THE CITY OF WINNIPEG

TENDER

TENDER NO. 883-2025

2025 OUTFALL PROGRAM

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B2. SUBMISSION DEADLINE

B2.1 The Submission Deadline is 12:00 noon Winnipeg time, December 12, 2025.

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

B3. SITE INVESTIGATION

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

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

B3.3 The Bidder shall not be entitled to rely on any information or interpretation received at the Site investigation unless that information or interpretation is the Bidder's direct observation or is provided by the Contract Administrator in writing.

B4. ENQUIRIES

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

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

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

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

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

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

B5. CONFIDENTIALITY

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

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

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

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

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

B6. ADDENDA

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

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

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

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

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

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

B7. SUBSTITUTES

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

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

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

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

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

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

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

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

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

the proposed work schedule and the dates specified in the Supplemental Conditions for Substantial Performance and Total Performance.

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

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

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

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

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

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

B8. BID COMPONENTS

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

(a) Form A: Bid/Proposal;

(b) Form B: Prices;

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

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

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

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

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

B9. BID

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

B10. PRICES

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

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

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

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

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

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

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

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

B11. DISCLOSURE

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

B11.2 The Persons are:

(a) Titan Environmental

(i) Material and product information

B12. CONFLICT OF INTEREST AND GOOD FAITH

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

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

(a) other commitments;

(b) relationships;

(c) financial interests; or

(d) involvement in ongoing litigation;

that could or would be seen to:

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

B13. QUALIFICATION

B13.1 The Bidder shall:

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

B14. BID SECURITY

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

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

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

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

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

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

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

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

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

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

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

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

B15. OPENING OF BIDS AND RELEASE OF INFORMATION

B15.1 Bids will not be opened publicly.

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

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

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

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

B16. IRREVOCABLE BID

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

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

B17. WITHDRAWAL OF BIDS

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

B18. EVALUATION OF BIDS

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

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

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

(c) Total Bid Price;

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

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

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

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

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

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

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

B19. AWARD OF CONTRACT

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

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

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

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

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

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

(d) only one Bid is received; or

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

B19.3 The Work of this Contract is contingent upon Council approval of sufficient funding in the ^ Capital Budget. If the Capital Budget approved by Council does not include sufficient funding for the Work, the City will have no obligation to award a Contract.

B19.4 If funding for the Work is provided to the City of Winnipeg by the Government of Manitoba and/or the Government of Canada, Bidders are advised that the terms of C24 shall immediately take effect upon confirmation of such funding, regardless of when funding is confirmed.

B19.5 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.

B19.5.1 Following the award of contract, a Bidder will be provided with information related to the evaluation of their Bid upon written request to the Contract Administrator.

PART C - GENERAL CONDITIONS

C0. GENERAL CONDITIONS

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

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

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

PART D - SUPPLEMENTAL CONDITIONS

GENERAL

D1. GENERAL CONDITIONS

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

D2. BACKGROUND AND PROJECT INFORMATION

D2.1 In Winter 2022/2023, a geotechnical drilling investigation program was carried out at the Roland Outfall Site. Test hole log information is provided in Appendix C.

D2.2 Further to D2.1, the City previously identified a large sinkhole at the Roland Outfall Site and emergency repairs to the outfall were completed in Winter 2022/2023. Repairs included installation of a temporary slip joint, concrete collar, and backfilling of the sinkhole with CLSM to provide interim support and reliability of the outfall until further geotechnical analysis could be undertaken and environmental regulatory approvals could be obtained for the project as required (as described below).

D2.3 The City has initiated a Department of Fisheries and Oceans (DFO) Request for Review submission to facilitate completion of the Work for the Roland Outfall as required. **Official response/approvals are expected to be in place for construction of all out-of-water Work to be completed this Winter 2026. The in-water riprap Work is to be completed in Winter 2027 (see D2.4 below).** All DFO measures, guidelines, laws, and regulations shall be adhered to during construction. A copy of the DFO Request for Review submission documents are included in Appendix E.

D2.4 Further to D2.3, pending DFO review/response, the in-water Work identified for the Roland Outfall Site (ie. in-water riprap) may require further DFO Approvals/Species at Risk Act (SARA) Permit to facilitate completion of the Work. For planning purposes, the in-water riprap at the Roland Outfall Site will subsequently be scheduled for Winter 2026/2027 to allow for Fisheries Act Authorization Application and Permitting process timelines (should a Fisheries Act Authorization be determined by DFO to be required).

D2.5 A copy of the Transport Canada Approval documentation will be provided to the Contractor upon project award. All Transport Canada measures, laws, regulations are to be adhered to during construction.

D2.6 The Government of Manitoba Historic Resources Branch has granted Conditional Approval of the project such that a Heritage Resource Protection Plan is implemented. A copy of the Heritage Resource Protection Plan is provided in Appendix D. The Contractor shall follow all guidelines and measures included in the plan as required throughout the project.

D2.7 A Waterways Permit for each of the outfall Sites has been issued to the City. Copies of the 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. **Temporary Access Permits as required for construction of temporary access/cut ramps are the responsibility of the Contractor (to be obtained from the City of Winnipeg Waterways Authority).**

D2.8 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

D3. SCOPE OF WORK

D3.1 The Work to be done under the Contract shall consist of:

(a) Roland Outfall (S-MA40011011)

(i) Removal of (+/-) 55.15 m of existing 3700 mm diameter SPCSP and replacing with (+/-) 55.15 m of 3990 mm diameter SPCSP (4.0 mm) c/w polymer coating

(ii) Reconnection of existing 1350 mm SRS to new 3990 mm diameter SPCSP outfall

(iii) Installation of temporary shoring

(iv) Installation of two (2) - 3990 mm diameter internal slip joints

(v) Connection of new 3990 mm diameter SPCSP to existing chamber

(vi) Shoreline test pitting investigation

(vii) Installation of sixty-two (62) – 2.13 m diameter rockfill columns

(viii) Installation of rockfill riprap

(ix) Riverbank regrading

(x) Installation of 3990 mm diameter Debris Grate

(xi) Sewer Inspection

(xii) Site Restoration

(b) Assiniboine Park Outfall (S-MA70166213)

(i) Removal of (+/-) 25.0 m of existing 300 mm diameter CMP and replacing with (+/-) 25.0 m of 300 mm diameter CMP (2.8 mm) c/w polymer coating

(ii) Installation of 300 mm concrete collar

(iii) Installation of temporary shoring (as required)

(iv) Installation of one (1) - 300 mm diameter external slip joint

(v) Installation of rockfill riprap

(vi) Riverbank regrading

(vii) Sewer Inspection

(viii) Site Restoration

D3.2 The funds available for this contract are $3,800,000.00

D4. SITE INVESTIGATION DUE DILIGENCE AND RISK

D4.1 Notwithstanding C3.1, the Contractor acknowledges that the site investigation reports and other site information included in this Tender have been provided to it and may be relied upon by the Contractor to the extent that the Contractor uses Good Industry Practice in interpreting such report(s) and site information and carries out the Work in accordance with Good Industry Practice based upon such report(s) and the information contained in them and such other site information. In the event that a site condition related to:

(a) the location of any utility which can be determined from the records or other information available at the offices of any public authority or person, including a municipal corporation and any board or commission thereof, having jurisdiction or control over the utility;

(b) the Site conditions, including but not limited to subsurface hazardous materials or other concealed physical conditions;

(c) the location, nature, quality or quantity of the materials to be removed or to be employed in the performance of the Work;

(d) the nature, quality or quantity of the Plant needed to perform the Work;

(e) all matters concerning access to the Site, power supplies, location of existing services, utilities or materials necessary for the completion of the Work; and

(f) all other matters which could in any way affect the performance of the Work;

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

D5. DEFINITIONS

D5.1 When used in this Tender:

(a) ”**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);

(g) **“SARA”** means Species at Risk Act;

D6. CONTRACT ADMINISTRATOR

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

Nicole Vidal, C.E.T.
Conveyance Lead - Rehabilitation

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 their designated supervisor and any additional personnel representing the Contractor and their respective roles and responsibilities for the Work.

D8. FURNISHING OF DOCUMENTS

D8.1 Upon award of the Contract, the Contractor will be provided with ‘issued for construction’ Contract Documents electronically, including Drawings in PDF format only.

SUBMISSIONS

D9. AUTHORITY TO CARRY ON BUSINESS

D9.1 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.

D10. SAFE WORK PLAN

D10.1 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.

