



THE CITY OF WINNIPEG

BID OPPORTUNITY

BID OPPORTUNITY NO. 289-2015

**PROVISION OF PIPELINE ACCESS MODIFICATIONS, CLEANING AND SUPPORT
SERVICES FOR WATERMAIN RIVER CROSSING INSPECTIONS**

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PART B - BIDDING PROCEDURES

B1. CONTRACT TITLE

B1.1 PROVISION OF PIPELINE ACCESS MODIFICATIONS, CLEANING AND SUPPORT SERVICES FOR WATERMAIN RIVER CROSSING INSPECTIONS

B2. SUBMISSION DEADLINE

B2.1 The Submission Deadline is 12:00 noon Winnipeg time, May 27, 2015.

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 D3.1(a).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 B17.
- 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 B17.1(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 B17.1(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. DISCLOSURE

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

B11.2 The Persons are:

- (a) N/A

B12. QUALIFICATION

B12.1 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.

B12.2 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>

B12.3 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);

B12.4 Further to B12.3 the Bidder and/or any proposed Subcontractor undertaking the cleaning of water pipelines shall, within five (5) Business Days of a request by the Contract Administrator, provide proof satisfactory to the Contract Administrator to demonstrate the following qualifications in accordance with B12.6 (Form L: Contractor Experience):

- (a) A minimum of three successfully cleaned watermains, utilizing cleaning methods proposed for this work.
- (b) A minimum of three examples of successful pipeline pigging using polyurethane foam pigs.

B12.5 Further to B12.3(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/>).

B12.6 The Bidder shall submit, within three (3) Business Days of a request by the Contract Administrator, proof satisfactory to the Contract Administrator of the qualifications of the Bidder and of any proposed Subcontractor.

B12.7 The Bidder shall provide, on the request of the Contract Administrator, full access to any of the Bidder's equipment and facilities to confirm, to the Contract Administrator's satisfaction, that the Bidder's equipment and facilities are adequate to perform the Work.

B13. BID SECURITY

B13.1 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.

B13.1.1 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.

B13.1.2 All signatures on bid securities shall be original.

B13.1.3 The Bidder shall sign the Bid Bond.

B13.1.4 The Surety shall sign and affix its corporate seal on the Bid Bond and the Agreement to Bond.

B13.2 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.

B13.2.1 Where the bid security provided by the successful Bidder is in the form of a certified cheque or draft pursuant to B13.1(c), it will be deposited and retained by the City as the performance security and no further submission is required.

B13.2.2 The City will not pay any interest on certified cheques or drafts furnished as bid security or subsequently retained as performance security.

B13.3 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.

B14. OPENING OF BIDS AND RELEASE OF INFORMATION

B14.1 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.

B14.1.1 Bidders or their representatives may attend.

B14.2 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>

B14.3 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>

B14.4 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.

B15. IRREVOCABLE BID

B15.1 The Bid(s) submitted by the Bidder shall be irrevocable for the time period specified in Paragraph 11 of Form A: Bid.

B15.2 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.

B16. WITHDRAWAL OF BIDS

B16.1 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.

B16.1.1 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.

B16.1.2 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.

B16.1.3 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 B16.1.3(b), declare the Bid withdrawn.

B16.2 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 B15.2 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.

B17. EVALUATION OF BIDS

- B17.1 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 B12 (pass/fail);
 - (c) Total Bid Price;
 - (d) economic analysis of any approved alternative pursuant to B7.
- B17.2 Further to B17.1(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.
- B17.3 Further to B17.1(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.
- B17.4 Further to B17.1(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.
- B17.4.1 Further to B17.1(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.

B18. AWARD OF CONTRACT

- B18.1 The City will give notice of the award of the Contract or will give notice that no award will be made.
- B18.2 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.
- B18.2.1 Without limiting the generality of B18.2, 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.
- B18.3 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 B17.
- B18.3.1 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.
- B18.4 If no Contract is awarded, then the City of Winnipeg will pay the requested Bidder for costs associated with preparation and delivery of the Shop Drawings, up to a maximum of five hundred dollars (\$500.00) for each of the requested submissions listed in E2. Delivery of the Shop Drawings to the City and payment of the above amounts will constitute full and final consideration of each party to the other and neither party will have any further liability to the other with respect to this Bid Opportunity.

PART C - GENERAL CONDITIONS

C0. GENERAL CONDITIONS

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

PART D - SUPPLEMENTAL CONDITIONS

GENERAL

D1. GENERAL CONDITIONS

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

D2. SCOPE OF WORK

D2.1 The Work to be done under the Contract shall consist of the development of access to, and cleaning of watermains and feeder mains crossing under rivers, and provision of inspection support services to specialized pipeline inspection contractor.

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

D2.2.1 Internal (Smart) Pipeline Inspection Sites:

- (a) Development of site access.
- (b) Construct pipeline access points by installing tool launching wyes.
- (c) Cleaning of pipeline crossings under rivers using pipeline cleaning pigs, jet flushers and other equipment.
- (d) Insertion of rope tag lines in crossings for deployment of specialized "smart" inspection tools.
- (e) Winching of pipeline inspection contractor supplied gauge pigs through pipelines to confirm diameters and obstructions.
- (f) Provision of confined entry support to pipeline inspection contractor and engineering staff.
- (g) Installation of pipeline inspection tool launch barrels and cable guide systems/pulleys (launch barrels and cable guidance equipment to be provided by others).
- (h) Provision of other miscellaneous inspection support.
- (i) Watermain and Feedermain flushing, disinfection, and health testing
- (j) Final pipeline modifications
- (k) Site restoration

D2.2.2 External Pipeline Inspection Sites:

- (a) Development of site access.
- (b) Expose pipeline and assist AECOM personnel in completing inspection of pipeline.
- (c) Complete repairs and repair external pipeline coating as required.
- (d) Backfill and restore site.

D2.3 Cleaning and inspection of the following river crossings are to be undertaken as part of this contract:

- (a) Site 9 – Charleswood-Assiniboia Feedermain
 - (i) 600 mm diameter Steel Feedermain
- (b) Site 10 – Goulet-Doucet Watermain
 - (i) 400 mm diameter Steel Watermain
- (c) Site 12 – Maryland Bridge Watermain
 - (i) 250 mm diameter Steel Forcemain

- (d) Site 14 - St. James Watermain
 - (i) 450 mm diameter Steel Watermain

D2.4 Pipeline inspections will be grouped into two inspection periods. Inspection mobilization dates provided below are subject to change based on weather, high water conditions, availability of the pipeline inspection contractor, and system operations within the City of Winnipeg. The Contract Administrator may permit combining the two mobilizations into a single mobilization if water demand conditions permit, and upon agreement with the City of Winnipeg, pipeline inspection contractor and the Contractor.

- (a) Inspection Mobilization 1
 - (i) Site 10
 - (ii) Site 14
- (b) Inspection Mobilization 2
 - (i) Site 9
 - (ii) Site 12

D3. DEFINITIONS

D3.1 When used in this Bid Opportunity:

- (a) "**CSA**" means Canadian Standards Association;
- (b) "**ASTM**" means American Society for Testing and Materials;
- (c) "**AWWA**" means American Water Works Association;
- (d) "**Site 9**" means Charleswood-Assiniboia Feedermain (600 mm)
- (e) "**Site 10**" means Goulet-Doucet Watermain (400 mm)
- (f) "**Site 12**" means Maryland Bridge Watermain (250 mm)
- (g) "**Site 14**" means St. James Watermain (450 mm)

D4. CONTRACT ADMINISTRATOR

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

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

Telephone No. 204-477-5381
Facsimile No. 204-284-2040

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

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

D5. CONTRACTOR'S SUPERVISOR

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

D6. OWNERSHIP OF INFORMATION, CONFIDENTIALITY AND NON DISCLOSURE

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

- D6.2 The Contractor shall not make any public announcements or press releases regarding the Contract, without the prior written authorization of the Contract Administrator.
- D6.3 The following shall be confidential and shall not be disclosed by the Contractor to the media or any member of the public without the prior written authorization of the Contract Administrator;
- (a) information provided to the Contractor by the City or acquired by the Contractor during the course of the Work;
 - (b) the Contract, all deliverables produced or developed; and
 - (c) any statement of fact or opinion regarding any aspect of the Contract.
- D6.4 A Contractor who violates any provision of D6 may be determined to be in breach of Contract.

D7. NOTICES

- D7.1 Except as provided for in C23.2.2, all notices, requests, nominations, proposals, consents, approvals, statements, authorizations, documents or other communications to the Contractor shall be sent to the address or facsimile number identified by the Contractor in Paragraph 2 of Form A: Bid.
- D7.2 All notices, requests, nominations, proposals, consents, approvals, statements, authorizations, documents or other communications to the City, except as expressly otherwise required in D7.3, D7.4 or elsewhere in the Contract, shall be sent to the attention of the Contract Administrator at the facsimile number identified in D3.1(a).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
- D7.5 Bids Submissions must be submitted to the address in B8.8.

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 B12.4 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.
 - (a) Contractors Pollution Liability (CPL) insurance in the amount of at least one million dollars (\$1,000,000) per occurrence and one million dollars (\$1,000,000) aggregate insuring against claims for injuries to persons or damages to property which may arise from or in connection with the performance of the work hereunder performed by the Contractor, its agents, representatives, employees or subcontractors. Coverage to include:
 - (i) Bodily injury, sickness, disease, mental anguish or shock sustaining by any person, including death;
 - (ii) Property damage including physical injury to or destruction of tangible property and the resulting loss or use thereof; loss of use of tangible property that has not been physically injured or destroyed; diminution in value; and Natural Resource Damages;
 - (iii) Clean –up costs (including restoration/replacement costs);
 - (iv) Defense including costs, charges and expenses incurred in the investigation, adjustment or defense of claims for such compensatory damages;
 - (v) Transported cargo and non-owned disposal sites (blanket basis)
 - (b) CPL coverage shall apply to both sudden and gradual pollution conditions, including the further disruption of pre-existing conditions, arising from the services rendered by the Contractor or others on their behalf. Further, coverage shall apply to conditions on, at, under and emanating from the job site including the discharge, dispersal, release, or escape of smoke, vapours, soot, fumes, acids, alkalis, toxic chemicals, liquids or gases, waste materials or other irritants, contaminants or pollutants into or upon land, structures thereupon, the atmosphere or any watercourse or body of water, which results in any loss or damages defined above. Coverage shall not contain any "Insured vs Insured" exclusion preventing the City from bringing a claim against the Contractor, nor any restrictions for property of others in the care, custody or control of the Contractor, CPL to remain in place during the performance of the Work and during the warranty period.

