



THE CITY OF WINNIPEG

BID OPPORTUNITY

BID OPPORTUNITY NO. 1062-2014

**JEFFERSON EAST COMBINED SEWER RELIEF – CONTRACT 4 – SEMPLE
OUTFALL**

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PART B - BIDDING PROCEDURES

B1. CONTRACT TITLE

B1.1 JEFFERSON EAST COMBINED SEWER RELIEF – CONTRACT 4 – SEMPLE OUTFALL

B2. SUBMISSION DEADLINE

B2.1 The Submission Deadline is 12:00 noon Winnipeg time, December 5, 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 Bidder may view the Site without making an appointment.

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, to the Bidder who requested approval of the substitute.

- B7.6.1 The Contract Administrator will issue an Addendum, disclosing the approved materials, equipment, methods and products to all potential Bidders. The Bidder requesting and obtaining the approval of a substitute shall be responsible for disseminating information regarding the approval to any person or persons he/she wishes to inform.
- B7.7 If the Contract Administrator approves a substitute as an “approved equal”, any Bidder may use the approved equal in place of the specified item.
- B7.8 If the Contract Administrator approves a substitute as an “approved alternative”, any Bidder bidding that approved alternative may base his/her Total Bid Price upon the specified item but may also indicate an alternative price based upon the approved alternative. Such alternatives will be evaluated in accordance with 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 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/>).
- B11.5 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, including, but not limited to:
- (a) Resume of Site Superintendent, Site Foreman and trenchless equipment operator(s) detailing a minimum of three projects for each, of similar size and complexity, including references, conducted in the last seven (7) years.
 - (b) Details of proposed equipment to be utilized in trenchless pipe installation operations, including make, model, year and ownership.
- B11.6 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.

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 construction of approximately 106 meters of 2100 millimetre land drainage system (LDS) piping by trenchless methods, associated sewer works including manholes and catchbasins, a new gate chamber, outfall end treatment, riprap placement, and restorations.

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

- (a) Installation of approximately 106 meters of 2100 millimetre LDS piping by trenchless methods, including manholes, catchbasins and appurtenances.
- (b) Installation of CSP end-treatment on outfall.
- (c) Construction of a new gate chamber
 - (i) Note: The sluice gate, flap gate, and operators have been procured under a separate City tender and will be supplied by the City of Winnipeg. All City supplied materials are expected to arrive by April 30, 2015. The materials will be temporarily stored at a City of Winnipeg facility. Delivery of the materials to site will be the responsibility of the Contractor.
- (d) Restoration works.

D3. DEFINITIONS

D3.1 When used in this Bid Opportunity:

- (a) "**AWWA**" means American Water Works Association;
- (b) "**ASTM**" means American Society for Testing and Materials;
- (c) "**CSA**" means Canadian Standards Association.

D4. CONTRACT ADMINISTRATOR

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

Paul Loudon
Project Coordinator
Telephone No. 204-477-5381
Facsimile No. 204-284-2040

D4.2 At the pre-construction meeting, Mr. Loudon 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 B11.4 at any time during the term of the Contract, the City may, at its sole discretion and acting reasonably, require an updated COR Certificate or Annual Letter of good Standing. A Contractor, who fails to provide a satisfactory COR Certificate or Annual Letter of good Standing, will not be permitted to continue to perform any Work.

D11. INSURANCE

- D11.1 The Contractor shall provide and maintain the following insurance coverage:
- (a) commercial general liability insurance, in the amount of at least two million dollars (\$2,000,000.00) inclusive, with The City of Winnipeg added as an additional insured, with a cross-liability clause, such liability policy to also contain contractual liability, unlicensed motor vehicle liability, non-owned automobile liability and products and completed operations, to remain in place at all times during the performance of the Work and throughout the warranty period;
 - (b) if applicable, Automobile Liability Insurance covering all motor vehicles, owned and operated and used or to be used by the Contractor directly or indirectly in the performance of the Work. The Limit of Liability shall not be less than \$2,000,000 inclusive for loss or damage including personal injuries and death resulting from any one accident or occurrence.
- D11.2 Deductibles shall be borne by the Contractor.
- D11.3 The Contractor shall provide the City Solicitor with a certificate(s) of insurance, in a form satisfactory to the City Solicitor, at least two (2) Business Days prior to the commencement of any Work but in no event later than the date specified in C4.1 for the return of the executed Contract.
- D11.4 The Contractor shall not cancel, materially alter, or cause each policy to lapse without providing at least thirty (30) Calendar Days prior written notice to the Contract Administrator.

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, 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) Mobilization
- (b) Shoring and Excavation
- (c) Installation of 2100 mm RCP from Gate Chamber to Red River
- (d) Installation of CSP Outfall End Treatment
- (e) Installation of 2100 mm RCP from Gate Chamber to Semple Avenue
- (f) Gate Chamber Construction
- (g) Backfill Chamber
- (h) Surface Restoration
- (i) Substantial Performance
- (j) Total Performance

D15.4 Further to D15.2(a), the Gantt chart shall show the time on a weekly basis, required to carry out the Work of each trade, or specification division. The time shall be on the horizontal axis, and the type of trade shall be on the vertical axis.

D16. SCHEDULE RESTRICTIONS

- D16.1 Further to D15, work on the riverbank and pipeline exposed to the river shall be completed by March 15 of a given year, including pipe, CSP outfall end-treatment, grating, and riprap. No work shall be scheduled on the river bank between March 15 and Red River drawdown (typically mid-October) of a calendar year.

SCHEDULE OF WORK

D17. COMMENCEMENT

- D17.1 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.
- D17.2 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.
- D17.3 The Contractor shall commence the Work on the Site within seven (7) Working Days of receipt of the letter of intent.

D18. WORKING DAYS

- D18.1 Further to C1.1(jj), the Contract Administrator's determination of whether or not atmospheric and Site conditions are such that a Working Day is deemed to have elapsed may be based at one time on one type of work while at another time a Working Day may be based on another type of work. When more than one type of major work is involved, the quantity of equipment that must be able to work in order to meet the requirements of a Working Day may vary considerably from that specified in the General Conditions.
- D18.2 In the event that incidental work is behind schedule which, in the opinion of the Contract Administrator, should have been or could have been carried out by the Contractor in conjunction with or immediately following work of a major type, the City hereby reserves the right to charge Working Days on the incidental work until such time as it is up to schedule.
- D18.3 When the major type of work involves restoration of the site to the condition it was prior to rainfall, Working Days shall not be charged.
- D18.4 The Contract Administrator will furnish the Contractor with a daily record for each major type of work showing various information concerning the equipment, the time it worked, could have worked and Working Days charged. This report is to be signed each day by an authorized representative of the Contractor.

D19. SUBSTANTIAL PERFORMANCE

- D19.1 The Contractor shall achieve Substantial Performance within one hundred (100) consecutive Working Days of the commencement of the Work as specified in D17.

- (a) Further to D19.1, the Contractor will be permitted one (1) suspension of on-site construction to facilitate materials deliveries, seasonal weather or river level conditions. Working Days will not be charged during this period. During this period, the Site must be made secure, roadways completely operational, and all existing facilities and work in progress be protected from weather or other potentially harmful effects. Changes to Contract Critical Stages or completion dates resulting from suspension of Working Days, will not be considered.

D19.2 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.

D19.3 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.

D20. TOTAL PERFORMANCE

D20.1 The Contractor shall achieve Total Performance by May 31, 2016.

D20.2 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.

D20.3 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.

D21. LIQUIDATED DAMAGES

D21.1 If the Contractor fails to achieve Substantial Performance or Total Performance in accordance with the Contract by the days fixed herein for same, the Contractor shall pay the City the following amounts per Working Day for each and every Working Day following the days fixed herein for same during which such failure continues:

- (a) Substantial Performance – two thousand dollars (\$2,000);
- (b) Total Performance – one thousand dollars (\$1,000).

D21.2 The amounts specified for liquidated damages in D21.1 are based on a genuine pre-estimate of the City's losses in the event that the Contractor does not achieve, Substantial Performance or Total Performance by the days fixed herein for same.

D21.3 The City may reduce any payment to the Contractor by the amount of any liquidated damages assessed.

CONTROL OF WORK

D22. JOB MEETINGS

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

to make any revisions to the Work schedule. The progress of the Work will be reviewed at each of these meetings.

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

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

D23.1 Further to C6.24, 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).