D10.2 The Safe Work Plan should be prepared and submitted in the format shown in the City's template which is available on the Information Connection page at The City of Winnipeg, Corporate Finance, Purchasing Division website at http://www.winnipeg.ca/matmgt/Safety/default.stm

D10.3 Notwithstanding B13.4 at any time during the term of the Contract, the City may, at their sole discretion and acting reasonably, require an updated COR Certificate or Annual Letter of good Standing. A Contractor, who fails to provide a satisfactory COR Certificate or Annual Letter of good Standing, will not be permitted to continue to perform any Work.

D11. INSURANCE

D11.1 The Contractor shall provide and maintain the following insurance coverage:

(a) commercial general liability insurance, in the amount of at least five million dollars ($5,000,000.00) inclusive, 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.

(d) Contractors pollution liability insurance (CPL) in the amount of at least two million dollars ($2,000,000) in the aggregate covering third party injury and property damage claims, including clean-up costs and transported cargo as a result of pollution conditions arising from the Contractor's operations and completed operations. Such policy shall name the City as an additional insured and remain in place for a minimum of six months (6) following Total Performance.

D11.2 Deductibles shall be borne by the Contractor.

D11.3 All policies shall be taken out with insurers licensed in the Province of Manitoba.

D11.4 The Contractor shall provide the City Solicitor with a certificate(s) of insurance, in a form satisfactory to the City Solicitor, at least two (2) Business Days prior to the commencement of any Work but in no event later than the date specified in C4.1 for the return of the executed Contract Documents, as applicable.

D11.5 The Contractor shall not cancel, materially alter, or cause each policy to lapse without providing at least thirty (30) Calendar Days prior written notice to the Contract Administrator.

D12. CONTRACT SECURITY

D12.1 The Contractor shall provide and maintain the performance bond and the labour and material payment bond until the expiration of the warranty period in the form of:

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

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

D12.1.1 Bonds are available at:

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

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

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

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

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

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

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

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

D12.1.2 Where the contract security is a performance bond, it may be submitted in hard copy or digital format. If submitted in digital format the contract security must meet the following criteria:

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

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

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

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

(e) the results of the verification must provide a clear, immediate and printable indication of pass or fail regarding D12.1(b).

D12.1.3 Digital bonds failing the verification process will not be considered to be valid and may be determined to be an event of default in accordance with C18.1. If a digital bond fails the verification process, the Contractor may provide a replacement bond (in hard copy or digital format) within seven (7) Calendar Days of the City's request or within such greater period of time as the City in their discretion, exercised reasonably, allows.

D12.1.4 Digital bonds passing the verification process will be treated as original and authentic.

D12.2 The Contractor shall provide:

(a) the required Contract Security to:

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

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

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

D12.3 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 D12.1(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.

D13. SUBCONTRACTOR LIST

D13.1 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.

D14. REQUIREMENTS FOR SITE ACCESSIBILITY PLAN

D14.1 The Contractor shall provide the Contract Administrator with an Accessibility Plan at least five (5) Business Days prior to the commencement of any Work on the Site.

D14.2 The Accessibility Plan shall demonstrate how the Contractor will accommodate the safe passage of pedestrians and cyclists in accordance with the Manual of Temporary Traffic Control, the Contract Drawings, Staging Plans, and Streets By-Law No. 1481/77 at all times for the duration of the Construction. Unless noted in the Contract, the Accessibility Plan must include a written plan for the following:

(a) How the Contractor will maintain at least one crossing in each direction for each intersection (one north/south crosswalk and one east/west crosswalk).

(b) How the Contractor will maintain access to bus stops within the site.

(c) How the Contractor will maintain access to pedestrian corridors and half signals.

(d) How the Contractor will maintain cycling facilities.

(e) How the Contractor will maintain access to residents and businesses unless otherwise noted in the Contract.

(f) Any required detour signage at adjacent crossings to facilitate sidewalk or active transportation pathway closures.

D14.3 The Accessibility Plan may also include figures, sketches, or drawings to demonstrate the proposed plan.

D14.4 The Accessibility Plan shall include written details on how the Contractor intends to review, maintain, and document all items related to the Accessibility Plan on-site during Construction, including, but not limited to:

(a) Signage

(b) Temporary Ramping

(c) Transit Stops

(d) Detour Signage

D14.5 At minimum, the Contractor shall review the site conditions on a daily basis to ensure that all features related to the Accessibility Plan are in place. The site review is intended to correct deficiencies as a result of unforeseen events such as wind, traffic, or the general public. Deficiencies that are direct result of the Contractors actions must be corrected immediately.

D14.6 Any changes to the Accessibility Plan must be approved by the Contract Administrator.

D14.7 Upon request from the Contract Administrator, the Contractor shall provide records demonstrating that the site has been maintained.

D14.8 Deficiencies as a direct result of actions by the Contractor that are not immediately corrected and/or failure to produce records that demonstrate that the site was maintained in compliance with the Accessibility Plan may result in a pay adjustment via the monthly Progress Payment. The rate of pay adjustment will be as per the following schedule:

(a) First Offence – A warning will be issued and documented in the weekly or bi-weekly site meeting.

(b) Second Offence – A field instruction to immediately correct the site will be issued by the Contract Administrator.

D14.9 Third and subsequent Offences – A pay reduction will be issued in the amount of $250.00 per instance and per day.

SCHEDULE OF WORK

D15. EXPEDITED SHOP DRAWINGS AND UTILITY LOCATES

D15.1 Further to E9, in order to expedite Shop Drawings with critical timeliness, the lowest responsive Bidder, as outlined in B18, 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 SPCSP (as a single submittal)

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

(c) Slip Joint(s)

(d) Debris Grate(s)

(e) Temporary Shoring

D15.2 In order to expedite utility locates on the Site, the lowest responsive Bidder, as outlined in B18, will be permitted, after receiving written approval from the Contract Administrator, to arrange for utility locates for the Site.

D15.3 If Award is made to the lowest responsive Bidder, then as indicated in E9.1(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 they are 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 D9;

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

(iii) the Safe Work Plan specified in D10;

(iv) evidence of the insurance specified in D11;

(v) the contract security specified in D12;

(vi) the Subcontractor list specified in D13;

(vii) the Requirements for Site Accessibility Plan specified in D14; and

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

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

D16.3 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.

D17. WORKING DAYS

D17.1 Notwithstanding C1.1(tt), a Working Day includes a Saturday, Sunday, or a statutory or civic holiday when the Contractor chooses to undertake work requiring the presence of the Contract Administrator and/or City resources.

D17.2 Further to C1.1(tt), the Contract Administrator's determination of whether or not atmospheric and Site conditions are such that a Working Day is deemed to have elapsed may be based at one time on one type of work while at another time a Working Day may be based on another type of work. When more than one type of major work is involved, the quantity of equipment that must be able to work in order to meet the requirements of a Working Day may vary considerably from that specified in the General Conditions.

D17.3 In the event that incidental work is behind schedule which, in the opinion of the Contract Administrator, should have been or could have been carried out by the Contractor in conjunction with or immediately following work of a major type, the City hereby reserves the right to charge Working Days on the incidental work until such time as it is up to schedule.

D17.4 When the major type of work involves restoration of the site to the condition it was prior to rainfall, Working Days shall not be charged.

D17.5 The Contract Administrator will furnish the Contractor with a weekly record for each major type of work, the equipment used, the time it worked and Working Days charged. This record will be provided at regular site meetings.

D18. SUBSTANTIAL PERFORMANCE

D18.1 The Contractor shall achieve Substantial Performance by March 9, 2026.

D18.2 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.

D18.3 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.

D19. TOTAL PERFORMANCE

D19.1 The Contractor shall achieve Total Performance by June 30, 2026.

D19.2 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.

D19.3 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.

D20. LIQUIDATED DAMAGES

D20.1 If the Contractor fails to achieve Substantial Performance or Total Performance in accordance with the Contract by the days fixed herein for same, the Contractor shall pay the City the following amounts per Working Day for each and every Working Day following the days fixed herein for same during which such failure continues:

(a) Substantial Performance – two thousand dollars ($2000.00);

(b) Total Performance – one thousand dollars ($1000.00).

D20.2 The amounts specified for liquidated damages in D20.1 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.

D20.3 The City may reduce any payment to the Contractor by the amount of any liquidated damages assessed.

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 E35;

(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 they deem it necessary.

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

D23.1 Further to C6.27, the Contractor shall be the Prime Contractor and shall serve as, and have the duties of the Prime Contractor in accordance with The Workplace Safety and Health Act (Manitoba).

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

PAYMENT

D25. FUEL PRICE ADJUSTMENT

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

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

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

(i) BFI = base fuel index

(ii) CFI = current fuel index

(iii) FF = fuel factor

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

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

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

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

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

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

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

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

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

(a) The Fuel Factor rate shall be set at 2.7% of the monetary value of all Work based on unit prices.

