



THE CITY OF WINNIPEG

BID OPPORTUNITY

BID OPPORTUNITY NO. 1040-2013

FORT GARRY INTERCEPTOR SIPHON REPAIR

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PART B - BIDDING PROCEDURES

B1. CONTRACT TITLE

B1.1 FORT GARRY INTERCEPTOR SIPHON REPAIR

B2. SUBMISSION DEADLINE

B2.1 The Submission Deadline is 12:00 noon Winnipeg time, January 8, 2014.

B2.2 Bids determined by the Manager of Materials to have been received later than the Submission Deadline will not be accepted and will be returned upon request.

B2.3 The Contract Administrator or the Manager of Materials may extend the Submission Deadline by issuing an addendum at any time prior to the time and date specified in B2.1.

B3. SITE INVESTIGATION

B3.1 Further to C3.1, the Contract Administrator or an authorized representative will be available at the Site from 9:00 AM to 10:00 AM on December 20, 2013 to provide Bidders access to the Site. Bidders shall meet on the east side of the Red River, north of Eastbound Bishop Grandin Boulevard.

B3.2 Further to C3.1, the Bidder may view the Site without making an appointment.

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 D4.1.

B4.2 If the Bidder finds errors, discrepancies or omissions in the Bid Opportunity, 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 Bid Opportunity 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 Bid Opportunity 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.

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 Bid Opportunity 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 Bid Opportunity, 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.

B6.2.1 Addenda will be available on the Bid Opportunities page at The City of Winnipeg, Corporate Finance, Materials Management Division website at <http://www.winnipeg.ca/matmgt/bidopp.asp>

B6.2.2 The Bidder is responsible for ensuring that he/she has received all addenda and is advised to check the Materials Management Division website for addenda regularly and shortly before the Submission Deadline, as may be amended by addendum.

B6.3 The Bidder shall acknowledge receipt of each addendum in Paragraph 10 of Form A: Bid. Failure to acknowledge receipt of an addendum may render a Bid non-responsive.

B7. SUBSTITUTES

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

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

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

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

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

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

- B7.6 The Contract Administrator will provide a response in writing, at least two (2) Business Days prior to the Submission Deadline, only to the Bidder who requested approval of the substitute.
- B7.6.1 The Bidder requesting and obtaining the approval of a substitute shall be entirely responsible for disseminating information regarding the approval to any person or persons he/she wishes to inform.
- B7.7 If the Contract Administrator approves a substitute as an “approved equal”, any Bidder may use the approved equal in place of the specified item.
- B7.8 If the Contract Administrator approves a substitute as an “approved alternative”, any Bidder bidding that approved alternative may base his/her Total Bid Price upon the specified item but may also indicate an alternative price based upon the approved alternative. Such alternatives will be evaluated in accordance with B16.
- 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.
- B7.10 Notwithstanding B7.2 to B7.9, and in accordance with B8.6 deviations inconsistent with the Bid Opportunity document shall be evaluated in accordance with B16.1(a).

B8. BID COMPONENTS

- B8.1 The Bid shall consist of the following components:
- (a) Form A: Bid;
 - (b) Form B: Prices;
 - (c) Bid Security
 - (i) Form G1: Bid Bond and Agreement to Bond, or Form G2: Irrevocable Standby Letter of Credit and Undertaking, or a certified cheque or draft;
- B8.2 Further to B8.1, the Bidder should include the written correspondence from the Contract Administrator approving a substitute in accordance with B7.
- B8.3 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, to constitute a responsive Bid.
- B8.4 The Bid shall be submitted enclosed and sealed in an envelope clearly marked with the Bid Opportunity number and the Bidder's name and address.
- B8.4.1 Samples or other components of the Bid which cannot reasonably be enclosed in the envelope may be packaged separately, but shall be clearly marked with the Bid Opportunity number, the Bidder's name and address, and an indication that the contents are part of the Bidder's Bid.
- B8.5 Bidders are advised not to include any information/literature except as requested in accordance with B8.1.
- B8.6 Bidders are advised that inclusion of terms and conditions inconsistent with the Bid Opportunity document, including the General Conditions, will be evaluated in accordance with B16.1(a).
- B8.7 Bids submitted by facsimile transmission (fax) or internet electronic mail (e-mail) will not be accepted.
- B8.8 Bids shall be submitted to:
- The City of Winnipeg
Corporate Finance Department

Materials Management Division
185 King Street, Main Floor
Winnipeg MB R3B 1J1

B9. BID

- B9.1 The Bidder shall complete Form A: Bid, making all required entries.
- B9.2 Paragraph 2 of Form A: Bid shall be completed in accordance with the following requirements:
- (a) if the Bidder is a sole proprietor carrying on business in his/her own name, his/her name shall be inserted;
 - (b) if the Bidder is a partnership, the full name of the partnership shall be inserted;
 - (c) if the Bidder is a corporation, the full name of the corporation shall be inserted;
 - (d) if the Bidder is carrying on business under a name other than his/her own, the business name and the name of every partner or corporation who is the owner of such business name shall be inserted.
- B9.2.1 If a Bid is submitted jointly by two or more persons, each and all such persons shall identify themselves in accordance with B9.2.
- B9.3 In Paragraph 3 of Form A: Bid, the Bidder shall identify a contact person who is authorized to represent the Bidder for purposes of the Bid.
- B9.4 Paragraph 12 of Form A: Bid shall be signed in accordance with the following requirements:
- (a) if the Bidder is a sole proprietor carrying on business in his/her own name, it shall be signed by the Bidder;
 - (b) if the Bidder is a partnership, it shall be signed by the partner or partners who have authority to sign for the partnership;
 - (c) if the Bidder is a corporation, it shall be signed by its duly authorized officer or officers and the corporate seal, if the corporation has one, should be affixed;
 - (d) if the Bidder is carrying on business under a name other than his/her own, it shall be signed by the registered owner of the business name, or by the registered owner's authorized officials if the owner is a partnership or a corporation.
- B9.4.1 The name and official capacity of all individuals signing Form A: Bid should be printed below such signatures.
- B9.5 If a Bid is submitted jointly by two or more persons, the word "Bidder" shall mean each and all such persons, and the undertakings, covenants and obligations of such joint Bidders in the Bid and the Contract, when awarded, shall be both joint and several.

B10. PRICES

- B10.1 The Bidder shall state a price in Canadian funds for each item of the Work identified on Form B: Prices.
- B10.2 The quantities listed on Form B: Prices are to be considered approximate only. The City will use said quantities for the purpose of comparing Bids.
- B10.3 The quantities for which payment will be made to the Contractor are to be determined by the Work actually performed and completed by the Contractor, to be measured as specified in the applicable Specifications.
- B10.4 Payments to Non-Resident Contractors are subject to Non-Resident Withholding Tax pursuant to the Income Tax Act (Canada).

B11. QUALIFICATION

B11.1 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.

B11.2 The Bidder and any proposed Subcontractor (for the portion of the Work proposed to be subcontracted to them) shall:

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

B11.3 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);

B11.4 The Bidder and/or any proposed Subcontractor undertaking the pipeline repairs must be able to demonstrate the following qualifications in accordance with B11.6:

- (a) A minimum of three successful projects involving 600 mm (and larger) HDPE pressure pipe.
- (b) A minimum of three successful projects which required the installation of 600 mm (and larger) steel sleeve couplings.

B11.5 Further to B11.3(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) 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
- (b) 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
- (c) a report or letter to that effect from an independent reviewer acceptable to the City. (A list of acceptable reviewers and the review template are available on the Information Connection page at The City of Winnipeg, Corporate Finance, Materials Management Division website at <http://www.winnipeg.ca/matmgt/>).

B11.6 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.

B11.7 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.

B12. BID SECURITY

B12.1 The Bidder shall provide bid security in the form of:

- (a) a 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 the form included in the Bid Submission (Form G1: Bid Bond and Agreement to Bond); or
- (b) an irrevocable standby letter of credit, in the amount of at least ten percent (10%) of the Total Bid Price, and undertaking issued by a bank or other financial institution registered to conduct business in Manitoba and drawn on a branch located in Winnipeg, in the form included in the Bid Submission (Form G2: Irrevocable Standby Letter of Credit and Undertaking); or
- (c) a certified cheque or draft payable to "The City of Winnipeg", in the amount of at least fifty percent (50%) of the Total Bid Price, drawn on a bank or other financial institution registered to conduct business in Manitoba.

B12.1.1 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.

B12.1.2 All signatures on bid securities shall be original.

B12.1.3 The Bidder shall sign the Bid Bond.

B12.1.4 The Surety shall sign and affix its corporate seal on the Bid Bond and the Agreement to Bond.

B12.2 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 executed by the successful Bidder and the performance security furnished as provided herein. The bid securities of all other Bidders will be released when a Contract is awarded.

B12.2.1 Where the bid security provided by the successful Bidder is in the form of a certified cheque or draft pursuant to B12.1(c), it will be deposited and retained by the City as the performance security and no further submission is required.

B12.2.2 The City will not pay any interest on certified cheques or drafts furnished as bid security or subsequently retained as performance security.

B12.3 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 Bid Opportunity.

B13. OPENING OF BIDS AND RELEASE OF INFORMATION

B13.1 Bids will be opened publicly, after the Submission Deadline has elapsed, in the office of the Corporate Finance Department, Materials Management Division, or in such other office as may be designated by the Manager of Materials.

B13.1.1 Bidders or their representatives may attend.

B13.2 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 Closed Bid Opportunities (or Public/Posted Opening & Award Results) page at The City of Winnipeg, Corporate Finance, Materials Management Division website at <http://www.winnipeg.ca/matmgt/default.stm>

B13.3 After award of Contract, the name(s) of the successful Bidder(s) and the Contract amount(s) will be available on the Closed Bid Opportunities (or Public/Posted Opening & Award Results) page at The City of Winnipeg, Corporate Finance, Materials Management Division website at <http://www.winnipeg.ca/matmgt/default.stm>

B13.4 The Bidder is advised that any information contained in any Bid may be released if required by City policy or procedures, by The Freedom of Information and Protection of Privacy Act (Manitoba), by other authorities having jurisdiction, or by law.

B14. IRREVOCABLE BID

B14.1 The Bid(s) submitted by the Bidder shall be irrevocable for the time period specified in Paragraph 11 of Form A: Bid.

B14.2 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 executed and the performance security 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.

B15. WITHDRAWAL OF BIDS

B15.1 A Bidder may withdraw his/her Bid without penalty by giving written notice to the Manager of Materials at any time prior to the Submission Deadline.

B15.1.1 Notwithstanding C23.3, the time and date of receipt of any notice withdrawing a Bid shall be the time and date of receipt as determined by the Manager of Materials.

B15.1.2 The City will assume that any one of the contact persons named in Paragraph 3 of Form A: Bid or the Bidder's authorized representatives named in Paragraph 12 of Form A: Bid, and only such person, has authority to give notice of withdrawal.

B15.1.3 If a Bidder gives notice of withdrawal prior to the Submission Deadline, the Manager of Materials will:

- (a) retain the Bid until after the Submission Deadline has elapsed;
- (b) open the Bid to identify the contact person named in Paragraph 3 of Form A: Bid and the Bidder's authorized representatives named in Paragraph 12 of Form A: Bid; and
- (c) if the notice has been given by any one of the persons specified in B15.1.3(b), declare the Bid withdrawn.

B15.2 A Bidder who withdraws his/her Bid after the Submission Deadline but before his/her Bid has been released or has lapsed as provided for in B14.2 shall be liable for such damages as are imposed upon the Bidder by law and subject to such sanctions as the Chief Administrative Officer considers appropriate in the circumstances. The City, in such event, shall be entitled to all rights and remedies available to it at law, including the right to retain the Bidder's bid security.

B16. EVALUATION OF BIDS

B16.1 Award of the Contract shall be based on the following bid evaluation criteria:

- (a) compliance by the Bidder with the requirements of the Bid Opportunity, or acceptable deviation there from (pass/fail);
- (b) qualifications of the Bidder and the Subcontractors, if any, pursuant to B11 (pass/fail);
- (c) Total Bid Price;
- (d) economic analysis of any approved alternative pursuant to B7.

B16.2 Further to B16.1(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.

- B16.3 Further to B16.1(b), the Award Authority shall reject any Bid submitted by a Bidder who does not demonstrate, in his/her Bid or in other information required to be submitted, that he/she is responsible and qualified.
- B16.4 Further to B16.1(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.
- B16.4.1 Further to B16.1(a), in the event that a unit price is not provided on Form B: Prices, the City will determine the unit price by dividing the Amount (extended price) by the approximate quantity, for the purposes of evaluation and payment.