- D11.2 The Contractor is to ensure that all sub-contractors provide and maintain comparable insurances to that outlined in D11.1 (a) and (b) above. The Contractor is to ensure that any sub-contractors provide and maintain comparable insurances to that outlined in D11.1 (c) as deemed necessary by The Contractor. Insurances are to be maintained during the performance of the Work and throughout the warranty period.
- D11.3 Deductibles shall be borne by the Contractor.
- D11.4 The Contractor shall provide the City Solicitor with a certificate(s) of insurance, in a form satisfactory to the City Solicitor, at least two (2) Business Days prior to the commencement of any Work but in no event later than the date specified in C4.1 for the return of the executed Contract.
- D11.5 The Contractor shall not cancel, materially alter, or cause each policy to lapse without providing at least thirty (30) Calendar Days prior written notice to the Contract Administrator.

D12. 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.
- (a) The Contractor shall note that schedule adjustments may be required in the event that the pipeline inspection contractor schedule is altered.
- D15.2 The detailed work schedule shall consist of the following:
- (a) a Gantt chart for the Work based on the C.P.M. schedule.
- D15.3 Pipeline inspections shall be scheduled on successive days in each mobilization. Each individual pipeline inspection is expected to take one day. Time permitting, more than one inspection may be completed in one day. The pipeline inspection contractor will require up to a two (2) days to convert tools to different pipe sizes. This conversion period may occur on a weekend
- D15.4 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 based on the proposed inspection schedule in D2.4:
- (a) For each site:
- (i) Site Access and Piping Modifications
 - (ii) Pipeline Cleaning and Gauging
 - (iii) Inspection Support
 - (iv) Watermain and Feedermain flushing, disinfection, and health testing.
 - (v) Final Piping Modifications
 - (vi) Site Restoration

SCHEDULE OF WORK

D16. COMMENCEMENT

- D16.1 The Contractor shall not commence any Work until he/she is in receipt of a letter of intent from the Award Authority authorizing the commencement of the Work.
- D16.2 The Contractor shall not commence any Work on the Site until:
- (a) the Contract Administrator has confirmed receipt and approval of:
- (i) evidence of authority to carry on business specified in D9;
 - (ii) evidence of the workers compensation coverage specified in C6.15;
 - (iii) the Safe Work Plan specified in D10;
 - (iv) evidence of the insurance specified in D11;
 - (v) the performance security specified in D12;
 - (vi) the Subcontractor list specified in D13;
 - (vii) the equipment list specified in D14; and
 - (viii) the detailed work schedule specified in D15.
- (b) the Contractor has attended a pre-construction meeting with the Contract Administrator, or the Contract Administrator has waived the requirement for a pre-construction meeting.
- D16.3 The City intends to award this Contract by July 3, 2015.
- D16.3.1 If the actual date of award is later than the intended date, the dates specified for Commencement, Critical Stages, Substantial Performance, and Total Performance will be adjusted by the difference between the aforementioned intended and actual dates.

D17. CRITICAL STAGES

- D17.1 The Contractor shall achieve critical stages of the Work in accordance with the following requirements:
- (a) Inspection Mobilization 1 pipelines - All preparation and cleaning work shall be completed by date established in D17.2(a).
 - (b) Inspection Mobilization 2 pipelines - All preparation and cleaning work shall be completed by date established in D17.2(b).
- D17.2 Final Critical Stage dates will be established immediately upon receipt of letter of intent, on a mutually agreeable schedule between the pipeline inspection contractor, PICA Corp., the City of Winnipeg, and the Successful Contractor, based on availability of all parties, and procurement of materials. The Contract Administrator will schedule a meeting with all parties within three (3) Business Days of receipt of the Letter of Intent. Schedule dates shall be limited by the following dates;
- (a) Mobilization 1 pipelines are to be available for inspection no later than September 14, 2015.
 - (b) Mobilization 2 pipelines are to be available for inspection no later than October 5, 2015.
 - (c) Once inspection dates for Mobilization 1 and Mobilization 2 are established, the Critical Dates identified in D17 will be established.

D18. SUBSTANTIAL PERFORMANCE

- D18.1 The Contractor shall achieve Substantial Performance by November 30, 2015.
- D18.2 When the Contractor considers the Work to be substantially performed, the Contractor shall arrange, attend and assist in the inspection of the Work with the Contract Administrator for purposes of verifying Substantial Performance. Any defects or deficiencies in the Work noted during that inspection shall be remedied by the Contractor at the earliest possible instance and the Contract Administrator notified so that the Work can be reinspected.
- D18.3 The date on which the Work has been certified by the Contract Administrator as being substantially performed to the requirements of the Contract through the issue of a certificate of Substantial Performance is the date on which Substantial Performance has been achieved.

D19. TOTAL PERFORMANCE

- D19.1 The Contractor shall achieve Total Performance by June 30, 2016.
- D19.2 When the Contractor or the Contract Administrator considers the Work to be totally performed, the Contractor shall arrange, attend and assist in the inspection of the Work with the Contract Administrator for purposes of verifying Total Performance. Any defects or deficiencies in the Work noted during that inspection shall be remedied by the Contractor at the earliest possible instance and the Contract Administrator notified so that the Work can be reinspected.
- D19.3 The date on which the Work has been certified by the Contract Administrator as being totally performed to the requirements of the Contract through the issue of a certificate of Total Performance is the date on which Total Performance has been achieved.

D20. LIQUIDATED DAMAGES

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

- (a) Critical Stages – five thousand dollars (\$5,000.00);
- (b) Substantial Performance - one thousand dollars (\$1,000.00);
- (c) Total Performance - five hundred dollars (\$500.00).

D20.2 The amounts specified for liquidated damages in D20.1 are based on a genuine pre-estimate of the City's losses in the event that the Contractor does not achieve Critical Stages, Substantial Performance or Total Performance by the days fixed herein for same.

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

CONTROL OF WORK

D21. JOB MEETINGS

D21.1 Regular weekly job meetings will be held at the Site. These meetings shall be attended by a minimum of one representative of the Contract Administrator, one representative of the City and one representative of the Contractor. Each representative shall be a responsible person capable of expressing the position of the Contract Administrator, the City and the Contractor respectively on any matter discussed at the meeting including the Work schedule and the need to make any revisions to the Work schedule. The progress of the Work will be reviewed at each of these meetings.

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

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

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

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

D23.1 Further to B12.4, 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 B12.4.

D24. WORK PRACTICES ON ASBESTOS-CEMENT PIPE

D24.1 Further to C.6.26(d), the Contractor's attention is directed to the possible health dangers associated with working with asbestos cement pipe and all work associated with the existing asbestos cement (AC) watermains shall conform to the following publications:

D24.1.1 "Work Practices for Asbestos-Cement Pipe", AWWA No. M16, published by the American Water Works Association.

D24.1.2 "Recommended Work Practices for AC Pipe", 1977, published by the AC Pipe producers Association.

D24.2 The Contractor shall state in the "job specific safe work plan" the proposed procedure for working on AC pipe. The Contractor shall also provide proof of asbestos handling training or certification.

MEASUREMENT AND PAYMENT

D25. PAYMENT

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

WARRANTY

D26. WARRANTY

D26.1 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. 289-2015

PROVISION OF PIPELINE ACCESS MODIFICATIONS, CLEANING AND SUPPORT SERVICES FOR WATERMAIN RIVER CROSSING INSPECTIONS

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. 289-2015

PROVISION OF PIPELINE ACCESS MODIFICATIONS, CLEANING AND SUPPORT SERVICES
FOR WATERMAIN RIVER CROSSING INSPECTIONS

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)

PROVISION OF PIPELINE ACCESS MODIFICATIONS, CLEANING AND SUPPORT SERVICES FOR
WATERMAIN RIVER CROSSING INSPECTIONS

<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)

PROVISION OF PIPELINE ACCESS MODIFICATIONS, CLEANING AND SUPPORT SERVICES FOR
WATERMAIN RIVER CROSSING INSPECTIONS

<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>

FORM L: CONTRACTOR EXPERIENCE

(See B12)

**PROVISION OF PIPELINE ACCESS MODIFICATIONS, CLEANING AND SUPPORT SERVICES FOR
WATERMAIN RIVER CROSSING INSPECTIONS**

Attach additional resumes and documents as required. Indicate whether Projects/Project Personnel are for Contractor or Subcontractor, and if applicable include name of Subcontractor.