WARRANTY

D26. WARRANTY

D26.1 Notwithstanding C13.2, the warranty period shall begin on the date of Substantial Performance and shall expire one (1) year thereafter, except where longer warranty periods are specified in

the respective Specification sections, unless extended pursuant to C13.2.1 or C13.2.2, in which case it shall expire when provided for thereunder.

D26.1.1 For the purpose of contract security, the warranty period shall be one (1) year.

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

D26.2.1 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.

INDEMNITY

D27. INDEMNITY

D27.1 Indemnity shall be as stated in C17.

FORM J: SUBCONTRACTOR LIST
(See D13)

2025 OUTFALL PROGRAM

Name	Address

PART E - SPECIFICATIONS

GENERAL

E1. APPLICABLE SPECIFICATIONS AND DRAWINGS

E1.1 These Specifications shall apply to the Work.

E1.2 *The City of Winnipeg Standard Construction Specifications* in their entirety, whether or not specifically listed on Form B: Prices, shall apply to the Work.

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

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

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

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

E1.4 The following are applicable to the Work:

Drawing No.	Drawing Name/Title
1-0303O-D0016-001	COVER SHEET
1-0303O-D0017-001	INDEX PAGE
1-0303O-C0079-001	ROLAND OUTFALL – MUNICIPAL PLAN AND PROFILE – S-MA40011011
1-0303O-C0080-001	ROLAND OUTFALL – GEOTECHNICAL PLAN AND PROFILE – S-MA40011011
1-0303O-C0081-001	ASSINIBOINE PARK OUTFALL – MUNICIPAL PLAN AND PROFILE – S-MA70166213
1-0303O-C0084-001	MISCELLANEOUS DETAILS – SHEET 1
1-0303O-C0084-002	MISCELLANEOUS DETAILS – SHEET 2

E2. SOILS INVESTIGATION REPORT

E2.1 Further to C3.1,

(a) Geotechnical test holes have been drilled in the vicinity of the proposed Works to determine the character of the subsurface soil to facilitate the design of the Work. The information listed is considered accurate at the locations indicated and at the time of the investigation. However, considerable variations in the soil conditions may exist between test holes and fluctuations in ground water levels can be expected seasonally. Test hole logs are included in Appendix C.

(b) Contractors are responsible for any interpretation they place on the supplied information and are expected to make such additional investigation of the soil at the site as they feel necessary to satisfy themselves.

(c) 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.

GENERAL REQUIREMENTS

E3. OFFICE FACILITIES

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

E3.2 The Contractor shall relocate the office facility during construction to an alternate active 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) The building shall be equipped with appropriate cleaning products, including hand sanitizer.

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

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

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

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

(f) 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.

(g) 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. TRAFFIC CONTROL

E4.1 In accordance with the Manual of Temporary Traffic Control on City Streets (MTTC), the Contract Administrator shall make arrangements with the Traffic Services Branch of the City of Winnipeg to place, maintain, and remove all regulatory signs and traffic control devices authorized and/or required by the Traffic Management Branch in the following situations:

(a) Parking restrictions,

(b) Stopping restrictions,

(c) Turn restrictions,

(d) Diamond lane removal,

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

(f) Traffic routed across a median,

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

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

E4.2 Further to (c), the Contractor shall make arrangement with the Traffic Services Branch of the City of Winnipeg to supply regulatory signs as required.

E4.3 Upon request from the Contract Administrator, the Contractor shall provide records demonstrating that the Site has been maintained.

E4.4 Further to E4.1(c) and E4.1(d) the Contractor shall make arrangements with the Traffic Services Branch of the City of Winnipeg to reinstall the permanent regulatory signs after the Contract Work is complete. At this time the Contractor shall make arrangements to drop off the stockpiled materials to Traffic Services at 495 Archibald Street.

E4.5 Any changes to the approved traffic management plan must be submitted to the Contract Administrator a minimum of (five) 5 Working Days prior to the required change for approval.

E4.6 If the Contract Administrator determines that the Contractor is not performing Traffic Control in accordance with this specification, Traffic Services Branch may be engaged to perform the Traffic Control. In this event the Contractor shall bear the costs associated charged to the project by the Traffic Services Branch of the City of Winnipeg in connection with the required Works undertaken by the Contractor.

E4.7 The Contractor will be responsible for all arrangements for route planning, flagging, special permits, escort vehicles, and safety equipment for any oversize materials transportation.

E4.8 Further to E4.7, for the Roland Outfall Site, the Contractor is advised that staging/queuing of construction vehicles along regional streets will not be permitted and the Contractor should plan for this accordingly (ie. stage along local streets in near proximity as approved by the Contract Administrator/City of Winnipeg Traffic Management Branch and/or time delivery and haul trucks accordingly). Flaggers shall be used to facilitate safe access and egress to/from the Site. The Contractor shall provide the Contract Administrator with their Site Development and Access Plan for review and approval prior to construction (see also E13).

E5. TRUCK WEIGHT LIMITS

E5.1 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.

E6. DANGEROUS WORK CONDITIONS

E6.1 Further to clause C 6.27 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.

E6.2 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.

E6.3 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.

E6.4 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.

E6.5 Workers must always wear a respirator or supplied air when entering a chamber, manhole or sewer where live sewage is present.

E6.6 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.

E6.7 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.

E7. WATERWAY BY-LAW AND PERMITS

E7.1 The Contractor shall note that all Works fall within 107 meters (350 feet) of the regulated summer water level of the Red River and 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.

E7.2 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 E13.

E7.3 Under no circumstances will stockpiling of any material be permitted within 107.0 m (350 feet) of the regulated summer water level of the Red River.

E8. ENVIRONMENTAL PROTECTION PLAN

E8.1 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.

E8.2 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. 93/2014 and 93/2024
  (ii) And any other applicable Acts, Regulations, and By-Laws.

E8.3 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 and Assiniboine River. 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. 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 River or Assiniboine River.

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 River and Assiniboine River Navigation Protection

Dangerous Goods/Hazardous Waste Handling and Disposal

(a) The Red River and Assiniboine River is 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 River 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 River or Assiniboine River, the Contractor shall provide to the Contract Administrator a copy of all necessary approvals received by the Contractor.

E9. SHOP DRAWINGS

E9.1 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.

E9.2 Measurement and Payment

(a) Preparation and submission of Shop Drawings shall be considered incidental to the Work. No measurement or payment will be made.

E10. FLOW CONTROL

E10.1 Description

E10.1.1 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.

E10.1.2 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.

E10.1.3 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

E10.1.4 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.

E10.1.5 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.

E10.1.6 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.

E10.2 Payment

E10.2.1 Payment for flow control shall be included under the item “Site Development and Restoration”. No separate measurement or payment will be made.

E11. WORK PRACTICES ON ASBESTOS CEMENT PIPE

E11.1 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:

E11.1.1 “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

E11.1.2 “Work practices for Asbestos –Cement Pipe”, AWWA No. M16, published by American Water Works Association. http://www.awwa.org/.

E11.1.3 Recommended Work Practices for AC Pipe, 1977, published by the AC Pipe producers Association.

E12. CHANNEL PROTECTION

E12.1 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.

E13. SITE DEVELOPMENT AND RESTORATION

E13.1 Description

E13.1.1 This Specification shall cover all aspects of the Site Development and Restoration Work, including but not limited to mobilization and demobilization into the Sites, heating, hoarding, thawing, and dewatering of the outfall pipe (as required), erection, maintenance and removal of safety fencing, removal and re-installation of existing debris grates, field cutting/bevelling pipe end(s) as required, swamp mats and/or other materials as required for access, traffic control, flagging (as required), 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, protection of existing instrumentation, removal and reinstallation of site furniture, office facilities, development of working

platforms for rockfill column installation, general access development, access maintenance and removal (including permits required for temporary access works), and Site Restoration.

E13.1.2 The Tender quantities for the 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.

E13.1.3 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 the outfall pipe as required to complete the Work.

(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.

E13.2 Materials

E13.2.1 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.

E13.3 Construction Methods

E13.3.1 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, protection of existing landscaping features **(including asphalt pathways)**, **temporary removal and reinstallation of 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 review and approval.

(b) Further to the above, **for the Roland Outfall Site, the Contractor is advised that staging/queuing of construction vehicles along regional streets will not be permitted and the Contractor should plan for this accordingly (ie. stage along local streets in near proximity as approved by the Contract Administrator/City of Winnipeg Traffic Management Branch and/or time delivery and haul trucks accordingly). Flaggers shall be used to facilitate safe access and egress to/from the Site. The Contractor shall provide the Contract Administrator with their Site Development and Access Plan for review and approval prior to construction (see also E13).**

(c) 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 and the City of Winnipeg Waterway Branch for approval a minimum of seven (7) days prior to any construction activity on Site. Permit(s) as required must be obtained from the City of Winnipeg Waterway Branch for construction of any temporary cut ramps. 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.