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

D24.1 Further to B11.4, the Contractor/Subcontractor must, throughout the term of the Contract, have a Workplace Safety and Health Program meeting the requirements of The Workplace Safety and Health Act (Manitoba). At any time during the term of the Contract, the City may, at its sole discretion and acting reasonably, require updated proof of compliance, as set out in B11.4.

D25. PAYMENT

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

D26. WARRANTY

D26.1 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. 1062-2014

JEFFERSON EAST COMBINED SEWER RELIEF – CONTRACT 4 – SEMPLE OUTFALL

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. 1062-2014

JEFFERSON EAST COMBINED SEWER RELIEF – CONTRACT 4 – SEMPLE OUTFALL

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)

JEFFERSON EAST COMBINED SEWER RELIEF – CONTRACT 4 – SEMPLE OUTFALL

<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)

JEFFERSON EAST COMBINED SEWER RELIEF – CONTRACT 4 – SEMPLE OUTFALL

<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>Title</u>
A	Test Hole Logs
B	DFO Correspondence

<u>Drawing No.</u>	<u>Drawing Name/Title</u>
LD-7416	JEFFERSON EAST COMBINED SEWER RELIEF - CONTRACT 4 - COVER SHEET
LD-7417	JEFFERSON EAST COMBINED SEWER RELIEF - CONTRACT 4 - SCOTIA STREET - SEMPLE AVENUE TO 24M SOUTH OF BURRIN AVENUE
LD-7418	JEFFERSON EAST COMBINED SEWER RELIEF - CONTRACT 4 - PROPOSED OUTFALL AT 407 SCOTIA STREET - SEMPLE AVENUE TO RED RIVER
LD-7419	JEFFERSON EAST COMBINED SEWER RELIEF - CONTRACT 4 - GATE CHAMBER - STANDARD DETAILS
LD-7420	JEFFERSON EAST COMBINED SEWER RELIEF - CONTRACT 4 - GATE CHAMBER - STRUCTURAL PLANS
LD-7421	JEFFERSON EAST COMBINED SEWER RELIEF - CONTRACT 4 - GATE CHAMBER - STRUCTURAL SECTIONS
LD-7422	JEFFERSON EAST COMBINED SEWER RELIEF - CONTRACT 4 - GATE CHAMBER - STRUCTURAL REINFORCING DETAILS
LD-7423	JEFFERSON EAST COMBINED SEWER RELIEF - CONTRACT 4 - GATE CHAMBER - STRUCTURAL REINFORCING DETAILS 2

E2. SOILS INVESTIGATION REPORT

- E2.1 Further to C3.1, the Test Hole Logs provided in Appendix A, and shown on the Drawings, are provided to supplement the Bidder's evaluation of Site conditions within the work area. Interpretation of the information provided is the responsibility of the Contractor. Variations in the soil conditions may exist between test holes and fluctuations in groundwater levels can be expected seasonally.

GENERAL REQUIREMENTS

E3. OFFICE FACILITIES

- E3.1 The Contractor shall supply office facilities meeting the following requirements:
- (a) The field office shall be conveniently located near the Site of the Work;

- (b) The building shall have a minimum floor area of 20 square metres, with window area of 3 square metres and a door entrance with suitable lock satisfactory to the Contract Administrator.
- (c) The building shall be suitable for all-weather use. It shall be capable of maintaining a temperature range between 16°C and 25°C;
- (d) The building shall be supplied with adequate lighting and 120 Volt power supply;
- (e) The building shall be furnished with one desk, one meeting table, one drafting table, one filing cabinet and six chairs, all satisfactory to the Contract Administrator;
- (f) A separate toilet with door lock shall be supplied for the Contract Administrator;
- (g) The field office shall be cleaned weekly immediately prior to the Job Site Meetings to the satisfaction of the Contract Administrator;

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. SHOP DRAWINGS

E4.1 Description

- (a) This Specification shall revise, amend, and supplement the requirements of CW 1100 of the City of Winnipeg's Standard Construction Specifications.
 - (i) The term "Shop Drawings: means drawings, diagrams, illustrations, schedules, performance charts, brochures, and other data, which are to be provided by the Contractor to illustrate details of a portion of the Work.
 - (ii) The Contractor shall submit specified Shop Drawings to the Contract Administrator for review. All submissions must be in metric units. Where data is in imperial units, the correct metric equivalent shall also be shown on all submissions for Engineering review.
 - (iii) Provision of Shop Drawings will be considered incidental to the price for supply and delivery of equipment.
- (b) Shop Drawings
 - (i) Original drawings are to be prepared by the Contractor, Subcontractor, Supplier, Distributor, or Manufacturer, which illustrate the appropriate portion of Work; showing fabrication, layout, setting, or erection details as specified in appropriate sections.

E4.2 Contractor's Responsibilities:

- (a) Review shop drawings, product data, and samples prior to submission and stamp and sign drawings indicating conformance to the Contract requirements.
- (b) Verify:
 - (i) Field measurements
 - (ii) Field construction criteria
 - (iii) Catalogue numbers and similar data
- (c) Coordinate each shop drawing submission with the requirements of the Work and Contract Documents. Shop drawings of separate components of a larger system will not be reviewed until all related drawings are available.

- (d) Notify Contract Administrator, in writing at time of shop drawing submission, of deviations from requirements of Contract Documents.
- (e) Responsibility for deviations in Shop Drawing submission from requirements of Contract Documents is not relieved by the Contract Administrator's review of submission, unless the Contract Administrator gives written acceptance of specified deviations.
- (f) Responsibility for errors and omissions in the Shop Drawing submission is not relieved by the Contract Administrator's review of the submittals.
- (g) The Contractor shall make any corrections required by the Contract Administrator and shall resubmit the required number of corrected copies of Shop Drawings. The Contractor shall direct specific attention in writing or on resubmitted Shop Drawings to revisions other than the corrections requested by the Contract Administrator on the previous submission.
- (h) After the Contract Administrator has reviewed and returned the copies, distribute the copies to sub-trades as appropriate.
- (i) Maintain one (1) complete set of reviewed shop drawings, filed by Specification Section Number, at the Site for use and reference by the Contract Administrator and Subcontractors.

E4.3 Submission Requirements

- (a) Schedule to submit Shop Drawing submissions following receipt of Notice of Award in accordance with B17, and allow for a seven (7) Calendar day period for review by the Contract Administrator of each individual submission and re-submission, unless noted otherwise in the Contract Documents.
- (b) Submit five (5) paper prints of Shop Drawings. The Contractor is advised that the Contract Administrator will retain three (3) copies of all submittals and return two (2) copies to the Contractor.
- (c) Accompany shop drawing submissions with a transmittal letter containing:
 - (i) Date
 - (ii) Project title and Bid Opportunity number
 - (iii) Contractor's name and address
 - (iv) Number of each shop drawing, product data, and sample submitted
 - (v) Specification Section, Title, Number, and Clause
 - (vi) Drawing Number and Detail/Section Number
 - (vii) Other pertinent data
- (d) Shop drawing submissions shall include:
 - (i) Date and revision dates.
 - (ii) Project title and Bid Opportunity number.
 - (iii) Name of:
 - Contractor
 - Subcontractor
 - Supplier
 - Manufacturer
 - Separate detailer when pertinent
 - (iv) Identification of product or material.
 - (v) Relation to adjacent structure or materials.
 - (vi) Field dimensions, clearly identified as such.
 - (vii) Specification section name, number and clause number or drawing number and detail/section number.
 - (viii) Applicable standards, such as CSA or CGSB numbers.
 - (ix) Contractor's stamp, initialled or signed, certifying review of submission, verification of field measurements, and compliance with Contract Documents.

E4.4 Other Considerations

- (a) Fabrication, erection, installation, or commissioning may require modifications to equipment or systems to conform to the design intent. Revise pertinent shop drawings and resubmit.
- (b) Material and equipment delivered to the Site will not be paid for until pertinent shop drawings have been submitted and reviewed.
- (c) Incomplete shop drawing information will be considered as stipulated deductions for the purposes of progress payment certificates.
- (d) No delay or cost claims will be allowed that arise because of delays in submissions, re-submissions, and review of shop drawings.

E5. WATERWAYS PROTECTION

E5.1 Description

- (a) All work adjacent to or crossing waterways including creeks and ditches draining in waterways is regulated by the Federal Department of Fisheries and Oceans (DFO), and City of Winnipeg Waterways division of Planning Property and Development.
- (b) Complete works in accordance to DFO guidelines/regulations.