B17. AWARD OF CONTRACT

- B17.1 The City will give notice of the award of the Contract or will give notice that no award will be made.
- B17.2 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 responsible and qualified, and the Bids are determined to be responsive.
- B17.2.1 Without limiting the generality of B17.2, the City will have no obligation to award a Contract where:
- (a) the prices exceed the available City funds for the Work;
 - (b) the prices are materially in excess of the prices received for similar work in the past;
 - (c) the prices are materially in excess of the City's cost to perform the Work, or a significant portion thereof, with its own forces;
 - (d) only one Bid is received; or
 - (e) in the judgment of the Award Authority, the interests of the City would best be served by not awarding a Contract.
- B17.3 Where an award of Contract is made by the City, the award shall be made to the responsible and qualified Bidder submitting the lowest evaluated responsive Bid, in accordance with B16.
- B17.3.1 Following the award of contract, a Bidder will be provided with information related to the evaluation of his/her Bid upon written request to the Contract Administrator.
- B17.4 If no Contract is awarded, then the City of Winnipeg will pay the requested Bidder up to a maximum of five hundred dollars (\$500.00) for each of the requested submissions listed in E4 for the preparation and delivery of Shop Drawings. Delivery of the Shop Drawings to the City and payment of the above 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 Bid Opportunity.

PART C - GENERAL CONDITIONS

C0. GENERAL CONDITIONS

- C0.1 The *General Conditions for Construction* (Revision 2006 12 15) are applicable to the Work of the Contract.
- C0.1.1 The *General Conditions for Construction* are available on the Information Connection page at The City of Winnipeg, Corporate Finance, Materials Management Division website at http://www.winnipeg.ca/matmgt/gen_cond.stm
- C0.2 A reference in the Bid Opportunity to a section, clause or subclause with the prefix “**C**” designates a section, clause or subclause in the *General Conditions for Construction*.

PART D - SUPPLEMENTAL CONDITIONS

GENERAL

D1. GENERAL CONDITIONS

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

D2. SCOPE OF WORK

D2.1 The Work to be done under the Contract shall consist of repair of a partially inverted section of the Fort Garry Interceptor Siphon.

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

- (a) Repair of 800 mm HDPE pipeline.
- (b) River bank regrading.
- (c) Installation of shoreline erosion protection.
- (d) Restoration.

D3. DEFINITIONS

D3.1 When used in this Bid Opportunity:

- (a) "**CSA**" means Canadian Standards Association
- (b) "**ASTM**" means American Society for Testing and Materials
- (c) "**AWWA**" means American Water Works Association;
- (d) "**HDPE**" means High Density Polyethylene
- (e) "**ID**" means Inside Diameter
- (f) "**OD**" means Outside Diameter
- (g) "**ECB**" means Erosion Control Blanket
- (h) "**DFO**" means Department of Fisheries and Oceans

D4. CONTRACT ADMINISTRATOR

D4.1 The Contract Administrator is AECOM Canada Ltd., represented by:

Adam Braun, P.Eng.
Municipal Engineer
99 Commerce Drive
Winnipeg, MB R3P 0Y7

Telephone No. 204 928-9216
Facsimile No. 204 284-2040

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

D4.3 Bids Submissions must be submitted to the address in B8.8.

D5. CONTRACTOR'S SUPERVISOR

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

D6. OWNERSHIP OF INFORMATION, CONFIDENTIALITY AND NON DISCLOSURE

D6.1 The Contract, all deliverables produced or developed, and information provided to or acquired by the Contractor are the property of the City and shall not be appropriated for the Contractors own use, or for the use of any third party.

D6.2 The Contractor shall not make any public announcements or press releases regarding the Contract, without the prior written authorization of the Contract Administrator.

D6.3 The following shall be confidential and shall not be disclosed by the Contractor to the media or any member of the public without the prior written authorization of the Contract Administrator;

- (a) information provided to the Contractor by the City or acquired by the Contractor during the course of the Work;
- (b) the Contract, all deliverables produced or developed; and
- (c) any statement of fact or opinion regarding any aspect of the Contract.

D6.4 A Contractor who violates any provision of D6 may be determined to be in breach of Contract.

D7. NOTICES

D7.1 Except as provided for in C23.2.2, all notices, requests, nominations, proposals, consents, approvals, statements, authorizations, documents or other communications to the Contractor shall be sent to the address or facsimile number identified by the Contractor in Paragraph 2 of Form A: Bid.

D7.2 All notices, requests, nominations, proposals, consents, approvals, statements, authorizations, documents or other communications to the City, except as expressly otherwise required in D7.3, D7.4 or elsewhere in the Contract, shall be sent to the attention of the Contract Administrator at the facsimile number identified in D4.1.

D7.3 Notwithstanding C21., all notices of appeal to the Chief Administrative Officer shall be sent to the attention of the Chief Financial Officer at the following facsimile number:

The City of Winnipeg
Chief Financial Officer
Facsimile No.: 204 949-1174

D7.4 All notices, requests, nominations, proposals, consents, approvals, statements, authorizations, documents or other communications required to be submitted or returned to the City Solicitor shall be sent to the following facsimile number:

The City of Winnipeg
Legal Services Department
Attn: Director of Legal Services
Facsimile No.: 204 947-9155

D8. FURNISHING OF DOCUMENTS

D8.1 Upon award of the Contract, the Contractor will be provided with five (5) complete sets of the Bid Opportunity. If the Contractor requires additional sets of the Bid Opportunity, they will be supplied to him/her at cost.

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 but in no event later than the date specified in C4.1 for the return of the executed Contract.

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, Materials Management Division website at <http://www.winnipeg.ca/matmgt/Safety/default.stm>

D10.3 Notwithstanding B11.5 at any time during the term of the Contract, the City may, at its sole discretion and acting reasonably, require an updated COR Certificate or Annual Letter of good Standing. A Contractor, who fails to provide a satisfactory COR Certificate or Annual Letter of good Standing, will not be permitted to continue to perform any Work.

D11. INSURANCE

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

- (a) Commercial general liability insurance, in the amount of at least two million dollars (\$2,000,000) inclusive, with The City of Winnipeg to be 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 and products and completed operations, to remain in place at all times during the performance of the Work and throughout the warranty period;
- (b) Automobile liability insurance covering all motor vehicles, owned and operated and used or to be used by the Contractor directly or indirectly in the performance of the Work. The Limit of Liability shall not be less than \$2,000,000 inclusive for loss or damage including personal injuries and death resulting from any on accident or occurrence.
- (c) Contractors Pollution Liability (CPL) insurance in the amount of at least one million dollars (\$1,000,000) per occurrence and one million dollars (\$1,000,000) aggregate insuring against claims for injuries to persons or damages to property which may arise from or in connection with the performance of the work hereunder performed by the Contractor, its agents, representatives, employees or subcontractors. Coverage to include:
 - (i) Bodily injury, sickness, disease, mental anguish or shock sustaining by any person, including death;
 - (ii) Property damage including physical injury to or destruction of tangible property and the resulting loss or use thereof; loss of use of tangible property that has not been physically injured or destroyed; diminution in value; and Natural Resource Damages;
 - (iii) Clean –up costs (including restoration/replacement costs);
 - (iv) Defense including costs, charges and expenses incurred in the investigation, adjustment or defense of claims for such compensatory damages;
 - (v) Transported cargo and non-owned disposal sites (blanket basis)

Coverage shall apply to both sudden and gradual pollution conditions, including the further disruption of pre-existing conditions, arising from the services rendered by the Contractor or others on their behalf. Further, coverage shall apply to conditions on, at, under and emanating from the job site including the discharge, dispersal, release, or escape of smoke, vapours, soot, fumes, acids, alkalis, toxic chemicals, liquids or gases, waste materials or other irritants, contaminants or pollutants into or upon land, structures thereupon, the atmosphere or any watercourse or body of water, which results in any loss or damages defined above. Coverage shall not contain any "Insured vs Insured" exclusion preventing the City from bringing a claim against the Contractor, nor any restrictions for property of others in the care, custody or control of the Contractor, CPL to remain in place during the performance of the Work and during the warranty period.

- D11.2 Workers compensation must be in place in accordance with provincial legislation.
- D11.3 All policies must be taken out with insurers licensed to carry on business in the Province of Manitoba.
- D11.4 Deductibles shall be borne by the Contractor.
- D11.5 The Contractor shall not cancel, or cause any such policy or policies to lapse without a minimum thirty (30) days prior written notice to the City;
- D11.6 The Contractor shall provide the Contract Administrator with evidence of insurance at least two (2) business days prior to the commencement of any Work on the Site but in no event later than seven (7) calendar days from notification of the award of the Contract. The evidence shall be in a form of a certificate of insurance and must be satisfactory to the City Solicitor.
- D11.7 All policies shall be in a form satisfactory to the City of Winnipeg and shall be kept in full force and effect during the Work;

D12. PERFORMANCE SECURITY

- D12.1 The Contractor shall provide and maintain performance security until the expiration of the warranty period in the form of:
 - (a) a performance bond of a company registered to conduct the business of a surety in Manitoba, in the form attached to these Supplemental Conditions (Form H1: Performance Bond), in the amount of fifty percent (50%) of the Contract Price; or
 - (b) an irrevocable standby letter of credit issued by a bank or other financial institution registered to conduct business in Manitoba and drawn on a branch located in Winnipeg, in the form attached to these Supplemental Conditions (Form H2: Irrevocable Standby Letter of Credit), in the amount of fifty percent (50%) of the Contract Price; or
 - (c) a certified cheque or draft payable to "The City of Winnipeg", drawn on a bank or other financial institution registered to conduct business in Manitoba, in the amount of fifty percent (50%) of the Contract Price.
- D12.1.1 Where the performance security is in the form of a certified cheque or draft, it will be deposited by the City. The City will not pay any interest on certified cheques or drafts furnished as performance security.
- D12.2 The Contractor shall provide the City Solicitor with the required performance security within seven (7) Calendar Days of notification of the award of the Contract by way of letter of intent and prior to the commencement of any Work on the Site but in no event later than the date specified in C4.1 for the return of the executed Contract.

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 but in no event later than the date specified in C4.1 for the return of the executed Contract.

D14. EQUIPMENT LIST

D14.1 The Contractor shall provide the Contract Administrator with a complete list of the equipment which the Contractor proposes to utilize (Form K: Equipment List) at least two (2) Business Days prior to the commencement of any Work on the Site but in no event later than the date specified in C4.1 for the return of the executed Contract.

D15. DETAILED WORK SCHEDULE

D15.1 The Contractor shall provide the Contract Administrator with a detailed work schedule at least two (2) Business Days prior to the commencement of any Work on the Site but in no event later than the date specified in C4.1 for the return of the executed Contract.

D15.2 The detailed work schedule shall consist of the following:

(a) a Gantt chart for the Work;
acceptable to the Contract Administrator.

D15.3 Further to D15.2(a), the schedule shall clearly identify the start and completion dates of all of the following activities/tasks making up the Work as well as showing those activities/tasks on the critical path:

- (a) Repair of siphon.
- (b) Installation of shoreline erosion protection.

SCHEDULE OF WORK

D16. COMMENCEMENT

D16.1 The Contractor shall not commence any Work until he/she is in receipt of a letter of intent 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 C6.15;
 - (iii) the Safe Work Plan specified in D10;
 - (iv) evidence of the insurance specified in D11;
 - (v) the performance security specified in D12;
 - (vi) the Subcontractor list specified in D13;
 - (vii) the equipment list specified in D14; and
 - (viii) the detailed work schedule specified in D15.
- (b) the Contractor has attended a pre-construction meeting with the Contract Administrator, or the Contract Administrator has waived the requirement for a pre-construction meeting.

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

D16.4 The City intends to award this Contract by January 31, 2014.

D16.4.1 If the actual date of award is later than the intended date, the dates specified for Commencement, Critical Stages, Substantial Performance, and Total Performance will be adjusted by the difference between the aforementioned intended and actual dates.

D17. CRITICAL STAGES

- D17.1 The Contractor shall achieve critical stages of the Work in accordance with the following requirements:
- (a) Siphon inspection and repair and installation of riprap shall be completed by March 14, 2014.

D18. SUBSTANTIAL PERFORMANCE

- D18.1 The Contractor shall achieve Substantial Performance by June 13, 2014.
- 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 27, 2014.
- 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 Critical Stages, Substantial Performance or Total Performance in accordance with the Contract by the days fixed herein for same, the Contractor shall pay the City the following amounts per Working Day for each and every Working Day following the days fixed herein for same during which such failure continues:
- (a) Critical Stage - Siphon Inspection and Repair and Installation of Riprap - Two thousand dollars (\$2,000);
 - (b) Substantial Performance - Five hundred dollars (\$500);
 - (c) Total Performance – Five hundred dollars (\$500);
- 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 Critical Stages, 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.