(d) 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 Waterways Authority at 204-986-7532 for information regarding Waterway Permits.

(e) Any material imported for site access development shall be considered incidental to Site Development and Restoration, and no additional measurement or payment will be made.

(f) 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. Any granular materials used for development of site access shall be removed as part of the site restoration works.

E13.3.2 Rockfill Column Working Platform

(a) The Contractor shall be responsible to develop working platforms as required to install the rockfill columns. This includes but is not limited to protection of existing underground infrastructure and landscaping features, temporary removal and reinstallation of fencing, any landscaping and grading repairs, restoration of vegetation, etc. necessary to restore any working platform. Prior to commencing construction, the Contractor shall submit details on the rockfill column working platform as part of their Site Access Plan to the Contract Administrator for review and approval.

(b) All working platforms shall be constructed by excavating to the necessary grade, working from upslope to downslope directions, and disposing of the material off Site. No fill shall be used to develop the working platforms unless otherwise approved by the Contract Administrator.

(c) The locations of the working platforms shall be restored to the same condition or better than it was prior to the initiation of any Work, to the satisfaction of the Contract Administrator.

(d) Development and restoration of rockfill column working platforms and all associated works will be considered incidental to Site Development and Restoration.

E13.3.3 Frozen Waterways Permit

Where required, 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.

E13.3.4 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 E10. The cost of the flow diversion is considered incidental to Site Development and Restoration.

E13.3.5 Temporary Cofferdam

(a) The Contractor shall erect a temporary cofferdam to provide a safe, dry 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.

E13.3.6 Vegetation Removal

(a) 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.

E13.3.7 Snow and Ice Removal

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

(b) 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.

E13.3.8 Field Cutting/Bevelling Pipe Ends

(a) The Contractor shall cut/bevel pipe ends as directed by the Contract Administrator and in accordance with the methods outlined in E18.

E13.3.9 Safety Fence

(a) 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 and protect the public. 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.

E13.3.10 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

E13.3.11 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.

E13.4 Method of Measurement and Payment

(a) Site Development and Restoration

(i) 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.

(ii) 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.

(iii) 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.

(b) Topsoil and Sod

(i) Further to E13.1.2 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.

E14. TREE REMOVAL

E14.1 Description

E14.1.1 This specification shall cover the removal of existing trees.

E14.1.2 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.

E14.2 Materials

E14.2.1 Existing Trees to be Removed

(ii) 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.

E14.3 Construction Methods

E14.3.1 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.

E14.3.2 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.

E14.3.3 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.

E14.4 Measurement and Payment

E14.4.1 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

E14.4.2 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.

E15. PROTECTION OF EXISTING TREES

E15.1 Removal and pruning 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.

E15.1.1 Do not stockpile materials and soil or park vehicles and equipment within 2 metres of trees.

E15.1.2 Strap mature tree trunks with 25 x 150 x 2400 wood planks. Smaller trees shall be similarly protected using appropriately sized wood planks.

E15.1.3 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.

E15.1.4 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.

E15.1.5 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.

E15.2 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.

E15.3 Costs for protection of trees shall be considered incidental to Site Development and Restoration. No separate measurement or payment will be made.

E16. PROTECTION OF INSTRUMENTATION

E16.1 The Contractor shall ensure that all instrumentation as identified 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.

E16.2 Measurement and Payment

E16.2.1 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 AND GEOTECHNICAL STABILITY WORK

E17. SUPPLY AND INSTALLATION OF TEMPORARY SHORING

E17.1 Description

E17.1.1 This Specification shall cover shoring requirements for the Works where required under Manitoba Acts, Regulations, and Guidelines, or as indicated on the Drawings.

E17.2 Construction Methods

E17.2.1 Excavation

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

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

E17.2.2 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 E13.3.8.

E17.2.3 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 their own cost, to the satisfaction of the Contract Administrator.

(g) Shoring and bracing shall be designed and installed to ensure that there is adequate space to facilitate the Work (including existing pipe connections where required – ie. Roland Outfall) and also achieve compaction of bedding and backfill and such that it does not impact compaction of bedding and backfill and/or cause settlement when shoring is removed.

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

E17.2.4 Monitoring Movement of Shoring

(a) The Contractor shall submit to the Contract Administrator a plan for monitoring the movement of their shoring system 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.

E17.3 Measurement and Payment

E17.3.1 Temporary Shoring for the Roland Outfall Site is required to protect surrounding property and existing infrastructure, support the pipe installation, and meet the installation specifications once removed as listed within the Specifications and indicated on the Drawings. Measurement and payment for supply and installation of shoring will be measured and paid for on a lump sum basis at the unit price for “Supply and Installation of Temporary Shoring”.

E18. OUTFALL SEWER REPAIRS

E18.1 Description

E18.1.1 This Specification shall amend and supplement Standard Specifications CW 2130, CW 2160, and CW 3610

E18.1.2 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.

E18.2 Materials

E18.2.1 Handling and Storage of Materials

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

E18.2.2 Testing and Approval

(a) 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.

E18.2.3 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.

E18.2.4 Galvanized Primer

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

E18.2.5 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%

E18.2.6 Bedding and Backfill Material

(a) 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.

E18.2.7 SPCSP Outfall Pipe wall thickness

(a) The SPCSP outfall wall thickness shall be minimum 4.0 mm or as indicated on the Drawings.

E18.2.8 CMP Outfall Pipe wall thickness

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

E18.2.9 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.

E18.2.10 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.

E18.2.11 Polymer Coated Pipe

(a) Pipe

Sewer 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.

E18.2.12 Polymer Coated SPCSP Pipe

(a) Pipe

Outfall pipe shall be Atlantic Industries Limited Bolt-A-Plate Polymer Coated Structural Plate Corrugated Steel Pipe (SPCSP) or approved equivalent in accordance with B7, of diameter, corrugation and wall thickness as shown on the Drawings.

Note that the structural plates for the Roland Outfall pipe shall be manufactured appropriately to facilitate the internal slip joint locations and the required minimum 1500mm stub connection to the existing 1350mm concrete SRS. The Contractor is responsible to complete internal measurements of the pipe and 1350mm SRS connection prior to construction as required to facilitate shop drawing development of the SPCSP.

Contact: Titan - Peter McDougall, Regional Manager (Central Canada), peter.mcdougall@titanenviro.com, 431-338-4358.

E18.2.13 Equipment

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

E18.3 Construction Methods

E18.3.1 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.

E18.3.2 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.

E18.3.3 Bedding and Backfill

(a) **Roland Outfall Bedding and Initial Backfill - Contractor shall submit a detailed Backfilling Procedure and Pipe Protection Plan to the Contract Administrator a minimum of fifteen (15) days prior to Construction. The Backfilling Procedure and Pipe Protection Plan submittal at a minimum shall include:**

(i) Methods for how the cement stabilized fill will be delivered and placed on site.

(ii) Methods and description for how the pipe will be supported to prevent against buoyancy during backfilling operations. This should include specified lift heights and temporary bracing as required (to be designed by Contractor).

(iii) Description of Contractor's means and methods for heating and hoarding of cement stabilized fill material while curing as required and in accordance with CW2160 and Cold Weather Requirements E22.

E18.3.4 Backfill

(a) 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.

E18.3.5 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.

E18.3.6 Installation of Pipe

(a) 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) The outfall pipe shall be installed as shown on the Drawings and in accordance with CW 3610.

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

(e) The existing outfall pipe shall be protected as directed by the Contract Administrator.

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

E18.3.7 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.

E18.3.8 Installation of Debris Grate

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

E18.3.9 Shop Drawings

(a) Submit prepared shop drawings for the: polymer coated SPCSP, polymer coated CMP, reinforced concrete collar connections, temporary trench shoring, slip joints, and debris grate details in accordance with Clause 1.5 of CW 1110, E9, and E17.

E18.4 Method of Measurement and Payment

E18.4.1 Removals

(a) 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, concrete collars, stabfill, 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.

E18.4.2 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) 300 mm diameter CMP (2.8 mm) c/w polymer coating
b) 3990 mm diameter SPCSP (4.0 mm) c/w polymer coating

E18.4.3 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) 300 mm diameter polymer coated External Slip Joint
b) 3990 mm diameter polymer coated Internal Slip Joint

E18.4.4 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.