E5.2 Construction Methods

E5.2.1 Permits

- (a) Waterways
 - (i) Contract Administrator has applied for Waterways permit on behalf of City of Winnipeg. A copy will be provided to Contractor
- (b) Department of Fisheries and Oceans
 - (i) This work does not require an authorization from the Department of Fisheries and Oceans. See correspondence in Appendix B.

E5.2.2 General

- (a) Complete erosion control works to be in accordance with current DFO Environment guidelines at <http://www.dfo-mpo.gc.ca/pnw-ppe/measures-mesures/index-eng.html>
- (b) The following mitigation measures must be adhered to protect fish habitat:
 - (i) No in-channel construction activity shall be permitted during the time period of April 1 – June 15, as per the Department of Fisheries and Oceans timing windows.
 - (ii) Use sediment and erosion control measures to prevent soil laden run off and silt from affecting downstream areas of the watercourse. Halt construction during periods of heavy rain or run off.
 - (iii) Monitor the work site to evaluate the effectiveness of erosion control measures and the physical stability of the creek bed and banks. Any problems are to be rectified immediately.
 - (iv) Conduct the cleaning, fuelling, and servicing of equipment a minimum of 100 m from any watercourse. Equipment operating near any watercourse should be free of external grease, oil, mud, or fluid leaks.
 - (v) Take necessary precautions to ensure deleterious substances, including silt, does not enter any watercourse. The deposit of deleterious substances into water frequented by fish is prohibited under the Fisheries Act.
 - (vi) Remove excess material from the excavation and place where it will not erode into any watercourse. Dispose all spoil materials above the high water mark and located such that they do no re-enter any watercourses.

- (c) The ice surface and riverbank shall be cleared of construction materials prior to ice break-up. The Contractor shall clean up all materials, including, but not limited to: soil snow fence, construction debris, etc.

E6. ENVIRONMENTAL PROTECTION

- E6.1 The Contractor shall plan and implement the Work of this Contract strictly in accordance with the requirements of the environmental protection measures as herein specified.
- E6.2 The Contractor is advised that at least the following Acts, Regulations, and By-laws apply to the Work:
 - E6.2.1 Federal
 - (a) Canadian Environmental Protection Act (CEPA) c.16
 - (b) Canadian Environmental Assessment Act (CEAA) c.37
 - (c) Transportation of Dangerous Goods Act and Regulations c.34
 - (d) The Fisheries Act
 - (e) Navigable Water Protection Act
 - E6.2.2 Provincial
 - (a) The Dangerous Goods Handling and Transportation Act D12
 - (b) The Endangered Species Act E111
 - (c) The Environment Act c.E125
 - (d) The Fire Prevention Act F80
 - (e) The Manitoba Nuisance Act N120
 - (f) The Public Health Act c.P210
 - (g) The Workplace Safety and Health Act W120
 - (h) And current applicable associated regulations.
- E6.3 The Contractor is advised that the following environmental protection measures apply to the Work.
 - E6.3.1 Materials Handling and Storage
 - (a) Construction materials shall not be deposited or stored on riverbanks or river shorelines unless written acceptance from the Contract Administrator is received in advance.
 - (b) Construction materials and debris shall be prevented from entering the Red River and Assiniboine River. In the event that materials and/or debris inadvertently enter the watercourse, the Contract shall be required to remove the material and restore the watercourse to its original condition.
 - E6.3.2 Fuel Handling and Storage
 - (a) The Contractor shall obtain all necessary permits from Manitoba Conservation for the handling and storage of fuel products and shall provide copies to the Contract Administrator.
 - (b) All fuel handling and storage facilities shall comply with The Dangerous Goods and Transportation Act Storage and Handling of Petroleum Products Regulation and any local land use permits.
 - (c) Fuels, lubricants, and other potentially hazardous materials as defined in The Dangerous Goods and Transportation Act shall be stored and handled within the approved storage areas.
 - (d) In accordance with Section 2.5 (Construction: General Guidelines) of the Manitoba Stream Crossing Guidelines for the Protection of Fish and Fish Habitat, (DFO and

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

- (e) The Contractor shall ensure that all fuel storage containers are inspected daily for leaks and spillage.
- (f) Products transferred from the fuel storage area(s) to specific Work Sites shall not exceed the daily usage requirement.
- (g) When servicing requires the drainage or pumping of fuels, lubricating oils or other fluids from equipment, a groundsheet of suitable material (such as HDPE) and size shall be spread on the ground to catch the fluid in the event of a leak or spill.
- (h) Refuelling of mobile equipment and vehicles shall take place at least 100 metres from a watercourse.
- (i) The area around storage Sites and fuel lines shall be distinctly marked and kept clear of snow and debris to allow for routine inspection and leak detection.
- (j) A sufficient supply of materials, such as absorbent material and plastic oil booms to clean up minor spills shall be stores nearby on-site. The Contractor shall ensure that additional material can be made available on short notice.

E6.3.3 Waste Handling and Disposal

- (a) The construction area shall be kept clean and orderly at all times during and at completion of construction.
- (b) At no time during construction shall personal or construction waste be permitted to accumulate for more than one day at any location on the construction site, other than at a dedicated storage area as may be approved by the Contract Administrator.
- (c) Indiscriminate dumping, littering, or abandonment shall not take place.
- (d) No on-site burning of waste is permitted.
- (e) Waste storage areas shall not be located so as to block natural drainage.
- (f) Run-off from a waste storage area shall not be allowed to cause siltation of a watercourse.
- (g) Waste storage areas shall be left in a neat and finished appearance and/or restored to their original condition to the satisfaction of the Contract Administrator.
- (h) Equipment shall not be cleaned near watercourses; contaminated water from onshore cleaning operations shall not be permitted to enter watercourses.

E6.3.4 Dangerous Goods/Hazardous Waste Handling and Disposal

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

E6.3.5 Emergency Spill Response

- (a) The Contractor shall ensure that due care and caution is taken to prevent spills.
- (b) The Contractor shall report all major spills of petroleum products or other hazardous substances with the potential for impacting the environment and threat to human health and safety to the Contract Administrator and Manitoba Environment,

immediately after occurrence of the environmental accident, by calling the 24-hour emergency telephone phone number (204) 945-4888.

- (c) The Contractor shall designate a qualified supervisor as the on-site emergency response coordinator for the project. The emergency response coordinator shall have the authority to redirect manpower in order to respond in the event of a spill.
- (d) The following actions shall be taken by the person in charge of the spilled material or the first person(s) arriving at the scene of a hazardous material accident or the on-site emergency response coordinator:
 - (i) Notify emergency-response coordinator of the accident:
 - identify exact location and time of accident
 - indicate injuries, if any
 - request assistance as required by magnitude of accident (Manitoba Environment 24-hour Spill Response Line (204) 945-4888, Police, Fire Department, Ambulance, company backup)
 - (ii) Assess situation and gather information on the status of the situation, noting:
 - personnel on Site
 - cause and effect of spill
 - estimated extent of damage
 - amount and type of material involved
 - proximity to waterways, sewers and manholes
 - (iii) If safe to do so, try to stop the dispersion or flow of spill material:
 - approach from upwind
 - stop or reduce leak if safe to do so
 - dike spill material with dry, inert sorbent material or dry clay soil or sand
 - prevent spill material from entering waterways and utilities by diking
 - prevent spill material from entering manholes and other openings by covering with rubber spill mats or diking
 - (iv) Resume any effective action to contain, clean up, or stop the flow of the spilled product.
- (e) The emergency response coordinator shall ensure that all environmental accidents involving contaminants shall be documented and reported to the Manitoba Environment according to The Dangerous Goods Handling and Transportation Act Environmental Accident Report Regulation 439/87.

E7. RED RIVER WATER LEVELS

E7.1 Normal Red River water levels are as follows.

- (a) Normal Summer Water Level (NSWL) (normally early June to late October) – 223.70 geodetic (approximate)
- (b) Winter Water Level (NWWL) (normally late November to late March) – 221.77 geodetic (approximate)

E7.2 Red River water levels rise considerably in the spring (typically mid March) due to ice break-up and snow melt. River crest elevations of 228.00 geodetic or higher are not unusual.

E7.3 River elevation may also increase in the summer due to heavy rainfall in the areas south of Winnipeg. Summer river crests are usually lower and of shorter duration than spring crests.

E7.4 No work on river banks or areas potentially in flood plain shall be scheduled after March 15 of a given year. The Contractors shall be prepared at all times to evacuate the work area due to sudden changes in river elevations and flows.