CONTROL OF WORK

D21. JOB MEETINGS

- D21.1 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.
- D21.2 The Contract Administrator reserves the right to cancel any job meeting or call additional job meetings whenever he/she deems it necessary.

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

- D22.1 Further to C6.24, the Contractor shall be the Prime Contractor and shall serve as, and have the duties of the Prime Contractor in accordance with The Workplace Safety and Health Act (Manitoba).

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

- D23.1 Further to B11.5, the Contractor/Subcontractor must, throughout the term of the Contract, have a Workplace Safety and Health Program meeting the requirements of The Workplace Safety and Health Act (Manitoba). At any time during the term of the Contract, the City may, at its sole discretion and acting reasonably, require updated proof of compliance, as set out in B11.5.

MEASUREMENT AND PAYMENT

D24. PAYMENT

- D24.1 Further to C12, the City may at its option pay the Contractor by direct deposit to the Contractor's banking institution.

WARRANTY

D25. WARRANTY

- D25.1 Warranty is as stated in C13.

FORM H1: PERFORMANCE BOND
(See D12)

KNOW ALL MEN BY THESE PRESENTS THAT

_____ ,
(hereinafter called the "Principal"), and

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

_____ dollars (\$_____)

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

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

BID OPPORTUNITY NO. 1040-2013

FORT GARRY INTERCEPTOR SIPHON REPAIR

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

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

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

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

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

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

_____ day of _____, 20____ .

SIGNED AND SEALED
in the presence of:

(Witness as to Principal if no seal)

(Name of Principal)

Per: _____ (Seal)

Per: _____

(Name of Surety)

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

**FORM H2: IRREVOCABLE STANDBY LETTER OF CREDIT
(PERFORMANCE SECURITY)**
(See D12)

(Date)

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

RE: PERFORMANCE SECURITY - BID OPPORTUNITY NO. 1040-2013
FORT GARRY INTERCEPTOR SIPHON REPAIR

Pursuant to the request of and for the account of our customer,

(Name of Contractor)

(Address of Contractor)

WE HEREBY ESTABLISH in your favour our irrevocable Standby Letter of Credit for a sum not exceeding in the aggregate

_____ Canadian dollars.

This Standby Letter of Credit may be drawn on by you at any time and from time to time upon written demand for payment made upon us by you. It is understood that we are obligated under this Standby Letter of Credit for the payment of monies only and we hereby agree that we shall honour your demand for payment without inquiring whether you have a right as between yourself and our customer to make such demand and without recognizing any claim of our customer or objection by the customer to payment by us.

The amount of this Standby Letter of Credit may be reduced from time to time only by amounts drawn upon it by you or by formal notice in writing given to us by you if you desire such reduction or are willing that it be made.

Partial drawings are permitted.

We engage with you that all demands for payment made within the terms and currency of this Standby Letter of Credit will be duly honoured if presented to us at:

(Address)

and we confirm and hereby undertake to ensure that all demands for payment will be duly honoured by us.

All demands for payment shall specifically state that they are drawn under this Standby Letter of Credit.

Subject to the condition hereinafter set forth, this Standby Letter of Credit will expire on

(Date)

It is a condition of this Standby Letter of Credit that it shall be deemed to be automatically extended from year to year without amendment from the present or any future expiry date, unless at least 30 days prior to the present or any future expiry date, we notify you in writing that we elect not to consider this Standby Letter of Credit to be renewable for any additional period.

This Standby Letter of Credit may not be revoked or amended without your prior written approval.

This credit is subject to the Uniform Customs and Practice for Documentary Credit (2007 Revision), International Chamber of Commerce Publication Number 600.

(Name of bank or financial institution)

Per: _____
(Authorized Signing Officer)

Per: _____
(Authorized Signing Officer)

FORM K: EQUIPMENT
(See D14)

FORT GARRY INTERCEPTOR SIPHON REPAIR

<p>1. Category/type:</p> <p>Make/Model/Year: _____ Serial No.: _____</p> <p>Registered owner: _____</p> <p>Make/Model/Year: _____ Serial No.: _____</p> <p>Registered owner: _____</p> <p>Make/Model/Year: _____ Serial No.: _____</p> <p>Registered owner: _____</p>
<p>2. Category/type:</p> <p>Make/Model/Year: _____ Serial No.: _____</p> <p>Registered owner: _____</p> <p>Make/Model/Year: _____ Serial No.: _____</p> <p>Registered owner: _____</p> <p>Make/Model/Year: _____ Serial No.: _____</p> <p>Registered owner: _____</p>
<p>3. Category/type:</p> <p>Make/Model/Year: _____ Serial No.: _____</p> <p>Registered owner: _____</p> <p>Make/Model/Year: _____ Serial No.: _____</p> <p>Registered owner: _____</p> <p>Make/Model/Year: _____ Serial No.: _____</p> <p>Registered owner: _____</p>

FORM K: EQUIPMENT
(See D14)

FORT GARRY INTERCEPTOR SIPHON REPAIR

<p>4. Category/type:</p> <p>Make/Model/Year: _____ Serial No.: _____</p> <p>Registered owner: _____</p> <p>Make/Model/Year: _____ Serial No.: _____</p> <p>Registered owner: _____</p> <p>Make/Model/Year: _____ Serial No.: _____</p> <p>Registered owner: _____</p>
<p>5. Category/type:</p> <p>Make/Model/Year: _____ Serial No.: _____</p> <p>Registered owner: _____</p> <p>Make/Model/Year: _____ Serial No.: _____</p> <p>Registered owner: _____</p> <p>Make/Model/Year: _____ Serial No.: _____</p> <p>Registered owner: _____</p>
<p>6. Category/type:</p> <p>Make/Model/Year: _____ Serial No.: _____</p> <p>Registered owner: _____</p> <p>Make/Model/Year: _____ Serial No.: _____</p> <p>Registered owner: _____</p> <p>Make/Model/Year: _____ Serial No.: _____</p> <p>Registered owner: _____</p>

PART E - SPECIFICATIONS

GENERAL

E1. APPLICABLE SPECIFICATIONS AND DRAWINGS

- E1.1 These Specifications shall apply to the Work.
- E1.2 *The City of Winnipeg Standard Construction Specifications* in its entirety, whether or not specifically listed on Form B: Prices, shall apply to the Work.
- E1.2.1 *The City of Winnipeg Standard Construction Specifications* is available on the Information Connection page at The City of Winnipeg, Corporate Finance, Materials Management Division website at <http://www.winnipeg.ca/matmgt/Spec/Default.stm> .
- E1.2.2 The version in effect three (3) Business Days before the Submission Deadline shall apply.
- E1.2.3 Further to C2.4(d), Specifications included in the Bid Opportunity shall govern over *The City of Winnipeg Standard Construction Specifications*.
- E1.3 The following are applicable to the Work:

<u>Appendix No.</u>	<u>Appendix Title</u>
A	Geotechnical Memo
B	Record Drawings
C	Site Photos
D	Soil Amendment Detail

<u>Drawing No.</u>	<u>Drawing Name/Title</u>
	Cover Sheet
10723	Civil - Plan/Profile & Details
LD-7277	Geotechnical – Plan/Profile

E2. SOILS INVESTIGATION REPORT

- E2.1 Further to C3.1, the geotechnical memo and record geotechnical information is provided to aid in the Contractor evaluation of the existing soil conditions.
- (a) Soils investigation Technical Memo contained in Appendix A.

GENERAL REQUIREMENTS

E3. OFFICE FACILITIES

- E3.1 The Contractor shall supply office facilities meeting the following requirements:
- (a) The minimum facility floor area shall be 12 square metres.
 - (b) The facility shall have a door with lockable hardware.
 - (c) The facility shall have lighting, heating and cooling provisions to maintain a temperature between 15°C and 25°C.
 - (d) The facility shall have a desk, chair and plan table, and file cabinet.
 - (e) Portable washroom facility with lockable door.
- E3.2 The office facilities will be provided from the date of the commencement of the Work to the date of Total Performance.
- E3.3 Location of temporary office facilities shall be approved by the Contract Administrator.

E3.4 Measurement and Payment

- E3.4.1 The Contractor shall be responsible for all installation and removal costs, all operating costs, and the general maintenance of the office facilities. No separate measurement or payment will be made.

E4. EXPEDITED SHOP DRAWINGS

E4.1 Description

- (a) This Section details the submission of expedited shop drawings.

- E4.2 Further to CW 1100, in order to expedite Shop Drawings with critical timelines, the lowest responsive Bidder, as outlined in B16, will be required, after receiving a written request from the Contract Administrator, to arrange for the preparation of Shop Drawings for the following items with critical timelines:

- (a) HDPE piping as per E9.
(b) Couplings, restraint harnesses, and pipe stiffeners as per E10.

- E4.3 If Award is made to the lowest responsive Bidder, then no payment for the preparation of Shop Drawings will be made.

E5. OPERATING CONSTRAINTS FOR WORK IN CLOSE PROXIMITY TO FEEDERMAINS AND AQUEDUCTS

E5.1 Description

- (a) This Section details operating constraints for all Work to be carried out in close proximity to feeder mains. Close proximity shall be deemed to be any construction activity within a 5 m offset from the centreline of the feeder main.

E5.2 General Considerations for Work in Close Proximity to Feeder mains

- (a) Feeder mains are a critical component of the City of Winnipeg Regional Water Supply System and Work in close proximity to the pipeline shall be undertaken with an abundance of caution. Inadvertent damage caused to the pipe would likely have catastrophic consequences.
- (b) Work around feeder mains shall be planned and implemented to minimize the time period that Work is carried out in close proximity to the pipe and to ensure that the pipeline is not subjected to excessive construction related loads, including excessive vibrations and/or concentrated or asymmetrical lateral loads during backfill placement.
- (c) Large diameter pressure pipe generally has limited ability to withstand increased earth and live loading. Therefore, every precaution must be undertaken to ensure that applied loading during all phases of construction is within accepted loading parameters. Prestressed pipe typically fails in a non-ductile mode and has the potential to cause extensive consequential damage to infrastructure if failure should occur.

E5.3 Impacted Feeder mains

- (a) The Fort Garry - St. Vital Feeder main is constructed from 600 mm prestressed concrete cylinder pipe (lined core) conforming to AWWA Standard C301. The Fort Garry - St. Vital Feeder main was manufactured and installed in 1960.
- (b) The Branch II Aqueduct is constructed from 1650 mm prestressed concrete cylinder pipe (Embedded core) conforming to AWWA Standard C301. The Branch II Aqueduct was manufactured and installed in 1958.

E5.4 Submittals

- (a) Submit proposed construction equipment specifications to the Contract Administrator for review seven (7) days prior to construction. Submittal shall include:

- (i) Equipment operating weight and dimensions including wheel or track base, track length or axle spacing, track widths or wheel configurations
 - (ii) Payload weights
 - (iii) Load distributions in the intended operating configuration
- (b) Submit a Construction Method Statement with proposed construction plan including haul routes, excavation equipment locations, loading positioning, to the Contract Administrator for review seven (7) days prior to construction. Do not commence construction until the Construction Method Statement has been reviewed and accepted by the Contract Administrator.

E5.5 Pre-Work, Planning and General Execution

- (a) No Work shall commence at the Site until the Equipment Specifications and Construction Method Statement have been submitted and accepted, and feedermain locations have been clearly delineated in the field. Work over feedermain shall only be carried out with equipment that has been reviewed and quantified in terms of its loading implications on the pipe.
- (b) All proposed construction equipment must be submitted to Contract Administrator for review prior to construction. Work in areas in close proximity to feedermain shall only be carried out with equipment that has been reviewed and quantified in terms of its loading implications by the Contract Administrator.
- (c) Contact the City of Winnipeg WWD Department, Construction Services Coordinator (Duane Baker) prior to construction.
- (d) Where Work is in close proximity to a feedermain, utilize construction practices and procedures that do not impart excessive vibration loads on the feedermain or that would cause settlement of the subgrade below the feedermain.
- (e) At all times reduce equipment speeds to levels that minimize the effects of impact loading to the pipe
- (f) For construction work activities either longitudinally or transverse to the alignment of a feedermain, work only with equipment and in the manner stipulated in the accepted Construction Method Statement and the supplemental requirements noted herein.
- (g) Where Work is in proximity to a feedermain, utilize construction practices and procedures that do not impart excessive vibration loads on the feedermain or that would cause settlement of the subgrade below the feedermain.
- (h) Construction operations should be staged in such a manner as to limit multiple construction loads at one time, (e.g. offset crossings sufficiently from each other, rollers should remain a sufficient distance behind spreaders to limit loads. A reasonable offset distance is 3m between loads).
- (i) Granular material, construction material, soil or other material shall not be stockpiled on the pipelines or within 5 metres of the pipe centerline.
- (j) The Contractor shall make himself fully aware of all associated restrictions, constraints, and risks associated with working adjacent to and over this pipeline.
- (k) The Contractor shall ensure that all crew members understand and observe the requirements of this specification. Prior to commencement of on-site work, the Contractor shall jointly conduct an orientation meeting with the Contract Administrator and all superintendents, foreman, and heavy equipment operators to make all workers on Site fully cognizant of the limitations of altered loading on, the ramifications of inadvertent damage to, and the constraints associated with Work in close proximity to the feedermain. New personnel introduced after commencement of the project need to be formally orientated as to the risks and constraints associated with working over the feedermain.