E18.4.5 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) 3990 mm diameter Debris Grate

E19. ROCKFILL RIPRAP

E19.1 Description

E19.1.1 This Specification shall cover the sub-cut excavation for riprap placement and supply and placement of rockfill riprap.

E19.1.2 Riprap placement and the associated sub-cut excavation work shall be considered provisional work. The requirement for riprap placement and the extents will be determined based on the findings of the shoreline investigation, as determined by the Contract Administrator.

E19.2 Materials

E19.2.1 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.

E19.2.2 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.

E19.2.3 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.

E19.2.4 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

E19.2.5 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%

E19.3 Submittals

E19.3.1 The Contractor shall submit the proposed supplier(s) and location of quarry Sites for supply of riprap a minimum of seven (7) days prior to production.

E19.3.2 Representative samples of the rockfill riprap submitted for material testing purposes shall be completed as specified herein.

E19.4 Quarry Sites

E19.4.1 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.

E19.5 Testing and Approval

E19.5.1 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.

E19.5.2 The Contract Administrator will visit proposed quarry Sites for inspection of the proposed rockfill material and quarry faces within seven (7) days of supply and placement of riprap.

E19.5.3 No supply and placement of riprap will be permitted prior to the Contract Administrator reviewing the source.

E19.5.4 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.

E19.5.5 The testing frequency necessary to confirm the material quality will be specified at the discretion of the Contract Administrator.

E19.6 Construction Methods

E19.6.1 Shoreline Investigation shall be completed in accordance with 0 prior to supply and placement of rockfill riprap.

E19.6.2 Any existing rockfill riprap within the rockfill column footprint 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 at the location of the backfilled outfall excavation as shown on the drawings.

E19.6.3 Sub-cut the bank over which riprap blanket is to be placed above the AWRL to the dimensions shown on the drawings. The Contractor shall not commence excavation until the riprap rockfill to backfill the excavation is onsite.

E19.6.4 Excavated material shall be removed from the riverbank area immediately upon excavation and disposed of offsite. Stockpiling of excavated material on the riverbank area will not be permitted.

E19.6.5 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.

E19.6.6 Sufficient levelling shall be done to produce a neat and uniform surface, conforming to the shape and dimensions shown on the Drawings, and accepted by the Contract Administrator.

E19.6.7 The allowable fill tolerances shall be within ± 50 mm of the grades and thickness shown on the Drawings, provided positive downslope grading is achieved.

E19.6.8 Provide a smooth uniform surface from the existing grade and new riprap when placing outside edges or transitions, as accepted by the Contract Administrator.

E19.6.9 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.

E19.6.10 When riprap rockfill has become contaminated with silt, clay, snow, ice, or other deleterious material due to the Contractor’s method of operation, negligence, failure to backfill in a timely manner, etc. the material shall be classified as rejected backfill and shall

be weighted prior to disposal for deduction from the total weight of riprap rockfill measured for payment.

E19.7 Measurement and Payment

E19.7.1 Riprap Excavation

(a) The excavation for the riprap blanket will be measured on a volume basis. The volume to be paid for shall be the total number of cubic metres of excavation completed, measured from the original ground surface prior to riprap blanket construction as carried out in accordance with this Specification, acceptable to the Contract Administrator, and as computed from measurements made by the Contract Administrator. No additional payment will be made for hauling or disposal of the excavated material offsite, as this is considered incidental to the Work.

E19.7.2 Riprap Rockfill

(a) 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.

(b) 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.

E20. CONSTRUCTION OF CONCRETE COLLAR

E20.1 Description

E20.1.1 All concrete work in this project, materials and construction methods, shall be according to the Drawings, Details and this specification.

E20.2 Materials

E20.2.1 Concrete Mix Design

(a) Concrete mix design and steel reinforcement shall be as indicated on the Drawings and in accordance with E21 (Cast in Place Concrete Construction).

E20.2.2 Cold Weather Requirements

(a) Cold weather requirements shall be in accordance with E22 (Cold Weather Requirements).

E20.3 Construction Methods

E20.3.1 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.

E20.3.2 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.

E20.3.3 Grout

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

E20.4 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) 300 mm diameter

b) 1500 mm diameter

c) 3990 mm diameter

E21. CAST-IN-PLACE CONCRETE CONSTRUCTION

E21.1 Description

E21.1.1 This specification shall cover construction of cast-in-place concrete and shall supplement, revise and amend CW 2160.

E21.2 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.

E21.3 Measurement and Payment

E21.3.1 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.

E22. COLD WEATHER REQUIREMENTS

E22.1 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.

E22.2 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.

E22.3 Measurement and Payment

E22.3.1 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.

E23. RIVERBANK REGRADING

E23.1 Description

E23.1.1 This Specification shall cover the riverbank regrading at the Site, including excavation and reworking of excavated material, tension crack sealing, and imported impervious clay supply and placement for tension crack sealing where required.

E23.1.2 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.

E23.2 Materials

E23.2.1 The Contractor shall be responsible for the supply, safe storage and handling of all materials set forth in this Specification.

E23.2.2 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.

E23.2.3 Clay Backfill

(a) The impervious clay backfill to be used for tension crack sealing 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.

E23.3 Construction Methods

E23.3.1 General

(a) The riverbank regrading will be completed in the mid and lower portions of the bank as shown on the Drawings. The limits of the riverbank regrading shall be field fitted to preserve existing trees and provide positive downslope grading, as accepted by the Contract Administrator.

(b) The riverbank regrading shall be completed by excavation and reworking of existing riverbank materials on site where needed. No new fill shall be imported for riverbank regrading unless otherwise approved by the Contract Administrator.

(c) Sufficient levelling shall be done to procure a neat and uniform surface within the limits of riverbank regrading and to provide a smooth transition with existing grade along the outside edges, as accepted by the Contract Administrator.

(d) All excess excavated material shall be removed off site immediately upon excavation or stockpiled as directed by the Contract Administrator.

E23.3.2 Tension Crack Sealing

(a) The Contractor shall seal tension cracks at the direction of the Contract Administrator.

(b) The tension cracks shall be excavated to the dimensions shown on the Drawings and infilled with clay backfill material.

(c) 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 or as approved by the Contract Administrator.

(d) Clay backfill for placement within the excavated tension crack shall not be stockpiled on the riverbank.

E23.4 Measurement and Payment

E23.4.1 Riverbank Regrading

(a) 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", completed in accordance with this Specification, as measured in the field and accepted by the Contract Administrator.

(b) 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.

E23.4.2 Tension Crack Sealing

(a) Tension crack sealing will be measured on a length basis. The length to be paid for shall be the total number of lineal metres of "Tension Crack Sealing", completed in accordance with this Specification, as measured in the field and accepted by the Contract Administrator.

(b) Tension crack sealing will be paid for at the Contract Unit Price per lineal metre for the "Tension Crack Sealing", 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.

E24. GEOTEXTILE

E24.1 Description

E24.1.1 This Specification shall cover the supply and placement of the geotextile fabric below the rockfill riprap.

E24.2 Materials

E24.2.1 Each geotextile roll to be used shall be tagged to provide product identification for inventory and quality control purposes.

E24.2.2 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.

E24.2.3 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 $L/sec/m^2$

E24.2.4 Suitable products shall be Tencate Mirafi 180 N or approved equivalent in accordance with B7.

E24.3 Construction Methods

E24.3.1 Geotextiles shall consist of non-woven fabric.

E24.3.2 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.

E24.3.3 Snow and ice shall be cleared from the riverbank in accordance with E13.3.7 prior to placement of geotextile.

E24.3.4 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.

E24.3.5 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.

E24.3.6 A minimum of 300 mm of material shall be placed over the fabric prior to equipment passage.

E24.3.7 Riprap shall be placed on the geotextile in such a manner that the geotextile is not damaged, torn, excessively stretched, or punctured.

E24.3.8 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.

E24.4 Measurement and Payment

E24.4.1 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.

E24.4.2 Overlap at all joints shall be considered a single layer of geotextile for measure and payment purposes.

E24.4.3 Geotextile used for repairs will be excluded from the quantity paid.

E25. REMOVAL OF DEBRIS

E25.1 Description

E25.1.1 This Specification shall cover the removal of any miscellaneous debris located at the outfall site.

E25.2 Construction Methods

E25.2.1 All existing miscellaneous debris located near the outfall shall be removed and appropriately disposed off site.

E25.3 Measurement and Payment

E25.3.1 The removal of debris is considered incidental to the Work. No separate measurement or payment is to be made.

E26. SEWER INSPECTION

E26.1 Description

E26.1.1 This Specification shall amend and supplement Standard Specifications CW 2145.

E26.1.2 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.

