Contract Administrator, the Contractor shall also list the date, start, and completion times of the grouting procedure. The detailed procedure must also include the following:

(i) Grout port types and dimensions, configuration along the axis of the liner pipe, and longitudinal spacing.

(ii) Grouting application rates and anticipated hydrostatic pressure on the liner pipe.

(iii) Method for repairing grout ports.

(iv) Type, material specification, configuration and location of bulkheads.

E20.1.7 Records

The Contractor will keep records of all grouting operations, such as the time of each change of grouting operation, pressure, rate of pumping, proportioning of grout constituents, amount of cement for each change in water/cement ratio, and other data as deemed by the Contract Administrator to be necessary. The Contractor shall furnish all necessary assistance and cooperation to this end. A copy of all records shall be submitted to the Contract Administrator at the end of each Workday.

E20.1.8 Protection To Work And Cleanup

The Contractor will be required to furnish such pumps as may be necessary to care for wastewater and grout from his operations. The Contractor shall, upon completion of his operations, clean up all waste resulting from his operations that is unsightly or would interfere with the efficient operation of the project as anticipated by the original design.

E20.1.9 Supervision of Grouting Operations

All pressure grouting operations shall be performed in the presence of the Contract Administrator, and shall be in accordance with the following general procedures.

E20.2 Materials

E20.2.1 Equipment

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

E20.2.2 Products

(a) All products shall be new, free of defects, and supplied in their original factory containers.

(b) Written recommendations from the product supplier(s) for application and preparation shall be available for the Contract Administrator upon request.

(c) All products shall be handled, stored, and prepared in accordance with the written recommendations of the product manufacturer.

E20.2.3 Cementitious Grout Products

(a) Grout for the annular space and void filling shall be a mix of compounds consisting of non-metallic aggregate, Portland cement, chemical concrete additives, which may include water reducing, plasticizing and aqueous foam agents. Pozzolans and other cementitious materials may not be used.

(i) Compressive strength: 5-10 MPa (745 - 1450 psi) at 28 days.

(ii) Net expansion at 28 days: maximum 0.4%.

(iii) Net shrinkage at 28 days: shrinkage not permitted.

(b) All cementitious grout materials shall be supplied in original manufacturer's packaging, clearly identifying the product and preparation instructions.

(c) Grout for general repair, host pipe/liner pipe transition and other areas shall be multi-purpose Specialty Polymers Inc. (SPI) rapid repair grout, or approved equal in accordance with B7.

E20.2.4 Other Requirements

(a) Sand

(i) Sand for grout shall be clean and consist of hard, tough, durable, uncoated particles. The shape of the particles shall be generally rounded or cubical. The sand shall be generally well graded from fine to coarse in accordance with ASTM C 136 with 100 percent passing the No. 8 sieve.

(ii) The percentage of surface moisture in terms of the saturated surface-dried sand will be determined in accordance with ASTM C 70, or other method giving comparable results.

(iii) Sand shall be stored in such a manner as to avoid the inclusion of any foreign materials in the grout. All sand shall remain in free draining storage for at least 72 hours prior to use.

(b) Water shall be potable water, which shall be imported to the Site.

(c) All materials shall be delivered to the Site in undamaged, unopened containers bearing the supplier's original labels.

(d) WHMIS labels on all containers shall confirm with Canadian regulations, including English and French risk phrases, proper chemical name, shipping class, packing group and UN number.

(e) MSDS for all materials shall conform with Canadian regulations.

(f) No materials shall be used which are manufactured from or contain toluene diisocyanate (TDI), toluene, acetone or methyl ethyl ketone.

(g) No materials shall be used which are flammable or which display shipping Class 3 red warning labels.

(h) The Contractor shall keep all materials from freezing as per the Manufacturer's specifications.

E20.3 Construction Methods

E20.3.1 Execution

(a) Contractor shall evaluate, select and submit for review and approval the injection grouting material, method, and pertinent data to the Contract Administrator for each condition and type of joint, or void identified and deemed by the Contractor as requiring treatment at least two (2) weeks prior to the commencement of injection grouting.

(b) The Contractor shall arrange a meeting with the Contract Administrator no less then 48 hours prior to any grouting operations to review and discuss the grouting Work plan, schedule, materials and methodology for the Work to be performed.

(c) All drilling and grouting equipment used shall be of a type, capacity and mechanical condition suitable for performing the Work, as approved by the Contract Administrator. The power and equipment and the layout thereof shall meet all applicable requirements of municipal, provincial, and federal regulations and codes for both safety and otherwise.

E20.3.2 Cementitious Grout Injection Preparation and Installation

(a) Grouting shall be performed in conjunction with E24 (Cold Weather Requirements).

(b) All joints and areas to be grouted shall be cleaned of any dirt, grease, marine growth, or other substances that could interfere with penetration of grout, or its bond. Potable water shall initially be used, and if deemed unsuccessful by the Contract Administrator, the Contractor shall propose other materials.

(c) All cleaning, flushing, or other agents shall be approved by the Contract Administrator and shall be sufficiently flushed or neutralized to allow proper installation and application of grout. Flushing or neutralizing shall be performed in accordance with manufacturer's written recommendations.

(d) Injection ports shall be installed in holes drilled through the liner. The Contract Administrator shall approve the spacing between ports. The Contractor shall submit a plan for the injection port distribution which shall include the configuration and distribution of injection ports, the port size, the number of ports per location, and the number of locations at least two (2) weeks prior to the commencement of injection grouting. All injection ports shall be flushed clean prior to grouting, and repaired to the satisfaction of the Contract Administrator once grouting operations are complete

(e) Grout shall be placed from the bottom of the cavity to the top of the cavity in a uniform and continuous procedure. During grouting, adjacent ungrouted ports shall be left open to permit the flow or escape of air, water, or flushed-out grout. When required, cap or seal adjacent ports or vent holes once clean; consistent grout is observed flowing from vent or port. At all times, a minimum of one vent hole or port shall be maintained open and monitored for grout level. The Contractor shall submit the proposed grouting procedure at least two (2) weeks prior to the commencement of injection grouting.

(f) A fine screen or filter shall be used to remove lumps and other foreign matter from the slurry prior to pumping or tremie placement of the grout. The Contractor must make every effort to maintain proper placement and flow of grout.

(g) As grouting proceeds, cap and move grout injection hose from port to port following the flow of clean grout flowing from vents or ports. In general, grouting should move from port to port in a regular and steady manner.

(h) Grouting pressures shall be monitored and adjusted by the Contractor to suit local conditions encountered to permit full and complete penetration of the grout, while preventing leakage of grout or displacement of structural elements. The Contractor

shall review changes in grouting pressure or rate with the Contract Administrator as Work proceeds. Grout pressure shall not exceed 33.8 kPa (4.9 psi) without the written approval of the Contract Administrator.

(i) If the Contractor elects to perform simultaneous grouting operations, the Contractor must maintain sufficient reserve equipment and labour to accommodate and complete grouting of one cavity in the event of difficulty or equipment failure during grouting of the another cavity.

(j) The batching and preparation of grout shall be performed in accordance with the written recommendations of the grout supplier, and the supplier's technical representative.

(k) No Work shall be done adjacent to grouted areas for twenty-four (24) hours after the completion of grouting.

(l) All excess surface sealing material, grout, seepage, and ports shall be removed from the surface of the liner pipe upon the final curing or set of the grout. Any voids encountered during removal shall be repaired as directed by the Contract Administrator.

(m) The preparation of grouting mixes and pumping pressures shall be monitored by the Contract Administrator during all operations, and adjustments may be required to suit local conditions.

(n) Construct concrete transition between extent of grouting and existing CSP outfall as shown on the Drawings.

(o) Upon completion of the Work, remove all injection-related materials from the Work area, and remove all debris from the Site.

E20.4 Method of Measurement

E20.4.1 Measurement

Grouting of annular space shall be considered incidental to the Installation of HDPE Liner Pipe.

E20.4.2 Payment

No payment shall be made for the Grouting of annular space as it is considered incidental to the installation of the HDPE Liner Pipe.

E21. SUPPLY AND INSTALLATION OF PVC FOLD AND FORM LINER

E21.1 Description

E21.1.1 This Specification shall cover the requirements for the supply and installation of the 600 mm PVC Fold and Form Liner for the 2782 Assiniboine Avenue Outfall site.

E21.1.2 The installation process consists of installing a thermoformed PVC pipe liner inside the existing 600 mm diameter vitrified clay sewer. When installed, the liner will be a seamless, joint-less, solid wall PVC pipe liner that is tightly conformed to the interior contours of the original host pipe. The liner shall be continuous from the outlet to the upstream end of the existing clay pipe with no seams or joints. Service connections will be reconnected using closed circuit television and remotely controlled cutters (as required).

E21.1.3 The Work to be done by the Contractor under this Specification shall include the furnishing of all superintendence, overhead, labour, materials, and all things necessary for and incidental to the satisfactory performance and completion of all Work as hereinafter specified and as shown on the Drawings.

E21.2 Referenced Documents

E21.2.1 This specification references ASTM standards and other related standards, which are made a part hereof by reference and shall be the latest edition thereof.

(a) ASTM D638 – Standard Test Method for Tensile Properties of Plastics

(b) ASTM D790 – Standard Test Method for Flexural Properties of Unreinforced and Reinforced Plastics and Electrical Insulating Materials

(c) ASTM D1784 - Standard Specification for Rigid Poly (Vinyl Chloride) (PVC) Compounds and Chlorinated Poly (Vinyl Chloride) (CPVC) Compounds

(d) ASTM F1947 – Standard Practice for Installation of Folded/Formed Poly (Vinyl Chloride) (PVC) Pipe Type A for Existing Sewer and Conduit Rehabilitation

(e) ASTM F2122 – Standard Test Method for Determining Dimensions of Thermoplastic Pipe and Fittings

E21.3 Submittals

E21.3.1 The Contractor shall prepare and submit the following submittals to the Contract Administrator for review and approval:

(a) Shop Drawings, Product Data, and Samples

(b) ASTM F1216 design calculations to ensure the liner supports full overburden soil loads without relying on the existing host pipe (min. thickness to be 8.7mm).