E7.5 The following web site link <http://winnipeg.ca/waterandwaste/sewage/riverlevels/pastYears.stm> lists historic Red River levels month by month back to 1999. The elevations shown are in imperial measurement and are referenced to “James Avenue Datum” which is elevation 221.76 geodetic.

E7.6 The Contractor shall be responsible to isolate the work area from elevated river levels once the outfall piping has been installed out to the river.

E7.7 Submittals

- (a) The Contractor shall submit a plan documenting the procedures, materials and equipment which will be used to isolate the work site from the river prior to mobilizing to site

E7.8 Measurement and Payment

- (a) No measurement of payment shall be made for protection of the site from river levels.

E8. PROTECTION OF EXISTING TREES

E8.1 The Contractor shall take the following precautionary steps to prevent damage from construction activities to existing boulevard trees within the limits of the construction area:

- (a) The Contractor shall not stockpile materials and soil or park vehicles and equipment on boulevards within 2 metres of trees.
- (b) Trees identified to be at risk by the Contract Administrator are to be strapped with 25 x 100 x 2400mm wood planks, or suitably protected as approved by the Contract Administrator.
- (c) Excavation shall be performed in a manner that minimizes damage to the existing root systems. Where possible, excavation shall be carried out such that the edge of the excavation shall be a minimum of 1.5 times the diameter (measured in inches), with the outcome read in feet, from the closest edge of the trunk. Where roots must be cut to facilitate excavation, they shall be pruned neatly at the face of excavation. They must be properly trimmed with sharp tools to prevent crushing or being pulled by construction equipment. No paint is required. All exposed roots must be mulched until the excavated area is filled with clean earth to avoid exposure to sunlight and desiccation.
- (d) Operation of equipment within the dripline of the trees shall be kept to the minimum required to perform the work required. The dripline of a tree shall be considered to be the ground surface directly beneath the tips of its outermost branches.
- (e) Work on-site shall be carried out in such a manner so as to minimize damage to existing tree branches. Where damage to branches does occur, they shall be neatly pruned.

E8.2 All damage to existing trees caused by the Contractor's activities shall be repaired to the requirements and satisfaction of the Contract Administrator and the City Forester or his designate.

E8.3 Elm trees shall not be pruned at any time between April 1st and July 31st of any year under provisions of The Forest Health Protection Act and The Forest Health Protection Regulations.

E8.4 No separate measurement or payment will be made for the protection of trees.

E9. TREES AND SHRUBS

E9.1 Description

E9.1.1 General

- (a) This specification covers the supply and installation of nursery-grown trees and shrubs plantings in areas to be determined by the Contract Administrator, including preparation, digging, transport and planting, and maintenance.

E9.1.2 Nomenclature

- (a) Nomenclature of specified nursery stock shall conform to the International Code of Nomenclature for Cultivated Plants and shall be in accordance with the approved scientific names given in the latest edition of Standardized Plant Names. The names

of varieties not named therein are generally in conformity with the names accepted in the nursery trade.

E9.1.3 Source Quality Control

- (a) All nursery stock supplied shall be nursery grown and of species and sizes as indicated on the Drawings. Nursery stock shall be No. 1 Grade material in accordance with the current edition of Landscape Canada's (CNTA) "Guide Specifications for Nursery Stock".
- (b) 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". Obtain permission of the Contract Administrator to use collected plants.
- (c) The Contractor shall notify Contract Administrator of source of plant material at least seven (7) days in advance of shipment.
- (d) Acceptance of plant material at source does not prevent rejection of same plant material on site prior to or after planting operations.
- (e) Imported plant material must be accompanied with necessary permits and import licenses. Conform to federal and provincial regulations.

E9.1.4 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, especially of large trees, during lifting.
- (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 protect from sun and wind. Heel-in trees and shrubs that cannot be planted immediately in shaded areas; water well.

E9.1.5 Replacement

- (a) During the first two (2) years following completion of planting operations, remove from site any plants that have died or failed to grow satisfactorily, as determined by the Contract Administrator. As an example, plant material installed in 2015 that has failed to grow satisfactorily and has not been replaced by October 31, 2016, would be required to be replaced in the spring of 2017.

E9.2 Materials

E9.2.1 Water

- (a) Water shall be potable and free of minerals that may be detrimental to plant growth.

E9.2.2 Fertilizer

- (a) Fertilizer shall be slow release organic. Fertilizer shall contain N-P-K in ratio as recommended by soil test results from an approved agricultural soil testing laboratory.

E9.2.3 Root Ball Burlap

- (a) Root ball burlap shall be 150 g Hessian burlap.

E9.2.4 Anti-desiccant

- (a) Anti-desiccant shall be wax-like emulsion to provide film over plant surfaces reducing evaporation but permeable enough to permit transpiration.

E9.2.5 Wound Dressing

- (a) Wound dressing shall be horticultural accepted non-toxic, non-hardening emulsion.

E9.2.6 Plant Material

- (a) All plant material specified for this project shall be containerized and/or ball and burlap nursery stock. All plants shall be from the Winnipeg area.
- (b) Comply with latest edition of the "Guide Specification for Nursery Stock", produced by Landscape Canada (CNTA), referring to quality, size and development of nursery-grown plant material and root balls.
- (c) Nursery stock shall be No. 1 grade trees, shrubs and vines.
- (d) All plant material shall be measured when branches are in their natural position. Height and spread dimensions specified in the Plant List in this specification, refer to the main body of the plant, and not from branch tip to root base or from branch tip to branch tip. Where trees are measured by calliper (cal.), reference is made to the diameter of the trunk measured at 300 mm above ground as the tree stands properly planted in the nursery.
- (e) Material sources are to be approved by Contract Administrator prior to ordering. The Contractor shall provide all of the necessary nursery certificates to ensure that the plant species comply with this specification.
- (f) 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". All evergreens shall be symmetrically grown and branched from ground level, up.
- (g) 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.
- (h) All parts of the plants shall be moist and show live, green cambium tissue when cut.
- (i) At least one (1) plant of each variety supplied shall bear a tag showing both the botanical and common name of the plant.

E9.2.7 Additional Plant Material Qualifications:

- (a) Imported Plant Material
 - (i) Plant material obtained from areas with milder climatic conditions from those of site acceptable only when moved to site prior to the breaking of buds in their original location and heeled-in in a protected area or placed in cold storage until conditions suitable for planting. Obtain Contract Administrator's approval to use imported plant material.
- (b) Cold Storage
 - (i) Approval required for plant material that has been held in cold storage.
- (c) Container-Grown Stock
 - (i) 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.
- (d) Balled and Burlapped Plant Material
 - (i) Deciduous trees in excess of 3 m height must have been dug with large firm ball. Root balls must include 75% of fibrous and feeder root system. This excludes use of native trees grown in light sandy or rocky soil. Secure root balls with burlap, heavy twine and rope. For large trees: wrap ball in double layer of burlap and drum lace with minimum 10 mm diameter rope. Protect root balls against sudden changes in temperature and exposure to heavy rainfall.

- (e) Tree Spade Dug Material
 - (i) Obtain approval of the Contract Administrator for digging plant material with mechanized digging equipment, hydraulic spade or clam-shell type. This type of digging is typically not acceptable for boulevard tree plantings. Dig root balls to satisfy Landscape Canada (CNTA) standards. Lift root ball from hole, place in wire basket designed for purpose, line with burlap. Tie basket to ball with heavy rope. Take care not to injure trunk of tree with wire basket ties or rope.
- (f) Substitutions
 - (i) 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.

E9.2.8 Plant List

- (a) Deciduous Trees
 - (i) 2 *Ulmus americana* / American Elm 65mm calliper Balled and Burlapped / Container
 - (ii) 2 *Fraxinus pennsylvanica* / *Subintegerrima* / Green Ash 65mm calliper Balled and Burlapped / Container

E9.3 Construction Methods

E9.3.1 Workmanship

- (a) The Contract Administrator shall stake out location of trees prior to excavating.
- (b) The Contractor shall obtain clearances from all utilities, with respect to underground lines located in the areas to be excavated, prior to commencing planting operations.
- (c) The Contractor shall apply anti-desiccant in accordance with material manufacturer's instructions.
- (d) The Contractor shall coordinate planting operations; keep the site clean and planting holes drained, and immediately remove soil or debris spilled onto pavement.