E26.2 Construction Methods

E26.2.1 Sewer Condition Coding

(a) Sewer pipes shall be coded according to the Standard Specifications CW 2145.

E26.2.2 Cross Sectional Measurements (Pipes 900mm and larger)

(a) 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.

E26.2.3 Maximum Vertical Deflection

(a) The maximum observed vertical deflection “pinch point” in the outfall shall be recorded with its appropriate stationing (if applicable – verify with the Contract Administrator).

E26.3 Measurement and Payment

E26.3.1 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.

E26.4 Delete Section 4.6 of Specification CW 2145.

E27. DE-WATERING AND THAWING OUTFALL PIPE

E27.1 Description

E27.1.1 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 and/or as required carry out the Work.

E27.1.2 Works for de-watering and thawing of outfall pipe will only be permitted between December 1 and March 15 of any given year.

E27.1.3 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.

E27.2 Materials

E27.2.1 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 E8 (Environmental Protection Plan) and DFO Request for Review measures and guidelines**.**

E27.3 Construction Methods

E27.3.1 Temporary Clay Coffer Dam Installation (as required)

(a) Temporary Clay Coffer Dam Installation shall be installed prior to de-watering in accordance with E13.

E27.3.2 Thawing/De-Icing Outfall Pipe

(a) The Contractor shall supply heating and hoarding to remove all ice from inside the outfall pipe as required.

E27.3.3 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.

E27.4 Measurement and Payment

E27.4.1 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.

E28. ROCKFILL COLUMNS

E28.1 Description

(a) This Specification shall cover the installation of the rockfill columns, including shaft drilling, sleeving, cuttings removal, supply, placement and compaction of rockfill and clay cap backfill, and provisions for handling groundwater infiltration.

(b) 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. The Contractor shall ensure that his/her operations can be

completed in accordance with the Drawings and based on the Contractor's equipment, staging, and sequencing plans, as approved by the Contract Administrator.

E28.2 Materials

(a) The Contractor shall be responsible for the supply, safe storage and handling of all materials set forth in this Specification.

(b) Rockfill Backfill

(i) The rockfill material for use as backfill 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.

(ii) 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.

(iii) Should the Contractor choose to use limestone, it shall be durable white crystalline limestone that has proven freeze-thaw durability based on the material requirements given below. Softer buff to yellow dolomite or dolostone will not be accepted.

(iv) Where rockfill has become contaminated with silt, clay, snow, ice or other deleterious material due to the Contractor's method of operation, negligence, failure to backfill in a timely manner, etc. the material shall be classified as rejected backfill and shall be weighed prior to disposal for deduction from the total weight of rockfill measured for payment. The Contractor shall be responsible for the removal of all contaminated rockfill.

(v) 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 C535	32% maximum
Soundness	ASTM C88	13% maximum
Gradation	ASTM D5519	See below

(vi) The rockfill shall be well-graded, having a full range and even distribution of sizes and shall conform to the following gradation:

Canadian Metric Sieve Size [millimetres]	Percent of Total Dry Weight Passing Each Sieve
150	100%
75	40 – 70%
25	0 – 5%

(c) Clay Cap

(i) The impervious clay cap at the top of the rockfill columns 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.

E28.3 Equipment

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

(b) The Contractor shall use vibratory equipment that can be directly inserted into the rockfill column to densify the rockfill backfill throughout the entire depth of the rockfill column.

E28.4 Submittals

(a) The Contractor shall submit the following to the Contract Administrator, in accordance with this Specification:

(i) The Contractor shall submit their proposed construction methodology for rockfill columns, including equipment capabilities and sequencing requirements to the Contract Administrator a minimum of seven (7) days prior to the start of construction. The Contractor shall demonstrate that the rockfill columns can be constructed successfully based on the proposed methodology. The Contractor will not begin installation of the rockfill columns until the Contract Administrator has reviewed the construction methodology, equipment capabilities and sequencing requirements and has provided written approval to proceed.

(ii) The Contractor shall submit the names of the proposed supplier(s) and location of quarry sites for supply of rockfill backfill to be utilized on the project a minimum of seven (7) days prior to the production. The Contractor shall be responsible for demonstrating that the material is of adequate quality and volume to meet the material specifications and project requirements.

E28.5 Testing and Approval

(a) 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.

(b) The Contract Administrator will visit proposed quarry Sites for inspection of the proposed rockfill material and quarry faces within seven (7) days of supply and placement of rockfill backfill.

(c) No supply and placement of the column rockfill will be permitted prior to the Contract Administrator reviewing the source.

(d) 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 rockfill backfill that will be used, subject to the acceptance of the Contract Administrator.

(e) The testing frequency necessary to confirm the material quality will be specified at the discretion of the Contract Administrator.

E28.6 Construction Methods

(a) Construction Sequencing

(i) Shoreline Investigation shall be completed at the Roland Outfall site in accordance with 0 to confirm the extents of the existing shear key prior to commencement of the rockfill column works.

(ii) The Contractor shall excavate working platforms prior to shaft drilling as required to facilitate the work, in accordance with E13.

(iii) The Contractor shall complete the backfilling of each rockfill column prior to commencing the excavation of the adjacent rockfill column.

(iv) The Contractor shall vibro-compact rockfill columns in a sequence approved by the Contract Administrator. Vibro-compaction of rockfill columns shall be completed in advance of pipe installation Works.

(b) Excavation

(i) The excavation shall be supervised at all times, and open shafts shall be adequately guarded or covered for safety.

(ii) The rockfill column shafts shall be excavated by drill rig augers to a minimum of 1.0 metres into the dense, competent till layer and as approved by the Contract Administrator.

(iii) The Contractor shall not commence drilling until the rockfill to backfill the shaft is onsite. The construction of the rockfill columns shall be a continuous operation with backfilling immediately following excavation.

(iv) The excavations shall be permitted to be left open overnight for any length of time as placement of rockfill shall follow excavation immediately.

(v) Any deleterious or sloughed material shall be removed from the rockfill column shaft prior to backfilling.

(vi) The Contractor shall be responsible to contain and direct any displaced surface water or groundwater such that it will not affect other construction work, cause sediment to enter any water course, or cause excessive erosion of the native pond slope soils. The control of surface water and groundwater shall be the responsibility of the Contractor and shall be considered incidental to the Work.

(vii) Excavated material shall be assessed for suitability for use as clay cap or backfill for tension crack sealing. Material deemed acceptable for re-use by the Contract Administrator shall be placed at a temporary stockpiling location proposed by the Contractor and approved by the Contract Administrator. Excess excavated material shall be disposed of offsite immediately after excavation. Stockpiling of excavated material on the riverbank slope area will not be permitted.

(viii) It shall be the responsibility of the Contractor to dispose of excess excavated material and all material designated as unsuitable backfill by the Consultant off site, in a location determined by the Contractor. The unsuitable and/or excess backfill shall become the property of the Contractor.

(ix) It shall be the responsibility of the Contractor to stockpile the material designated by the Contract Administrator as suitable clay cap or tension crack sealing backfill material in an location proposed by the Contractor and approved by the Contract Administrator.

(x) No additional payment will be made for disposing of the unsuitable material and stockpiling the excess material off site as this will be considered incidental to the unit price for “Rockfill Column Shaft Drilling.”

(c) Backfilling and Compaction

(i) The Contractor shall monitor the supply rate of the rockfill material to ensure that backfilling operations are not delayed.

(ii) Stockpiling of rockfill material on the riverbank slope is not permitted except at locations where rockfill columns are installed and subject to the approval of the Contract Administrator.

(iii) Excavated rockfill columns shafts shall be backfilled immediately following excavation. No hole shall remain without backfill overnight, or for a period beyond two (2) hours.

(iv) Rockfill columns within the footprint of the outfall sewer repair works shall be backfilled with compacted rockfill to 0.6 m below the pipe foundation subgrade elevation followed by placement and compaction of impervious clay cap material to the ground surface.

(v) Compacting of rockfill shall be by vibro-compaction through the full depth of the rockfill and capable of a minimum 10% increase in relative rockfill density. Compacting with a vibrating plate compactor, drop hammer, backhoe bucket, or other similar approaches shall not be accepted. Compacting with a vibratory lance mounted on a crane or excavator shall be accepted. Vibro-compaction shall be completed over the entire length of the rockfill columns as shown on the Drawings. Rockfill compaction will be considered incidental to the Supply and Placement of Rockfill Column Rockfill, and no separate payment for compaction will be made.

(d) Rockfill Column Sleeving

(i) If sloughing or squeezing of the excavated shaft requires sleeving, then shafts shall be sleeved immediately (subject to approval of the Contract Administrator) to advance and maintain an open hole during the excavating, backfilling and compacting procedures. The Contractor shall only be paid for sleeving approved by

the Contract Administrator. If the Contractor uses sleeves that do not extend from ground surface to the bottom of the hole, a pro-rated payment for the sleeve will be made based upon the actual length of the sleeve used.