1. Project References:

Project Client/Contact: _____

(Name)

(Address)

(phone)

(email)

<u>Year</u>	<u>Description of Project, including type of pipe</u>	<u>Value</u>
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_____	_____	_____
_____	_____	_____
_____	_____	_____

2. Project References:

Project Client/Contact: _____

(Name)

(Address)

(phone)

(email)

<u>Year</u>	<u>Description of Project, including type of pipe</u>	<u>Value</u>
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_____	_____	_____
_____	_____	_____
_____	_____	_____

FORM L: CONTRACTOR EXPERIENCE

(See B12)

**PROVISION OF PIPELINE ACCESS MODIFICATIONS, CLEANING AND SUPPORT SERVICES FOR
WATERMAIN RIVER CROSSING INSPECTIONS**

3. Project References:

Project Client/Contact: _____
(Name)

(Address)

_____ (phone) _____ (email)

<u>Year</u>	<u>Description of Project, including type of pipe</u>	<u>Value</u>
-------------	---	--------------

4. Project References:

Project Client/Contact: _____
(Name)

(Address)

_____ (phone) _____ (email)

<u>Year</u>	<u>Description of Project, including type of pipe</u>	<u>Value</u>
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FORM L: CONTRACTOR EXPERIENCE

(See B12)

**PROVISION OF PIPELINE ACCESS MODIFICATIONS, CLEANING AND SUPPORT SERVICES FOR
WATERMAIN RIVER CROSSING INSPECTIONS**

5. Project References:

Project Client/Contact: _____
(Name)

(Address)

_____ (phone) _____ (email)

<u>Year</u>	<u>Description of Project, including type of pipe</u>	<u>Value</u>
-------------	---	--------------

6. Project References:

Project Client/Contact: _____
(Name)

(Address)

_____ (phone) _____ (email)

<u>Year</u>	<u>Description of Project, including type of pipe</u>	<u>Value</u>
-------------	---	--------------

FORM L: CONTRACTOR EXPERIENCE

(See B12)

**PROVISION OF PIPELINE ACCESS MODIFICATIONS, CLEANING AND SUPPORT SERVICES FOR
WATERMAIN RIVER CROSSING INSPECTIONS**

7. Project Personnel:

Name and Title: _____
(Name)

Qualifications: (attach resume and fill out information below)

<u>Year</u>	<u>Description of Past Project</u>	<u>For Whom Work Was Performed</u>	<u>Value</u>

8. Project Personnel:

Name and Title: _____
(Name)

Qualifications: (attach resume and fill out information below)

<u>Year</u>	<u>Description of Past Project</u>	<u>For Whom Work Was Performed</u>	<u>Value</u>

9. Project Personnel:

Name and Title: _____
(Name)

Qualifications: (attach resume and fill out information below)

<u>Year</u>	<u>Description of Past Project</u>	<u>For Whom Work Was Performed</u>	<u>Value</u>

FORM L: CONTRACTOR EXPERIENCE

(See B12)

**PROVISION OF PIPELINE ACCESS MODIFICATIONS, CLEANING AND SUPPORT SERVICES FOR
WATERMAIN RIVER CROSSING INSPECTIONS**

10. Project Personnel:

Name and Title: _____
(Name)

Qualifications: (attach resume and fill out information below)

<u>Year</u>	<u>Description of Past Project</u>	<u>For Whom Work Was Performed</u>	<u>Value</u>

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	Record Drawings
B	Site Photos
C	Pipeline External Inspection Drawing

<u>Drawing No.</u>	<u>Drawing Name/Title</u>
	Cover Sheet
D-13301	Site 9 - Charleswood-Assiniboia Feedermain
D-13302	Site 10 - Goulet-Doucet Watermain
D-13303	Site 12 - Maryland Bridge Watermain
D-13409	Site 14 - St. James Watermain

E2. SHOP DRAWINGS

- E2.1 Description
- (a) This Specification shall revise, amend, and supplement the requirements of CW 1100 of the City of Winnipeg's Standard Construction Specifications.
- (b) The term "Shop Drawings: means drawings, diagrams, illustrations, schedules, performance charts, brochures, and other data, which are to be provided by the Contractor to illustrate details of a portion of the Work.
- E2.2 Submit all Shop Drawings in accordance with CW 1100 except as modified herein.
- E2.3 The Contractor shall submit specified Shop Drawings to the Contract Administrator for review. All submissions must be in metric units. Where data is in imperial units, the correct metric equivalent shall also be shown on all submissions for Engineering review.
- E2.4 Submit Shop Drawing submissions within seven (7) Calendar days of a request as indicated in E2.7.1 or receipt of Notice of Award in accordance with B18, whichever is earlier.
- E2.5 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.
- E2.6 Review of Shop Drawings by the Contract Administrator will be limited two (2) reviews per Shop Drawing. This shall include a review of the initial submission and a review of the revised submission. Costs associated with subsequent reviews will be billed of the Contractor.

E2.7 Expedited Shop Drawings

E2.7.1 Further to CW 1100, in order to expedite Shop Drawings with critical timelines, the lowest responsive Bidder, as outlined in B17, will be required, after receiving a written request from the Contract Administrator, to arrange for the preparation of Shop Drawings for the following items with critical timelines:

- (a) Ductile Iron Piping Components

E2.8 Measurement and Payment

- (a) If Award is made to the lowest responsive Bidder, then the provision of Shop Drawings will be considered incidental to the price for supply and delivery of equipment. No additional payment will be made. If no contract is awarded payment for Shop Drawings prepared will be paid in accordance with B18.4.

E3. RIVER CROSSING SITE ACCESS

E3.1 Site Access Requirement and Constraints

- (a) Site 6 – Munroe-Polson Sewer Siphon (Munroe Avenue at Henderson Hwy)
 - (i) Access to site is via a hard access road, on a City right-of-way.
 - (ii) Access to pipeline via the river bank behind the pump station off Henderson highway.
 - (iii) Contractor shall develop site access as required to investigation area. Contractor shall limit activity to single access path and space required to complete investigation and pipeline repair.
 - (iv) Access requirements may include but are not limited to: construction of temporary ramps, temporary regrading, snow removal, and tree and undergrowth removal.
- (b) Site 9 – Charleswood-Assiniboia Feedermain (Assiniboine Avenue at Rouge Road to Berkley Street)
 - (i) Access on both sides is via a grassed right-of-way off residential streets.
 - (ii) Provide access to both access points for preparation, cleaning, and inspection work.
 - (iii) Contractor shall limit disturbance of existing grassed areas to a single access path (6 m wide max) and an area near the work site as required to complete modifications and inspection. Construction trailers and all vehicles not required to complete work shall be parked on adjacent roadways.
- (c) Site 10 – Goulet-Doucet Watermain (Goulet Street to Doucet Street)
 - (i) Access on both sides is via residential streets.
 - (ii) Provide access to both access points for preparation, cleaning, and inspection work.
 - (iii) Contractor shall maintain access to all private approaches.
- (d) Site 12 – Maryland Watermain (Academy Road to Cornish Ave)
 - (i) Access on the north side is via a grassed boulevard off Cornish Ave. Access to the hospital for emergency vehicles must be maintained at all times.
 - (ii) Access on the south side is via the Shaarey Zedek Synagogue parking lot (561 Wellington Crescent).
 - (iii) Provide access to both access points for preparation, cleaning, and inspection work.
 - (iv) Contractor shall limit disturbance of existing grassed areas to a single access path (6 m wide max) and an area near the work site as required to complete modifications and inspection. Construction trailers and all vehicles not required to complete work shall be parked on adjacent roadways.
- (e) Site 14 – St. James Watermain (Wolseley Ave W at St. James Street to Wellington Crescent east of existing CNR bridge)
 - (i) Access on both sides is via residential streets.
 - (ii) Provide access to both access points for preparation, cleaning, and inspection work.

- (iii) Access requirements include but are not limited to removal and replacement of the existing fence.
- (iv) The Contractor must maintain a minimum of one lane of traffic during the work. Provide notice of lane closure, complete with date and duration, to the Contract Administrator a minimum of five (5) Business Days prior to closure.
- (f) The Contractor shall exercise caution to prevent damage to existing pavements, curbs, sidewalks, grassed areas, and trees. Surface restoration outside of the designated construction areas shall be the responsibility of the Contractor.
- (g) Where site access utilizes multi-use pathways, the pathways must remain open to public use. Ensure adequate delineation, fencing, flagging or other measures to protect public.
- (h) Where tracked equipment is utilized, protect pathways from damage with planking. No payment will be made for damages caused by equipment tracks on unprotected surfaces.
- (i) Where site access utilizes grassed right-of-ways, limit access for heavy equipment to a single pathway directly from street to work area, Protect grassed areas with planking or other measures to minimize rutting and damage.
- (j) Laydown and storage areas shall be staged away from areas prone to damage.

E3.2 Measurement and Payment

- (a) Development of site access shall be considered incidental to "Pipeline Modifications" and will not be measured for payment. No separate payment will be made.
- (b) Restoration, where approved by the Contract Administrator will be measured and paid in accordance to E12.

E4. EXCAVATION, SHORING, AND BACKFILL

E4.1 Description

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

E4.2 Submittals

- (a) Shop Drawings for all excavation shoring (where required) shall be prepared and submitted in accordance with E2 a minimum of five (5) Business Days prior to undertaking the excavation and shoring installation. Where required by Workplace Safety and Health Regulation, shoring Shop Drawings shall be sealed by a Professional Engineer, registered in the Province of Manitoba, experienced in the design of excavation shoring systems.

E4.3 Approvals

- (a) City of Winnipeg Waterways approvals have been submitted and will be in place prior to the start of construction.

E4.4 Shoring Design

- (a) Shoring shall be provided for excavations in accordance with CW 2030.
- (b) Excavation shoring shall be designed to accommodate the installation of all pipe and fittings.
- (c) Where long term shoring for excavations is required provide stamped Shop Drawings in accordance with E4.2.
- (d) All shoring systems shall comply with Manitoba Workplace Safety and Health requirements.

E4.5 Excavation

- (a) Material from excavations shall not be stockpiled on the riverbank, or within 30 metres of the top of the riverbank.

- (b) Granular materials, pipe bedding, and other materials shall not be stockpiled on the riverbank, or within 30 metres of the top of the riverbank.
- (c) Materials shall not be stockpiled over pipelines.
- (d) Excess excavation material from excavations shall be disposed of off-site.
- (e) Granular bedding in the vicinity of existing pipelines shall be dewatered and stabilized prior to undermining pipes to prevent loss of granular pipe foundation.
- (f) Carefully excavate to expose existing pipelines. Excavation within 1.0 m of the pipe shall be done using soft dig or hand excavation methods to prevent damage to the pipe.
- (g) The Contractor shall undertake all efforts to prevent freezing of soils underlying existing pipelines, bedding and backfilling will not be permitted overtop of frozen soils. Excavations left open when nighttime atmospheric temperatures are expected to drop below 0°C shall be horded and heated as required to keep soils and pipelines from freezing.