E6. EXCAVATION, SHORING, AND BACKFILL

E6.1 Description

- (a) This Specification covers the requirements for excavations, demolition and backfilling of trenches and structures.

E6.2 Submittals

- (a) Shop drawings for all excavation shoring shall be prepared and submitted in accordance with CW 1100. All shop drawings shall be sealed by a Professional Engineer, registered in the Province of Manitoba, experienced in the design of excavation shoring systems.

E6.3 Shoring Design

- (a) Excavation shoring shall be designed as required to accommodate the installation of all pipe and fittings.

E6.4 Excavation

- (a) Material from excavations shall not be stockpiled on the riverbank, or within 30 metres of the top of the riverbank.
- (b) Granular materials, pipe bedding, riprap and other materials shall not be stockpiled on the riverbank, or within 30 metres of the top of the riverbank.
- (c) Materials shall not be stockpiled over pipelines.
- (d) Excess excavation from trenching operations shall be disposed of off-site.
- (e) Granular bedding in the vicinity of existing pipelines shall be dewatered and stabilized prior to undermining pipes to prevent loss of granular pipe foundation.

E6.5 Backfill

- (a) Backfill within 1 m of existing and proposed pavements shall be completed to CW 2030, Class 2 standards. Granular backfill shall extend to the underside of the proposed pavement structure, as indicated on the drawings. The remaining trench backfill shall be completed to existing grade to CW 2030, Class 4 standards.
- (b) Backfill under proposed paths and walkways shall be completed to CW 2030, Class 4 standards.
- (c) Backfill within 1 metre of existing and new concrete structures shall be completed with free draining pit run granular material to CW 2030, Class 2 standards. The top 600 millimetres of the backfill adjacent to concrete structures shall be insitu clay material completed to CW 2030, Class 4 standards.
- (d) Pipe bedding and backfill of parallel trenches in the vicinity of thrust blocks shall be carefully backfilled to the levels shown on the drawings with crushed granular backfill conforming to CW 2030 Type 2 material, and thoroughly compacted to CW 2030 Class 2 standards.
- (e) Backfill for all other areas shall be completed to CW 2030, Class 4 standards.

E6.6 Measurement and Payment

- (a) Excavation, shoring, and backfilling for pipe installation shall be measured and paid in accordance with E9.6.

E7. RESTORATION

E7.1 Description

- (a) This Specification covers the requirements for restoration of the site.

E7.2 Site Restoration

- (a) Seed all existing grass and treed areas disturbed by construction in accordance with E18 except for:
 - (i) Sod existing turfed areas (areas east of existing asphalt bicycle path) disturbed by construction in accordance with CW 3510.
 - (ii) Repair damage to existing asphalt bicycle path caused by construction in accordance with CW 3410.
- (b) Shrubs shall be planted in all seeded areas in accordance with E20.

E7.3 Measurement and Payment

- (a) Restoration will be paid as follows:
 - (i) Seeding shall be paid in accordance with E18.
 - (ii) Shrub planting shall be paid in accordance with E20.
 - (iii) All other restoration work required will be considered incidental to the Work and will not be measured for payment. No separate payment will be made.

E8. TREE PRUNING AND REMOVAL

E8.1 Description

E8.1.1 This specification covers the pruning and removal of existing trees as required to facilitate construction and amends CW 3110 Clearing and Grubbing.

E8.2 Quality Control

E8.2.1 Person performing work shall possess a valid Manitoba Arborists License.

E8.1 Materials

E8.1.1 Wound Dressing

- (a) Wound dressing shall be horticultural accepted non-hardening bituminous emulsion, free of materials toxic to callus formation, containing disinfectant for fungal and other diseases.

E8.2 Construction Methods

E8.2.1 Scheduling of Work

- (a) The Contractor shall review trees to be removed or pruned with the Contract Administrator a minimum of two (2) Calendar days prior to commencement of work.

E8.2.2 Pruning

- (a) Prune and/or remove individual trees as required and approved by the Contract Administrator. Remove dead, dying, diseased interfering, objectionable and weak growth in order to promote healthy development suitable to the purpose for which plant material is grown.
- (b) Prune in accordance with Agriculture Canada Publication 1505-1977, The Pruning Manual.
- (c) Employ clean sharp tools and make cuts flush with main branch, smooth and sloping as to prevent accumulation of water. Remove projecting stumps on trunks or main branches. Remove dead and injured branches and branches that rub causing damage to bark. Trim trees without changing their natural shape. Do not damage lead branches or remove smaller twigs along main branches.

E8.2.3 Cut Back

- (a) Eliminate narrow crotches as much as possible, avoid cutting back to small suckers. Remove smaller limbs and twigs to leave foliage evenly distributed.

- (b) When reducing overall size, make symmetrical in appearance to maintain tree-like form typical of species.
- (c) Do not remove more than one-third of total branching at single operation.

E8.2.4 Repair and Protection

- (a) Repair cuts and old scars in accordance with Agriculture Canada Publication 1505-1977, The Pruning Manual.
- (b) Paint new cuts 100mm in diameter and over with wound dressing.

E8.3 Measurement and Payment

- E8.3.1** Tree pruning and removals shall be considered incidental to the Work will not be measured for payment. No additional payment will be made.

E9. SUPPLY AND INSTALLATION OF HDPE PIPE

E9.1 Description

- (a) This specification covers the manufacture, supply, fabrication, testing, and installation of HDPE pipe.

E9.2 Materials

E9.2.1 HDPE Pipe

- (a) 800 mm IPS, DR17
- (b) PE 4710 with minimum cell classification 775474C in accordance with ASTM D3350
- (c) Minimum Hydrostatic Design Stress (HDS) of 6.9 MPa
- (d) Conforming to AWWA C906 and ASTM F714
- (e) Acceptable Products:
 - (i) Sclairpipe by KWH Canada
 - (ii) DriscoPlex by Performance Pipe
 - (iii) JM Eagle HDPE Water Pipe
 - (iv) or Approved Equal in accordance to B7

E9.2.2 Embedment Material

- (a) Embedment material shall be Type 2 material conforming to CW2030 Table CW 2030.1.
- (b) Frozen material will not be permitted.

E9.3 Submittals

- E9.3.1** Shop drawings for HDPE pipe in accordance with CW 1100.

E9.3.2 Pipe Manufacture Quality Control Reports

- (a) Submit quality control reports, for testing required in accordance to AWWA C906 Section 5.4, no later than 5 Business Days upon manufacture of pipe.

E9.3.3 Affidavit of Compliance

- (a) An affidavit of compliance signed by an officer of the pipe manufacturing company shall be provided stating that the pipe and fittings comply with this Specification, in accordance with Section 6.3 of AWWA C906.

E9.4 Quality Control

E9.4.1 Inspection

- (a) The Contractor shall afford the Contract Administrator every facility to access and inspect all plant to be provided, work to be performed, materials to be supplied and equipment or machinery to be installed in accordance with Specifications.

E9.4.2 Testing of Pipe and Materials

- (a) The Contractor shall provide access to the Contract Administrator or his appointed representative to conduct plant inspections, in accordance to Section 5.8 of AWWA C906. The Contractor shall provide a minimum of 7 calendar days notice of commencement of pipe manufacture, for the purposes of scheduling plant inspections.
- (b) The Contract Administrator reserves the right to conduct third party quality control testing.

E9.4.3 Dimensional Checks

- (a) Notwithstanding AWWA C906, Section 5.4.2, dimensional checks shall be carried out for each and every pipe in the production run.

E9.5 Construction Methods

E9.5.1 Excavation

- (a) Excavation shall be in accordance with Specification CW2030, "Excavation, Bedding and Backfill" and E6.

E9.5.2 Inspection of Existing Siphon

- (a) Provide a minimum of two (2) working days notice to the Contract Administrator prior to exposing the pipe.
- (b) Expected damage to the pipeline is a section of "inverted" or buckled pipe between the 10:00 and 2:00 position on the pipe
- (c) Expose existing siphon pipe down to invert of the pipe. Excavation from 1 metre above the pipe, beside and between pipelines shall be completed by soft excavation methods such as hydro excavation, or hand excavation.
- (d) Allow the Contract Administrator or representative to inspect the pipe.
 - (i) If the pipe appears to be undamaged the pipe shall be bedded and backfilled as per the Drawings and this Section of the Technical Specification.
 - (ii) If the pipe requires replacement, remove the damaged section of the siphon as delineated by the Contract Administrator and replace as per the Drawings and this Section of the Technical Specification.

E9.5.3 Pipe Installation - AWWA C906 HDPE

- (a) Installation of Pipe
 - (i) Over-excavated material shall be replaced with compacted, well-graded crushed limestone having a maximum aggregate size of 100mm, conforming to CW 3110, compacted to 95% SPD as shown on the Drawings for pipe foundation.
 - (ii) Pipe bedding structure shall meet the requirements of ASTM D2321 except as modified herein and on the Drawings.
 - (iii) The bedding shall be levelled and compacted to 90% SPMDD, such that it forms a continuous solid bedding for the full length of the pipe except at the midpoint of each pipe and at the joints. The middle of the trench bedding for a width of one third of the pipe outside diameter, shall remain uncompacted.
 - (iv) A small groove shall be left at the midpoint to facilitate the removal of the sling after the pipe has been laid. Grooves shall be filled with compacted sand after placement of pipe and removal of the sling.

- (v) Bedding shall be placed to 50 millimetres above the haunch of the pipe and thoroughly compacted to 90% SPMDD, to provide adequate lateral support of the pipe wall. Initial backfill shall then be placed to a depth of 200 millimetres above the top of the pipe, for the full trench width. The Contractor shall ensure that disturbance of the pipe or damage to the pipe coating does not occur during sand bedding and backfilling operations.
- (vi) The pipe shall be laid and fitted together so that when complete, the pipe will have a smooth and uniform invert. The trench shall be free of water while the pipe is being installed. The excavation of the trench shall be fully completed a sufficient distance in advance so as not to interfere with the laying of the pipe.
- (vii) The exposed end of the pipe shall be fully protected with an approved stopper to prevent foreign matter from entering the pipe. The interior of the pipe shall be kept free of all dirt, concrete or superfluous material as the Work proceeds.
- (viii) Expose sufficient length of pipe beyond proposed connection points to allow for re-rounding of the existing pipe to accommodate pipe couplers. Allow 1.5 times the pipe outside diameter at each connection point for re-rounding.

E9.5.4 Pipe shall be joined using sleeve couplings and restraint harnesses in accordance with E10. Use rounding clamps as required to round pipe within coupler specifications.

E9.5.5 Frost Conditions

- (a) No pipe shall be laid upon a foundation into which frost has penetrated, nor at any time when the Contract Administrator shall deem that there is danger of the formation of ice or the penetration of frost at the bottom of the excavation. Every precaution must be taken to prevent frost from penetrating the ground to depths below the foundations during construction. Any pipe which, in the opinion of the Contract Administrator, shall have been injured through neglect of this provision of the specifications, shall be removed and made good by the Contractor and at the Contractor's expense.

E9.6 Measurement and Payment

E9.6.1 Supply of Pipe

- (a) Supply, delivery, and testing of pipe will be measured on a unit basis. The units measured and paid will be the number of lineal metres of pipe supplied, based on measurements made by the Contract Administrator, as indicated in Form B: Prices.

E9.6.2 Inspection of the Existing Siphon

- (a) Inspection of the existing siphon will be measured and paid on a lump sum basis as per the Form B: Prices. Payment for inspection of the existing pipe shall include all required site preparation, excavation, shoring (if required), pipe bedding, backfilling, and all other materials or work required to complete the Work.

E9.6.3 Installation of Pipe and Couplings

- (a) Installation of pipe and couplings will be measured and paid on a lump sum basis as per the Form B: Prices. Payment for installation of the pipe and couplings shall include installation of pipe and couplings, and all other materials or work required to complete the installation.
- (b) If upon inspection, the existing siphon appears to be in good condition, and no new pipe is installed there shall be no measurement or payment for the "Installation of Pipe and Couplings". Materials shall be turned over to the City of Winnipeg.