E9.3.2 Planting Time

- (a) The Contractor shall plant deciduous plant material during dormant period before buds have broken. Plant material noted for spring planting only must be planted in dormant stage.
- (b) Plant material imported from region with warmer climatic conditions may only be planted in early spring.
- (c) 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.
- (d) When permission has been obtained, trees, shrubs and ground covers growing in containers may be planted throughout growing season.
- (e) Plant only under conditions that are conducive to health and physical conditions of plants.
- (f) The Contractor shall advise the Contract Administrator about the planting schedule at least 3 days prior to planting operations.

E9.3.3 Excavations

- (a) Trees: excavate to depth such that the top of the root ball is even with existing grade, with a surface width of two times the diameter of the root ball. Backfill around trees with planting soil mixture.
- (b) The sides of all tree pits shall be scarified to the depth of one shovel blade.

- (c) Provide drainage for planting holes in heavy soil if natural drainage does not exist. Have method approved.
- (d) Protect the bottoms of excavations against freezing.
- (e) Remove water that enters excavations prior to planting. Ensure source of water is not ground water.

E9.3.4 Planting

- (a) Trees shall be placed on undisturbed soil and to a depth equal to that at which they were originally growing at the nursery.
- (b) For shrubs, 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 plant material to give best appearance in relation to structures, roads and walkways.
- (d) Place plant material to depth equal to depth they were originally growing in nursery or in locations collected.
- (e) Ball and burlap root balls: loosen burlap and cut away minimum top 1/3 without disturbing root ball. Do not pull burlap or rope from under root ball. With container stock, remove entire container without disturbing root ball. Non-biodegradable wrappings must be removed.
- (f) Tree spade excavated materials:
 - (i) Tree spade planting shall be permitted only by approval of the Contract Administrator.
 - (ii) Dig tree pit with same mechanical equipment as used to dig plant material. Ensure hole dug is upright as possible. Place in hole a mixture of 40 L of planting soil and fertilizer mixed with water to soupy consistency. This will be forced up sides of ball as root ball is placed in hole.
 - (iii) Loosen bottom of planting hole to depth of 150 to 200 mm. Cover bottom of each excavation with minimum 150 mm topsoil mixture.
- (g) Tamp planting soil mixture 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 been completely penetrated into soil, complete backfilling.
- (h) Excavate 200 mm depth an additional 600 mm beyond planting pits around the perimeter of all tree planting pits, and fill with planting soil mixture.
- (i) Construct 100 mm deep saucers around the outer edge of planting pits to assist with maintenance watering.
- (j) 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 calliper for trees, or as recommended by the soil analysis. Mix fertilizer thoroughly with top layer of planting soil and water in well.

E9.3.5 Pruning

- (a) Prune trees, shrubs and groundcover after planting, as indicated. Postpone pruning of those trees where heavy bleeding may occur, until in full leaf. 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 and shrubs without changing their natural shape. Do not damage lead branches or remove smaller twigs along main branches.

E9.3.6 Standards

- (a) All roots shall be cleanly cut; split roots are not acceptable.
- (b) Branches and trunks shall be tied and protected; broken or abraded branches or trunks are not acceptable.

- (c) Planting shall be protected from drying conditions; desiccated material not acceptable.
- (d) All plants shall be free of insects and disease: galls, blight and other manifestations of insect infestation or disease not acceptable.

E9.3.7 Wood Chip Mulch

- (a) Wood chip mulch shall extend under all tree limbs, but shall not be installed within 150 mm of the tree trunk.
- (b) The saucers of all trees not planted in beds shall be covered with a 100 mm depth of wood chip mulch.

E9.3.8 Maintenance

- (a) Watering
 - (i) Plant material shall be watered once a week for first four weeks following installation, and once every second week, thereafter. Ensure adequate moisture in root zone at freeze-up.
- (b) Weeding
 - (i) Keep mulched shrub beds and tree saucers weed-free by manually removing weeds during the maintenance period.
- (c) Insects and Diseases
 - (i) Spray plants to combat pests and diseases. Use organic chemical insecticides approved by Agriculture Canada.
- (d) Adjustments
 - (i) Make adjustments requested by the Contract Administrator, including straightening trees, tightening guy wires and removing tree stakes.
- (e) Maintenance Period
 - (i) Maintain plant material for a period of two years following acceptance to start maintenance period of planting operations, as determined by the Contract Administrator.

E9.4 Measurement and Payment

E9.4.1 Trees and Shrubs

- (a) Supply and installation of trees and shrubs will be measured on a unit price basis for each tree and shrub listed on the Plant List and paid for at the Contract Unit Price for each species and size shown on the Plant List. The number of trees and shrubs to be paid for will be the total number of trees and shrubs installed in accordance with this specification and accepted by the Contract Administrator, as computed by the Contract Administrator.
- (b) Supply and installation of fertilizer for plant material will be included in payment for the plant material.

E10. TOPSOIL, PLANTING SOIL, SOIL AMENDMENTS AND FINISH GRADING

E10.1 Description

E10.1.1 General

- (a) This specification shall amend and supplement City of Winnipeg Standard Construction Specification CW 3540-R5 "Topsoil and Finish Grading for Establishment of Turf Areas", and shall cover supply, preparation and placement of topsoil, planting soil and soil amendments, including preparation of existing grade, finish grading and fertilizer application.
- (b) Referenced Standard Construction Specifications
 - (i) CW 3540- Topsoil and Finish Grading for Establishment of Turf Areas

E10.2 Materials

E10.2.1 Peatmoss

- (a) Peat moss shall be decomposed plant material, fairly elastic and homogenous, free of colloidal residue, wood, sulphur and iron; containing a minimum of 60% organic material by weight, with moisture content not exceeding 15%. Shredded particles shall not exceed 6 mm in size. Minimum pH value of peat shall be 4.5; maximum 6.0.

E10.2.2 Sand

- (a) Sand shall be hard, granular, sharp sand to CSA A82.56-M1976, well-washed and free of impurities, chemicals and organic matter.

E10.2.3 Bonemeal

- (a) Bonemeal shall be raw, finely ground with a minimum chemical analysis of 3% nitrogen and 20% phosphoric acid.

E10.2.4 Wood Chip Mulch

- (a) Wood chip mulch shall be chipped ash, maple, poplar, birch and other deciduous trees. Mulch shall be chipped to sizes ranging from 50mm to 100mm. Mulch may NOT contain stringy twigs and seed, free of non-organic material, wood preservatives or diseased wood. The mulch shall contain no more than 5% of the following materials in total: soil, sawdust, peatmoss, coniferous wood and needles.
- (b) The Contractor shall supply a wood chip mulch sample to the Contract Administrator for approval prior to installation.

E10.2.5 Fertilizer

- (a) 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:
 - (i) Horticultural trees and shrubs with planting soil mix; and

E10.2.6 Chemical Application

- (a) Roundup or similar chemical herbicides approved by Agriculture Canada shall be used only with the approval of the Contract Administrator.

E10.3 Construction Methods

E10.3.1 Planting Soil Mixture for Trees and Shrubs

- (a) Planting soil mixture shall be a mix of 75% topsoil and 20% peatmoss, loose by volume. Incorporate 5% sand, or as required, to improve soil texture. Incorporate bonemeal at 3 kg/cubic metre of planting soil mixture.

E10.4 Method of Measurement and Basis of Payment

E10.4.1 Planting Soil Mixture

- (a) There will be no separate measurement or payment for planting soil mixture used in planting individual trees.

E10.4.2 Wood Chip Mulch

- (a) There will be no separate measurement or payment for wood chip mulch used in individual trees saucers.

E11. TRAFFIC MANAGEMENT

E11.1 Further to clause 3.7 of CW 1130:

- E11.1.1 Scotia Street will be permitted to be closed in the immediate vicinity of the Work, as required, for the duration of construction. The Contractor shall maintain access to private approaches.

- E11.1.2 Should the Contractor be unable to maintain pedestrian or vehicular access to a residence or business, he/she shall review the planned disruption with the business or residence and the Contract Administrator, and take reasonable measures to minimize the impact. The Contractor shall provide a minimum of 24 hours notification to the affected residence or business and the Contract Administrator, prior to disruption of access.
- E11.1.3 The Contractor shall maintain pedestrian access during street closures by means of detours or rerouting.
- E11.1.4 Provide notice of complete street shutdowns complete with dates and duration a minimum of five (5) working days prior to street shutdown.