E4.6 Backfill

- (a) Backfill within 1 m of existing and proposed pavements shall be completed to CW 2030, Class 2 standards.
- (b) Backfill under proposed paths and walkways shall be completed to CW 2030, Class 2 standards.
- (c) Backfill within 1 metre of existing concrete structures shall be completed with free draining pit run granular material to CW 2030, Class 2 standards. The top 600 millimetres of the backfill adjacent to concrete structures shall be insitu clay material completed to CW 2030, Class 4 standards.
- (d) All other areas shall be backfilled with a Class 4 backfill unless otherwise noted on the Drawings.
- (e) The Contractor shall take all undertake all efforts to prevent excavated material intended for backfilling from freezing. Backfilling with frozen materials will not be permitted.

E4.7 Measurement and Payment

- (a) Excavation, shoring, and backfilling for excavations shall be considered incidental to "Pipeline Modifications" and will not be measured for payment. No separate payment will be made.

E5. OPERATING CONSTRAINTS FOR WORK IN CLOSE PROXIMITY TO FEEDERMAINS

E5.1 Description

- (a) This Section details operating constraints for all Work to be carried out in close proximity to feeder mains. Close proximity shall be deemed to be any construction activity within a 5 m offset from the centreline of the feeder main.
- (b) This Section of the Specification affects construction near the following pipelines:
 - (i) Site 9: 600 mm Charleswood-Assiniboia and Rouge Road Feeder mains

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

- (a) Feeder mains are a critical component of the City of Winnipeg Regional Water Supply System and Work in close proximity to the pipeline shall be undertaken with an abundance of caution. Inadvertent damage caused to the pipe would likely have catastrophic consequences.
- (b) Work around feeder mains shall be planned and implemented to minimize the time period that Work is carried out in close proximity to the pipe and to ensure that the pipeline is not subjected to excessive construction related loads, including excessive vibrations and/or concentrated or asymmetrical lateral loads during backfill placement.

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

E5.3 Submittals

- (a) Submit proposed construction equipment specifications to the Contract Administrator for review seven (7) days prior to construction. Submittal shall include:
 - (i) Equipment operating weight and dimensions including wheel or track base, track length or axle spacing, track widths or wheel configurations
 - (ii) Payload weights
 - (iii) Load distributions in the intended operating configuration
- (b) Submit proposed construction sequencing to the Contract Administrator for review seven (7) days prior to construction. Submittal shall include:
 - (i) Haul routes
 - (ii) Stockpile locations
 - (iii) Equipment operating location(s)

E5.4 Pre-Work, Planning and General Execution

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

shall provide meeting minutes confirming the dissemination of information regarding work near feeder mains. Include the names and positions of all attendees.

E5.5 Restrictions for working in close proximity to feeder mains:

- (a) Use of pneumatic concrete breakers within 3 metres of a feeder main is prohibited.
- (b) Offset excavation equipment a minimum of 3 m from the feeder main's centerline when undertaking excavations where there is less than 2.5 m of earth cover over a feeder main.
- (c) Utilize only smooth edged excavation buckets, soft excavation or hand excavation techniques where there is less than 1.6 metres of earth cover over a feeder main.
- (d) Carefully expose the feeder main using soft dig methods to delineate the location and depth of the main prior to and provide full time supervision of the excavation where there is less than 1 metre of cover over the feeder main.
- (e) Materials shall not be dumped directly on pipelines but shall be stockpiled outside limits noted in these recommendations and shall be carefully bladed in-place
- (f) Compaction within 3 metres of the centreline of a feeder main shall be either carried out by static methods (without vibration) or with smaller approved equipment such as hand held plate packers or smaller roller equipment.

E5.6 Measurement and Payment

- (a) Work covered in this section shall be considered incidental to "Pipeline Modifications" and will not be measured for payment. No separate payment will be made.

E6. WATER SUPPLY

E6.1 Further to specifications CW 1120, section 3.1, CW 2140 and CW 2145, water supply for the Work may be taken from City of Winnipeg hydrants in accordance with the following:

- (a) Only hydrants approved by WSD shall be used for water supply.
- (b) The Contractor shall supply and use a Backflow Protection Arrangement as shown on Standard Drawing SD-019 when taking water from City hydrants. Alternatively, the Contractor may rent the Backflow Protection Arrangement from the Water Services Division (WSD) if available. WSD will supply a meter and locks for the Backflow Protection Arrangement.
- (c) The Contractor is permitted to turn approved hydrants on and off provided the Contractor has received training by the Water Services Division and the turn-ons and turn-offs are done in the presence of the Contract Administrator.
- (d) Hydrants approved for use shall be considered to be "in the Contractor's control" from the time the City has turned the hydrant on until the Contractor has notified the City the hydrant is no longer being used and the meter box has been removed.
- (e) Between November 1 and April 30 of any year the Contractor shall take all necessary precautions to prevent freezing of hydrants and related appurtenances for hydrants in their control and shall be responsible to pump out hydrants turned off by Emergency Services. Heating and hoarding of hydrants will be required by the Contractor.
- (f) If a hydrant or appurtenance is damaged due to freezing or improper turn-on or turn-off procedures while in the Contractor's control, WSD will assess the damage and determine if WSD will repair the damage or if the Contractor will be responsible to repair the damage. Costs for repairs completed by WSD will be deducted from payments owing the Contractor. Repairs completed by the Contractor will be at the Contractor's expense.
- (g) Erect and maintain signage (bump signs) warning oncoming traffic of hose crossings to the satisfaction of the Contract Administrator and the Manual of Temporary Traffic Control. Construct ramps as shown on attached Drawing D-8211.
- (h) Direct hook-up of pipeline flushing equipment to a hydrant is not permitted unless approved by the Contract Administrator

- (i) WSD may instruct the Contractor to make other arrangements for hydrant turn-ons and turn-offs.

E6.2 Measurement and Payment

- (a) The supply of the Backflow Protection Arrangement or rental of same from WSD shall be considered incidental to "Pipeline Modifications" and will not be measured for payment. No additional payment will be made.
- (b) All costs associated with heating and hoarding shall be considered incidental to "Pipeline Modifications" and will not be measured for payment. No additional payment will be made.
- (c) Further to Section 3.7 of CW 1120, charges incurred for the permit and water meters shall be paid for by the Contractor when taken out. The Contractor shall forward the invoice to the Contract Administrator for reimbursement. The billing for water usage sent to the Contractor shall be forwarded to the Contract Administrator for payment. The Bid Opportunity number shall be noted on each permit.

E7. PIPELINE MODIFCATIONS

E7.1 Description

- (a) This Specification shall cover the modification of valve chambers, feeder mains, and water mains, as required for cleaning and inspection the river crossing pipelines.

E7.2 Description of Work:

E7.2.1 Piping Modifications:

- (a) See Drawings and drawings attached in Appendix C for details on proposed piping modifications.
- (b) Site 6a - Munroe-Polson Siphon
 - (i) Access and inspection of Munroe-Polson site can only occur after Red River winter draw-down, typically mid-October of a Calendar Year.
 - (ii) Construct access and complete excavation to permit external investigation of localized defects on up to 3 m of the existing 300 mm pipeline. See drawing located in Appendix C.
 - (iii) Contractor shall allow a minimum of two (2) hours for the Contract Administrator to complete inspection of the pipeline.
- (c) Site 9 – Charleswood-Assiniboine Feedermain
 - (i) Install permanent inspection wyes and temporary piping to enable cleaning and inspection of the feedermain as shown on the Drawings.
- (d) Site 10 – Goulet-Doucet Watermain
 - (i) Install permanent inspection wyes and temporary piping to enable cleaning and inspection of the watermain as shown on the Drawings.
- (e) Site 12 – Maryland Watermain
 - (i) Install new gate valve.
 - (ii) Install permanent inspection wyes and temporary piping to enable cleaning and inspection of the watermain as shown on the Drawings.
- (f) Site 14 – St. James Watermain
 - (i) Install permanent inspection wyes and temporary piping to enable cleaning and inspection of the watermain as shown on the Drawings.
 - (ii) 450 mm flange by plain end spool pieces utilized on the north side of the Assiniboine River must be cut to length on site to accommodate existing Victaulic jointed pipe.
- (g) All tool launching assemblies, including 45 deg elbow, spool piece, and any flange adaptors shall be turned over to the City upon completion of work.

E7.3 Submissions:

- (a) Submit Shop Drawings for all permanent and temporarily installed fittings, valves, piping and couplings in accordance with CW1110.

E7.4 Products

E7.4.1 Fasteners

- (a) Bolts direct bury flange connections shall be ASTM A307 or ASTM F568M, grade B.
- (b) Nuts direct bury flange connections shall be ASTM A563 or ASTM A563M, grade B
- (c) Bolts for all sleeve style couplings and/or restraints shall be ASTM F593 or ASTM F738M, type 316 stainless steel.
- (d) Nuts for all sleeve style couplings and/or restraints shall be ASTM F594 or ASTM F836M, type 316 stainless steel.
- (e) Anti-seize compound shall be used on all bolts.
- (f) For flanged connections, bolt size, type and diameter shall be in accordance to AWWA C207. Bolt length suitable for coupling AWWA C207 Class D flange.
- (g) All flanged connections shall be wrapped in a petrolatum tape coating system in accordance with E7.4.17. All steel bolting hardware shall be liquid epoxy coated in accordance with AWWA C116, E7.4.14, and E7.5.2 prior to wrapping with petrolatum tape coating system.

E7.4.2 Flange Gaskets

- (a) 3mm, full-faced, SBR rubber gaskets or neoprene in accordance with AWWA C207.
- (b) Gaskets shall be one piece construction where possible.
- (c) Segmented gaskets shall be constructed of a minimum number of segments and joints shall be of dovetailed construction, or other jointing methods approved by the Contract Administrator.

E7.4.3 Blind Flanges

- (a) Steel blind flanges shall be AWWA C207 Class D.
- (b) Cast and ductile blind flanges shall be ASME/ANSI B16.1 Class 125.
- (c) Steel blind flanges to be fusion bonded epoxy coated in accordance with AWWA C213, E7.4.14, and E7.5.2.
- (d) Cast and ductile blind flanges shall be fusion bonded epoxy coated in accordance with AWWA C116, E7.4.14, and E7.5.2.