E10. SUPPLY AND INSTALLATION OF SLEEVE COUPLINGS, RESTRAINT HARNESES AND PIPE STIFFENERS

E10.1 Description

- (a) This specification covers the supply, fabrication, testing, and installation of the sleeve couplings complete with restraint harnesses and stiffeners for the purpose of connecting the proposed 800 mm HDPE with the existing 800 mm HDPE siphon.

E10.2 Submittals

- (a) Submit shop drawings in accordance with CW 1110 for the following:
 - (i) Sleeve Couplings
 - (ii) Restraint Harness Assembly
 - (iii) Pipe Stiffeners
 - (iv) Petrolatum Tape Wrap System

E10.3 Materials

E10.3.1 Fasteners

- (a) Bolts for all sleeve style couplings and restraints shall be ASTM F593 or ASTM F738M, type 316 stainless steel.
- (b) Nuts for all sleeve style couplings and restraints shall be ASTM F594 or ASTM F836M, type 316 stainless steel.
- (c) Anti-seize compound shall be used on all bolts.

E10.3.2 Stiffeners

- (a) The OD of the stiffener shall match the ID of the HDPE pipe.
- (b) The stiffener material shall be ASTM 240, type 316 stainless steel

E10.3.3 Restraint Harnesses

- (a) Material: Carbon steel meeting the requirements of ASTM A285, Grade C.
- (b) Coating: Fusion bonded epoxy conforming to AWWA C213.
- (c) The restraints shall provide a minimum pullout resistance equal to 1.5 times the axial thrust created by an internal pressure based on the pressure class of the pipe.
- (d) Minimum of 6 serrations per inch.
- (e) Minimum harness width of 250 mm
- (f) Harness must be manufactured to match the outside diameter of the pipe.
- (g) Restraint lugs shall be sized to accommodate the outside diameter of the sleeve coupling.
- (h) All hardware shall be type 316 stainless steel in accordance with E10.3.1.
- (i) Acceptable Products:
 - (i) Sur-Grip Restrainers for Polyethylene Pipe manufactured by JCM Industries Inc.
 - (ii) or Approved Equal in accordance to B7

E10.3.4 Sleeve Couplers

- (a) Sleeve couplers shall be to the latest revision of AWWA C219 for bolted, Sleeve Type Couplers for Plain End Pipe. Minimum requirements are:
 - (i) Minimum centre sleeve length 250 mm
 - (ii) Minimum centre sleeve thickness 12.7 mm
 - (iii) Couplings capable of accommodating up to 2 degrees deflection
 - (iv) Design pressure 150 psi

- (b) Center sleeve material: Carbon steel conforming to AWWA C219.
- (c) End ring material: Carbon steel conforming to AWWA C219
- (d) Coating: Fusion bonded epoxy conforming to AWWA C213.
- (e) All hardware shall be type 316 stainless steel in accordance with E10.3.1.

E10.3.5 Petrolatum Tape Corrosion Protection System

- (a) All buried pipe couplers and flanged connections shall be protected against corrosion by a petrolatum tape corrosion protection system consisting of the following components:
 - (i) Petrolatum paste primer
 - (ii) Void-filling mastic filler
 - (iii) Petrolatum tape
 - (iv) Protective outerwrap
- (b) Petrolatum tape system shall be manufactured Denso North America Inc., Trenton Corporation, or approved equal in accordance with B7.

E10.4 Methods

E10.4.1 Installation of Sleeve Coupling Complete with Restraint Harness and Stiffener

- (a) Insert the stiffeners into the pipe bore as per the manufactures recommendations.
- (b) Center the coupling on the joint and tighten the end ring retaining bolts as recommended by the manufacturer.
- (c) Install the restraint harnesses and tie rods as per the manufacturer's recommendations.
- (d) Wrap restraints and couplings with a petrolatum tape system in accordance with AWWA C217 and E10.4.2.

E10.4.2 Installation of Petrolatum Tape Corrosion Protection Systems

- (a) For all surfaces to be wrapped with the corrosion protection system, remove loose rust, paint and foreign matter by hand and/or power tool cleaning in accordance with SSPC-SP-2 or SSPC-SP-3.
- (b) Apply a thin uniform coat of petrolatum paste primer, using a glove or brush, to all surfaces to be wrapped with the corrosion protection system.
- (c) Apply void-filling mastic filler, by hand, to all flanges designated to be wrapped with the corrosion protection system. Mold the mastic to a rounded configuration around the flange, filling all spaces around fasteners and eliminating sharp edges and irregular shapes.
- (d) Spirally wrap the petrolatum tape, using a minimum 25mm overlap, over the primed and mastic-filled pipe and flange surfaces. While wrapping, press out all air pockets and smooth all lap seams.
- (e) Spirally wrap clear outerwrap, using sufficient tension to make a tight-fitting cover, over the petrolatum tape.

E10.5 Measurement and Payment

E10.5.1 Supply of Couplings and Restraint Assemblies

- (a) Supply and delivery of couplings will be measured on a unit basis. The units measured and paid will be the number of couplings supplied, as indicated in Form B: Prices.
- (b) Payment for supply of couplings shall include the supply of restraint harnesses, pipe stiffeners, and all required gaskets and hardware.

- E10.5.2 Installation of Couplings and Restraint Assemblies
- (a) Installation of couplings and restraint assemblies shall be paid in accordance with E9.6.2.

E11. RIVER BANK REGRADING

E11.1 Description

E11.1.1 This Specification covers grading works and shall amend and supplement Standard Specification CW 3170-R3.

E11.1.2 The Work to be done 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 hereinafter specified

E11.2 Protection of Waterways

E11.2.1 Complete works in accordance to DFO guidelines/regulations.

E11.2.2 Install silt fencing and silt curtains in accordance with E15 and E16.

E11.3 Approvals

E11.3.1 DFO and City of Winnipeg Waterways approvals have been submitted and will be in place prior to the start of construction.

E11.4 Construction Methods

E11.4.1 Excavation and grading shall be to the elevations and grades as shown on the Drawings.

E11.4.2 The Contractor shall ensure that all existing mature trees located along the riverbank slope not be removed unless approved by the Contractor Administrator.

E11.4.3 Excavation and grading shall include the removal and disposal of snow, deleterious materials and debris from work area.

E11.4.4 Excavated material, as approved by the Contract Administrator, may be used for grading purposes excluding deleterious material such as snow, frozen soil, roots, tree trunks, and rubble. Fills shall be compacted to a minimum of 95 percent of the Standard Proctor Maximum Dry Density as determined by ASTM D698.

E11.4.5 All excess material shall be removed from the site.

E11.5 Measurement and Payment

E11.5.1 Site Excavation and Grading

- (a) Site excavation and grading shall be measured on a unit basis. The units measured and paid will be the number of cubic metres of existing material excavated based on measurements made by the Contract Administrator, as indicated in Form B: Prices.
- (b) Payment for "Site Excavation and Grading" shall include all excavation, leveling, and placement of common excavation materials as required to complete the Work.
- (c) Excavation for purposes of exposing and repairing the siphon shall not be measured for payment. No additional payment will be made.

E12. GEOTEXTILE

E12.1 Description

E12.1.1 This Specification covers the supply and installation of the geotextile fabric and shall amend and supplement Standard Specification CW 3130-R2. Sub clauses 2.1 to 2.4, 3.1 to 3.2 and 4.1 apply.

E12.1.2 The Work to be done 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 hereinafter specified.

E12.2 Materials

E12.2.1 The geotextile shall be a non-woven geotextile fabric, meeting or exceeding the following properties:

NON-WOVEN GEOTEXTILE PROPERTIES			
	ASTM Test Method	Units	Minimum Average Roll Values
PHYSICAL			
Grab Tensile Strength	D-4632	N	890
Grab Tensile Elongation	D-4632	%	50
Mullen Burst	D-3786	kPa	2750
Puncture	D-4833	N	575
Trapezoidal Tear	D-4533	N	355
UV Resistance	D-4355	% @ hrs ¹	70/500
HYDRAULIC			
Apparent Opening Size	D-4751	mm	0.150
Permittivity	D-4491	sec ⁻¹	1.4
Flow Rate	D-4491	L/sec/m ²	54

¹ Percent grab tensile strength retained per hours of UV exposure following conditioning in accordance with ASTM D-4355.

E12.3 Construction Methods

E12.3.1 Geotextile fabric shall be installed beneath the riprap as shown on the Drawings.

E12.3.2 Installation, handling and storage of geotextile fabric shall conform to the manufacturer's recommendations.

E12.3.3 If more than one piece of fabric is used to cover the ground surface the joints shall be overlapped by 0.6 m, in a shingle pattern, with the up-slope pieces overlapping the down-slope pieces and the up-stream pieces overlapping the down-stream pieces.

E12.3.4 Tears or other damage in the geotextile fabric shall be repaired with a piece of geotextile fabric placed over the damaged area and extending 1.0 m in all directions beyond the damaged area. Damaged or torn geotextile shall be replaced or repaired at the Contractors expense.

E12.4 Measurement and Payment

E12.4.1 Geotextile

(a) Supply and Placement of Geotextile shall be measured on a unit basis. The units measured and paid will be the number of square metres of geotextile acceptably installed based on measurements made by the Contract Administrator, as indicated in Form B: Prices.

(b) Payment for "Supply and Placement Geotextile" shall include the supply of all materials and all work required to complete the Work.

E13. RIPRAP

E13.1 Description

E13.1.1 This Specification covers all operations necessary for placing riprap, as erosion protection, along the river bank, as shown on the Drawings or determined by the Contract

Administrator. This Specification amends and supplements Standard Specification CW 3615.

E13.1.2 The Work to be done 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 hereinafter specified.

E13.2 Materials

E13.2.1 Riprap shall be manufactured from hard, durable limestone or dolomite that is resistant to the action of water and frost and suitable in all respects for the purpose intended. The rock shall meet the following physical requirements:

- (a) Class 350, well graded having a full range of and even distribution of sizes.
- (b) minimum bulk specific gravity of 2.6 (ASTM C127),
- (c) maximum Los Angeles abrasion loss of 32% (ASTM C535),
- (d) maximum soundness loss of 13% (ASTM C88),
- (e) maximum absorption of 2.5% (ASTM C127),
- (f) maximum moisture content of 3 percent by weight (ASTM D2216-98),

E13.2.2 Acceptance of Material

- (a) The Contractor shall supply a representative sample of 1 tonne of riprap delivered to the AECOM office (99 Commerce Drive), or provide access to the quarry manufacturing the riprap at least ten (10) Business Days prior to the commencement of the Construction.
- (b) The Contractor shall submit the proposed supplier and location of the rock and confirm that sufficient quantity of specified rock is available at least (10) Business Days prior to the commencement of the Construction.
- (c) The Contract Administrator shall perform the necessary tests to determine compliance with the specified properties.

E13.3 Construction Methods

E13.3.1 Riprap shall be installed to the elevations, grades, thickness and dimensions as shown on the Drawings, or as directed by the Contract Administrator.

E13.3.2 Riprap shall be placed in a manner that prevents damage to the geotextile.

E13.3.3 Riprap shall be placed in a manner such that larger pieces are uniformly distributed, smaller rocks fill the spaces between the larger rocks, and that excessive segregation of the various rock sizes does not occur.

E13.4 Measurement and Payment

E13.4.1 Riprap

- (a) Supply and placement of riprap will be measured and paid unit basis. The units measured and paid will be the number of tonnes of riprap delivered and placed in accordance with this Specification.
- (b) Payment for "Supply and Placement of Geotextile" shall include the supply of all materials and all work required to complete the Work.

E14. TEMPORARY FLOW DIVERSIONS

E14.1 Description

- (a) This Specification shall cover the supply and installation of flow bypasses and pipeline shutdowns for the purpose of completing the repairs to the siphon.

E14.2 Products

E14.2.1 Inflatable Plugs

- (a) Plugs shall be a multi size plug where possible.
- (b) Plugs shall be capable of withstanding a minimum of 69 kPa (10 psi) of backpressure.
- (c) Plugs shall be capable of being anchored from upstream.
- (d) 50 mm (minimum) flow through port.

E14.2.2 Sandbags

- (a) Where required, provide sandbags for diversion of flow. Remove and dispose of sandbags upon completion of inspection. Sandbags in contact with sewage shall be disposed of at an approved disposal facility.