(c) Product technical data including physical properties data sheet and manufacturers installation instructions.

(d) Temperature and pressure monitoring plan.

(e) Certifications

(i) The Contractor shall be licensed directly by the manufacturer of the product and provide written clarification that he/she is an experienced and qualified installer of the product. If the Contractor is not a licensed installer of the product, the Contractor shall employ technicians and/or a manufacturer's representative with the required qualifications to supervise the liner installation and all Works associated herein.

(ii) Manufacturers certification that the product meets the requirements of the standards and physical properties identified herein.

(iii) Submit documentation from the manufacturer that there is an established and ongoing quality control and quality assurance program for the product at the manufacturer's production facility. This should include proof that the manufacturer has the necessary equipment and trained personnel to properly implement the quality control program.

(f) Phasing Plan including:

(i) Bypass/Flow Control Procedures

(ii) Order/sequencing of construction

(iii) Traffic Control (as required)

E21.4 Materials

E21.4.1 Equipment

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

E21.4.2 Basic Material and Liner Pipe Design Requirements

(a) The pipe shall be made from PVC compound meeting all requirements for Cell Classification 12334 as defined in specification D1784 and with the minimum physical properties:

(i) Tensile Strength – Test Method D638 – 6000 psi (41.4 MPa)

(ii) Tensile Modulus – Test Method D638 – 320,000 psi (2206 MPa)

(iii) Flexural Strength – Test Method D790 – 6000 psi (41.4 MPa)

(iv) Flexural Modulus – Test Method D790 (320,000 psi (2206 MPa)

(v) Heat Deflection Temperature Tested @ 264 psi (2MPa) – Test Method D648 – 115 degrees Fahrenheit (46 degrees Celsius)

E21.4.3 Other Requirements

(a) Pipe Flattening: there shall be no evidence of splitting, cracking, or breaking when the rounded pipe is tested in accordance to section 11.3 of ASTM F1504

(b) Pipe Impact Strength: The impact strength of rounded pipe shall not be less than the values in Table 1 when tested in accordance with test method D2444 as referenced in ASTM F1504.

Table 1: Minimum Impact Strength at 73°F (23°C)

Pipe Size, in. (mm)	Impact Strength, ft-lb f (J)
6 (150)	210 (284)
8 (200)	210 (284)
10 (250)	220 (299)
12 (300)	220 (299)
15 (375)	220 (299)
18 (450)	220 (299)
24 (600)	220 (299)
30 (750)	220 (299)

(c) Pipe Stiffness: Values for pipe stiffness for the rounded pipe shall comply with Table 2 when tested in accordance with test method D2412 as referenced in ASTM F1504.

Table 2: Minimum Pipe Stiffness at 5% Deflection

Pipe Size, in. (mm)	Pipe Stiffness, psi (kPa)	Dimension Ratio, (DR)
6 (150)	36 (250)	35
8 (200)	36 (250)	35
10 (250)	36 (250)	35
12 (300)	22 (153)	41
15 (375)	12 (83)	50
18 (450)	6 (41)	66
24 (600)	6 (41)	66
30 (750)	6 (41)	66

(d) Extrusion Quality: The extrusion quality of the pipe shall be evaluated by both of the following test methods:

(i) Acetone Immersion: The pipe shall not flake or disintegrate when tested in accordance with test method D2152 as referenced in ASTM F1504.

(ii) Heat Reversion: The extrusion quality of the pipe shall be estimated by heat reversion method in accordance with practice F1057 as referenced in ASTM F1504.

(iii) Flexural Properties: The flexural strength and modulus of the pipe shall be tested in accordance with test method D790 as referenced in ASTM F1504.

(e) Dimensions:

(i) Formed Pipe Diameter: the average outside diameter of the formed pipe shall meet requirements in Table 3, +/- 1.0% or the design thickness as computed in calculations to support overburden conditions when tested in accordance with test method D2122 as referenced in ASTM F1504.

(ii) Formed Pipe Wall Thickness: the wall thickness of the formed pipe shall not be less than the values specified in Table 3 when tested in accordance with test method D2122 as referenced in ASTM F1504.

Table 3: Formed Pipe Dimensions

Nominal Outside Diameter, in. (mm)	Minimum Wall Thickness, in. (mm)	Dimension Ratio, (DR)
6 (150)	0.17 (4.34)	35
8 (200)	0.23 (5.78)	35
10 (250)	0.28 (7.23)	35
12 (300)	0.292 (7.4)	41
15 (375)	0.30 (7.6)	50
18 (450)	0.27 (6.8)	66
24 (600)	0.34 (8.7)	66
30 (750)	0.43 (10.8)	66

(f) Workmanship, Finish, and Appearance

(i) The formed pipe shall be homogeneous throughout and free from visible cracks, holes, foreign inclusions, or other defects. The pipe shall be as uniform as commercially possible in colour, opacity, density, and other physical properties.

E21.4.4 PVC Fold and Form Liner Pipe Product

(a) Acceptable Lining Pipe Product:

600 mm outside diameter PVC Fold and Form Liner
Trade name: **NovaForm PVC Liner**
Manufacturer: IPEX Inc.
Contact Info: David Sylvestre, David.Sylvestre@ipexna.com, (204) 633-3111

(b) The Contractor may elect to use an alternative product upon review and approval by the Contract Administrator and in accordance with B7. The Contractor shall request the Manufacturer to directly submit written information on the preparation, materials, design, performance, references, and use of proposed products.

(c) Lubricant shall be non-toxic, vegetable based, lubricating gel.

E21.5 Construction/Liner Installation

E21.5.1 Pre-Heating

(a) Prior to insertion of the liner into the host pipe, the Contractor shall pre-heat the liner in a manner prescribed by the manufacturer's installation instructions, and heat and hoard the host pipe at the outfall outlet to support the liner installation as required. The heated liner must be pliable enough to be pulled into the host pipe with as little resistance as possible.

E21.5.2 Pipe Liner Insertion

(a) The liner pipe shall be inserted into the sewer through the outfall outlet. Insertion of the liner into the host pipe will be accomplished by pulling the liner into the host pipe by means of a steel cable strung through the host pipe from a winch located at the upstream manhole within the driveway. Note that access to the intermediate manhole will be permitted for person-entry access only. The end of the liner shall be prepared

for attachment to the cable in accordance with the manufacturer's instructions. The connection between the pulling cable and the prepared end of the liner shall be a swivel device to prevent twisting of the liner as it is pulled through the host pipe. The heated liner coil shall be placed in such a manner as to prevent damage to the liner as it is pulled through into the host pipe.

(b) A member of the installation crew shall monitor the speed of the pull; he/she must coordinate the speed of the pull with the winch operator via two-way radio. The crew member coordinating the insertion of the liner shall ensure that the liner as the proper amount of slack, to prevent it from being either stretched or kinked.

E21.5.3 Stress Relief

(a) After the liner has been inserted into the host pipe, the Contractor shall relieve any stress imparted to the liner during the insertion in a manner prescribed in the manufacturer's installation instructions.

E21.5.4 Processing

(a) The Contractor shall supply suitable heat source equipment. The equipment shall be capable of delivering steam through the lining section to uniformly raise the temperature of the PVC material to effect forming of the liner pipe.

(b) Suitable monitors shall be installed to gauge steam temperatures and pressures at the input and the exhaust ends of the liner. Steam monitoring methods and forming period shall be recommended by the liner manufacturer. Contractor shall provide a submittal identifying their plan for monitoring the temperatures and pressures.

(c) After forming, the liner shall be cooled using compressed air or a mixture of compressed air and water. Cooling shall be deemed complete when the temperature of the exhaust air or air water mixture has remained constantly below 90 degrees Fahrenheit for a minimum of 10 minutes.

E21.5.5 Pipe Liner Trimming

(a) After installation, the ends of the PVC liner shall be cut off at the outlet end flush with the end of the host clay pipe. At the upstream end of the host clay pipe, the liner shall extend approximately 100mm from the end and cut, then grouted around the annulus as required. Cuts shall be smooth and parallel with the maintenance hole wall. The finished liner shall not protrude into the maintenance hole over 4 inches.

(b) If the maintenance hole has been lined through, the top half of the liner pipe may be cut off even with the top of the shelf, leaving the channel lined.

E21.5.6 Service Connections

(a) Location of service connections shall be determined from a pre-lining CCTV inspection.

(b) It shall be the Contractor's responsibility to accurately locate all existing service connections (if any) whether in service or not. The Contractor shall re-connect all potentially active service connections to the pipe liner, including those from unoccupied, abandoned, or vacant lots. Capped service connections shall no be reconnected unless otherwise directed by the City.

(c) All existing service connections shall be reinstated by a remotely controlled robotic device. Only experienced operators shall make robotic service connection reinstatements.

(d) Service reconnections shall be smooth and circular in nature as observed by a pan and tilt CCTV camera. The hole shall be a maximum of 105% and minimum og 90% of the service pipe diameter. The opening shall be smooth and conform to the inside shape and size of the original connection.

E21.6 Post Installation Inspection

(a) Upon completion, and before acceptance of the Work, the Contractor shall inspect the rehabilitated pipeline using a CCTV camera. The Contractor shall submit the post-

installation video to the Contract Administrator for review and approval prior to acceptance of the Work in accordance with E29.

E21.7 Method of Measurement and Payment

E21.7.1 Installation of PVC Fold and Form Liner Pipe

(a) The supply and installation of PVC Fold and Form Liner shall be measured on a linear basis. The length to be paid for shall be the total number of linear meters acceptably supplied and installed, measured horizontally, at grade, above the centre line of the pipe, as computed by measurement made by the Contract Administrator.

(b) Separate measurement will be made for each size and class of PVC Fold and Form Liner Pipe

(c) Supply and Installation of PVC Fold and Form Liner Pipe will be paid for at the Contract Unit Price for "Items of Work" listed below, measured specified herein, which price shall be payment in full for supplying all materials and performing all operations herein described and as shown on the Drawings and Details and all other items incidental to the Work included in this Specification.