E7.4.4 Temporary bends and launch piping shall be constructed from either Ductile Iron in accordance with E7.4.5 and E7.4.6 or PVC in accordance with E7.4.7.

E7.4.5 Ductile Iron Fittings

- (a) Flanged ductile iron fittings conforming to AWWA C110.
- (b) Fittings shall meet the following minimum criteria:
 - (i) Fittings shall be new.
 - (ii) Permanently installed fittings shall be cement-mortar lined in accordance with AWWA C104.
 - (iii) Temporarily installed fittings shall be liquid epoxy lined to AWWA C210, E7.4.13, and E7.5.2. as a minimum.
 - (iv) All fittings to be liquid epoxy coated to AWWA C210, E7.4.13, and E7.5.2.

E7.4.6 Ductile Iron Pipe

- (a) Ductile iron pipe conforming to AWWA C151.
- (b) Pipe shall meet the following minimum criteria:

- (i) Thickness Class 54 (minimum).
 - (ii) Pipe shall be new.
 - (iii) Permanently installed pipe shall be cement-mortar lined in accordance with AWWA C104.
 - (iv) Temporarily installed fittings shall at a minimum have be liquid epoxy lined to AWWA C210, E7.4.13, and E7.5.2.
 - (v) All pipe to be liquid epoxy coated in accordance with AWWA C210, E7.4.13, and E7.5.2.
- (c) Pipe used for feedermain and watermain tool launching purposes must be cleaned disinfected in accordance with E10.2(a)(a) prior to use.

E7.4.7 PVC Pipe and Fittings

- (a) PVC pipe and fittings shall conform to AWWA C900 or AWWA C905 and CSA B137.3.
- (b) Pipe and fittings shall meet the following minimum requirements:
 - (i) Shall have a dimension ratio (DR) of 18.
 - (ii) Shall be new.
- (c) Pipe used for Feedermain and watermain tool launching purposes must be cleaned disinfected in accordance with E10.2(a)(a) prior to use.
- (d) Flange adaptors used must be fully restrained from axial movement.

E7.4.8 Fabricated Steel Pipe and Fittings

- (a) Steel pipe and fittings shall conform to AWWA C200 and meet the following requirements:
 - (i) Minimum steel yield strength of 207 MPa (30,000 psi)
 - (ii) Minimum wall thickness of 9.51 mm for all sizes.
 - (iii) All exposed steel surfaces (interior and exterior) shall be coated in accordance with AWWA C210, E7.4.13, and E7.5.2.
- (b) Welded steel patches on existing steel pipelines shall be a minimum thickness of 9.51 mm.
- (c) Welded steel patches on existing pipelines shall be externally coated with a petrolatum tape wrap system in accordance with E7.4.17 and E7.5.4.

E7.4.9 Flanges for Pipe and Fittings

- (a) Steel flanges shall conform to AWWA C207, minimum Class D Flange
- (b) Threaded ductile iron flanges shall conform to AWWA C115 ASME/ANSI B16.1 Class 125.

E7.4.10 Pipe Couplings and Flange Adaptors

- (a) Pipe couplings shall conform to AWWA C219.
- (b) Unless otherwise specified, center sleeves for pipe couplings shall be constructed from:
 - (i) Ductile iron for sizes less than 300 mm
 - (ii) Steel for sizes 300 mm and greater
- (c) Minimum requirements for sleeve couplings are:
 - (i) Centre sleeve length: 250 mm
 - (ii) Centre sleeve thickness for steel couplings: 9.5 mm
 - (iii) Couplings capable of accommodating up to 2 degrees deflection
 - (iv) Design pressure 150 psi
- (d) Minimum requirements for flange adaptors:
 - (i) Flanges shall conform to ASME/ANSI B16.1 Class 125.

- (e) Restraining end rings shall be supplied where axial thrust restraint is specified on the Drawings. Restraint rings shall be specifically designed for the material type of the pipes being joined.
- (f) All hardware shall be type 316 stainless steel in accordance with E7.4.1.
- (g) Couplings to be fusion bonded epoxy coated in accordance with E7.4.14 and E7.5.2.
- (h) Couplings to be supplied with two di-electric insulating boots.
- (i) Buried pipe couplings shall be further protected against corrosion by wrapping the assembled coupler with petrolatum tape coating system in accordance with E7.4.17.
- (j) All transition couplings, larger than 300 mm in diameter, with differential outside pipe diameters greater than 25 mm shall be restrained to prevent movement of the coupling due to differential thrust forces. Tie rods placed in compression for the purpose of restraining differential thrust forces shall be no longer than 150 mm and the Contractor must demonstrate they are capable of withstanding the applied forces.
- (k) Temporarily installed coupling end plugs shall be fabricated from steel rolled to the OD of the permanently installed ductile iron spool pieces complete with a welded steel end cap. The plugs must be capable of preventing the ingress of soils and groundwater (minimum 10 psi). Plugs do not need to be designed to withstand internal watermain pressures. The minimum steel wall thickness for the end cap shall be 6.35 mm. Plugs shall be supplied complete with a threaded port and valve for relieving pressure built-up within the watermain. Alternatively, a purpose built end cap compatible with coupling may be used provided it meets the requirements outlined herein.
- (l) Blocking shall be installed between the temporary coupling end plugs and the temporary blind flange to restrain axial thrusts imparted on the watermain.

E7.4.11 Gate Valves

- (a) Gate valves shall conform to CW2110.

E7.4.12 Coatings

- (a) Unless otherwise specified herein coatings for all metal chamber piping and fittings shall be a liquid epoxy meeting the requirements of E7.4.13. As an alternative to liquid epoxy, the contractor shall have the option to use fusion bonded epoxy in accordance with E7.4.14.

E7.4.13 Liquid Epoxy Coatings

- (a) Liquid epoxy coatings shall conform to AWWA C210.
- (b) Liquid epoxy coatings shall be NSF 61 certified for immersion service in pipelines.
- (c) All coatings shall be applied in a minimum of two (2) or more layers (5 mils dry film thickness minimum each coat) for a minimum final coating dry film thickness of the greater of 16 mils or the thickness recommended by the manufacturer for immersion service.
- (d) Interior pipe linings shall be a 100% solids liquid epoxy product. Approved products: Enviroline 230, Bar-Rust 234P, Specialty Polymer Coatings SP-7888, or approved equal in accordance with B7.
- (e) Exterior coatings for all exposed steel, piping, valves, and actuators shall be Polyamide Epoxy. Approved products: Enviroline 230, Bar-Rust 234P, Specialty Polymer Coatings SP-7888, Tnemec Series 140F Pota-Pox Plus, Amerlock 2 or approved equal in accordance with B7.
- (f) Submit product data for interior lining and exterior coating products in accordance with E2.

E7.4.14 Fusion Bonded Epoxy Coatings

- (a) Fusion bonded epoxy coatings shall conform to AWWA C213 for steel components and AWWA C116 for ductile iron fittings.

- (b) Fusion bonded epoxies shall be NSF 61 certified for immersion service in pipelines.
- (c) The final minimum coating thickness shall be the greater of 16 mils or the thickness recommended by the manufacturer for immersion service.
- (d) Submit product data for interior lining and exterior coating products in accordance with E2.

E7.4.15 Continuity Bonding

- (a) Wires for continuity bonding shall be No.10 American Wire Gauge (AWG) 7-strand copper conductor with black TWU insulation.
- (b) Thermite weld products shall be properly selected based on the wire size, pipe size and material.
- (c) Thermite weld caps shall be constructed from 20 mil high-density polyethylene and may be either pre filled or field filled with a bituminous mastic coating or approved equal.

E7.4.16 Galvanic Anodes

- (a) Galvanic anodes for cathodic protection of buried ferrous pipes and fittings shall be 10.9 kg pre-packaged zinc anodes to City of Winnipeg specification.

E7.4.17 Petrolatum Tape Corrosion Protection System

- (a) All buried pipe couplers and flanged connections shall be protected against corrosion by a petrolatum tape corrosion protection system consisting of the following components:
 - (i) Petrolatum paste primer
 - (ii) Void-filling mastic filler
 - (iii) Petrolatum tape
 - (iv) Protective outerwrap
- (b) Petrolatum tape systems shall conform to AWWA C217.
- (c) Approved product: Petrolatum tape system manufactured by Denso North America Inc., Trenton Corporation, Petro Coating Systems Ltd, or approved equal in accordance with B7.
- (d) Submit Shop Drawings for petrolatum wrapping system in accordance with CW1110.

E7.5 Methods

E7.5.1 Installation of Lead Wires, Continuity Bonding and Galvanic Anodes

- (a) Anodes and continuity bonding shall be installed on new and existing pipes and fittings where shown on the Drawings or as directed by the Contract Administrator.
- (b) Thermite Welding Procedure:
 - (i) Prepare steel surface to bare metal by grinding or filing. Remove all coatings, dirt, mill scale, oxide, grease, moisture, and other foreign matter from weld areas in an area required to complete the weld.
 - (ii) Before welding, remove wire insulation as required to fit mold, avoiding damage to the exposed copper wire. If wire is cut or nicked over halfway through its diameter, cut off and strip new end. If manufacturer requires the use of a copper sleeve, crimp it securely to wire and remove excess wire protruding from the end of the sleeve.
 - (iii) After charge is set, remove mold and slag from weld area with welder's hammer. Strike top and sides of weld with hammer to test secureness of connection. If weld does not hold, remove scrap weld material, clean, and begin weld process again.
 - (iv) After welding and before coating the cleaned weld area, the Contract Administrator may test the joint bond for and wires for electrical continuity.

- (v) When the weld passes test for soundness and electrical continuity, repair the coating in the weld area with mastic and weld cap placed over the weld. Clean weld area to remove any loose material, and welding residuals. Cover exposed metal on the pipe and wire with mastic filled weld cap. Ensure weld cap covers the entire area of coating removed for installation of the thermite weld. If not, repair coating as per the coating manufactures recommendations prior to installing weld cap.