(ii) The sleeves shall be a length suitable to extend from ground surface down to a minimum of 1.0 metres into the underlying competent till material, as approved by the Contract Administrator.

(e) Clay Cap

(i) The impervious clay cap shall be placed in lifts not exceeding 200 millimetres, and compacted to a minimum of 95% of the Standard Proctor Maximum Dry Density (SPMDD).

(ii) Care shall be taken to ensure that an effective seal results between the wall of the shaft excavation and the clay material placed to protect against water infiltration into the shaft, as approved by the Contract Administrator.

(iii) The impervious clay cap at the top of the rockfill columns shall consist of a high plasticity clay material, with a liquid limit in excess of 50%.

(iv) 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.

E28.7 Measurement and Payment

(a) Rockfill Column Shaft Drilling

(i) The drilling of shafts for the rockfill columns will be measured on a length basis. The length to be paid for shall be the total number of vertical metres of shaft drilled in the native soil, measured from the ground surface at the base of the respective work platform at the time of the rockfill column installation carried out in accordance with this specification, acceptable to the Contract Administrator, as computed from measurements made by the Contract Administrator. No additional payment will be made for hauling of excavated material from the site, as this is considered incidental to the Work.

(ii) Drilling of the rockfill column shafts will be paid for at the Contract Unit Price for the "Items of Work" listed below, measured as specified herein, which price shall be payment in full for supplying all materials and performing all operations herein described, and all other items incidental to the Work included in this Specification.

Items of Work: Rockfill Columns

i. Shaft Drilling – 2.13m Diameter

(b) Sleeving

(i) Sleeving of the rockfill columns will be measured on a unit basis. The Contractor shall be paid for the total number of sleeves used in accordance with this specification, as measured by the Contract Administrator. Only the sleeved holes that are approved by the Contract Administrator will be paid for. Where the sleeving does not extend to the bottom of the rockfill columns, the sleeving will be measured on a pro-rated basis as the proportion of the column depth.

(ii) Sleeving of the rockfill column shafts will be paid for at the Contract Unit Price for "Rockfill Column Sleeving", measured as specified herein, which price shall be payment in full for supplying all materials and performing all operations herein described, and all other items incidental to the Work included in this Specification.

Items of Work: Rockfill Columns

i. Sleeving – 2.13m Diameter

(c) Rockfill Backfill

(i) The supply, placement and compaction of the Rockfill Backfill will be measured on a weight basis. The weight to be paid for shall be the total number of metric tonnes of Rockfill Backfill material, supplied and placed in accordance with this specification, acceptable to the Contract Administrator, as measured on a certified weigh scale. The Contractor shall provide the weight 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 that are not supplied at the time of delivery.

(ii) The supply, placement and compaction of the Rockfill Backfill in the Rockfill Columns will be paid for at the Contract Unit Price for "Rockfill Column Rockfill", measured as specified herein, 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.

(d) Clay Cap

(i) The placement and compaction of the clay cap material shall be measured on a volume basis. The volume to be paid shall be the total number of cubic meters placed in accordance with this Specification and computed from measured area, multiplied by the fixed depth.

(ii) The placement and compaction of the Clay Cap will be paid for at the Contract Unit Price for "Rockfill Column Clay Cap", measured as specified herein, which price shall be payment in full for performing all operations and providing all other items incidental to the Work included in this Specification.

E29. SHORELINE INVESTIGATION

E29.1 Description

E29.1.1 The Contractor shall complete a shoreline investigation program consisting of test pit excavations along the shoreline at the Roland Outfall Site to verify the presence of existing CPKC shear key at the Roland Outfall site, prior to commencement of riprap placement and rockfill column works.

E29.1.2 The shoreline investigation program shall be conducted at the direction of the Contract Administrator.

E29.1.3 The findings of the shoreline investigation program will be used to determine the extents of riprap placement as per E19.

E29.2 Materials

E29.2.1 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.

E29.3 Equipment

E29.3.1 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.

E29.3.2 All equipment shall be operated and maintained in accordance with E8 (Environmental Protection Plan) and DFO Request for Review measures and guidelines.

E29.4 Construction Methods

(a) The shoreline investigation program shall be completed prior to supply and placement of rockfill riprap as per E19 and construction of rockfill columns as per E28.

(b) The Contractor shall provide a minimum of three (3) day notice to the Contract Administrator prior to commencement of the shoreline investigation program.

(c) The shoreline investigation program shall be conducted under the Contract Administrator's inspection. The Contract Administrator will examine the test pits and excavated materials throughout the investigation program.

(d) Approximately five (5) test pits shall be excavated at each of the Roland Outfall and 106 River Road Outfall sites. The test pits shall be excavated to approximately two to three (2 to 3) metres in depth or as directed by the Contract Administrator.

(e) The Contractor shall backfill each test pit after the Contract Administrator has inspected the excavation. No test pit shall be left open for an extended period of time. The investigation areas shall be restored to existing conditions or better, as accepted by the Contract Administrator.

E29.5 Measurement and Payment

E29.5.1 Shoreline investigation shall be measured on a per unit basis. The amount to be paid for shall be the total number of test pits completed in accordance with this Specification, and as acceptable to the Contract Administrator.

E29.5.2 Payment for shoreline investigation shall be paid for at the Contract Unit Prices for "Shoreline Investigation". 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.

E30. GROUTED RIPRAP

E30.1 Description

E30.1.1 This Specification shall cover the installation of the grouted riprap and splash pad completer with strap anchors required to be installed at the Roland Outfall pipe outlet.

E30.1.2 This Specification shall amend and supplement Standard Specification CW 3615.

E30.2 Materials

E30.2.1 Riprap

(a) Rock for riprap shall consist of hard, dense, durable rock. The rock shall be angular crushed limestone, resistant to the action of air and water and suitable in all other respects for the purpose intended.

(b) The stones shall range in size from 100mm to 350mm in diameter with 75% by count between 200mm and 350mm.

(c) Crushed limestone when subjected to the Los Angeles abrasion test shall have a loss of not more than thirty-two percent (32%).

(d) Crushed limestone when subjected to the Magnesium Sulphate Soundness test shall have a loss of not more than eighteen percent (13%).

(e) The sample material shall be crushed to 37.5 mm maximum aggregate size and tested in accordance with ASTM C131 – Resistance to Degradation of Small size Coarse Aggregate by Abrasion and Impact in the Los Angeles Machine and ASTM C88 – Soundness of Aggregates by Use of Magnesium Sulphate.

(f) The rock for riprap shall be approved by the Contract Administrator prior to riprap installation.

E30.2.2 Strap Anchors

(a) Material for strap anchors shall be as specified on the Drawings. Shop drawings shall be submitted to the Contract Administrator for review and approval prior to construction.

E30.2.3 Geotextile

(a) Geotextile shall be as per E24

E30.2.4 Concrete/Grout

(a) Concrete/Grout shall be as per CW 3615.

E30.3 Construction Methods

E30.3.1 Riprap

(a) Installation of 300mm grouted riprap shall be as per Clause 9.3 of CW 3615. Total depth of concrete and riprap to be as shown on the drawings.

(b) Riprap shall not be dropped onto the geotextile from a height greater than 300mm.

(c) Any geotextile damaged during placement of the riprap shall be replaced as directed by the Contract Administrator at the Contractors expense.

E30.4 Measurement and Payment

E30.4.1 Grouted Riprap

(a) As per Clauses 12.2 and 13.2 of CW 3615.

E30.4.2 Strap Anchors

(a) The installation of pipe anchors into grouted riprap is considered incidental to the installation of pipe and grouted riprap. No separate measurement or payment will be made for installation of pipe strapping anchors.

EROSION CONTROL AND RESTORATION

E31. EROSION CONTROL BLANKETS

E31.1 Description

E31.1.1 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).

E31.2 Materials

E31.2.1 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.

E31.3 Construction Methods

E31.3.1 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.

E31.3.2 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.

E31.3.3 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.

E31.4 Measurement and Payment

E31.4.1 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.

E32. INSTALLATION OF SILT FENCE

E32.1 Description

E32.1.1 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.

E32.1.2 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.

E32.2 Materials

E32.2.1 Fence Posts

(a) Fence posts shall be 100 mm diameter untreated wood posts or 50 mm diameter steel.

E32.2.2 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.

E32.2.3 Wire Mesh

(a) Wire mesh shall be galvanized or plain metal with wire gauge = 3.0 mm, wire spacing @ 150 mm o/c.