E12. EXCAVATION, BEDDING AND BACKFILL

E12.1 Submittals

- (a) Submit shoring designs, in accordance to CW 2030.

E12.2 Existing Utilities

- (a) Arrange and pay for any required safety watches around existing utilities as per CW1120.

E12.3 Disposal of Unsuitable or Surplus Excavated Material

- (a) The Contractor is responsible for arranging for a disposal site for all excavated material, including all associated works including transportation and payment of tipping fees. Disposal of all excavated material shall be considered incidental to the Works.

E12.4 Foundation, Bedding and Backfill

- (a) Type 3 materials shall be used where foundations are required.
- (b) Class A concrete pipe bedding shall be used in jacking shafts as per SD-001.
- (c) Type 3 initial backfill material shall be used in place of sand in all shafts.
- (d) All shafts shall be backfilled with Class 2 backfill as per SD-002.
- (e) Shafts to accommodate a tunnelling or jacking machine shall be constructed with a concrete foundation of sufficient cross section and trueness to adequately support and align the machine during tunnelling operations.

E12.5 Measurement and Payment

- (a) Excavation, shoring, and backfilling for pipe installation and gate chamber construction will not be measured for payment. Costs for excavation and shoring shall be included in the price for installation of sewer pipe and the gate chamber. No separate measurement or payment will be made.

E13. LAND DRAINAGE SEWER

E13.1 Materials

E13.1.1 Reinforced Concrete Jacking Pipe

- (a) Reinforced concrete jacking pipe shall conform to CW 2130, ASTM C76 and CSA A257.
- (b) Minimum pipe class: Class IV (ASTM C76) or 100-D (CSA A257)
- (c) Pipe shall be a "C-Wall" design with a minimum wall thickness of 219 mm.
- (d) Pipe classes for jacking pipe as shown on the Drawings are for long term design conditions and loading. The Contractor shall verify that the pipe class, strength, reinforcing and joint design are suitable for his proposed installation methods and procedures. Design of any pipe to suit installation methods is the responsibility of the Contractor. Axial load carrying capacity shall be designed in accordance with ASCE 27.

- (e) Reinforcement for pipe intended for trenchless installations must take into account the potential for the pipe to rotate during installation. The design of stirrups and circumferential reinforcement must not result in a preferential installation orientation for the pipe unless appropriate controls are put in place, precluding rotation of the pipe during installation.
- (f) External joint bands shall conform to CW 2130 and ASTM A36.
- (g) Perform a minimum of one (1) three-edge bearing test in accordance with ASTM C76 and C497. Test shall confirm both the service cracking and ultimate load capacity of the pipe. Test shall be performed in the presence of the Contract Administrator. The pipe supplier shall provide a minimum of five (5) working days advance notice to the Contract Administrator prior to undertaking the test.

E13.2 Submittals

- E13.2.1 Submit Shop Drawings for reinforced concrete jacking pipe in accordance with ASTM C76 and CW 2160. Shop Drawings shall include the following:
 - (a) All pipe and joint dimensions
 - (b) Steel reinforcement configuration
- E13.2.2 Submit quality control documentation in accordance with ASTM C76 and CW 2160. Quality control documents shall include the following:
 - (a) Mill tests for reinforcing steel
 - (b) Concrete test results
 - (c) Results from three-edge bearing test(s).

E13.3 Construction Methods

- (a) Land drainage sewers shall be installed in accordance with CA 2130 and E12.4.
- (b) Verification of Utility Elevations
 - (i) Prior to construction, the Contractor shall verify buried utility elevations at proposed crossing locations identified on the drawings. Verification shall occur a minimum of 10 business days prior to any construction on the land drainage sewer such that any required grade adjustments can be made. Contractor shall arrange for all required utility locations, safety watches and other required notifications. Contractor shall provide a minimum of two (2) Business Days notice to the Contract Administrator of conducting utility exposures.

E13.4 Measurement and Payment

- E13.4.1 Measurement and payment for sewer installation shall be in accordance with CW 2130.

E14. TRENCHLESS EXCAVATION

- E14.1 Further to Clause 3.4.1 of CW 2130, all sewers shall be installed by trenchless methods.
- E14.2 Selection of excavation equipment for installation of sewers by trenchless methods shall be the responsibility of the Contractor and shall be made based on the basis of expected soil conditions outlined in the geotechnical report and as detailed on the soil logs. The Contractor shall make allowances in the choice of equipment to account for reasonable and minor deviations in ground conditions and shall have contingency plans for the removal of boulders and other minor changes in ground conditions.
- E14.3 In the event that there is a substantial change in the character or nature of the subsurface conditions or that obstructions are encountered, which adversely impact the Contractor's production or construction procedure, the Contractor shall immediately notify the Contract Administrator.

- (a) The notice shall provide details of the change in subsurface soil conditions or obstructions encountered, any proposed construction procedure revision that the Contractor intends to undertake, as well as any other relevant supporting information.
- (b) The Contract Administrator shall review the notice as expeditiously as possible to assess whether the change in conditions and revised construction procedures amount to a Change in Work. In the case of obstructions due to boulders in the silt/till or hardpan strata where that stratum is evident in the soils logs, no consideration will be made for a Change in Work as boulder obstructions can be reasonably anticipated when working in this stratum. Obstructions such as "random boulders" in the clay strata well above the till interface may be considered as a Change in Work dependent on the level of effort required to facilitate their removal.
- (c) Where the Contract Administration deems that a Change in Work is necessary, it shall be valued in accordance with the provisions of C7 and the supplementary requirements of E15.

E15. TRENCHLESS EXCAVATION OBSTRUCTIONS

E15.1 Contingency plans for removal of the obstructions encountered in trenchless excavations must be approved by the Contract Administrator and may consist of but not limited to one of the following.

- (a) Drill or excavate a shaft at the location of the obstruction and remove the obstruction.
- (b) Remove the obstruction through the jacking head or core hole following drilling, splitting or breaking the obstruction into smaller components as required.
- (c) Other removal methods.

E15.2 Where the Contract Administrator deems that the obstruction encountered represents a Change in Work, it shall be valued in accordance with C7.4 (c) and the following supplemental requirements:

- (a) The first four (4) hours of handling obstructions for each occurrence shall be the responsibility of the Contractor.
- (b) Equipment rates for equipment required in support of the obstruction removal shall be compensated at the MHCA rental rates. Equipment not listed in the MHCA rate schedule shall have their rates established by the Contractor prior to the commencement of Work in accordance with the procedure documented in the MHCA rental guide for establishing equipment rental rates and shall be subject to the approval of the Contract Administrator.
- (c) Standby equipment that cannot reasonably be deployed elsewhere during the duration of the obstruction removal shall be compensated at 50% of its established rate as noted in E15.2(b) above.
- (d) Labour rates and material costs associated with obstruction removal shall be compensated as per C7.4 (c) and C7.4.1 with the provision that any removal and replacement of pavements shall be compensated at the Contract Unit Price for such Work.

E16. CONSTRUCTION OF GATE CHAMBER

E16.1 Description

- (a) This Specification shall cover the construction of a new reinforced concrete gate chamber as shown on the Drawings.

E16.2 Materials

- (a) All materials shall conform to the requirements of this Specification and the requirements of the latest edition of the City of Winnipeg Standard Construction Specification.

E16.2.1 Concrete

- (a) Concrete mix design shall be as indicated in the Construction Notes on the Drawings and in accordance with CW 2160 and E18.

E16.2.2 Reinforcing Steel

- (a) Reinforcing Steel shall conform to CW 2160 and E19.

E16.2.3 Metal Fabrications

- (a) Metal Fabrications shall conform to E17.

E16.2.4 Internal Pipe Drop

- (a) Internal Pipe Drop shall conform to City of Winnipeg Standard Detail SD-010D.

E16.2.5 Shop Drawings

- (a) Provide shop drawings in accordance with E4.

E16.2.6 Grout

- (a) Grout, if required, shall be Sika Grout 212 or CPD Non Shrink Grout or approved equal in accordance with B7, mixed and applied in accordance with the manufacturer's instructions and of a consistency suitable for the intended application, as approved by the Contract Administrator.

E16.2.7 Foundation Waterproofing

- (a) Foundation waterproofing shall conform to CW 2160.

E16.2.8 Valve Box Sealant

- (a) Sealant for the valve box flange shall be a general purpose butyl sealant rated for buried and exterior locations.