E7.5.2 Coatings

- (a) Where indicated on the Drawings and directed by the Contract Administrator, prepare metal surfaces for recoating using the following methods:
 - (i) Steel - Prepare steel surfaces for recoating by blast cleaning to near-white metal as specified by Joint Surface Preparation Standard NACE No.2/SSPC-SP10.
 - (ii) Cast and Ductile Iron - Prepare ductile iron surface in accordance with NAPF 500-03.
 - (iii) Remove all dust and loose residues from the prepared surfaces and surrounding area. The surface shall be roughened to a degree suitable for the coating system employed.
- (b) Protect valve seals, machined surfaces, threads, and nameplates from sandblasting.
- (c) Primer coat to follow immediately after completion of sandblasting and prep.
- (d) Apply liquid epoxies of prepared surfaces in accordance with AWWA C210, E7.4.13, and the manufactures recommendations.
- (e) Apply fusion bonded epoxies of prepared surfaces in accordance with AWWA C213, E7.4.14, and the manufactures recommendations.
- (f) Provide adequate ventilation and heat to facilitate curing of coatings.
- (g) Interior linings for pipes and fittings shall be applied and cured as recommended by the manufacturer prior to placing into service. Linings must be fully cured for immersion service prior to installation and reinstating the line into service. Where accelerated cure times are required for assembly and water immersion, a coating and curing plan shall be submitted to the Contract Administrator in accordance with E2 a minimum of five (5) Business Days prior to application.

E7.5.3 Field Welding of Steel Pipelines and Fittings

- (a) Field welding of steel pipes shall conform to AWWA C206.
- (b) Connections to existing pipelines shall be accomplished with a full penetration butt weld or a fillet welded split sleeve (external).
- (c) Patches on steel pipelines shall be fillet welded.
- (d) All fillet welds shall have minimum leg lengths equal to the thickness of the material being welded.
- (e) All welds shall be inspected using magnetic particle testing methods by a qualified inspector in accordance with ASTM E1444.

E7.5.4 Installation of Petrolatum Tape Corrosion Protection Systems

- (a) Install in accordance with AWWA C217 and the manufactures recommendations.
- (b) For all surfaces to be wrapped with the corrosion protection system, remove loose rust, paint and foreign matter by hand and/or power tool cleaning in accordance with SSPC-SP-2 or SSPC-SP-3.
- (c) Apply a thin uniform coat of petrolatum paste primer, using a glove or brush, to all surfaces to be wrapped with the corrosion protection system.
- (d) Apply void-filling mastic filler, by hand, to all flanges designated to be wrapped with the corrosion protection system. Mold the mastic to a rounded configuration around

the flange, filling all spaces around fasteners and eliminating sharp edges and irregular shapes.

- (e) Spirally wrap the petrolatum tape, using a minimum 25mm overlap, over the primed and mastic-filled pipe and flange surfaces. While wrapping, press out all air pockets and smooth all lap seams.
- (f) Spirally wrap clear outerwrap, using sufficient tension to make a tight-fitting cover, over the petrolatum tape.

E7.5.5 Bedding

- (a) All pipes shall be installed in accordance with CW2030, utilizing a Class B bedding.

E7.5.6 External Pipeline Investigation Support.

- (a) Maintain a safe and dry excavation while the external pipeline inspection is being undertaken.
- (b) Allow for up to 8 hrs for the external investigation.
- (c) Provide heating and hoarding around the lower portion of the excavation and pipe during the investigation.
- (d) Remove existing coating from pipeline prior to external investigation
- (e) Install petrolatum tape corrosion protection system after the external investigation and/or repairs are complete.

E7.6 Measurement and Payment

E7.6.1 Pipeline Modifications

- (a) "Pipeline Modifications" shall be measured and paid on a Lump Sum basis for each of the river crossing sites listed in the Form B: Prices.
- (b) Payment for "Pipeline Modifications" shall include the supply of all materials and performance of all pipe access modifications required for cleaning and inspection of the pipelines.
- (c) Payment for "Pipeline Modifications" shall include but is not limited to the following:
 - (i) Removal and trimming of trees
 - (ii) Temporary grading
 - (iii) Construction of temporary work platforms
 - (iv) Temporary water supplies
 - (v) Installation of all new valves,
 - (vi) The supply of all permanent and temporary piping components as specified herein and shown on the drawings
 - (vii) Installation of all permanent piping and fittings
 - (viii) Installation and removal of all temporary piping and fittings
 - (ix) The supply and installation of all gaskets, fasteners, and couplings required to complete the Work
 - (x) The installation of tag lines for cleaning and inspection purposes
 - (xi) Completion and shoring of all excavations
 - (xii) Pipe bedding and backfilling
 - (xiii) Restoring site to existing grades
 - (xiv) Disinfection and health testing of pipelines
 - (xv) Disposal of all chlorinated water
 - (xvi) Heating and hoarding
- (d) Payment for "Pipeline Modifications" shall not include the use of pipeline flushing equipment except for the purposes of installing tag lines.

E7.6.2 Supply of Fittings and Valves

- (a) "Supply of Fittings and Valves" measured and paid on a unit basis for each type of fitting or valve acceptable supplied as listed in Form B: Prices.

E7.1 External Physical Inspection

- (a) "External Pipeline Investigations" shall be paid on a Lump Sum basis for each of the river crossing sites listed in the Form B: Prices.
- (b) Payment for "External Pipeline Investigations" shall include the supply of all materials and performance of all excavation, pipe preparation, assistance in performing external wall thickness measurements, heating and hoarding, installation of petrolatum corrosion protection wrap on the existing pipe as specified herein.

E7.2 Welded Steel Patches

- (a) "Installation of Welded Steel Pipe Patches" shall be paid on a unit basis for each steel patch acceptably installed.
- (b) Payment for "Welded Steel Pipe Patches" shall include the supply of all materials and performance of preparation work, welding, and testing as specified herein. Please allow for patches up to 0.6 m in length encompassing half of the pipes circumference.
- (c) Payment shall be made on the following payment schedule:
 - (i) Ten percent (10%) payment for supply of pre formed steel patch
 - (ii) One hundred percent (100%) payment upon completion of the repair and required testing

E8. WATERMAIN AND FEEDERMAIN SHUTDOWNS

E8.1 Description

- (a) This Specification shall cover the watermain and Feedermain shutdowns for the purposes of cleaning and inspecting of pipelines.

E8.2 Scheduling

- (a) Watermain and Feedermain Shutdowns
 - (i) Watermain and feedermain river crossing shutdowns are scheduled based on a number of factors including routine maintenance and repair work, water demand, weather and other factors. The City shall endeavour to make the specified time periods available to the Contractor to schedule his Work requiring removal of a watermain from service, without limiting the City's control over the operation of the regional water system to complete other work, maintain adequate system service and maintain the integrity of the infrastructure. The City shall reserve the right to cancel and/or delay these schedule dates at any time, due to any circumstances that could adversely affect water supply system operation, including but not limited to high water demand, abnormal weather, failures of related water system components and/or security concerns.
 - (ii) The Contractor shall provide a minimum of ten (10) Business Days notice to the Contract Administrator, in writing, of requiring a shutdown. The City will endeavour to schedule the shutdown as requested.
 - (iii) Shutdowns will not be permitted after May 15 or prior to September 1 of a calendar year.

E8.3 General

- (a) Isolation of the watermain and feedermain crossings will be completed using mainline valves and completed by City forces.
- (b) Dewatering of the Charleswood Feedermain will be completed by City forces. The Contractor shall be responsible for dewatering all other watermain.

- (c) Work shall be scheduled to minimise the duration of all shutdowns.
- (d) Contractor will be permitted to commence installation of pipeline modifications and cleaning activities up to ten (10) Business Days in advance of Critical Stages as outlined in D17. Activities not involving feedermain or watermain shutdowns can commence prior to these dates.

E8.4 Measurement and Payment

- E8.4.1 Work covered in this section shall be considered incidental to "Pipeline Modifications" and will not be measured for payment. No separate payment will be made.

E9. PIPELINE CLEANING

E9.1 Description

- (a) This Specification shall cover the supply of foam pipeline cleaning pigs and the cleaning of the pipelines to be inspected.

E9.2 Submittals

E9.2.1 Cleaning Plan

- (b) The Contractor shall submit in writing a detailed cleaning plan for each pipeline crossing for review by the Contract Administrator. The cleaning plan at a minimum shall include the following:
 - (i) Method(s) of cleaning
 - (ii) Sizes and densities of foam pigs to be used
 - (iii) Means of debris collection and disposal
- (c) The pipeline cleaning plan must be submitted a minimum of 10 Business Days prior to undertaking cleaning operations.
- (d) No cleaning operations shall be undertaken prior to review of the cleaning plan by the Contract Administrator.

E9.2.2 Shop Drawings

- (a) The Contractor shall submit Shop Drawings for the proposed winch line (or flusher hose), complete with the safe pull strength as recommended by the manufacturer.
- (b) The Contractor shall submit Shop Drawings for all cleaning pigs proposed for use.

E9.3 Products

E9.3.1 Winch Line

- (a) Winch lines for cleaning shall not cause damage to pipelines or pipeline coatings. Provide synthetic winch line such as Amsteel, cable coated with sacrificial synthetic coating, or braided flusher hose.
- (b) Tether line shall be a minimum of 9 mm synthetic rope.

E9.3.2 Foam Cleaning Pigs

- (a) Material: One piece moulded open-cell polyurethane
- (b) Density: up to a standard medium density cleaning pig (80 to 112 kg/m³)
- (c) Pigs shall be new and packaged for shipping and storage to prevent contamination.
- (d) Pigs shall be supplied complete with a factory installed pulling rope or cable,
- (e) For towed pigs, pigs shall be supplied complete with support disc on both ends suitable for towing pigs. Foam cores for pigs shall be of equal or greater density than foam body
- (f) Pigs to be sized for the internal diameter of the pipeline, or as recommended by the manufacture and approved by the Contract Administrator.

- (g) Where required, bristled pigs shall be complete with synthetic plastic brush designed for regular scraping

E9.3.3 Gauge Pigs will be supplied by the pipeline inspection contractor.