E32.2.4 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.

E32.3 Construction Methods

E32.3.1 Ensure that no deleterious substances are discharged into the adjacent watercourse at any time during construction activities.

E32.3.2 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 E32.2.4. 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).

E32.3.3 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 E32.3.2. If silt fence is found to be loose or torn, repair or replace as necessary to comply with E32.3.2.

(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.

E32.3.4 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 E13 without releasing any deleterious substances to the adjacent watercourse.

E32.4 Measurement and Payment

E32.4.1 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.

E32.4.2 Removal of accumulated sediment from the silt fence is considered incidental to the Work and no separate measurement or payment will be made

E33. TEMPORARY SURFACE RESTORATION

E33.1 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.

E33.2 The Contractor shall monitor and maintain temporarily restored surfaces as required until permanent restoration is complete.

E33.3 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.

E33.4 All costs associated with the maintenance or reconstruction of temporary pavement incurred by the City shall be deducted from future payments to the Contractor.

E33.5 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.

E33.6 No measurement or payment will be made for the temporary restoration of barrier or lip curb.

E33.7 No measurement or payment will be made for the temporary restorations of boulevards and grassed areas.

E33.8 No measurement or payment will be made for the removal of temporary pavement prior to permanent restoration.

E34. NATIVE GRASSES

E34.1 Description

(a) This Specification shall cover the installation of native grasses within the lower and mid bank areas.

(b) 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.

(c) The Contractor shall be responsible for the supply, safe storage and handling of all materials set forth in this Specification.

E34.2 Materials

E34.2.1 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.

E34.3 Construction Methods

E34.3.1 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.

E34.3.2 Maintenance of Seeded Area

(a) 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

E34.3.3 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.

E34.4 Method of Measurement

E34.4.1 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 E13: 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.

E34.5 Basis of Payment

E34.5.1 Topsoil and Seeding (Native Grass Seed Mix)

(a) 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.

E35. PLANTING OF TREES AND SHRUBS

E35.1 Description

E35.1.1 Trees and Shrubs will be planted in 2026 as directed by the Contract Administrator. Plantings will consist of trees and shrubs in various container sizes.

E35.1.2 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.

E35.1.3 Work shall include, but not necessarily confined to, the relocation, supply and installation of trees and shrubs.

E35.1.4 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.

E35.1.5 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.

E35.1.6 Maintenance

(a) The Contractor shall be responsible for the maintenance of the trees and shrubs 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:

(i) Maintenance work carried out.

(ii) Development and condition of plant material.

(iii) Preventative or corrective measures required which are outside Contractor's responsibility.

E35.1.7 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.

E35.1.8 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.

E35.2 Materials

E35.2.1 Planting Soil and Mulch

(a) As per Planting Preparation.

(b) Imported soils shall be used to backfill tree and shrub plantings

E35.2.2 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.

E35.2.3 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.

E35.2.4 Tree and Shrub Quantity and Size

(a) Trees and shrubs 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:

- Peach Leaf Willow
- Manitoba Maple
- Basswood
- Cottonwood

(ii) Shrubs in two gallon containers shall be well formed, dense, bushy plants. The species of the planted shrubs shall consist of:

- Nannyberry (shrub form) with a minimum of nine (9) basal stems and a minimum height of 900 mm
- Red Oiser Dogwood with a minimum of nine (9) basal stems and a minimum height of 900 mm
- Willow
- Rose Berry
- Saskatoon Berry
- Snow Berry

(iii) Planting locations will be determined on-site by the Contract Administrator.

(b) 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.

(c) 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.

E35.2.5 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.

E35.3 Construction Methods

E35.3.1 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.

E35.3.2 Planting Time

(a) Plant trees and shrubs as early as May 15th, but no later than June 30, 2026 depending when Topsoil are 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.

E35.3.3 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.

E35.3.4 Installation

(a) Plantings of trees and shrubs 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.

E35.3.5 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.

E35.3.6 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.

E35.3.7 Trunk / Beaver Protection

(a) Install trunk protection on trees.

(b) Install trunk protection prior to installation of tree supports when used.

E35.3.8 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.

E35.3.9 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.

E35.4 Measurement and Payment

E35.4.1 Installation and maintenance of trees and shrubs shall be measured on a per unit basis. The amount to be paid for shall be the total number of trees and shrubs supplied and installed in accordance with this Specification and the Construction Drawings, and as acceptable to the Contract Administrator.

E35.4.2 Payment for Installation and maintenance of trees and shrubs shall be paid for at the Contract Unit Prices. 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

E36. BUILDING INSPECTIONS AND VIBRATION MONITORING

E36.1 Description

(a) The Contractor is advised that vibration monitors are required to be installed by a suitable testing company for this Contract at the Roland Outfall Site.

(b) Monitoring instruments will be set up on or in structures near the construction activities as determined by the Contract Administrator. At a minimum, the Contractor shall conduct inspections and install monitors at the following locations:

ROLAND OUTFALL SITE

(i) CPKC Bridge Structure

(ii) Roland Flood Pumping Station (16 Watt Street)

(iii) Alhijra Islamic School (410 Desalaberry Ave.)

(c) While a current by-law on acceptable vibrations does not exist for the City of Winnipeg, The monitoring data should be compared to the California Department of Transportation and Construction Guidance Manual (September 2013) which presents probabilistic damages thresholds.

(d) The Contractor should select construction method that they feel results in a vibration tolerance limit that they deem is an acceptable risk.

E36.2 Construction

(a) The Contractor or their designate shall complete a pre-construction photographic survey of the existing structures adjacent to the work (and for which vibration monitors may be installed upon).

(b) Where the Contractor is entering properties to undertake the photographic survey, notices shall be provided to the businesses or homeowners in advance to arrange for interior inspections. Notices will need to be approved by the Contract Administrator and the City. Any individuals entering into a private residence or meeting private citizens as part of this work shall have first submitted their security clearances to the Contract Administrator in accordance with Part F.

(i) The photographic survey should provide a record of foundation, interior walls, door and window frames, existing cracks and other features.

(c) Vibration monitors should be installed in adjacent to structure. The monitors should be capable of measuring 0 – 254 mm/sec, continuously. Where data storage permits continuous monitoring, the data should be downloaded periodically to provide sufficient storage for continuous monitoring.

(d) The vibration monitoring will be set up prior to any construction activities to ensure a baseline reading is developed.

(e) Data should be recorded and provided to the Contract Administer

(f) The collected data shall be made available and be provided to the homeowners or business owners adjacent to the work upon request.

(g) Following construction activities, the Contractor shall arrange for a post construction inspection of any business or residences where preconstruction inspections were undertaken.

E36.3 Measurement and Payment

(a) The cost for the building inspections and vibration monitors shall be paid for under the Contract unit price for “Allowance for Vibration Monitoring”. Costs will be based on actual invoiced costs for inspections, equipment, and monitoring with allowable mark-ups in accordance with the General Conditions.

E37. ALLOWANCE FOR GEOTECHNICAL INSTRUMENTATION INSTALLATION

E37.1 Description

E37.1.1 The Contractor is advised that the existing slope inclinometers and piezometers at the Roland Outfall Site may require removal to suit the Contractor’s construction access and means & methods. Should any geotechnical instrumentation require removal, they shall be replaced with new slope inclinometer(s) and piezometer(s) at locations chosen by the Contract Administrator on Site.

E37.1.2 The Contractor shall complete a geotechnical instrumentation installation program that includes one (1) slope inclinometer and two (2) vibrating wire piezometers in the mid to lower bank and two (2) vibrating wire piezometers in the upper bank.

E37.1.3 The new slope inclinometer and piezometers are to be installed by a suitable company at the Sites at a location approved by the Contract Administrator.

E37.2 Construction Methods

E37.2.1 Instrumentation shall be grouted to full depth within the test hole drilled.

E37.3 Measurement and Payment

E37.3.1 The cost for the installation of geotechnical instrumentation shall be paid for under the Contract Unit Price for “Allowance for Geotechnical Instrumentation Installation”. Costs will be based on actual invoiced costs to complete the geotechnical instrumentation installation with allowable mark-ups in accordance with the General Conditions.

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 their place of residence. This can be obtained from one of the following;

(a) police service having jurisdiction at their 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 Bidder/Contractor shall supply the Contract Administrator with a Police Information Check obtained not earlier than one (1) year prior to the Submission Deadline, or a certified true copy thereof, for each individual proposed to perform 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 their sole discretion and acting reasonably, require an updated Police Information Check. Any individual who fails to provide a satisfactory Police Information Check as a result of a repeated Police Information Check will not be permitted to continue to perform any Work.