E16.2.9 Joint Fillers

- (a) Joint Fillers
 - (i) Joint filler for concrete slab shall be self-leveling, polyurethane sealant to meet requirements of ASTM C920, Type S, Grade P, Class 25, Use T, M, A, O, and I.
 - (ii) Approved product: Vulkem 45 as manufactured by Tremco, Sikaflex 1C SL, or approved equal in accordance with B7.
- (b) Backer rod shall meet requirements of ASTM C1330.
- (c) Bond Breaker: pressure sensitive plastic tape, which will not bond to sealants.
- (d) Joint Cleaner: xylol, methylethyleketon or non-corrosive type recommended by sealant manufacturer and compatible with joint forming materials.

E16.3 Construction Methods

E16.3.1 Excavation

- (a) Place a minimum 75mm thick lean mix concrete slab in the bottom of the excavation to provide a clean working base upon completion of the excavation to the required limits. Allow the concrete to set for twenty-four (24) hours before setting up forms or placing reinforcing steel.
- (b) Lean mix concrete shall be well-tamped and screened to give a level working platform for setting up forms and placing reinforcing steel.

E16.3.2 Backfill

- (a) Place and compact backfill material as indicated on the Drawings in accordance with CW 2030. Do not place backfill material in a frozen state. Supply heating and hoarding in accordance with CW 2160 if required to ensure material does not freeze before compaction is complete.

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

E16.3.3 Grout

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

E16.3.4 Installation of Removable Roof Slabs

- (a) Clean joint surfaces as per sealant manufacturer's instructions.
- (b) Install removable roof slabs.
- (c) Apply joint filler as per manufacturer's instructions.

E16.4 Measurement and Payment

- (a) Construction of the gate chamber will be measured on a Lump Sum Basis and paid at the Contract Price for "Construction of Gate Chamber" which price shall be payment in full for supplying all materials and for performing all operations herein described and all other items incidental to the Work included in this Specification.

E17. METAL FABRICATIONS

E17.1 Description

- (a) This Specification shall cover the supply, fabrication, transportation, handling, delivery and placement of metal fabrications.

E17.2 Materials

- (a) All materials shall be of a type acceptable to the Contract Administrator, and shall be subject to inspection and testing by the Contractor Administrator.
- (b) Material intended for use in the various assemblies shall be new, straight, clean, and with sharply defined profiles.
- (c) Steel Sections and Plates: to CAN/CSA G40.20/G40.21, Grade 300 W, except W, HP and
- (d) HSS sections, which shall be Grade 350 W.
- (e) Steel Pipe: to ASTM A53/A53M, seamless, galvanized, as specified on the Drawings
- (f) Welding materials: to CSA W59.
- (g) Hot dipped galvanized steel repair material: Galvalloy and Gal-Viz
- (h) Stud Anchors: to ASTM A108, Grade 1020.
- (i) Aluminum: to CAN/CSA S157 and the Aluminum Association 'Specifications for Aluminum Structures'. Aluminum for plates shall be Type 6061-T651. Aluminum plate shall have an approved raised oval or multi-grip pattern.
- (j) Isolating sleeves shall be "Nylite" – headed sleeve as manufactured by SPAE-Naur, or approved equal in Accordance with B7.
- (k) Anchor bolts and fasteners: ASTM A276, Type 316 stainless steel, of ample section to safely withstand the forces created by operation of the equipment or the load to which they will be subjected.

E17.3 Construction Methods

- (a) Submittals
 - (i) The Contractor shall submit the qualifications of the fabricator and welders to the Contractor Administrator for acceptance. Submit shop drawings in accordance with this Specification clearly indicating materials, core thickness, finishes, connections,

joints, method of anchorage, number of anchors, supports, reinforcement, details and, accessories. Indicate field measurements on shop drawings.

(b) Fabrication

- (i) Fabricate Work square, true, straight and accurate to required size, with joints closely fitted and properly secured. Assemble Work in such a way that no disfigurements will show in the finished Work, or impair the strength.
- (ii) Confirm measurements for all fabrications before fabricating.
- (iii) Cut aluminum plate with edges straight and true, and as far as practical, maintain continuity of the pattern at abutting edges.
- (iv) Pieces shall be of the sizes indicated on the Drawings and shall not be built up from scrap pieces. Confirm sizes with field measurements.
- (v) Where possible, fit Work and shop assemble, ready for erection.
- (vi) Angle frames shall be of the same material as the cover plate (except for existing frames designated on the Drawings for re-use), and cover plates shall be hinged and be supplied with lifting handles, as shown on the Drawings. Exterior covers shall be supplied with a hasp for a padlock.
- (vii) Remove and grind smooth burrs, filings, sharp protrusions, and projections from metal fabrications to prevent possible injury. Correct any dangerous or potentially harmful installations as directed by Contract Administrator.
- (viii) All steel welding shall conform to CSA Standard W.59. Fabricator shall be fully approved by the Canadian Welding Bureau, in conformance with CSA Standard W.47.1. Welding shall be done by currently licensed welders only.
- (ix) All aluminum welding shall be in accordance with the requirements of CSA W59.2. The fabricator shall be fully certified in conformance with CSA Standard W47.2. All welding shall be done in a licensed welding shop, and no field welding will be permitted unless approved in writing, in advance, by the Contract Administrator.
- (x) Ensure exposed welds are continuous for length of each joint. File or grind exposed welds smooth and flush.
- (xi) All steel shall be hot-dip galvanizing after fabrication, in accordance with CAN/CSA G164, to a minimum net retention of 600 gm/m².
- (xii) Seal exterior steel fabrications to provide corrosion protection in accordance with CAN3-S16.1.
- (xiii) Use self-tapping shake-proof flat-headed screws on items requiring assembly by screws.

(c) Erection

- (i) Do steel welding Work in accordance with CSA W59 and aluminum welding Work in accordance with CSA W59.2
- (ii) Erect metal Work in accordance with reviewed shop drawings, square, plumb, straight, and true, accurately fitted, with tight joints and intersections.
- (iii) Provide suitable means of anchorage acceptable to Contract Administrator such as dowels, anchor clips, bar anchors, expansion bolts and shields, and toggles where not specifically indicated on the Drawings.
- (iv) Provide components for building in accordance with shop drawings and schedule.
- (v) Make field connections with bolts to CAN/CSA-S16, or weld.
- (vi) Touch-up rivets, bolts and burnt or scratched surfaces that are to receive paint finish, with zinc primer after completion of erection.
- (vii) Repair damaged galvanized surfaces and field welds with self-fluxing, low temperature, zinc-based alloy rods in accordance with ASTM A780, Repair of Damaged Hot Dip Galvanizing Coatings. The general procedure shall be to allow a small amount of the repair alloy to flow then spread by brushing briskly with a wire brush. Brushing shall be sufficient to obtain a bright finish. Repeat process three times to ensure a proper thickness is achieved. Temperatures shall be kept below

177°C (350°F) at all times. All heating of structural steel. Work shall be done in the presence of the Contract Administrator.

- (viii) Install access hatch frames square and level at the locations show on the Drawings. Embed anchors in concrete as shown on the Drawings. Install covers and adjust hardware to proper function.
- (ix) All aluminum surfaces in contact with concrete shall be isolated using alkali resistant bituminous paint meeting the requirements of CGSB 31-GP-3M.
- (x) Install electrochemical isolation gaskets and sleeves to electrically isolate dissimilar metals.

E17.4 Measurement and Payment

- (a) Supply and installation of fabricated metal components within gate chamber shall be paid for under the Lump Sum Price for "Construction of Gate Chamber", which price shall be payment in full for supplying all materials and for performing all operations herein described and all other items incidental to the Work included in this Specification.
- (b) Supply and installation of fabricated metal components associated with the outfall piping including handrails, bar screen, internal slip joint, an internal pipe restraints, shall be paid for under Lump Sum Price for "Metal Fabrications – Outfall", which price shall be payment in full for payment in full for supplying all materials and for performing all operations herein described and all other items incidental to the Work included in this Specification.