Items of Work: Supply and Installation of PVC Fold and Form Liner Pipe

- 600 mm OD PVC Fold and Form (min. 8.7mm wall thickness)

E22. CONSTRUCTION OF CONCRETE COLLAR

E22.1 Description

E22.1.1 All concrete work in this project, materials and construction methods, shall be according to the Drawings, Details and this specification.

E22.2 Materials

Concrete Mix Design

Concrete mix design and steel reinforcement shall be as indicated on the Drawings and in accordance with E23 (Cast in Place Concrete Construction).

E22.2.1 Cold Weather Requirements

Cold weather requirements shall be in accordance with E24 (Cold Weather Requirements).

E22.3 Construction Methods

E22.3.1 Cast in place Concrete Construction

(a) Construct cast in place concrete in accordance with CW 2160, except as supplemented, revised or amended in this specification and as indicated in the construction notes on the Drawings.

(b) Adjust the location of reinforcing steel adjacent to openings to frame those openings in accordance with good practice, and maintain the bar spacing intent.

(c) Do not use welded splices for reinforcing steel.

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

E22.3.2 Backfill

(a) Place and compact backfill material as indicated on the Drawings in accordance with CW 2030.

(b) Do not place backfill material in a frozen state.

(c) Supply heating and hoarding in accordance with CW 2160 if required to ensure material does not freeze before compaction is complete.

(d) Notify the Contract Administrator at least one (1) full Working Day in advance of any backfilling operation. No Backfill shall be placed against concrete until approved by the Contract Administrator and in no case before field cured test cylinders show the concrete strength to be 75% of that specified.

E22.3.3 Grout

(a) Mix and apply grout in accordance with the manufacturer's instructions. Consistency to be suitable for the intended application.

E22.4 Measurement and Payment

(a) Construction of the concrete collar will be measured on a unit basis and paid for at the Contract Unit Price for ""Items of Work" listed below. Said price shall be payment in full for supplying all materials and performing all operations herein described and all other items incidental to the Work included in this specification.

(b) Cold weather requirements shall be considered incidental to the construction of cast-in-place concrete and no measurement or payment will be made for this item.

Items of Work: Construction of Concrete Collar

a) 525 mm diameter

b) 600 mm diameter

c) 750 mm diameter

d) 900 mm diameter

e) 1200 mm diameter

E23. CAST-IN-PLACE CONCRETE CONSTRUCTION

E23.1 Description

E23.1.1 This specification shall cover construction of cast-in-place concrete and shall supplement, revise and amend CW 2160.

E23.2 Materials

(a) Concrete Design

(i) Proportioning of fine aggregate, coarse aggregate, cement, and water for cast-in-place concrete shall be as follows:

- Cement Type: HS
- Minimum Compressive Strength @ 28 days: 30 MPa
- Maximum coarse aggregate size: 19 mm
- Maximum Water/Cement ratio: 0.45
- Slump (Before Plasticizing): 80 mm +/- 30 mm
- Slump (After Plasticizing): 150 mm +/- 30 mm

(ii) All admixtures must be compatible and meet the following standards:

- Air entraining agents to ASTM C260
- Chemical admixtures (water reducing) to ASTM C494
- Type F high-range water reducing (super-plasticizing) admixture shall be used when a slump of more than 110 mm is desired.

(b) Lean-Mix Concrete Design

(i) Proportioning of fine aggregate, coarse aggregate, cement, and water for lean mix concrete shall be as follows:

- Cement Type: HS
- Minimum Compressive Strength @ 28 days: 15 MPa

- Slump: 80 mm
- Air Content: nil
- Minimum Cement Content = 240 kg/m3
- Maximum Water/Cement Ratio = 0.49

(c) Grout

(i) Grout shall be Sika Grout 212 or approved equal in accordance with B7.

(d) Reinforcing Steel

(i) Reinforcement is new deformed billet steel bar conforming to CSA G30.18 (Latest). Grade 400.

(ii) Unless noted otherwise, reinforcement clear concrete cover distances shall be a minimum of:

- 75 mm for concrete cast against earth.
- 50mm for all other concrete.

(iii) Reinforcing steel shall be clean, free of rust, dirt, loose scale, oil, grease or any material that could reduce bond with the concrete.

(e) Waterstop shall be SikaSwell S-2 (Hydrophilic Polyurethane Sealant) extrudable swelling waterstop or approved equivalent in accordance with B7.

E23.3 Measurement and Payment

E23.3.1 Cast-in-place concrete will be considered incidental to the Work listed in individual Part E specifications and shall be included in the associated price for each applicable item. No direct measurement for payment will be made for this item.

E24. COLD WEATHER REQUIREMENTS

E24.1 Description

(a) Should any concrete Work be required to be carried out when the mean daily temperature is below 5°C or anticipated to be below 5°C within the next 24 hours, cold weather requirements will be specified herein.

(b) All freshly placed concrete shall be protected from the elements and from defacements due to construction operations.

E24.2 Construction Methods

(a) The following are minimum requirements for protecting concrete during and after placement during freezing weather, but mere adherence to these requirements will not relieve the Contractor of the necessity for producing concrete which has not been weakened or injured by frost of freezing, or replacing such damaged Work at no additional expense to the City;

(i) Before any concrete is placed, all ice, snow, and frost shall be completely removed from all formwork, and other surfaces against which concrete temperatures of such surfaces raised above 7°C for twenty-four (24) hours minimum prior to concreting. Where concrete Work is to come in contact with the earth, the surface of the earth shall be completely free of frost when concrete is placed thereon.

(ii) Concrete aggregates and water shall be heated to not over 80°C. Concrete shall be not less than 20°C or more than 30°C in temperature when deposited. Concrete when placed during freezing weather, or if freezing is anticipated during curing period, shall be fully enclosed and the temperature of same maintained at not less than 20°C for five (5) days nor less than 5°C for an additional five (5) days.

(iii) Heating enclosures shall be strong and wind-proof, well ventilated with heating units so located as to prevent local overheating or drying of the concrete or damage from combustion gases. Only indirect fired heaters will be accepted. Units must be vented outside the enclosure. No direct fired units will be accepted.

(iv) The Contractor shall inform the Contract Administrator well in advance as to the methods of enclosure and frost protection he proposes to employ.

E24.3 Measurement and Payment

E24.3.1 Cold weather requirements shall be considered incidental to the construction of cast-in-place concrete and no measurement or payment will be made for this item.

E25. RIVERBANK REGRADING

E25.1 Description

E25.1.1 This Specification shall cover the riverbank regrading at the site, including excavation and reworking of excavated material, and imported impervious clay supply and placement.

E25.1.2 The work to be done by the Contractor under this Specification shall include the furnishing of all superintendence, overhead, labour, materials, equipment, tools, supplies and all things necessary for an incidental to the satisfactory performance and completion of all work as hereinafter specified.

E25.2 Materials

E25.2.1 The Contractor shall be responsible for the supply, safe storage and handling of all materials set forth in this Specification.

E25.2.2 Native Material to be Excavated

(a) The materials covered in this specification consist of the in-situ overburden soils, and may include but not necessarily be limited to organic topsoil, clay, silt, sand, gravel, fill, rubble, roots, riprap, concrete blocks, etc., all of which may be excavated with standard hydraulic excavation equipment.

E25.2.3 Clay Backfill

(a) The impervious clay backfill to be used for riverbank regrading shall consist of a high plasticity clay material, with a liquid limit in excess of 50%. The clay shall be free of deleterious material such as roots, organic material, ice, snow or other unsuitable materials, and may be salvaged from the on-site excavation, as approved by the Contract Administrator. Frozen material will not be accepted.

E25.3 Construction Methods

E25.3.1 General

(a) The riverbank regrading will be completed in the mid and upper bank portions of the bank. The limits of the riverbank regrading will be laid out in the field by the Contract Administrator.

E25.3.2 Repair of Existing Slip Surfaces

(a) A trench 0.6 m wide and 0.6 m deep

E25.3.3 Native Material to be Excavated

(a) All excavated material shall be removed off site immediately upon excavation or stockpiled as directed by the contract administrator.

E25.3.4 Clay Backfill

(a) The depressions within the limits of the existing mid and upper bank shall be infilled with clay backfill material. The clay backfill material shall be pushed and kneaded into place to ensure that the entire excavated volume is entirely filled with clay, and that no void spaces remain. The clay backfill shall be compacted to a minimum of 95% of the SPMDD.

(b) Clay backfill for placement within the limits of the existing mid and upper bank shall not be stockpiled on the riverbank.

E25.4 Measurement and Payment

E25.4.1 Basis of Measurement

The supply and placement of the riverbank regrading will be measured on a volume basis. The volume to be paid for shall be the total number of cubic metres of "Riverbank Regrading", supplied and placed in accordance with this Specification, as measured in the field and accepted by the Contract Administrator.

E25.4.2 Basis of Payment

The supply and placement of riverbank regrading will be paid for at the Contract Unit Price per cubic metre for the "Riverbank Regrading", measured as specified herein, which shall be payment in full for supplying all materials and for performing all operations herein described and all other items incidental to the work included in this Specification.

E26. GEOTEXTILE

E26.1 Description

E26.1.1 This Specification shall cover the supply and placement of the geotextile fabric below the rockfill riprap.

E26.2 Materials

E26.2.1 Each geotextile roll to be used shall be tagged to provide product identification for inventory and quality control purposes.

E26.2.2 Geotextile rolls shall be furnished with suitable wrapping for protection against moisture and extended exposure from the sun, and contamination from dirt, dust, and any other deleterious materials. The geotextile shall remain wrapped in a protective covering until it is used.

E26.2.3 Non-woven geotextile fabric shall meet or exceed the following requirements:

Parameter	Test Method	Minimum Criteria
Grab Tensile Strength	ASTM D4632	900 N
Mullen Burst	ASTM D3786	2600 kPa
Puncture	ASTM D4833	550 N
Trapezoidal Tear	ASTM D4533	350 N
Apparent Opening Size	ASTM D4751	1.2 mm
Permittivity	ASTM D4491	1.2 sec^{-1}
Flow Rate	ASTM D4491	60 $L/sec/m^2$

E26.2.4 Suitable products shall be Tencate Mirafi 180 N or approved equivalent in accordance with B7.