E9.3.4 Water for pig launching may be obtained from fire hydrants in accordance with CW 1120 and E6.

E9.4 Equipment

(a) Debris, Pumping and Disposal

- (i) Equipment as per CW 2140-R3, except storage tank volume shall be a minimum of 13,500 (3000 Gal Imp) litres.
- (ii) Where requested by Contract Administrator, such as in the case of a blockage, store liquid and decant at an approved offsite location.

(b) Flushing Equipment

- (i) Equipment as per CW 2140-R3
- (ii) Nozzle pressures when utilizing flushing equipment within pipelines shall be limited to 10,350 kPa.
- (iii) Disinfection of Equipment: Any equipment coming in contact with the potable water system shall be clean, must never have been used in a non-potable water or sewer system and shall be disinfected in accordance with E11.

E9.5 Internal pipeline diameters based on the best available record information. The Contractor is responsible to confirm the inner pipe diameters prior to undertaking cleaning work:

Site	Nominal Diameter (mm)	Estimated Internal Diameter (mm)
Site 9	600	592
Site 10	400	394
Site 12	250	244
Site 14	450	457

E9.6 Methods

E9.6.1 Pigging

- (a) Where applicable, provide pig launch tubes, pipe and fittings, including valves.
- (b) Winch lines shall be inserted into the pipelines for cleaning purposes. Winch lines may be inserted by high pressure flusher nozzle, flow drone or other approved method.
- (c) Untethered pigs utilizing differential pressure will be permitted upon review of pigging procedure by the Contract Administrator.
- (d) If not otherwise shown on the Drawings, watermains may be cleaned in either direction.
- (e) Cleaning is to be completed sufficient to accommodate in-line inspection tools, typically 25 millimetres smaller than pipe inside diameter.
- (f) Minimum cleaning requirements per pipeline crossing:
 - (i) Pull one 25 mm undersized medium density foam cleaning pig (prove bore prior to pulling the gauge pig)
 - (ii) Pull one full sized low density foam cleaning pig (debris removal)
- (g) The use of foam cleaning pigs shall not introduce air into pipeline river crossings below river levels. Many pipelines are weighted bottom installations, or shallow cover, and susceptible to floatation. Pipelines shall be kept full behind pigs
- (h) Foam cleaning pigs shall be tethered on each end and be capable of being winched in either direction.

- (i) A gauge pig shall be pulled through the pipe during the cleaning operation to determine the effectiveness of the cleaning operation. Gauge pig shall be tethered on each end and be capable of being winched in either direction.
- (j) Cleaning operations shall continue until the Contract Administrator is satisfied that the pipe is passable by the inspection tools. This shall be proved by passing of the supplied gauge pig through the line.
- (k) The Contractor shall be prepared to remove hard debris from the pipe during cleaning process to the extent required to pass the supplied gauge pig.
- (l) It is anticipated that pipeline cleaning will take a maximum of one day per pipeline. More than one pipeline can be cleaned per day, time permitting. Overtime rate shall be approved by the Contract Administrator.

E9.6.2 Flushing of Pipelines using traditional flushing equipment

- (a) Flushing equipment shall conform to CW2140 and may be utilized for removal of debris from pipelines.
- (b) Nozzle pressures when utilizing flushing equipment within pipelines shall be limited to 10,350 kPa.

E9.7 Disposal of Solid Debris

- (a) Where hydrovacating of cleaning debris is required, the liquid may be decanted into nearby WWS MH's at rates shown on the Drawings and as approved by the Contract Administrator.
- (b) Solid debris shall be hauled off site as per CW 2140.

E9.8 Watermain and Feedermain Flushing

- (a) Flushing of solid debris from watermains and feeder mains shall be undertaken after completion of pipeline inspection work and shall conform to CW2125 and AWWA C651.
- (b) Watermains and feeder mains greater than 300 millimetres diameter shall be flushed to achieve a minimum of three (3) pipe volumes, or until water runs clear.
- (c) Watermains and feeder mains shall be flushed in the direction shown on the Drawings unless otherwise approved by the Contract Administrator. If no direction is shown on the Drawings, watermains and feeder mains may be flushed in either direction.
- (d) Disinfection of pipelines and disposal of chlorinated water shall be completed in accordance with E11.

E9.9 Provisional Flushing and Hydrovac Services

- (a) Where requested by Contract Administrator, provide provisional flushing and hydrovac services to assist in inspection operations. This work is outside of the normal cleaning operations identified in E9.6.1.

E9.10 Method of Measurement and Basis of Payment

E9.10.1 Pipeline Cleaning

- (a) "Pipeline Cleaning" shall be measured on a daily basis with an hourly overtime rate.
- (b) Payment for "Pipeline Cleaning" shall include supplying of all materials and performance of all work as specified herein, including site access, removal of access hatches, confined entry support, temporary access, flow diversions, performance of all cleaning and gauging work, and disposal of solid debris.
- (c) Time measured shall be based on on-site availability of the Contractor's crews, from the time crews are present on site, until crews are complete and site secured of the shift, as certified by the Contract Administrator.
- (d) Hourly overtime rate for each hour or portion thereof in excess of the daily minimum rate of 10 hours.

- (e) The supply of pigs for pipeline cleaning shall be considered incidental to "Pipeline Cleaning" and will not be measured for payment. No additional payment will be made.
- (f) Flushing of pipelines for the purposes of debris removal shall be considered incidental to "Pipeline Cleaning" and will not be measured for payment. No additional payment will be made.
- (g) Disinfection of pipelines, health testing, and disposal of chlorinated water shall be considered incidental to "Pipeline Modifications" and will not be measured for payment. No separate payment will be made.

E9.10.2 Provisional Hydrovac Services

- (a) Provisional use of a hydrovac truck shall be measured on an hourly basis for each hour of use on site and paid for at the unit price for "Hydrovac Truck". Hauling and disposal of solid debris will not be measured for payment.
- (b) Payment for the use of a "Hydrovac Truck" shall include the supply of all materials and disposal of all debris.

E9.10.3 Provisional Flushing Services

- (a) Provisional use of sewer flushing equipment shall be measured on an hourly basis for each hour of use on site and paid for at the unit price for "Sewer Flushing Unit".
- (b) Payment for "Flushing Unit" shall include the supply of all materials and equipment required.

E10. INSPECTION SUPPORT SERVICES

E10.1 Support Services Requirements

E10.1.1 General

- (a) Coordinate work hours with pipeline inspection contractor. Contractor and pipeline inspection contractor shall agree on time for commencement of work by the pipeline inspection contractor. The Contractor will be permitted reasonable time for preparation of activities prior to arrival of pipeline inspection contractor. Excessive site support time in advance of agreed site hours will not be measured for payment.
- (b) Pipeline inspections typically will require one day of onsite support per pipeline. It is intended that onsite support services will run on consecutive days. More than one site may be commenced on any day. No more than one inspection will occur at a time.
- (c) The pipeline inspection contractor will require one day to convert their tool between the 400, 450, and 600 mm pipeline inspections. Scheduling of the inspections and conversions days will be made after award of the contract.
- (d) Provide support labour to assist the pipeline inspection contractor's crews with handling of equipment, setup, and access.
- (e) Provide minimum of two support persons, including small hand and power tools to assist the pipeline inspection contractor's crew, including:
 - (i) Portable hammer drills for setting anchor bolts in concrete (minimum 12 mm drive chuck)
 - (ii) Shovels
 - (iii) Hand tools
 - (iv) Light duty transportation truck(s)
 - (v) Portable ladders (two per crossing)
 - (vi) Gas powered air compressor with 5 gallon tank (minimum) and capable of supplying 8 cfm at 90 psi.
 - (vii) Disinfection solution and equipment for the purposes of spray and swap disinfection of pipeline inspection contractor's equipment, including but not limited to: inspection tools, launch equipment, winch lines, and any other

equipment entering the pipeline. Disinfection equipment and procedures shall conform to E11.

- (f) Support personnel shall assist the pipeline inspection contractor's crews with access, removal of gratings, covers, installation of concrete anchors, where required, installation of flow diversion equipment, and any other general assistance to crews for completion of inspections.
- (g) The Contractor shall provide a heated space at each site for storage and setup of the inspection tools when atmospheric temperatures are below 5°C. The space shall be a minimum of 5 x 2.5 m.
- (h) Lifting Equipment
 - (i) Provide mobile lifting equipment, boom truck, loader or other equipment capable of lifting, moving and lowering inspection equipment into pipelines in accordance to the following:

Pipeline Size	Inspection Tool Mass (kg)	Maximum Depth (m)
250	127	7
400	172	7
450	172	7
600	395	7

- (i) The Contractor is fully responsible for confined entry access on site, in accordance to Manitoba Workplace Safety and Health Regulation 217/2006 and subsequent amendments. The Contractor shall provide confine entry support for the pipeline inspection contractor's crews where required to facilitate pipeline inspections.

E10.1.2 Site Access and Restoration

- (a) Minimize disruption of public right-of-ways. Do not encroach on private property.
- (b) Where access is required for heavy equipment and vehicles, limit access to a single pathway directly from the street to the work area. Plank pathways and grassed areas to minimize damages due to rutting.
- (c) Remove all waste and debris upon completion of inspection.

E10.1.3 Chamber and Manhole Access

- (a) Remove hatches, covers, and removable concrete slabs as required for cleaning and inspection work.

E10.1.4 Lighting

- (a) Where required for night work, provide adequate lighting

E10.1.5 Shop Space

- (a) The Contractor shall provide wash facilities and a heated shop space for the pipeline inspection contractor for configuration and storage of inspection tools.
 - (i) A wash bay for cleaning the inspection tool for transport complete with a pressure washer capable of supplying 7 LPM at 10,300 kPa.
- (b) The Contractor shall provide a work shop to facilitate maintenance and conversion of inspection tools by the pipeline inspection contractor. The work shop shall meet the following minimum requirements:
 - (i) Floor space - 80 m².
 - (ii) Overhead door adequate for unloading of inspection tools and equipment with forklift or wheel loader. Minimum dimensions - 3.66 m x 3.66 m.
 - (iii) The shop must be heated.
 - (iv) Lifting hoist or forklift availability.
 - (v) Electric air compressor with 20 gallon tank (minimum) and capable of supplying 5 cfm at 90 psi.