E18. CAST-IN-PLACE CONCRETE

E18.1 Description

- (a) This Specification shall cover the construction of cast-in-place concrete for the gate chamber, which the Contractor shall carry out in accordance with Specification CW 2160 and CSA A23.1, except as amended or supplemented herein

E18.2 Materials

- (a) Structural Concrete Mix Design
 - (i) Provide concrete mixed in accordance with requirements of CAN/CSA-A23.2.
 - (ii) Structural concrete design shall be in accordance with performance specification having the following properties:
 - ◆ Class of Exposure: S-1
 - ◆ Minimum Compressive Strength @ 28 days: 35 MPa
- (b) Lean-Mix Concrete Design
 - (i) Lean-mix concrete design shall be in accordance with performance specification having the following properties:
 - ◆ Cement: Type HS
 - ◆ Minimum Compressive Strength @ 28 days: 15 MPa
- (c) Bonding Agent
 - (i) Bonding agent shall be ACRYL-STIX or approved equal in accordance with B7.
- (d) Waterstop
 - (i) Waterstop shall be 152.4mm wide by 9.5mm thick Vinylex ribbed center bulb or approved equal in accordance with B7.

E18.3 Construction Methods

E18.3.1 Construction Method Submission

- (a) No Work shall commence on construction of gate chamber until after the Contract Administrator's review of the Contractor's Construction Method submission.
- (b) The Contractor shall prepare for the Contract Administrator's review a Construction Method submission detailing:

- (i) Construction sequence to be followed including all methods to be employed to ensure no damage occurs to existing structures or adjacent properties within or adjacent to excavation.
- (ii) Proposed method of construction.
- (iii) Specialized equipment to be used.
- (iv) Any design revisions proposed to accommodate the Contractor's proposed construction method.
- (v) Flow control considerations including details on the Contractor's proposed method of flow control.
- (vi) The Contractor shall respond to any concerns that may be raised by the Contract Administrator after review of the Construction Method submission.

E18.4 Cast-in-Place Concrete Construction

- (a) Adjust the location of the reinforcing steel adjacent to openings and in location of the waterstop along the center line of wall to frame those openings in accordance with good practice, and maintain the bar spacing intent.
- (b) Do not use welded splices for reinforcing steel.
- (c) Install foundation waterproofing in accordance with Specification CW 2160.

E18.5 Measurement and Payment

- (a) Supply and placement of cast-in-place concrete shall be paid for under the Lump Sum Price for "Construction of Gate Chamber", which price shall be payment in full for supplying all materials and for performing all operations herein described and all other items incidental to the Work included in this Specification.

E19. REINFORCING STEEL

E19.1 Description

- (a) This Specification shall cover all reinforcing steel work, in accordance with Specification CW 2160, except as amended or supplemented herein.

E19.2 Materials

E19.2.1 Reinforcing Steel

- (a) Further to CW 2160 Sentence 2.6 Materials: Reinforcing Steel, all reinforcing steel shall conform to the requirements of CSA G30.18, Grade 400.

E19.2.2 Bar Accessories

- (a) Bar accessories shall be of type approved by the Contract Administrator. They shall be made from a non-corroding material, and they shall not stain, blemish, or spall the concrete surface for the life of the concrete. Bar chairs are to be PVC; galvanized bar chairs are not acceptable.
- (b) Bar accessories shall include bar chairs, spacers, clips, wire ties, wire (18 gauge minimum), or other similar devices that may be approved by the Contract Administrator. Bar accessories are not shown on the Contract Drawings. The supply and installation of bar accessories shall be considered incidental to the supply and placing of reinforcing steel.

E19.3 Construction Methods

E19.3.1 Placing of Reinforcing Steel

- (a) Reinforcing steel shall be placed accurately in the positions shown on the Contract Drawings. Carefully adjust the location of reinforcing steel adjacent to openings to frame those openings in accordance with good practice, and maintain the bar spacing intent.

- (b) Splices in reinforcing steel shall be made only where indicated on the Contract Drawings. Prior approval of the Contract Administrator shall be obtained where, in the opinion of the Contractor, other splices must be made. All splices shall have laps of at least 40 bar diameters. Welded splices shall not be used.
- (c) A minimum of twenty-four (24) hours notice shall be given to the Contract Administrator prior to the pouring of any concrete to allow for inspection of reinforcing steel.

E19.3.2 Quality Control

- (a) The Contractor shall provide, without charge, the samples of reinforcing steel required for quality control tests and provide such assistance and use of tools and construction equipment as is required.

E19.3.3 Shop Drawings

- (a) The Contractor shall submit shop drawings in accordance with E3.1 for the Contract Administrator's approval two (2) weeks prior to the fabrication of any reinforcing steel.

E19.4 Measurement and Payment

- (a) Supply and placement of reinforcing steel shall be paid for under the Lump Sum Price for "Construction of Gate Chamber", which price shall be payment in full for supplying all materials and for performing all operations herein described and all other items incidental to the Work included in this Specification.

E20. GEOTEXTILE

E20.1 Description

E20.1.1 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, 3.5 to 3.10 and 4.3 apply

E20.1.2 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.

E20.2 Materials

E20.2.1 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.

E20.3 Construction Methods

- E20.3.1 Geotextile fabric shall be installed beneath the rip-rap as shown on the Drawings.
- E20.3.2 Installation, handling and storage of geotextile fabric shall conform to the manufacturer's recommendations.
- E20.3.3 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.
- E20.3.4 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.

E20.4 Measurement and Payment

- E20.4.1 Geotextile fabric will be measured on an area basis. The area to be paid for shall be the total number of square metres of geotextile fabric installed in accordance with this Specification as computed from measurements verified by the Contract Administrator. Payment shall be at the Contract Unit Price for "Supply and Placement of Geotextile Fabric".

E21. RIPRAP

E21.1 Description

- E21.1.1 This Specification covers all operations necessary for placing riprap, as erosion protection, along the river banks. This Specification amends and supplements Standard Specification CW 3615.
- E21.1.2 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.

E21.2 Materials

- E21.2.1 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 35% (ASTM C131),
 - (d) maximum soundness loss of 18% (ASTM C88),
 - (e) maximum absorption of 2.5% (ASTM C127),
 - (f) maximum moisture content of 3 percent by weight (ASTM D2216-98),
- E21.2.2 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.

E21.3 Construction Methods

- E21.3.1 Snow cover shall be cleared from the riverbank and hauled off-site prior to placement of the riprap. Ice at the shoreline of the River shall be broken and cleared before placement of riprap below ice level. Care shall be taken to ensure that the ice is removed, and that it does not become trapped below riprap during placement.
- E21.3.2 Riprap shall be installed to the elevations, grades, thickness and dimensions as shown on the Drawings, or as directed by the Contract Administrator.
- E21.3.3 Riprap shall be placed in a manner that prevents damage to the geotextile.
- E21.3.4 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.

E21.4 Measurement and Payment

- E21.4.1 Supply and installation of riprap will be measured and paid for on a weight basis. The weight to be paid for shall be the total number of Tonnes of riprap delivered and placed in accordance with this Specification and as accepted by the Contract Administrator. Payment shall be at the Contract Unit Price "Supply and Placement of Riprap".

E22. INSPECTION OF EXISTING STRUCTURES

- E22.1 The Contract Administrator will arrange access for inspection of adjacent premises, prior to the commencement of construction, to document condition prior to the start of construction. Inspection of premises shall be attended by representatives of the City, Contract Administrator and the Contractor. The Contract Administrator will document inspections, and provide to Contractor for review and reference. Any discrepancies in the report shall be immediately reported to the Contract Administrator
- E22.2 The Contractor shall submit name and resume of proposed individual to attend inspection to the Contract Administrator, prior to inspection. Personnel shall obtain security clearances as per F1

E23. RIVER ACCESS TO OUTFALL SITE

- E23.1 Potential access points to the Red River through City Park lands within 800m of the worksite have been identified including Louis Greenburgh Park, Kildonan Park and from across the river along Kildonan Drive. An access point will be identified in collaboration with the Contract Administrator and the City.

PART F - SECURITY CLEARANCE

F1. SECURITY CLEARANCE

- F1.1 Each individual proposed to perform the following portions of the Work:
- (a) any Work on private property;
 - (b) any Work within City facilities other than:
 - (i) an underground structure such as a manhole;
 - (ii) in areas and at times normally open to the public;
 - (c) communicating with residents and homeowners in person or by telephone;
- F1.1.1 Each Individual shall be required to obtain a Criminal Record Search Certificate from the police service having jurisdiction at his/her place of residence. Or
- (a) police service having jurisdiction at his/her place of residence; or
 - (b) BackCheck, forms to be completed can be found on the website at: <http://www.backcheck.net/> ; or
 - (c) Commissionaires (Manitoba Division), forms to be completed can be found on the website at: <http://www.commissionaires.mb.ca/> .
- F1.2 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.
- F1.3 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.
- F1.4 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.
- F1.5 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.