E14.2.3 Stop Logs and Plywood Diversion Dykes

- (a) Stop logs and plywood diversion dykes may be used to direct wastewater flows where chamber configurations permit. Plywood to have a minimum thickness of 19 mm and to be braced as required to resist hydrostatic pressures.
- (b) Use sandbags as required to construct flow diversions.

E14.3 General Scheduling

(a) Flow Diversion Scheduling

- (i) Schedule and timing of flow diversions, temporary blockages and pumping station shutdowns are impacted by a number of factors such as system operation, maintenance activities, rainfall, and daily usage peaks. The City will endeavor to provide the requested schedule times and dates, but reserves the right to delay, postpone or re-schedule system operation events.
- (ii) Assist in monitoring upstream flow levels. Be prepared to remove bypasses or blockages if directed by the Contract Administrator.
- (iii) The Contractor shall provide a minimum of five (5) Working Days notice to the Contract Administrator, in writing, prior to installing flow diversions and bypasses.

E14.4 Methods

E14.4.1 Installation of Inflatable Plugs and Piping

- (a) Install flow through plugs as per manufacturer's recommendations
- (b) Plugs to be anchored to upstream manhole or chamber
- (c) Provide air supply and monitor plug inflation pressure, in accordance with manufacturer's recommendations.
- (d) Submit an inflatable plug installation plan for each plug installation a minimum of 5 working days prior to the planned installation.

E14.4.2 Site Specific Requirements:

- (a) The City is capable of shutting down the D'Arcy (upstream) pump station for short durations to facilitate the installation and removal of inflatable plugs and stop logs.
- (b) Once the pipeline is dewatered, the inflatable plug may be removed and sluice gate in the upstream chamber closed for the duration of the work.

E14.5 Measurement and Payment

E14.5.1 The supply and installation of flow bypass and diversions shall be considered incidental to the work and will not be measured for payment. No additional payment will be made.

E15. SILT FENCING

E15.1 Description

(a) This Specification shall cover the supply and installation of silt fencing.

E15.2 Products

E15.2.1 The silt fence barrier shall be a woven polyester/polypropylene geotextile fabric, meeting or exceeding the following properties:

WOVEN SILT FENCE BARRIER PROPERTIES			
	ASTM Test Method	Units	Minimum Average Roll Values
PHYSICAL			
Grab Tensile Strength	D-4632	N	330
Mullen Burst	D-3786	kPa	1000
Elongation	D-4632	%	15 (Max)
HYDRAULIC			
Apparent Opening Size	D-4751	mm	0.85

¹ Percent grab tensile strength retained per hours of UV exposure following conditioning in accordance with ASTM D-4355.

E15.2.2 Silt fence to extend 600 mm minimum above existing grade.

E15.2.3 Posts

- (a) Posts to be set into soil a depth of 600 mm minimum.
- (b) Steel posts to have a safety cap, orange paint or flagging.
- (c) Silt fence fabric to be secured to posts by:
 - (i) Wooden posts – nails or staples at 200 mm on centre.
 - (ii) Steel posts – tie wire or locking plastic fasteners at 200 mm on centre.

E15.3 Methods

E15.3.1 The silt fence barrier shall be installed to the elevations, grades, thickness and dimensions as shown on the Drawings, or as directed by the Contract Administrator.

E15.3.2 Silt fence barriers shall be installed to prevent sediment passing from one side of the barrier to the other.

E15.3.3 The stakes shall be a minimum of 1.2 meters in length with a maximum spacing of 2.5 meters between stakes, and driven vertically into the ground to a minimum depth of 600 mm.

E15.3.4 The prefabricated silt fence shall be installed without sags and have an overlap of 450mm wherever its length is extended.

E15.3.5 The Contractor has the option to install the silt fence manually (by hand) or mechanically as set forth in this Section of the Technical Specification.

E15.3.6 Manual Installation:

- (a) A trench measuring approximately 200 mm wide by 200 mm deep shall be excavated along the entire line of posts. The trench shall be on the side of the posts where grading work is to be conducted.
- (b) The geotextile from the silt fence barrier shall extend into the trench a minimum of 600 mm.
- (c) The trench shall be backfilled and tamped to existing grade so as to hold the base of the geotextile firmly in place.

- (d) The silt fence toe fabric shall achieve consistent placement depth and compaction such that no water flow can pass beneath the fence nor scour soil material away from the toe area of the fence.
- (e) The back-filled toe trench material shall be compacted by operating the wheel of a tractor or skid steer on each side of the silt fence a minimum of two passes, or alternative method to achieve similar compaction as approved by the Contract Administrator.

E15.3.7 Machine Installation:

- (a) The geotextile of the machine sliced silt fence shall be inserted by machine in a slit in the soil 200 mm to 300 mm deep.
- (b) The slit shall be created such that a horizontal chisel point at the base of a soil slicing blade slightly disrupts soil upward as the blade slices through the soil.
- (c) The geotextile shall be mechanically inserted directly behind the soil slicing blade in a simultaneous operation, achieving consistent placement and depth. No turning over (plowing) of soil is allowed for the slicing method.
- (d) The soil shall be compacted immediately next to the silt fence fabric by operating the wheels of a tractor or skid steer on each side of the silt fence a minimum of 2 times.
- (e) Actual alignment and location of the silt fence may be adjusted in the field by the Contract Administrator compared with the alignment and locations shown on the Drawings.

E15.3.8 The silt fence shall be installed in a curved configuration along contours with a deflection of 3 m along a 40 m length and accepted by the Contract Administrator.

E15.4 Maintenance

E15.4.1 The Contractor shall maintain the silt fences until they are no longer necessary and are removed. Maintenance shall consist of all work necessary to keep the devices functioning effectively. The Contractor shall repair or correct plugged, torn, displaced, damaged, or non-functioning devices to the satisfaction of the Contract Administrator.

E15.4.2 If the Contract Administrator determines that the Contractor has not maintained the silt fences properly or has damaged the devices from construction activities resulting in sediment releases beyond the work area, the Contractor shall retrieve all sediment that has left the construction area, to the fullest extent possible, at its own cost. As a minimum, the Contractor shall remove all deltas and sediment deposited in drainage ways and re-grade and/or reseed the areas where sediment removal results in exposed soil. The removal and restoration shall take place within 5 working days of discovery unless precluded by legal, regulatory, or physical access restraints. If precluded, removal and restoration must take place within 5 working days of obtaining access. The Contractor is responsible for contacting all local, regional, provincial, and federal authorities before working in surface waters and for obtaining applicable permits. The Contractor's restoration work to restore property outside of the designated work area shall be at its own cost.

E15.5 Sediment Removal During Construction

E15.5.1 During construction the Contractor shall remove sediment from silt fences when the sediment reaches 30 percent of the height, or replace, or supplement the device as directed by the Contract Administrator. Sediment removal shall occur within 24 hours of discovery or as soon as field conditions allow access and no sediment removal shall be performed without authorization from the Contract Administrator.

E15.5.2 Sediment removal shall consist of supplying all supervision, labour, materials, Plant, and equipment necessary for excavating, disposing and other associated operations to remove accumulated sediment and restore the capacity of the temporary erosion control device. Sediment shall be removed to the original grade or as necessary to restore the function of the device as determined by the Contract Administrator.

E15.6 Final Removal

- (a) Silt fence barriers shall be removed when, in the opinion of the Contract Administrator, the measure is no longer required. Removal of the silt fence barrier should not release sediment and debris into the watercourse.

E15.7 Measurement and Payment

E15.7.1 Supply and Installation of Silt Fencing

- (a) The supply and installation of silt fencing shall be measured on a unit basis. The units measured and paid will be the number of lineal metres of silt fence supplied and acceptably installed based on measurements made by the Contract Administrator, as indicated in Form B: Prices.
- (b) Payment for the installation of silt fencing shall include the supply of all materials, and work required for installation, maintenance, sediment removal, and final removal.

E16. SILT CURTAINS

E16.1 Description

- (a) This Specification shall cover the supply and installation of silt curtains.

E16.2 Products

- (a) Silt curtain rolls shall be tagged to provide product identification for inventory and quality control purposes.
- (b) Silt curtain rolls shall be furnished with suitable wrapping for protection against dirt, dust, and any other deleterious materials. The silt curtain shall remain wrapped in a protective covering until it is used.
- (c) Silt curtain filter fabric shall have a minimum water flow rate of 7,750 L/min/m².
- (d) The Contractor shall submit all manufacturer's product specifications and recommended installation methods for the proposed silt curtain and associated materials as per CW 1100.
- (e) Approved Products:
 - (i) Layfield's Floating Silt Curtain with Typar 3201 or Geotex 117F filter fabric,
 - (ii) or Approved Equal in accordance to B7.

E16.3 Methods

- (a) All work related to storage handling, and installation shall comply with the procedures and recommendations of the Manufacturer, and as accepted by the Contract Administrator.
- (b) The silt curtain shall be placed downstream of the in-stream work prior to commencing the Work. It shall remain in place for approximately two (2) weeks after completion of the in-stream work as directed by the Contract Administrator, at which time it shall be removed. The removal shall be performed in such a manner to minimize siltation of the water.
- (c) Any damaged silt curtain, as identified by the Contract Administrator, shall be repaired immediately.

E16.4 Measurement and Payment

E16.4.1 Supply and Installation of Silt Curtains

- (a) The supply and installation of silt curtains shall be measured on a unit basis. The units measured and paid will be the number of lineal metres of silt curtains supplied and acceptable installed based on measurements made by the Contract Administrator, as indicated in Form B: Prices.
- (b) Payment for the installation of silt curtains shall include the supply of all materials, and work required for installation, maintenance, and final removal.

E17. ERROSION CONTROL BLANKET

E17.1 Description

- (a) This Specification shall cover the supply and installation of erosion control blankets.

E17.2 Products

E17.2.1 Type 2 Erosion Control Blanket

- (a) Erosion Control Blanket shall be a machine-produced mat of 100% agricultural straw with a functional longevity of up to 12 months.
- (b) The blanket shall be of consistent thickness with the straw evenly distributed over the entire area of the mat. The blanket shall be covered on the top and bottom sides with lightweight photodegradable polypropylene netting having ultraviolet additives to delay breakdown and a maximum 14.9 x 13.0 mm mesh. The blanket shall be sewn together on 38.1 mm centres (maximum) with degradable thread.
- (c) The Type 2 erosion control blanket shall have the following properties:
- (i) Matrix 100% Straw Fibre 0.27 kg/m².
 - (ii) Netting top and bottom lightweight photodegradable (0.73 kg/100 m²).
 - (iii) Degradable thread.
- (d) Approved Products:
- (i) S150 manufactured by North American Green
 - (ii) S32 manufactured by Erosion Control Blanket
 - (iii) or Approved Equal in accordance to B7.

E17.3 Methods

E17.3.1 General

- (a) Erosion control blankets shall be installed at the direction of the Contract Administrator if high water levels are expected during spring flooding.

E17.3.2 Erosion Control Blanket –Side Slope Installation

- (a) For ECB installation on side slopes, excavate a trench 150 mm deep by 150 mm wide at the top of slope area leave 300 mm of ECB beyond the upslope portion of the trench. Anchor blanket with 200 mm long staples in trench as shown on the Drawings. Staples shall be a minimum 300 mm apart. Backfill trench with soil and compact. Fold remaining portion of blanket over and secure with staples spaced 300 mm apart (maximum) across width of blanket.
- (b) Roll blanket down slope. Secure blanket to soil with staples. There shall be a minimum of 2 staples per square metre.
- (c) There shall be a minimum 150 mm overlap between blankets in the down slope direction. Staples through the overlap areas shall be a minimum 300 mm apart.
- (d) The edges of parallel blankets shall have a minimum overlap of 150 mm (depending on type) and a minimum staple spacing of 300 mm.
- (e) Secure downslope edges of ECB with staples spaced at 300 mm (minimum).

E17.3.3 Maintenance

- (a) The areas covered with erosion control blanket shall be regularly inspected especially after severe rainfall or storm events, to check for blanket separation or breakage.
- (b) Any damaged or poorly performing areas as the result of storm events shall be replaced/repared immediately. Re-grading of the slope by hand methods may be required in the event of rill or gully erosion.

E17.4 Measurement and Payment

E17.4.1 Supply and Installation of Erosion Control Blankets (Provisional Item)

- (a) The supply and installation of erosion control blankets shall be measured on a unit basis. The units measured and paid will be the number of square metres of erosion control blanket supplied and acceptable installed based on measurements made by the Contract Administrator, as indicated in Form B: Prices.
- (b) Payment for the installation of erosion control blanket shall include the supply of all materials, and work required for installation, maintenance, and final removal.

E18. ESTABLISHMENT OF SEEDED AREAS

E18.1 Description

E18.1.1 This specification shall amend and supplement City of Winnipeg Standard Construction Specification CW 3520-R7 "Seeding", and shall cover all aspects of supply and installation of seed, including preparation of finish grade, hydro mulching, and maintenance.