E26.3 Construction Methods

E26.3.1 Geotextiles shall consist of non-woven fabric.

E26.3.2 All Work related to the geotextile storage, handling, and installation shall comply with the procedures and recommendations of the manufacturers, and as accepted by the Contract Administrator.

E26.3.3 Snow and ice shall be cleared from the riverbank in accordance with E12.3.6 prior to placement of geotextile.

E26.3.4 The fabric shall be loosely laid in order to allow conformity to the bedding surface. Folds and wrinkles in the fabric shall be avoided. Pins, nails or weights shall be installed to hold the fabric in place such that placement of fill material will not excessively stretch or tear the fabric and seam overlaps will be maintained.

E26.3.5 The fabric shall be overlapped in a downstream direction (upstream panel overtop of downstream panel) at all joints a minimum of 600 mm. The overlap shall be pinned or secured as approved by the Contract Administrator.

E26.3.6 A minimum of 300 mm of material shall be placed over the fabric prior to equipment passage.

E26.3.7 Riprap shall be placed on the geotextile in such a manner that the geotextile is not damaged, torn, excessively stretched, or punctured.

E26.3.8 Any damaged geotextile, as identified by the Contract Administrator, shall be repaired immediately at the Contractors own cost. All fill material shall be cleared a minimum of 1 m around the damaged area. The damaged area shall be covered with a geotextile patch that shall be large enough to be sewn or overlapped a minimum of 600 mm onto the undamaged geotextile.

E26.4 Measurement and Payment

E26.4.1 The supply and placement of geotextile, and related Work specified herein will be measured on an area basis and paid for at the Contract Unit Price for “Geotextile”. The area to be paid for shall be the total number of square metres of ground covered by geotextile, placed in accordance with this Specification, accepted and measured by the Contract Administrator.

E26.4.2 Overlap at all joints shall be considered a single layer of geotextile for measure and payment purposes.

Geotextile used for repairs will be excluded from the quantity paid.

E27. REMOVAL OF CONCRETE DEBRIS

E27.1 Description

E27.1.1 This Specification shall cover the removal of concrete debris located at any given outfall site.

E27.2 Construction Methods

E27.2.1 All existing concrete debris located near the outfall outlet as indicated on the Drawings shall be removed and appropriately disposed off site.

E27.3 Measurement and Payment

E27.3.1 The removal of concrete debris shall be measured by tonnes and paid for at the Contract Unit Price for “Removal of Concrete Debris”. The weight to be paid for shall be the total tonnes of garbage removed from Site and taken to a waste facility, in accordance with this Specification, and accepted and measured by the Contract Administrator.

E27.3.2 The Contractor shall supply and deliver receipts of weigh bills to the Contract Administrator before payment will be made.

All costs associated with removal of concrete debris, which includes collection of debris, transport, and tipping fees, will be considered incidental to the Work.

E28. SEWER CLEANING

E28.1 Description

(a) This Specification shall amend and supplement Standard Specifications CW 2140.

(b) Sewer cleaning has been included in the Contract due to the unpredictable conditions of outfalls and to supplement the HDD Cleaning. **The length of time spent on sewer cleaning shall be at the discretion and direction of the Contract Administrator.**

E28.1.1 Construction Methods

(c) Advise the Contract Administrator immediately when pipe material or backfill material is observed during the cleaning of a sewer. The Contract Administrator will direct one of the following operations be performed.

(i) Complete or attempt to complete cleaning of the sewer.

(ii) Suspend cleaning operations and inspect the sewer.

(iii) Simultaneously clean and inspect the sewer

E28.2 Measurement and Payment

E28.2.1 Amend Section 4.1 of Specification CW 2140 to read:

(b) Sewer Cleaning will be measured on a time basis and paid for at the Contract Unit Price for "Sewer Cleaning". The time to be paid will be the total number of hours of sewer cleaned in accordance with this specification, accepted and measured by the Contract Administrator.

(c) Sewer Cleaning shall include all water supply costs, permits (access or otherwise), cleaning, reverse set-up cleaning, dumping, travel time, tipping fees, units, flow control and whatever may be required for the cleaning of the outfall pipe.

(d) 75% of the payment will be made upon satisfactory completion of the cleaning work. The remaining 25% of the payment will be made upon final acceptance of the sewer cleaning as determined by the review of the corresponding video inspection.

E28.2.2 Delete sections 4.3, 4.7 and 4.8 of specification CW 2140.

E29. SEWER INSPECTION

E29.1 Description

E29.1.1 This Specification shall amend and supplement Standard Specifications CW 2145.

E29.1.2 This Specification covers inspection of sewers and manholes using internal video equipment for the purposes of assessing thoroughness of cleaning, observing and recording structural and service defects and construction features and to verify new sewer construction prior to acceptance.

E29.2 Construction Methods

E29.2.1 Sewer Condition Coding

Sewer pipes shall be coded according to the Standard Specifications CW 2145.

E29.2.2 Cross Sectional Measurements (Pipes 900mm and larger)

The Contractor shall record cross section measurements every 5 m taken horizontally at 3:00, vertically at 12:00 and at 45 degrees at 1:00 and 4:00. Stationing should be from the upstream face of the gate chamber or manhole. The Contractor shall record the cross sectional measurements on an Inspection Form provided by the Contract Administrator.

E29.2.3 Maximum Vertical Deflection

The maximum observed vertical deflection "pinch point" in the outfall shall be recorded with its appropriate stationing.

E29.3 Measurement and Payment

E29.3.1 Amend Section 4.4 of specification CW 2145 to read

(a) Sewer inspection will be measured on a length basis and paid for at the Contract Unit Price for "Sewer Inspection". Length to be paid for will be the total length of sewer inspected in accordance with this specification, accepted and measured by the Contract Administrator.

(b) Cross sectional measurements and maximum vertical deflection measurements will be considered incidental to the sewer inspection

(c) Payment will not be made until the required report submissions are accepted by the Contract Administrator.

E29.4 Delete Section 4.6 of Specification CW 2145.

E30. DE-WATERING AND THAWING OUTFALL PIPE

E30.1 Description

E30.1.1 This Specification shall apply to the de-watering and thawing of outfall pipes under frozen conditions as required for cleaning, repairs, and/or sewer inspection or to carry out the Work.

E30.1.2 Works for de-watering and thawing of outfall pipe will only be permitted between December 1 and March 15 of any given year.

E30.1.3 A copy of the Department of Fisheries and Oceans Canada (DFO) Request for Review documentation for applicable outfall sites will be provided to the Contractor upon notification of award. All DFO Regulations and Laws, and methodologies outlined in the DFO submissions, including but not limited to, construction methods, schedules, sediment and erosion control, and site restoration shall apply to the Work.

E30.2 Materials

E30.2.1 Equipment

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

(b) All equipment shall be operated and maintained in accordance with E7 (Environmental Protection Plan) and DFO Request for Review measures and guidelines**.**

E30.3 Construction Methods

E30.3.1 Temporary Clay Coffer Dam Installation (as required)

(a) Temporary Clay Coffer Dam Installation shall be installed prior to de-watering in accordance with E12.

E30.3.2 Thawing/De-Icing Outfall Pipe

(a) The Contractor shall supply heating and hoarding to remove all ice from inside the outfall pipe as required.

E30.3.3 De-watering Outfall Pipe

(a) The Contractor must comply with all measures to avoid causing harm to fish and fish habitat as outlined in DFO guidelines and regulatory provisions including the requirements stated in any DFO guidelines, regulations or permits. Contractor shall submit a De-Watering Outfall Pipe plan to the Contract Administrator, including the type of pumping equipment to be used, prior to commencement of de-watering works.

(b) Contractor shall provide 24-hour monitoring of all de-watering pumping works.

(c) Contractor shall monitor the turbidity of the water. Upon turbid water and/or when the pump begins to take in sediment, the contractor shall stop pumping operations. All

sediment shall then be pumped into a holding tank or tank truck and disposed of off site.

(d) Contractor shall make every reasonable effort to control sediment and dissipate water velocity in accordance with DFO guidelines.

(e) The contractor shall ensure the pumping system is sized properly and adjustments may be required to suit local conditions. The contractor shall be required to supply and operate at least (1) 100mm diameter flood pump. Primary pumps shall be critically silenced when used in residential settings where excessive noise levels would create a disturbance. A back-up pump should be readily available on-site in case of pump failure. Pumping operations shall follow in accordance with Appendix A.

E30.4 Measurement and Payment

E30.4.1 Payment for de-watering and thawing outfall pipes is considered incidental to the Work and included under “Site Development and Restoration”. No separate measurement or payment is to be made.

E31. HDD OUTFALL CLEANING

E31.1 Description

E31.1.1 This Specification shall cover the removal of the majority of sediment within outfall pipes with high levels of sediment and debris.

(a) The 242 Metcalfe Avenue Outfall is an 2100mm diameter CMP/1800mm diameter concrete outfall (approx. 34.1 meter length) that is approximately 50% filled with sediment and debris.

(b) The 1 Hart Avenue Outfall is an 2430mm diameter CMP/2850x2260mm egg concrete outfall (approx. 42.0 meter length) that is approximately 40% filled with sediment and debris.

(c) The 108 Selkirk Avenue Outfall is an 1800mm diameter CMP/1975mm diameter CMP/1980mm diameter concrete outfall (approx. 55.7 meter length) that is approximately 50% filled with sediment and debris.

(d) The Waterfront Drive/McDermot Street Outfall is an 2700mm diameter CMP/2700mm diameter concrete outfall (approx. 72.0 meter length) that is approximately 50% filled with sediment and debris.

(e) The Granite Way Outfall is an 1800mm diameter CMP outfall (approx. 47.3 meter length) that is approximately 50% filled with sediment and debris.

(f) The Bredin Drive Outfall is an 900 mm diameter CMP outfall (approx. 13.2 meter length) that is approximately 80% filled with sediment and debris.

E31.1.2 The intention of HDD Outfall Cleaning is to use an alternative method to standard pipe cleaning to remove large amounts of sediment from within outfall pipes using trenchless HDD equipment and methods, or approved equivalent in accordance to B7 (see below).

E31.1.3 Further to E31.1.2, the intent of HDD Outfall Cleaning is to remove the majority of sediment from within the outfall pipe. Once removed, standard pipe cleaning (ie. flushing) methods should be used to supplement and complete the sewer cleaning works to the satisfaction of the Contract Administrator.

E31.1.4 Further to E31.1.3, this Specification shall cover the HDD Outfall Cleaning works only for the sites listed in E31.1.1. Supplemental and/or additional standard cleaning works following completion of the HDD cleaning shall be completed and paid for in accordance with E28.

E31.1.5 Commencing, stopping and/or abandoning HDD outfall cleaning shall be at the discretion and direction of the Contract Administrator.

E31.2 Submittals

E31.2.1 Contractor shall submit a description of their proposed cleaning methodology (Form L) as indicated in B13 (Qualifications).

E31.2.2 Prior to cleaning, the Contractor shall submit a detailed cleaning plan, equipment list, flow control plan, and access plan for review and approval by the Contract Administrator.

(a) These submittals shall be provided a minimum of 1 week prior to cleaning so that the plan may be reviewed by the Contract Administrator and the City's Water and Waste Department.

E31.2.3 A drilling fluid management plan including potential environmental impacts and emergency procedures and associated contingency plans:

(a) Drilling Fluid Report Form, and all other pertinent information regarding fluid parameters.

(b) Monitoring plan of drilling fluids, including:

(i) Measurement and documentation of fluid loss..

(c) A list of personnel and their qualifications and past project experience operating HDD equipment.

E31.2.4 The Contractor is advised that additional permits for construction of temporary access, and/or pipe loading calculations as required is the responsibility of the Contractor and are incidental to Site Development and Restoration.

E31.3 Materials

E31.3.1 HDD Equipment Specifications and Capabilities

(a) Provide manufacture and equipment information detailing setup and installation capabilities of HDD equipment.

(b) Provide certification in writing that the HDD rig has been certified fit for use based on the anticipated project conditions.

(c) Provide current inspection certificates for the drill pipe and drill tooling's.

(d) Type and capabilities of surface tracking system, real time monitoring of drill head, and any other down-hole steering system.

(e) Electronic Drill Record, including instrumentation and readout accessible in drill rig, and provision of conversion factors to convert instrument read-outs of all recorders, annulus pressure, rotary motors, pressure, travel, and torque units to be manufacturer's specifications.

(f) Down-hole pressure monitoring system.

E31.3.2 Drilling Fluids

(a) The drilling fluids shall be mixed according to the Manufacturer's recommendations and be appropriate for the anticipated site conditions. All additives used shall be chemically inert, biodegradable, and non-toxic.

E31.3.3 All equipment, implements, and tools used shall be of a size and type as required to complete the Work as approved in the Contractor's Cleaning Plan. The Contractor shall keep all equipment in good working order, and have sufficient standby equipment available as required.

E31.3.4 The Contractor shall supply all materials and labour required to thaw the outfall in accordance with E30 (De-Watering and Thawing Outfall Pipe). Heating and hoarding materials used shall consider Flow Control plan and allow for easy removal to accommodate any unexpected flows from the pipe.

E31.3.5 The Contractor is advised that a temporary sandbag or clay cofferdam may be required to ensure water (from cleaning) and sediment does not enter the waterway. The Contractor shall supply all materials and labour required to install a temporary sandbag or clay cofferdam as required in accordance with E12 (Site Development and Restoration).

E31.4 Construction Methods

E31.4.1 Thawing/De-Icing Outfall Pipe

(a) The Contractor shall supply heating and hoarding in accordance with CW2160 and E30 to remove all ice and thaw the sediment material inside the outfall pipe as required. Thawing the outfall pipe may in advance of mobilization to site to suit the Contractor's schedule, means and methods.

E31.4.2 Site Development and Restoration

(a) Site Development and Restoration in accordance with E12.

E31.4.3 Construction of Temporary Access (as required)

(a) The Contractor shall construct temporary access to the outfall outlet as required to facilitate the Works in accordance with E12. Permits and/or pipe loading calculations as required for access is the responsibility of the Contractor. The riverbank/access route shall be restored to pre-construction condition and bank geometry following completion of the Work.

E31.4.4 Temporary Clay Cofferdam Installation

(a) Temporary clay cofferdam or sand bag dike shall be installed to ensure cleaning water, fluids, and sediment does not enter the waterway in accordance with E12. All temporary cofferdam materials shall be removed following completion of the Work.

E31.4.5 Construction of Equipment Pad at Outlet (As Required)

(a) The Contractor shall construct a temporary equipment pad situated at the pipe outlet and/or build up the ice thickness as required to suit the Contractor's equipment and cleaning method. All equipment pad materials shall be removed and disposed of off Site following completion of the Work.

E31.4.6 HDD Outfall Cleaning

(a) The Contractor shall take measurements to verify the pipe size and elevations at the pipe outlet and upstream end. The existing slope of pipe shall be computed and verified in the presence of the Contract Administrator.

(b) HDD cleaning equipment, or approved equivalent in accordance to B7 is to be set up at the outfall outlet end or as approved in the Contractor's HDD Cleaning Plan Submittal.

(c) Contractor to pilot bore from downstream end to upstream end of pipe. After completing the pilot bore, tooling attachments, such as reamers, bits, and/or cleaning attachments as approved in the Contractor's Cleaning Plan Submittal shall be used to disturb, displace, and remove the sediment material within the pipe. Cleaning head bucket-style attachments shall include outer protective barrier material, such as rubber or plastic on bottom/side skis, to provide additional protection against potential pipe damage (ie. protecting against potential steel on steel contact). Complete multiple pullback/reaming passes as necessary to remove sediment from the pipe, leaving a maximum of 100 mm (4 inches) of sediment along the pipe circumference, to the satisfaction and approval of the Contract Administrator.

(d) Every reasonable effort shall be made to keep rods centered and on alignment within the pipe to avoid causing pipe damage. Diameter of borehole shall be controlled such that the tooling attachments remain 100 mm (4 inches) away from the pipe at any given time. Pullback/reaming passes shall be conducted at a rate to minimize pressure and risk of damaging the outfall pipe. The Contractor shall monitor and report pressure readings to the on-site Contract Administrator throughout the cleaning process and as requested.

(e) Advise the Contract Administrator immediately if equipment becomes stuck in the sewer. The Contractor shall be responsible and bear all costs for the retrieval of any stuck equipment.

(f) The Contractor shall notify the Contract Administrator immediately if backfill or pipe material is observed within the pipe, if there is existing pipe damage, if there is a concern of causing pipe damage, and/or of any other unsuitable or unforeseen conditions.

(g) The Contractor shall ensure that all material within the pipe and drilling fluid is removed from site and does not enter the river.

(i) The Contractor is advised that the outfalls are combined sewers and that the pipe may contain diluted sewage material. All material removed from the pipe shall be hauled away and disposed of at a suitable facility off site.

E31.5 Measurement and Payment

E31.5.1 HDD Outfall Cleaning will be measured and paid for at the Contract Lump Sum price for "HDD Outfall Cleaning", which price shall be payment in full for supplying all materials and for performing all operations as described herein and to the satisfaction of the Contract Administrator.

(a) 25% of the HDD Outfall Cleaning unit price will be paid on the first progress payment following commencement of the work on the specific Site being cleaned.

(b) The remaining 75% of the HDD Outfall Cleaning unit price will be paid subsequent to the successful completion of the Work to the satisfaction of the Contract Administrator.

E32. TEMPORARY SEWER PLUG

E32.1 General

(a) This specification covers the supply and installation of a temporary sewer plug to facilitate sewer cleaning at the 2464 Assiniboine Crescent outfall site.

E32.2 Submittals

(a) Submit Shop Drawings for review and approval by the Contract Administrator, in accordance with E8.

(i) The submittal for the plug installation must be provided a minimum of 2 weeks so the plan may be reviewed by the Water and Waste Department.

(b) Flow Control Plan in accordance with E9.

E32.3 Materials

(a) The Contractor shall supply and hire a diving subcontractor as required to install a suitably sized inflatable plug within the 900 mm CMP end section of the outfall, as indicated on the Drawings or an alternate as approved by the Contact Administrator in accordance with B7.

E32.4 Construction Methods:

(a) A coordination meeting must be held with the Contractor, their subcontractors undertaking work associated with the plug installation, the Contract Administrator and the City of Winnipeg Water and Waste departments (Engineering and Construction Branch and Operations) a minimum of two weeks prior to the planned installation of the plug.

(b) Under no circumstances may a plug be installed if rain is in the forecast.

(c) A representative of the Contractor must be on site full time while the plug is installed to remove the plug if upstream water levels enter the outfall or if rain is expected to occur.

(i) The manholes upstream of the gate chamber must be monitored by the Contractor while the plug is installed to detect elevated water levels. If water is observed flowing in this manhole, the sewer flows have elevated above normal dry weather flows.

(ii) If the forecast changes and rain is expected after the plug has been installed, the Contractor must suspend the inspection and remove the plug.

(d) Clean interior contact surfaces of pipe and install temporary plug.

(e) Plugs shall be watertight and capable of withstanding the anticipated external river/creek water levels.

(f) Decant the water in the outfall on the upstream side of the plug to the river. No sediment may be transferred to the river in accordance with DFO regulations.

E32.5 Measurement and Payment

(a) Supply and installation of Temporary Plug shall be paid on a lump sum basis for the installation of the plug diameter listed on Form B Prices. The price shall include all Works and materials necessary to complete the installation as identified herein and as indicated on the Drawings.

EROSION CONTROL AND RESTORATION

E33. EROSION CONTROL BLANKETS

E33.1 Description

E33.1.1 This Specification shall cover the supply and placement of erosion control blankets to provide temporary erosion control in localized areas (as directed by the Contract Administrator)

E33.2 Materials

E33.2.1 The blanket material shall consist of wheat or barley straw, coconut fibres, or other plants approved by the Contract Administrator. Acceptable products will be S32 BD Double Net Straw Blankets with **biodegradable** netting or approved alternative in accordance with B7. The blanket material shall be air dried, reasonably light in colour, and shall not be musty, mouldy, caked or otherwise of low quality. The blanket material shall be free of coarse (chaff) material and free of noxious weeds and/or seeds to prevent the introduction of weeds into previously seeded and planted areas.