E18.1.2 Referenced Standard Construction Specifications

- (a) CW 3520-R7 – Seeding
- (b) CW 3540-R5 – Topsoil and Finish Grading for Establishment of Turf Areas

E18.2 Materials

E18.2.1 All seed supplied by the Contractor shall be Canada Certified No. 1 or Canada Certified No. 2 and come complete with a Certificate of Analysis verifying that quality standards for Canada Certified No. 1 or Canada Certified No. 2 seed are met. The Contractor shall submit the Certificates of Analysis to the Contract Administrator.

E18.2.2 Native Seed Mix

- (a) The seed supplied shall be free of disease and mixed by percentage (%) of weight to meet the following blends:
 - (i) Seed for naturalization area to be local native tall grass prairie seed with specific mixes for each slope, aspect and elevation. Contractor to supply a seed mix list prior to construction. Seed mix to include no greater than 34% of any one species and a minimum of 3 species from:

Western Wheatgrass	Slender Wheatgrass
Green Needlegrass	Canada Wild Rye
Fringed Brome	June Grass
Switch Grass	Big Bluestem
Tickle Grass	

E18.2.3 Prior to payment for the seeding operation the Contractor shall provide the Contract Administrator with a copy of an invoice or a shipping bill received from the seed distributor specifying the quantities of each type of seed supplied for the Work Site and the delivery date.

E18.2.4 Any variations to the above referenced seed blends or mixtures shall be approved by the Contract Administrator prior to sowing.

E18.2.5 Herbicides shall be standard commercial products registered for sale and use in Canada under the Pest Control Products Act.

E18.2.6 Insecticides shall be standard commercial products registered for sale and use in Canada under the Pest Control Products Act.

E18.2.7 Growing medium as per E19.

E18.3 Construction Methods

- E18.3.1 Where work is to be done in boulevard and median areas adjacent to roadways, the Contractor shall maintain traffic and ensure that protection is afforded to the road user and that the Contractor's operations in no way interfere with the safe operation of traffic.
- E18.3.2 The Contractor shall supply, erect and maintain all applicable traffic control devices in accordance with the provisions of the latest edition of the Manual of Temporary Traffic Control in Work Areas on City Streets issued by the Public Works Department of the City of Winnipeg.
- E18.3.3 To prevent the formation of depressions or water pockets, the Contractor shall smooth out any undulations or irregularities in the topsoil surface resulting from fertilizing, seeding, rolling or other operations.
- E18.3.4 The Contractor shall not commence seeding operations until the finished grade is inspected and approved by the Contract Administrator.
- E18.3.5 Seeding
- (a) Native Seed Mix: Imported Topsoil
 - (i) Seed shall be sown on 75mm compacted depth of imported topsoil and at rates suitable to the plant species and mix design. Seeding rates are to be included in seed mix design provided by Contractor.
 - (b) The Contractor shall sow the seed into the approved seed bed by using seeding equipment suitable for the area involved and to the satisfaction of the Contract Administrator.
 - (c) All seeded areas shall be rolled to form a uniform even surface, level with adjoining curbs, sidewalks or sod.
 - (d) Water shall be applied in sufficient quantities to saturate seeded area to a minimum depth of 100 mm. All costs to provide water for seeded areas shall be borne by the Contractor. These costs may include hydrant permit and meter rental fees.
 - (e) Seeding operations shall be completed within two working days after the commencement of sowing operation. This shall include the application of seed, rolling and watering.
 - (f) No seeding shall be done on frozen soil, or when any other conditions unfavourable to successful seed germination exist.
 - (g) The Contractor is to maintain the seeded area with all required watering, mowing, weed removal etc. to establish a healthy plant community for the duration of the growing season.
- E18.3.6 Commencement of Maintenance Period
- (a) Immediately after the completion of the final seeding operation, to the satisfaction of the Contract Administrator, the Contractor shall commence and pay for continuous maintenance of the seeded area until the criteria specified for Termination of the Maintenance Period has been met.
 - (b) Any deficient, damaged or vandalized areas shall be reseeded by the Contractor within three working days after receiving notification from the Contract Administrator and the area so reseeded, shall be further maintained until it meets the criteria specified in Maintenance of Seeded Area.
- E18.3.7 Maintenance of Seeded Area
- (a) The Contractor shall water all seeded areas in sufficient quantities and at a frequency required to maintain soil under seeded area continuously moist to a minimum depth of 100 mm. Any damage, which may occur through washout of the soil during the maintenance period shall be repaired and maintained until it meets the criteria specified in E18.3.10.

- (b) Given the need for weed control, the Contractor shall have in his possession a Pesticide Applicator's License and a Pesticide Use Permit for pesticide applications related to this Specification.
- (c) The Contractor shall apply herbicide with spot spraying when broadleaf weeds start developing in competition with grasses. Apply herbicide in accordance with the City of Winnipeg Weed Control Standards and Procedures, manufacturer's instructions and the Manitoba Agriculture Guide to Crop Protection and Herbicide Recommendations for Landscape Applicators, latest editions and the following criteria:
 - (i) Use 2,4-D Amine or MCPA Amine herbicide for susceptible broadleaf weeds.
 - (ii) Use a mixture containing 2,4-D Amine or MCPA Amine, Mecoprop and Dicamba for 2,4-D resistant plants.
 - (iii) Do not apply to newly seeded areas.
 - (iv) Do not water within one working day after application.
 - (v) Apply when winds are less than 20 km/h and air temperature is above 10° (degrees) Celsius.
 - (vi) Avoid use of pure Dicamba solutions near trees and shrubs.

E18.3.8 The Contractor shall inform the Contract Administrator immediately of any dangerous occurrence.

E18.3.9 Spring Clean Up

- (a) Where termination of the maintenance period has not been achieved in accordance with this specification prior to the end of a growing season, the Contractor shall complete all operations related to the cleanup of the Work Site in the following spring. This shall include the cleaning and removal of all dead vegetation, leaves, debris, snowmold and any sand or gravel resulting from winter sanding/de-icing operations from turf areas to encourage healthy and uniform grass growth.
- (b) All costs for spring clean-up operations, including reseeding of areas damaged over the winter shall be borne by the Contractor if in the previous year, seed was sowed, and the termination of the maintenance period in accordance with Clause E18.3.10, was not achieved in that same year or where the damage was due to defective seed or maintenance not conforming to this Specification.

E18.3.10 Termination of Maintenance Period

- (a) The Contract Administrator will terminate the maintenance period after the following criteria has been met:
 - (i) The certified seed sowed meets the requirements specified in herein.
 - (ii) The seeded area has been rolled and has a firm, uniform even surface.
 - (iii) The seeded area has established into a healthy, vigorously growing condition.
 - (iv) The seeded area is free of bare and dead spots and without more than ten (10) broadleaf weeds per fifty (50) square metres.
 - (v) The seeded area has sufficient shoot growth density that no surface soil is visible.
 - (vi) Edges of established seeded areas adjacent to shrub and flower beds are well defined.
- (b) When the Contractor considers that the seeded area meets the criteria listed above, he shall arrange, attend and assist in the inspection of the Work with the Contract Administrator for purposes of verifying whether the Maintenance Period can be terminated. Any deficient, damaged or vandalized areas may have to be reseeded within three working days after receiving notification from the Contract Administrator and the area so reseeded, shall be further maintained by and at the expense of the Contractor in accordance with Maintenance of Seeded Area herein.
- (c) In situations where the termination of the maintenance period is not granted by the Contract Administrator before the end of a growing season, the maintenance period will commence as described herein.

E18.3.11 Site Clean Up

- (a) During both seeding and maintenance operations, all sidewalks, streets, approaches, driveways and properties near the seeding operations shall be kept clean at all times by the Contractor.
- (b) Upon completion of the project, the Contractor shall immediately remove all excess material and debris from the Work Site.

E18.4 Measurement and Payment

E18.4.1 Seeding

- (a) Seeding shall be measured on a unit basis. The units measured and paid will be the number of square metres of seeding completed and accepted based on measurements made by the Contract Administrator, as indicated in Form B: Prices.
- (b) Payment for seeding shall include seed, soil amendment, herbicides, water, and all other materials and work required for installation, maintenance, and warranty of the seeded area as specified herein.

E19. SOIL AMENDMENTS AND GROWTH MEDIUM

E19.1 Description

E19.1.1 This Specification shall amend and supplement City of Winnipeg Standard Specification CW 3540 "Topsoil and Finish Grading for Establishment of Turf Areas" and shall cover supply, preparation and placement of topsoil and growing medium, including preparation of existing grade, finish grading and fertilizer application for restoration seeding.

E19.2 Quality Control

E19.2.1 Testing and Samples:

- (a) Submit to the Contract Administrator analyses of riverbank clay/silt to be used in creating growing medium, obtained for at least three separate samples taken from each area of the riverbank. The analysis shall be carried out by a qualified soil testing laboratory and shall include the percentage of organic material by weight, as well as recommendations for fertilizers and/or other soil ameliorants.
- (b) Soil testing shall determine N, P, K, Na, Cl, Ca, Mg, organic matter, C.E.C., pH, bulk density and C/N ratio.

E19.2.2 Deliver and store fertilizer in waterproof bags showing weight, analysis and name of manufacturer.

E19.3 Materials

E19.3.1 Imported topsoil and fertilizer shall conform to CW 3540.

E19.3.2 Peatmoss shall be derived from partially decomposed species of Sphagnum Mosses, elastic and homogenous, brown in colour; free of decomposed colloidal residue, wood, sulphur and iron or other deleterious material which could affect healthy plant growth; containing a minimum 60% organic matter by weight, and moisture content not exceeding 15%. Shredded particles may not exceed 5 mm in size. Minimum pH value of peat, 4.5; maximum, 7.0.

E19.3.3 Sand shall be medium to coarse textured silica sand to CSA A82.56-M1976, well washed and free of impurities, chemical or organic matter.

E19.3.4 Bonemeal shall be raw bonemeal, finely ground with a minimum analysis of 3% nitrogen and 20% phosphoric acid.

E19.3.5 Fertilizer: chemical fertilizers shall have N-P-K compositions as recommended by an agricultural soil testing laboratory approved by the Contract Administrator, provided for each of the following:

- (a) Seeded lawn turf with imported topsoil
- (b) Horticultural trees, shrubs and herbaceous material with growing medium
- (c) Native grasses and wildflowers seeding with growing medium

E19.4 Construction Methods

E19.4.1 Preparation of Existing Grade:

- (a) Rough grading shall be within 50 mm of the mud grade required prior to addition of peatmoss and sand to create the growing medium.
- (b) Preparation of the existing grade shall conform to CW 3540.

E19.4.2 Growing Medium for Native Grass Seeding

- (a) Growing medium for native grass seeding shall consist of a mix of 80% peat moss and 20% sand, loose by volume.
- (b) Cross-cultivate the entire area of soil base (clay/silt) that is to receive soil amendments to a depth of 150 mm. Redo areas where equipment used for hauling and spreading has re-compacted sub-grade.
- (c) Spread 40 mm of peat moss and 10 mm sand over the area of soil amendments.
- (d) Roto-till or disc the peat moss and sand into the top 100 mm of base material and mechanically roll to obtain a level surface.
- (e) Grade to eliminate rough spots and low spots and to maintain positive drainage.
- (f) Consolidate seedbed to required bulk density using equipment approved by the Contract Administrator. Leave surfaces smooth, uniform and firm against deep foot-printing.

E19.4.3 Growing Medium for Planting Individual Trees and Shrubs:

- (a) For planting trees and shrubs,
 - (i) 75% topsoil with 20% peatmoss, loose by volume. Incorporate 5% sand, or as required, to improve soil texture.
- (b) Incorporate bonemeal into planting soil at rate of 3 kg/m³ of planting bed area.

E19.4.4 Fertilizer:

- (a) Apply fertilizer at rates determined by the sub-soil analysis.

E19.5 Measurement and Payment

E19.5.1 Soil Amendments for Native Grass Seeding

- (a) Soil amendments as specified herein shall be considered incidental to "Seeding c/w Soil Amendments" and will not be measured for payment. No additional payment will be made.

E19.5.2 Growing Medium for Planting Individual Trees and Shrubs

- (a) Growing medium for individual trees and shrubs as specified herein shall be considered incidental to "Shrub Planting" and will not be measured for payment. No additional payment will be made.

E20. TREE AND SHRUB PLANTINGS

E20.1 Description:

- E20.1.1 This Specification shall deal with the supply and installation of trees and shrub plantings in areas as indicated on the Construction Drawings, including: preparation, digging, transport and planting.