E33.3 Construction Methods

E33.3.1 General

(a) The Contractor shall supply and place erosion control blankets immediately after final grading is completed and prior to March 15.

(b) Erosion control blankets shall be placed as directed, measured and accepted by the Contract Administrator.

(c) Covered areas shall be inspected periodically and after runoff producing storm events. Damaged areas shall be repaired immediately as determined by the Contract Administrator. Areas requiring recovering as directed by the Contract Administrator will be re-measured and additionally paid for at the Contract Unit Price for the Work item.

E33.3.2 Installation

(a) The erosion control blankets shall be installed as per the manufacturer's recommended procedures. Blankets shall be rolled out on smoothed out soils starting from the top of the slope. The Contractor is to start by stapling the blanket at the top of the slope in a 150 mm deep by 150mm wide trench. The trench will be backfilled and compacted so that water will flow evenly onto the blanket.

(b) The Contractor shall roll the blankets down the slope insuring soil blanket contact. Edges are to be overlapped a minimum 50 mm with parallel blankets.

(c) If more than one blanket is need for the run down the slope then adjoining ends must be overlapped a minimum 100 mm shingle style. Overlapped areas are to be stapled with a staggered pattern of staples.

E33.3.3 Removal

(a) Immediately prior to placement of topsoil and sod and/or topsoil and seed all erosion control blankets shall be removed and disposed of off-Site.

E33.4 Measurement and Payment

E33.4.1 Supply, placement and removal of erosion control blankets will be measured on an area basis and paid for at the Contract Unit Price for "Erosion Control Blankets". The area to be paid for shall be the total number of square metres of ground covered by blankets, supplied and placed in accordance with this Specification, accepted and measured by the Contract Administrator.

E34. INSTALLATION OF SILT FENCE

E34.1 Description

E34.1.1 This specification covers the erection of temporary silt fencing, which shall be installed and maintained at the locations shown on the drawings or as directed by the Contract Administrator, to control runoff and minimize the release of detrimental silt loading to watercourses.

E34.1.2 The scope of Work included in this specification is as follows:

(a) Supply and Install temporary silt fencing at the locations as indicated on the Drawings or as directed by the Contract Administrator, in accordance with the detailed drawing provided, immediately upon completion of the riprap placement and prior to undertaking any other activities on the Site where silt fencing is required.

(b) Maintain the silt fencing in serviceable condition throughout the entire duration of activities at the Site where silt fencing is required, including final restoration and cleanup of the construction Site.

(c) Remove the silt fencing and restore the area where the fencing was installed, without further disturbing the area and without releasing any deleterious substances to the adjacent watercourse.

E34.2 Materials

E34.2.1 Fence Posts

(a) Fence posts shall be 100 mm diameter untreated wood posts or 50 mm diameter steel.

E34.2.2 Filter Fabric

(a) Filter Fabric Shall be a woven geotextile material specifically designed for a silt fence applications, meeting the following minimum requirements:

Property	**Test Method**	**Value**
Grab Tensile Strength	ASTM D 4632	0.55 kN
Grab Tensile Elongation	ASTM D 4632	15%
Mullen Burst	ASTM D 4786	2060 kPa
Puncture	ASTM D 4833	0.285 kN
Trapezoid Tear	ASTM D 4533	0.285 kN
UV Resistance	ASTM D 435	5 80 % @ 500 hrs
Apparent Opening Size (AOS)	ASTM D 4751	0.60 mm
Flow Rate	ASTM D 4491	405 l/min/m2

Acceptable Product: "Amoco 2130 Silt Fence Fabric" or approved equal in accordance with B7.

E34.2.3 Wire Mesh

(a) Wire mesh shall be galvanized or plain metal with wire gauge = 3.0 mm, wire spacing @ 150 mm o/c.

E34.2.4 Fencing Material Fasteners

(a) Staples or wire ties of sufficient strength and spacing to withstand 500 N (100 lbf) pull test at any point on the wire mesh.

E34.3 Construction Methods

E34.3.1 Ensure that no deleterious substances are discharged into the adjacent watercourse at any time during construction activities.

E34.3.2 Silt Fence Installation

(a) Excavate 150 x 150 anchor trench along alignment of silt fence as indicated.

(b) Install fence posts as indicated. Ensure that fence posts are firmly driven into undisturbed soil, or are completely and firmly backfilled if installed via auger methods. Attach wire mesh as support backing for silt fence filter fabric with fasteners as specified in E34.2.4. Attach silt fence filter fabric on top of wire mesh in similar fashion. Overlap any fence seams (wire mesh or filter fabric) by 450 mm minimum. Ensure that wire mesh and filter fabric are installed on the upslope side of the post and are fully laid in anchor trench as shown.

(c) Install and compact impermeable excavated materials into anchor trench and slope as indicated. Compact to 95% of maximum dry density (ASTM D-698).

E34.3.3 Silt Fence Maintenance

(a) Inspect silt fence daily, prior to starting any other construction activities. If fence posts are found loose or not upright, repair in accordance with installation procedure as specified in E34.3.2. If silt fence is found to be loose or torn, repair or replace as necessary to comply with E34.3.2.

(b) If silt deposition at the fence is 300 mm or more in depth, carefully remove and dispose of silt offsite without disturbing silt fence.

E34.3.4 Silt Fence Removal

(a) The silt fence shall remain in place until new vegetation growth has established on the bank, as determined by the Contract Administrator.

(b) Upon authorization of the Contract Administrator, remove all fence posts, wire mesh, fabric, and fasteners from Site.

(c) Restore areas disturbed in accordance with E12 without releasing any deleterious substances to the adjacent watercourse.

E34.4 Measurement and Payment

E34.4.1 The supply, placement, and removal of silt fence shall be measured on a length basis and paid for at the Contract Unit Price per lineal metre for “Silt Fence”. The length to be paid for shall be the total number of metres supplied and placed in accordance with this Specification, accepted and measured by the Contract Administrator. Payment of silt fence shall be in accordance with the following payment schedule:

(a) Sixty percent (60%) of the Contract Unit Price per lineal metre for “Silt Fence” shall be paid following supply and installation.

(b) Forty percent (40%) of the Contract Unit Price per lineal metre for “Silt Fence” shall be paid following final removal.

E34.4.2 Removal of accumulated sediment from the silt fence is considered incidental to the Work and no separate measurement or payment will be made

E35. TEMPORARY SURFACE RESTORATION

E35.1 Further to clause 3.3 of CW 1130, where permanent surface restorations cannot be made due to cold weather, the Contractor shall temporarily restore surfaces as follows:

(a) backfill and level boulevards and grassed areas to match existing surface elevations,

(b) cap excavations in concrete pavement with a 100 millimetre 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 millimetre thick layer of concrete for "Temporary Restoration of Utility Pavement Cuts" as specified in CW 3310,

(d) insulate temporary concrete where required during 48hr curing period,

(e) 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.

(f) remove all temporary pavements prior to permanent restorations.

E35.2 The Contractor shall monitor and maintain temporarily restored surfaces as required until permanent restoration is complete.

E35.3 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.

E35.4 All costs associated with the maintenance or reconstruction of temporary pavement incurred by the City shall be deducted from future payments to the Contractor.

E35.5 Temporary surface restorations shall be measured and paid as follows:

(a) Temporary restoration will be measured by area and paid at the Contract Unit Price for "Temporary Surface Restoration". Area to be paid for will be total area temporarily restored inspected in accordance with this Specification, accepted and measured by the Contract Administrator.

E35.6 No measurement or payment will be made for the temporary restoration of barrier or lip curb.

E35.7 No measurement or payment will be made for the temporary restorations of boulevards and grassed areas.

E35.8 No measurement or payment will be made for the removal of temporary pavement prior to permanent restoration.

E36. NATIVE GRASSES

E36.1 Description

This Specification shall cover the installation of native grasses within the lower and mid bank areas.

The work to be done by the Contractor under this Specification shall include the furnishing of all superintendence, overhead labour, materials, and all other things necessary for and incidental to the satisfactory performance and completion of all work as hereinafter specified.

The Contractor shall be responsible for the supply, safe storage and handling of all materials set forth in this Specification.

E36.2 Materials

E36.2.1 Lower and Mid Bank Revegetation

(a) Seed Mixture

Grass seed shall consist of a Canada common native seed mix as follows:
20% Slender Wheatgrass
20% Switchgrass
20% Big Bluestem
20% Canada Wildrye
10% Fringed Brome
10% Canada Milkvetch

Grass species that may be substituted in varying percentages (no greater than 20%) as alternatives to those listed above include;

Prairie Cordgrass
Streambank Wheatgrass
Western Wheatgrass
Northern Wheatgrass

No more than (2) wheatgrass species shall be used in the mixture.

E36.3 Construction Methods

E36.3.1 Seeding

(a) Grass seed shall be sown at a rate of 0.5 kg per 100 square metres.

(b) Oats shall be sown at a rate of 0.38 kg per 100 square metres.

(c) Oats and grass seed may be mixed and sown together or they may be sown separately.

E36.3.2 Maintenance of Seeded Area

Areas seeded with native grasses shall be mowed during the first growing season to control pioneering weeds and other competition. For the purposes of this project a weed is defined as any plant not included in the seed mix. Mowing should be done before the general height is 150 to 250 mm, or when the weedy foliar cover reaches 50 percent of the seeded area, or when the weed species begin to flower. The first mowing shall be set at a height of 75 mm with the following mowings to be set at a height of 100 to 200 mm. Rotary, flail, or sickle bar type mowing equipment is acceptable.

All other maintenance of seeded area shall be in accordance with

E36.3.3 Quality Control

(a) Inspection

All workmanship and all materials furnished and supplied under this Specification are subject to close and systematic inspection by the Contract Administrator including all operations from the selection of materials through the final acceptance of the specified work. The Contractor shall be wholly responsible for the control of all operations incidental thereto notwithstanding any inspection of approval that may have been previously given.

(b) Access

The Contract Administrator shall be afforded full access for the inspection of materials at the site to determine whether the material is being selected and placed in accordance with this Specification.

E36.4 Method of Measurement

E36.4.1 Topsoil and Seeding

(a) The supply and placement of the native grass seeding within the lower and mid bank areas will be measured on an area basis. **The maximum area to be paid for shall be the area indicated on Form B: Prices, which is based on the area to be**

seeded as a direct result of specified works. Topsoil and Seeding area above this quantity shall be considered incidental to E12: Site Development and Restoration.

(b) The formula used to calculate topsoil and seeding areas is: *[3*(pipe diameter)+6] * pipe length* for all excavated pipe sections, including renewals and removals.

(c) Where installed pipe lengths vary due to field conditions or instructions from the Contract Administrator, the quantity of Topsoil and Seeding to be paid will be adjusted as appropriate.

E36.5 Basis of Payment

E36.5.1 Topsoil and Seeding (Native Grass Seed Mix)

The supply and placement of the native grass seeding within the lower and mid bank areas will be paid for at the Contract Unit Price per square metre of seeding for the "Topsoil and Seeding (Native Grass Seed Mix)" measured as specified, herein, which price shall be payment in full supplying all materials and performing all operations herein described, and all other items incidental to the work included in this Specification.

E37. TREE PLANTING

E37.1 Description

E37.1.1 Trees will be planted in 2022 as directed by the Contract Administrator. Plantings will consist of trees in various container sizes.

E37.1.2 The Work to be undertaken by the Contractor under this Specification shall include the furnishing of all superintendence, overhead, labour, materials, equipment, tools, supplies and all other things necessary for and incidental to the satisfactory performance and completion of all Work as shown on the Drawings and as herein specified.

E37.1.3 Work shall include, but not necessarily confined to, the relocation, supply and installation of trees and shrubs.

E37.1.4 Reference

(a) All plants shall be supplied and installed as per the Canadian Standards for Nursery Stock Current Edition, published by the Canadian Nursery Trades Association, except where specified otherwise.

E37.1.5 Source Quality Control

(a) All plant material shall be randomly inspected at the source upon request of the Contract Administrator.

(b) Trees are to be grown in nurseries under proper cultural practices as recommended by the Canadian Nursery Trades Association.

(c) Only those trees that have been grown for at least the four (4) previous years in local Manitoba nurseries located in an Agriculture Canada Plant Hardiness Zone designation of 2(a or b) or 3(a or b) and within a 250 km radius of Winnipeg, will be accepted. Trees that have grown in plant hardiness zones 1 and 4 or greater will be rejected.

E37.1.6 Maintenance

(a) The Contractor shall be responsible for the maintenance of the trees for a period of one (1) year from the date of Total Performance. Any areas planted after September 15th, the maintenance period will commence on May 15th of the following year or such date as mutually agreed upon by all parties.

(b) Water to ensure soil moisture conditions for optimum growth and health of plant material. Ensure watering techniques do not cause erosion.

(c) Reform damaged watering saucers.

(d) Remove weeds as per overall weed control strategy.

(e) Replace or re-spread damaged, missing or disturbed mulch.

(f) For non-mulched areas, cultivate monthly to keep top layer of soil friable.

(g) If required to control insects, fungus and disease, use appropriate control methods in accordance with Federal, Provincial and Municipal regulations. Obtain product approval from Contract Administrator prior to application.

(h) Apply fertilizer as directed by manufacturer's specifications.

(i) Remove dead, broken or hazardous branches from plant material.

(j) Keep trunk protection and tree supports in proper repair and adjustment.

(k) Remove trunk protection, tree supports and level watering saucers at end of warranty period.

(l) Remove and replace dead plants and plants not in healthy growing condition. Make replacements in same manner as specified for original plantings.

(m) Submit weekly written reports to Contract Administrator identifying:

- Maintenance work carried out.
- Development and condition of plant material.
- Preventative or corrective measures required which are outside Contractor's responsibility.

E37.1.7 Warranty

(a) The Contractor shall, at his/her expense, warrant the Work against any and all defects or deficiencies resulting from insect infestation, disease and mechanical damage due to improper handling, installation or maintenance, for a period of one (1) year from the date of the Total Performance. Nursery stock damaged by vandalism or reasons beyond the control of the Contractor shall be replaced by the client.

(b) End-of-Warranty inspection will be conducted by the Contract Administrator.

(c) The Contract Administrator reserves the right to request material replacement or extend the Contractor's Maintenance responsibilities for an additional one (1) year if, at the end of the Warranty Period, leaf development and growth are not sufficient to ensure future survival of the plant material.

E37.1.8 Replacements

(a) During the Warranty Period, the Contractor shall remove from Site any plant material that has died or failed to grow satisfactorily as determined by the Contract Administrator and replace as per Specifications within a maximum ten (10) day period from notification.

(b) Defective trees shall be replaced within three (3) days of notification to the Contractor, unless otherwise agreed to by the Contract Administrator.

(c) The Contractor shall extend Maintenance and Warranty on replacement tree for a period equal to the original Maintenance and Warranty Periods.

(d) The Contractor shall continue such replacement, Maintenance and Warranty until tree is acceptable.

E37.2 Materials

E37.2.1 Planting Soil and Mulch

(a) As per Planting Preparation.

(b) Imported soils shall be used to backfill tree and shrub plantings

E37.2.2 Miscellaneous Materials

(a) Water shall be potable and free of minerals which may be detrimental to plant growth.

(b) Stakes shall be metal T-Bar, steel, 40x40x5x2440 mm.

(c) ARBORTILE® by Deep Root Canada Corp., or equivalent approved by the Contract Administrator

(d) Guying Collar shall be plastic tube, 13mm diameter, nylon reinforced.

(e) Trunk Protection shall be plastic perforated spiralled strip.

(f) Fertilizer shall be a slow release formulation of low nitrogen and high phosphorus e.g. 10-50-12. Apply quantities at rates stated by product manufacturer.

(g) Root Ball Burlap shall be 150 g Hessian burlap, biodegradable.

(h) Wire Baskets shall be horticultural accepted product designed to carry the weight and to contain a burlap-covered root ball. Minimum diameter basket size is to conform to the same minimum diameter of the tree root ball for the respective minimum tree caliper sizes.

E37.2.3 Plant Material

(a) All nursery stock supplied shall be Canadian Prairie nursery grown, and of species and sizes indicated in the plant list on the Drawings. Its quality shall be in accordance with the "Guide Specification for Nursery Stock of the Canadian Nursery Trades Association".

(b) Any nursery stock dug from native stands, wood lots, orchards, or neglected nurseries and which have not received proper cultural maintenance as advocated by the Canadian Nursery Trades Association shall be designated as "collected plants". The use of "collected plants" will not be permitted unless specified below.

(c) Nomenclature of specified nursery stock shall conform to the International Code of Nomenclature for Cultivated Plants and shall be in accordance with the approved scientific names given in the latest edition of Standardized Plant Names. The names of varieties not named therein are generally in conformity with the names accepted in the nursery trade.

(d) Plants larger than specified may be used if approved by the Contract Administrator. The use of such plants shall not increase the Contract price.

(e) Plants shall be free of disease, insect infestation, rodent damage, or environmental stress.

(f) Trees:

(i) To be characteristically developed for their species and structurally sound, well branched, healthy and vigorous and densely foliated when in leaf. The tree is to have a healthy, well developed, fibrous root system which may be verified through a testing procedure that destructively samples one or more randomly selected root balls;

(ii) To have been root pruned regularly, but not later than one growing season prior to arrival on-site. The Contractor may be required to furnish documentation to the client on their root-pruning program. Trees in excess of 75 mm caliper are to have been half root pruned during each of two successive growing seasons, the latter at least, one growing season prior to arrival on-site;

(iii) To have all parts, especially lower branches, moist and show live, green cambium tissue when cut;

(iv) Single stem trees to have only one, sturdy, reasonably straight and vertical trunk, and a well-balanced crown with fully developed leader.

(v) To be free of disease, insect infestation, rodent damage, sun scald, frost cracks, abrasions, unhealed scars, scars exceeding 5cm in diameter, major forks or crooks in the trunk, broken branches, or angled leaders. Trees having the above defects will not be accepted by the Contract Administrator;

(vi) Trees having a leader which has developed at a sharp angle to the trunk as a result of pruning or trunk damage will not be accepted;

(vii) Trees exhibiting suppressed, weakly developed branches due to competition from other closely spaced trees in the nursery will not be accepted. Trees exhibiting dead branches will not be accepted.

(viii) Any tree that has come out of dormant stage and is too far advanced will not be accepted unless prior approval obtained. Approval is required for any tree which has been held in cold storage.

(ix) Balled and burlapped trees in excess of a 3 m height must have been dug with large firm ball. Roots in root balls must be comprised of 75% fibrous and feeder root systems. Secure root balls with burlap, heavy twine and rope. For trees 75 mm or more in caliper, wrap ball in double layer of burlap and drum lace with minimum 10 mm diameter rope. Protect root balls against sudden changes in temperature and exposure to heavy rainfall.

(x) Tree spade dug trees are to be dug with mechanized digging equipment with hydraulic spade. Lift root ball from hole, place in wire basket designed for purpose and lined with burlap. Tie basket to ball with heavy rope. Take care not to injure trunk of tree with wire basket ties or rope.

(xi) Use of collected or native trees is not permitted.

E37.2.4 Tree Quantity and Size

(a) Trees are to be planted at the quantities and caliper listed in Form B and broken down in detail below. Any variations to size, caliper or species of specified trees will require a request for approval from the Contract Administrator.

(i) Large trees shall be a minimum 75 mm caliper, 2.5 m in height, with a minimum of eight (8) major branches 2 m above grade, have balled and burlapped root balls, and be double stake. Tree species specific to the site shall consist of:

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

(b) Planting locations will be determined on-site by the Contract Administrator.

(c) Trees are to conform to the measurements specified in Form B, except that trees larger than specified may be used if approved by the Contract Administrator.

(d) Trees are to be measured when the branches are in their normal position. Height dimensions specified are to refer to the main body of the tree and not from branch tip to root base. Where trees have been measured by caliper or diameter, reference is to be made to the diameter of the trunk measured 15 cm above the ground as the tree stands in the nursery prior to lifting. Caliper of tree shall be appropriately designed on a permanently fixed tag on one of the branches.