E20.2 General

E20.2.1 Nomenclature of specified nursery stock and collected plantings 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.

E20.2.2 Source Quality Control:

- (a) All plant material specified within this project shall be either containerized nursery stock and/or collected field-potted native stock. All plants shall be from the Winnipeg area and the Oak-Aspen Forest Eco-region.
- (b) All nursery stock supplied shall be nursery grown and of species and sizes as indicated on the Construction Drawings. Stock shall be No. 1 Grade material in accordance with the current edition of Landscape Canada's "Guide Specifications for Nursery Stock".
- (c) All containerized whips shall have a minimum of one full year's growth. Roots shall be healthy, reaching the sides of the container and be developed such that the root ball can be kept intact during transplanting. Roots shall not encircle each other to the extent of inhibiting plant growth.
- (d) Any nursery stock dug from native stands, wood lots, orchards, or neglected nurseries, which have not received proper cultural maintenance, shall be designated as "collected plants". Material sources are to be approved by Contract Administrator prior to ordering or collecting. The Contractor shall provide all of the necessary nursery certificates to ensure that the plant species comply with this specification.
 - (i) Notify Contract Administrator of source of plant material at least 7 days in advance of shipment.
 - (ii) Acceptance of plant material at source does not prevent rejection of same plant material on site prior to or after planting operations.
- (e) The Contract Administrator retains the right to delete one or more of the specified containerized/potted plant materials to facilitate the completion of the contract.

E20.2.3 Shipment and Pre-Planting Care:

- (a) Coordinate shipping of plants and excavation of holes to ensure minimum time lapse between digging and planting.
- (b) Tie branches of trees and shrubs securely and protect plant material against abrasion, exposure and extreme temperature change during transit. Avoid binding of planting stock with rope or wire, which would damage bark, break branches or destroy natural shape of plant. Give full support to root balls during movement.
- (c) Cover plant foliage with tarpaulin, and protect bare roots by means of dampened straw, peat, 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 cut and cover cuts over 50 mm diameter with wound dressing.
- (e) Keep roots moist and protected from sun and wind. Heel-in trees and shrubs which cannot be planted immediately in shaded areas and water well.

E20.3 Materials

E20.3.1 Water shall be potable and free of minerals which may be detrimental to plant growth.

E20.3.2 Fertilizer shall be slow release organic. Fertilizer shall contain N-P-K in ratio as recommended by soil test results.

E20.3.3 Root ball burlap shall be 150 g Hessian burlap.

- E20.3.4 Anti-desiccant shall be wax-like emulsion to provide film over plant surfaces reducing evaporation but permeable enough to permit transpiration.
- E20.3.5 Wound dressing shall be horticultural accepted non-toxic, non-hardening emulsion.
- E20.3.6 The following shrubs shall be planted:

PLANT LIST AND NOTES				
Qty	Botanical Name	Common Name	Size	Planting Notes:
200	Cornus alba	Redosier Dogwood	Whip - 300mm to 450 ht. min., 1 litre pot min.	3 to 6 plants per grouping at 1m o.c.
40	Salix exigua	Coyote or Sandbar willow	Whip - 300mm to 450 ht. min., 1 litre pot min.	3 to 6 plants per grouping at 1m o.c. - to be planted closest to the river's edge.
170	Viburnum lentago	Nannyberry	Whip - 300mm to 450 ht. min., 1 litre pot min.	3 to 6 plants per grouping at 1m o.c.
160	Viburnum rafinesquianum	Downy Arrowwood	Whip - 300mm to 450 ht. min., 1 litre pot min.	3 to 6 plants per grouping at 1m o.c.

E20.3.7 Plant Material:

- (a) Comply with "Guide Specification for Nursery Stock", Latest Edition of Canadian Nursery Trades Association (Landscape Canada), referring to quality, size and development of plant material and root ball.
- (b) All nursery stock shall be measured when branches are in their natural position. Height and spread dimensions specified herein refer to the main body of the plant, and not from branch tip to root base or from branch tip to branch tip.
- (c) Use trees and shrub material of No. 1 grade.
- (d) All trees shall have one, only, sturdy, reasonably straight and vertical trunk, and a well-balanced crown with fully developed leader, unless designated "multi-stem".
- (e) Use trees and shrubs with structurally sound, strong fibrous root systems, and free of disease, insects, defects or injuries, including rodent damage, sun scald, frost cracks, abrasions or scars to the bark. Plants must have been root pruned regularly, but not later than one growing season prior to arrival on site.
- (f) All parts of the nursery stock shall be moist and show live, green cambium tissue when cut.
- (g) At least one (1) plant of each variety supplied shall bear a tag showing both the botanical and common name of the plant.
- (h) Additional Plant Material Qualifications:
 - (i) Approval required for plant material which has been held in cold storage.
 - (ii) Container-grown stock acceptable if containers large enough for root development. Trees and shrubs must have grown in container for minimum of one growing season but not longer than two. Root system must be able to hold soil when removed from container. Plants that have become root-bound are not acceptable. Container stock must have been fertilized with slow releasing fertilizer.
 - (iii) Balled and burlap deciduous trees must have been dug with firm ball. Root balls must include 75% of fibrous and feeder root system. Secure root balls with burlap, heavy twine and rope.
 - (iv) Substitutions to plant material as indicated on the Plant List will not be permitted unless written approval has been obtained as to type, variety and

size prior to Award of Contract. Plant substitutions must be of similar species and of equal size to those originally specified.

E20.4 Construction Methods

E20.4.1 Workmanship

- (a) Stake out location of larger trees and shrubs, and planting beds as per the Construction Drawings. Obtain approval prior to excavating.
- (b) No excavation is to take place without the clearance of all utility components with respect to underground lines located in the areas to be excavated.
- (c) Apply anti-desiccant in accordance with material manufacturer's instructions.
- (d) Co-ordinate operations. Keep site clean and planting holes drained. Immediately remove soil or debris spilled onto pavement.

E20.4.2 Planting Times:

- (a) Plant deciduous plant material during dormant period, before buds have broken. Plant material noted for spring planting only must be planted in dormant period.
- (b) When permission has been obtained to plant deciduous plant material after buds have broken, spray plants with anti-desiccant to slow down transpiration prior to transplanting.
- (c) When permission has been obtained, trees, shrubs and ground covers growing in containers may be planted throughout growing season.
- (d) Plant only under conditions that are conducive to health and physical conditions of plants.
- (e) Provide planting schedule. Extending planting operations over long period using limited crew will not be accepted.

E20.4.3 Excavations:

- (a) Individual shrubs to be in 200 mm deep holes backfilled with planting soil mixture.
- (b) Trees: excavate to depth of at least 200 mm deeper than height of root ball/roots, with width of three times the diameter. Backfill with planting soil mixture.
- (c) Remove water which enters excavations prior to planting. Ensure source of water is not ground water.

E20.4.4 Planting:

- (a) Plant shrubs in evenly spaced groups in accordance with E20.3.6 and approved by the Contract Administrator.
- (b) Loosen bottom of planting hole to depth of 150 to 200 mm. Cover bottom of each excavation with minimum of 150 mm of planting soil mixture.
- (c) Plant trees and shrubs vertically, with roots placed straight out in hole, orient to provide the best aspect as seen from the top of bank.
- (d) Place plant material to depth equal to depth they were originally growing in nursery.
- (e) With ball and burlap root balls, loosen burlap and cut away minimum top 1/3 without disturbing root ball. Do not pull burlap from under root ball. With container stock, remove entire container without disturbing root ball. Non-biodegradable wrappings must be removed.
- (f) Tamp planting soil around root system in layers of 150 mm eliminating air voids. Frozen or saturated planting soil is unacceptable. When 2/3 of planting soil has been placed, fill hole with water. After water has completely penetrated into soil, complete backfilling.
- (g) Build 100 mm deep saucer around outer edge of hole to assist with maintenance watering.

- (h) When planting is completed apply slow release organic fertilizer at minimum rate of 12 kg/100 m for shrub beds or 50 g/mm of caliper for trees, or as recommended by the soil analysis. Mix fertilizer thoroughly with top layer of planting soil and water in well.

E20.4.5 Prune trees and shrubs after planting. Employ clean sharp tools and make cuts flush with main branch, smooth and sloping as to prevent accumulation of water. Remove dead and injured branches and branches that rub causing damage to bark. Trim trees and shrubs without changing their natural shape. Do not damage lead branches or remove smaller twigs along main branches. Treat cuts in excess of 50 mm diameter and damaged parts with application of wound dressing.

E20.4.6 Standards

- (a) All roots shall be cleanly cut; split roots not acceptable.
- (b) Branches and stems shall be tied and protected; broken or abraded branches or stems not acceptable.
- (c) Planting shall be protected from drying conditions; desiccated material not acceptable.
- (d) All plants to be free of insects and disease: galls, blight and other manifestations of insect infestation or disease not acceptable.

E20.5 Maintenance for Establishment

E20.5.1 Water plant material to prevent desiccation. Assume that watering will be required once a week for first four weeks following installation; thereafter, once every second week for the remainder of the maintenance period for establishment. Ensure adequate moisture in root zone at freeze-up.

E20.5.2 Keep area where shrubs are planted free from weeds by manually removing undesirable plants during the maintenance period for establishment.

E20.5.3 Spray plants as required to combat pests and diseases. Use organic chemicals approved by Agriculture Canada.

E20.5.4 Make adjustments requested by the Contract Administrator, including straightening trees and adding protection from animals.

E20.6 Maintenance Period for Establishment

E20.6.1 Maintain plant material for a minimum period of four months (120 days) following completion of planting operations, or until such time that live growth is evident.

E20.6.2 At the end of the establishment period, the Contractor shall remove and replace from site plants which have died or failed to grow satisfactorily, as determined by the Contract Administrator.

E20.7 Warranty

E20.7.1 The Contractor hereby warrants that the plant material as itemized on the Plant Lists and on the Drawings will remain free of defects for one (1) year, commencing upon acceptance of installed plant material.

E20.7.2 At the end of the warranty period, remove from site any plant material that has died or failed to grow satisfactorily, as determined by the Contract Administrator and replace with healthy plant material of the same species and size.

E20.7.3 Extend warranty on replacement plant material for an additional period until the end of the specified warranty period or for one full growing season, whichever is the longer period.

E20.8 Measurement and Payment

E20.8.1 Shrub Planting

- (a) The planting of shrubs shall be measured on a unit basis. The units measured and paid will be the number of shrubs acceptably planted for each type, based on measurements made by the Contract Administrator, as indicated in Form B: Prices.
- (b) Payment for shrub planting shall include plant material, growth medium, fertilizer, water, and all other materials and work required for installation, maintenance, and warranty of the shrubs as specified herein.

PART F - SECURITY CLEARANCE

F1. SECURITY CLEARANCE

- F1.1 Each individual proposed to perform the following portions of the Work:
- (a) any Work on private property;
 - (b) communicating with residents and homeowners in person or by telephone;
- F1.1.1 Each Individual shall be required to obtain a Criminal Record Search Certificate from the police service having jurisdiction at his/her place of residence. Or
- (a) BackCheck, forms to be completed can be found on the website at: <http://www.backcheck.net/> ; or
 - (b) Commissionaires (Manitoba Division), forms to be completed can be found on the website at: <http://www.commissionaires.mb.ca/> .
- F1.2 The following is a link to information for obtaining the Criminal Record Search certificate from the City of Winnipeg Police Service.
http://winnipeg.ca/police/pr/info_request.stm#crim_record_search
- F1.2.1 The original Criminal Record Search Certificate (Form P-253) 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 Criminal Record Search Certificate (Form P-253) to the Contract Administrator.
- F1.3 Prior to the commencement of any Work specified in F1.1, and during the term of the Contract if additional or replacement individuals are proposed to perform Work, the Contractor shall supply the Contract Administrator with a Criminal Record Search Certificate obtained not earlier than one (1) year prior to the Submission Deadline, or a certified true copy thereof, for each individual proposed to perform such Work.
- F1.4 Any individual for whom a Criminal Record Search Certificate is not provided, or for whom a Criminal Record Search Certificate indicates any convictions or pending charges related to property offences or crimes against another person will not be permitted to perform any Work specified in F1.1.
- F1.5 Any Criminal Record Search Certificate obtained thereby will be deemed valid for the duration of the Contract subject to a repeated records search as hereinafter specified.
- F1.6 Notwithstanding the foregoing, at any time during the term of the Contract, the City may, at its sole discretion and acting reasonably, require an updated criminal records search. Any individual who fails to provide a satisfactory Criminal Record Search Certificate as a result of a repeated criminal records search will not be permitted to continue to perform any Work specified in F1.1.