E37.2.5 Shipment and Pre-Planting Care

(a) Coordinate shipping of trees and excavation of holes to ensure minimum time lapse between digging and planting.

(b) Tie branches of trees securely, and protect trees against abrasion, exposure and extreme temperature change during transit. Avoid binding of trees with rope or wire which would damage bark, break branches or destroy natural shape of tree. Give full support to root ball of trees during lifting.

(c) Cover tree foliage with tarpaulin, and protect bare roots by means of dampened straw, peat moss, saw dust or other acceptable material to prevent loss of moisture during transit and storage.

(d) Remove broken and damaged roots with sharp pruning shears. Make clean cuts, and cover cuts over 10 mm diameter with a tree wound dressing.

(e) Keep roots moist and protected from sun and wind. Heel-in trees which cannot be planted immediately in shaded areas and water well.

E37.3 Construction Methods

E37.3.1 Workmanship

(a) All areas and locations provided for planting will be staked out or painted on-Site by the Contract Administrator. Excavation shall not proceed until the layout has been inspected and approved by the Contract Administrator. Excavation shall not be undertaken until all underground utilities have been located and protected.

(b) Coordinate operations. Keep Site clean and planting holes drained. Immediately remove soil or debris spilled onto street pavement, grass or sidewalk.

(c) Work to be coordinated with installation of fencing and planting of shrub.

E37.3.2 Planting Time

(a) Plant trees as early as May 15, 2022 but no later than June 30, 2022 depending when topsoil is placed and prepared.

(b) Plant only under conditions that are conducive to health and physical conditions of trees.

(c) Provide planting schedule to Contract Administrator. Extending planting operations over long period using limited crew will not be accepted.

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

E37.3.3 Excavation

(a) Tree pit to be dug with back hoe.

(b) Excavate tree pits as indicated by stakes or paint marks.

(c) Protect bottom of excavations against freezing.

(d) Remove water which enters excavations prior to planting. Ensure source of water is not ground water and notify Contract Administrator.

(e) Upon excavation of the planting, the excavation shall be backfilled with a Topsoil mixture to a depth to permit adequate installation and stabilization of the plant material. Topsoil shall be placed in accordance with City of Winnipeg Standard Construction Specification CW 3540 to a 300 mm depth.

E37.3.4 Installation

(a) Plantings of trees shall be undertaken as approved by the Contract Administrator. Configuration of planting shall be subject to input and final approval by the Contract Administrator.

(b) Planting shall be done during periods of suitable weather conditions and in accordance with locally accepted practice.

(c) Trees are to be planted within forty-eight (48) hours of excavation from the nursery.

(d) No tree pit is to be left open at the end of the Contractor's Work Day. Planting program is to be planned to ensure that all approved trees delivered to the Site at designated planting locations are installed and thoroughly watered the same day as delivery.

(e) With balled and burlapped root balls and root balls in wire baskets, burlap shall be loosened and cut away from the top 1/3 without disturbing root ball. Wire shall be cut away and removed from the top 1/3 of the root ball. Burlap or rope shall not be pulled from under root ball. Non-biodegradable wrapping shall be removed.

(f) To avoid future root girdling, The Contractor shall ensure that roots are not coiled around the root ball. After removal from the container, if it is seen that roots are coiled

around the root ball, roots must be loosened and spread out in a more natural form before planting in order to establish healthy root development and root direction after planting.

(g) After inserting the tree and tamping the root system with Topsoil in layer of 150mm, water shall be poured in until the pit is thoroughly soaked. Filling of the hole shall then be completed and the fill-in soil shall be packed firmly around the roots, leaving a concave surface for convenient watering. After filling, the planting shall be watered at frequent intervals.

(h) Each tree is to have an earth saucer at its base having a diameter as large as the excavation with a 10 cm lip formed at the perimeter of the saucer to retain water.

(i) All nursery stock shall be set plumb in the centre of pits and at levels as shown on the planting details after settlement has taken place.

(j) Nursery stock shall be faced to give the best appearance or relationship to adjacent structure and to the approval of the contract administrator. Trees shall be placed equal to depth they were originally growing in nursery.

(k) Tree pit depth shall be such that the top of the root ball is even with the existing grade, taking into account that proper planting depth requires the root flare to be at or slightly above the finished grade. It is important to determine how deep the root flare is in the ball before it is placed in the planting hole. Sometimes the top of the ball may need to be raised until the root flare is at the proper planting depth and/or soil must be removed from the top of the ball.

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

E37.3.5 Supply and Installation of Mulch

(a) Contractor to supply and install mulch in tree pit, planters and in areas as indicated in the Drawings. Mulch supplied shall cover entire planting area to a consistent depth of 100 mm.

(b) Mulch must not be placed within 8 cm (3 in) of tree trunks.

E37.3.6 Fertilizing

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

E37.3.7 Trunk / Beaver Protection

(a) Install trunk protection on trees.

(b) Install trunk protection prior to installation of tree supports when used.

E37.3.8 Pruning

(a) The Contractor shall provide a licensed Manitoba Certified Arborist for each Work crew or Work Site.

(b) Employ clean sharp tools and make cuts flush with branch collars. Remove dead and injured branches.

E37.3.9 Watering

(a) Trees are to be watered during the planting procedure as described previously, and once a week thereafter, or more frequently as required, during the growing season.

(b) Apply 40 litres of water per 25 mm caliper per application using deep root feeder or low/pressure nozzle and hose. The water stream must not gouge out a hole in the soil and mulch.

(c) A complete record is to be kept of each series of waterings for all planted trees noting: 1) location, and 2) date of watering. This record shall be sent bi-weekly to the Contract Administrator.

E37.4 Measurement and Payment

E37.4.1 Installation and maintenance of trees shall be measured on a per unit basis. The amount to be paid for shall be the total number of trees supplied and installed in accordance with this Specification, and as acceptable to the Contract Administrator.

E37.4.2 Payment for Installation and maintenance of trees shall be paid for at the Contract Unit Prices for "Tree Revegation". This price shall be payment in full for supplying all labour, equipment and materials, and performing all operations herein described and all other items incidental to the Work included in this Specification and accepted by the Contract Administrator.

ALLOWANCES

E38. ALLOWANCE FOR REPLACEMENT OF IRRIGATION SYSTEM

E38.1 Description

E38.1.1 This specification shall cover the replacement of underground irrigation system as required at the 50 Eastwood Drive and 2782 Assiniboine Avenue outfall sites..

E38.2 Construction Methods

E38.2.1 The Contractor is advised that various underground irrigation lines exist at 2782 Assiniboine Avenue and 50 Eastwood Drive sites. If construction results in damage to the existing irrigation system, the contractor shall repair and/or replace the underground irrigation system as required.

E38.3 Measurement and Payment

E38.3.1 The Allowance for the Replacement of Irrigation System shall be measured and paid for up to a maximum of five thousand dollars ($5000.00) upon delivery of receipts to the Contract Administrator.

E38.3.2 All costs associated with the Allowance for Replacement of Irrigation System, which includes all supply and installation works, will be considered incidental to the work.

E39. ALLOWANCE FOR SPCSP PLATE REPLACEMENT

E39.1 Description

E39.1.1 This specification shall cover the replacement of the 2700 mm diameter SPCSP plate at the Waterfront Drive/McDermot Avenue Outfall to facilitate HDD Cleaning as required.

E39.2 Materials and Construction Methods

E39.2.1 The SPCSP replacement plate shall be re-installed in accordance with E17 and the manufacturer's instructions.

E39.2.2 SPCSP replacement plate, including bolts as required, shall match and conform to the existing 2700 mm diameter SPCSP material, gauge, and plate pattern. Existing plate material, gauge, and size is to be verified by the Contractor in field prior to manufacture.

E39.3 Measurement and Payment

E39.3.1 The Allowance for SPCSP Plate Replacement shall be measured and paid for up to a maximum of ten thousand dollars ($10,000.00) upon delivery of receipts to the Contract Administrator.

E39.3.2 All costs associated with the Allowance for Replacement of Irrigation System, which includes all supply and installation works, will be considered incidental to the work.

PART F - SECURITY CLEARANCE

F1. SECURITY CLEARANCE

F1.1 Each individual proposed to perform Work under the Contract shall be required to obtain a Police Information Check from the police service having jurisdiction at his place of residence. This can be obtained from one of the following;

(a) police service having jurisdiction at his/her place of residence; or

(b) 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

(c) Commissionaires (Manitoba Division), forms to be completed can be found on the website at: https://www.commissionaires.ca/en/manitoba/home ;or

(d) FASTCHECK Criminal Record & Fingerprint Specialists, forms to be completed can be found on the website at: https://myfastcheck.com

F1.2 The following is a link to information for obtaining the Police Information Check including the Vulnerable Sector screening from the City of Winnipeg Police Service. http://winnipeg.ca/police/pr/PIC.stm

F1.2.1 The Police Information Check shall include a Vulnerable Sector Screening. This can be obtained by following the link below http://winnipeg.ca/police/pr/PIC.stm .

(a) Individuals will need to state in the form, that they may be working in City of Winnipeg pools, libraries and community centres;

F1.3 The original Police Information Check (Form P–612) will be provided by the Winnipeg Police Service to the individual applicant. The original has a validation sticker from the Winnipeg Police Service in the top right hand corner. The applicant shall:

(a) Provide the original Police Information Check (Form P–612) to the Contract Administrator.

F1.4 Prior to the award of Contact, and during the term of the Contract if additional or replacement individuals are proposed to perform Work, the Contractor shall supply the Contract Administrator with a Police Information Check obtained not earlier than one (1) year prior to the Submission Deadline, or a certified true copy thereof, for each individual proposed to perform the Work.

F1.5 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.

F1.6 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.

F1.7 Notwithstanding the foregoing, at any time during the term of the Contract, the City may, at its sole discretion and acting reasonably, require an updated Police Information Check. Any individual who fails to provide a satisfactory Police Information Check as a result of a repeated Police Information Check will not be permitted to continue to perform any Work.