- (vi) Power – two (2) 15 amp, 120 volt AC power circuits.
- (vii) Work tables complete with vice.
- (c) The shop must be accessible to the pipeline inspection contractor after hours and during weekends.

E10.2 Method of Measurement and Basis of Payment

(a) Pipeline Inspection Support Services

- (a) Provision of pipeline inspection support services shall be measured on a daily basis with an hourly overtime rate. Payment shall be for at the unit prices for “Pipeline Inspection Support Services”.
- (b) Payment for “Pipeline Inspection Support Services” shall include confined entry support, inspection support, lifting equipment, lighting, pumps and other miscellaneous support as specified herein.
- (c) Time measured shall be based on on-site availability of the Contractor’s crews, from the time support crews are present on site, until crews are complete and site secured of the shift, as certified by the Contract Administrator.
- (d) Hourly overtime rate for each hour or portion thereof in excess of the daily minimum rate of 10 hours.
- (e) Installation of tag lines shall be considered incidental to “Pipeline Modifications” and will not be measured for payment. No additional payment will be made.
- (f) Provision of a heated shop shall be considered incidental to “Pipeline Modifications” and will not be measured for payment. No additional payment will be made.

E11. WATERMAIN AND FEEDERMAIN DISINFECTION

E11.1 Description

E11.1.1 This specification covers the disinfection of watermains, feeder mains, and fittings.

E11.2 Disinfection

E11.2.1 Disinfection of watermains and feeder mains shall be completed in accordance with CW2125 and AWWA C651.

E11.2.2 The Contractor shall take every reasonable precaution during construction to prevent debris from entering the pipeline. If, in the opinion of the Contract Administrator, deleterious substances have entered the pipeline, the Contractor shall flush the pipeline with sanitized pipeline cleaning equipment.

E11.2.3 Further to CW 2125, segments of watermains not disinfected and used as temporary fittings as noted above, shall be disinfected by swabbing as outlined in Section 3.3.16 of CW 2125.

E11.2.4 Upon completion of disinfection, chlorinated water shall be pumped from the pipeline at the lowest point(s) in the system. Chlorinated water shall not be directly discharged to the environment and shall be disposed of in accordance with E11.4.

E11.2.5 Bi-directional flushing will be required to remove chlorine from pipeline.

E11.2.6 All equipment being used within a potable water pipeline shall be spray or swab disinfected using a 200 mg/L free chlorine solution prior to entering or coming in contact with the pipe.

E11.2.7 Blind flanges shall be supplied with ports adequate to achieve desired flushing velocities.

E11.2.8 The Contractor shall ensure hoses, hydrants, meters, and other appurtenances used for flushing operations are protected from freezing.

E11.2.9 The Contractor shall ensure that the selected means of disposing of chlorinated water does not result in unsafe site conditions or as a result of freezing atmospheric temperatures.

E11.3 Health Testing

E11.3.1 The pipeline shall be refilled with potable water and water samples for health tests taken in accordance to CW 2125, except test samples shall be taken each day at least 24 hours apart for three (3) successive days.

E11.4 Disposal of Chlorinated Water

E11.4.1 Chlorinated water shall be treated by one of the following methods, as recommended in AWWARF - GUIDANCE MANUAL FOR THE DISPOSAL OF CHLORINATED WATER:

- (a) Discharged into nearby WWS MH's if possible. Allowable discharge rates for nearby WWS manholes have been provided on the Drawings. The Contractor may store water as required to meet allowable discharge rates.
- (b) De-chlorination of water with discharge into the LDS system or directly to the river. If discharging directly to the river the Contractor shall take all necessary precautions to prevent erosion of the river bank. De-chlorination may be accomplished using the following:
 - (i) Sodium Ascorbate,
 - (ii) Vita-D-Chlor TM by Integra Chemical,
 - (iii) or approved equal in accordance with B7.
- (c) Contain chlorinated water on Site until chlorine has dissipated to acceptable limits.

E11.4.2 The contractor shall submit a chlorinated water disposal plan in writing to the contractor a minimum of 5 working days prior to performing any cleaning, or flushing of watermain or feeder mains. The disposal plan shall at a minimum include the following:

- (a) Intended means of disposal for each site
- (b) Means of de-chlorination (if required)
- (c) Means of storing water for discharge (if required)

E11.5 Measurement and Payment

E11.5.1 Disinfection of water mains, health testing, and disposal of chlorinated water shall be considered incidental to "Pipeline Modifications" and will not be measured for payment. No additional payment will be made.

E12. RESTORATION

E12.1 Description

E12.1.1 This specification covers the restoration of work sites.

E12.2 Restoration Works

- (a) Regrade sites back to original condition upon completion of work.
- (b) Reconstruct concrete pavements in accordance with CW3310 and SD-213A.
- (c) Reconstruct asphalt pavements overlays in accordance with CW3410.
- (d) Sidewalks:
 - (i) Reconstruct existing asphalt sidewalks with 75 mm of Type 1A asphaltic concrete pavement conforming to CW3410. The sidewalk shall be constructed with 50 mm (min) of compacted base material and 150 mm (min) of sub-base material.
 - (ii) Reconstruct existing non reinforced concrete sidewalks with a 100 mm non-reinforced concrete conforming to CW3325 and SD-228A. The sidewalk shall be constructed with 100 mm (min) of compacted base material.
 - (iii) Reconstruct of the existing reinforced concrete sidewalks with a 150 mm reinforced concrete conforming to CW3235 and SD-237. The sidewalk shall be constructed with 100 mm (min) of compacted base material. To be used for private approaches.

- (e) Reconstruct concrete curbs in accordance with CW3240 and SD-206A.
- (f) Restore existing wooden fence on Wellington Crescent to existing condition.
- (g) Restore existing interlocking paving stone in accordance with CW3330 and SD-240A. It is anticipated that existing paving stones can be reused for restoration purposes. The Contractor shall take all necessary steps to not damage existing paving stone surfaces.
- (h) Sod all maintained grassed areas in accordance with CW3510.
- (i) The following restoration work shall be undertaken on unmaintained lower river bank areas as shown on the Drawings and as directed by the Contract Administrator:
 - (i) Soil Amendments in accordance with E14.
 - (ii) Sodding in accordance with CW3510, except topsoil not required. Stake sod on slopes.
 - (iii) Contractor is responsible for establishment of sod, however cutting and maintenance are not required.
 - (iv) Shrub planting in accordance with E15.

E12.3 Measurement and Payment

E12.3.1 Site Regrading

- (a) Regrading of sites to original elevations shall be considered incidental to "Pipeline Modifications" and will not be measured for payment. No additional payment will be made.

E12.3.2 Concrete Slab Patches with Asphalt Overlay

- (a) Construction of "Concrete Slab Patches" slabs complete with asphalt overlays shall be measured on a square metre basis for each thickness of pavement listed in Form B. Measurement will be made for each square metre of concrete slab acceptably replaced. Payment for "Concrete Slab Patching" shall include all base and sub base preparation, and the supply and placement of concrete and asphalt pavements.

E12.3.3 Concrete Barrier Curb Replacement

- (a) "Concrete Barrier Curb Renewal" shall be measured on a linear metre basis for. Measurement will be made for each linear metre of concrete curb acceptably replaced. Payment for "Concrete Barrier Curb Renewal" shall include all base and sub base preparation, and the supply and placement of concrete curbing.

E12.3.4 Sidewalk Patches

- (a) Construction of "Sidewalk Patches" shall be measured on a square metre basis for each type of pavement listed in Form B. Measurement will be made for each square metre of sidewalk acceptably replaced. Payment for "Sidewalk Patches" shall include all base and sub base preparation, supply and placement of concrete and asphalt pavements.

E12.3.5 Interlocking Paving Stones

- (a) Reconstruction of "Interlocking Paving Stone Restoration" shall be measured on a square metre basis. Measurement will be made for each square metre of paving stones restored. Payment for "Interlocking Paving Stone Restoration" shall include all base and sub base preparation, supply and placement of interlocking paving stones.

E12.3.6 Sodding

- (a) Supply and installation of sod using imported topsoil shall be measured and paid in accordance with CW 3510.

E12.3.7 Shrub planting shall be paid in accordance with E15.

E12.3.8 Wooden Fence Restoration

- (a) Restoration of wooden fences shall be considered incidental to "Pipeline Modifications" and will not be measured for payment. No additional payment will be made.

E12.3.9 Payment for restoration works will be limited to areas disturbed to facilitate construction. Surface restoration outside of the designated construction areas shall be at the Contractors expense.

E13. TREE PRUNING AND REMOVAL

E13.1 Description

E13.1.1 This specification covers the pruning and removal of existing trees as required to facilitate construction and amends CW 3110 Clearing and Grubbing.

E13.2 Quality Control

E13.2.1 Person performing work shall possess a valid Manitoba Arborists License.

E13.3 Materials

E13.3.1 Wound Dressing

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

E13.4 Construction Methods

E13.4.1 Scheduling of Work

- (a) The Contractor shall review work with Contract Administrator and the City's Forestry Department prior to starting work.

E13.4.2 Pruning

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

E13.4.3 Cut Back

- (a) Eliminate narrow crotches as much as possible, avoid cutting back to small suckers. Remove smaller limbs and twigs to leave foliage evenly distributed.
- (b) When reducing overall size, make symmetrical in appearance to maintain tree-like form typical of species.
- (c) Do not remove more than one-third of total branching at single operation.

E13.4.4 Repair and Protection

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

E13.5 Measurement and Payment

E13.5.1 Tree pruning and removals shall be considered incidental to "Pipeline Modifications" and will not be measured for payment. No additional payment will be made.

E14. SOIL AMENDMENTS AND GROWTH MEDIUM

E14.1 Description

E14.1.1 This Specification shall amend and supplement City of Winnipeg Standard Specification CW 3540 "Topsoil and Finish Grading for Establishment of Turf Areas" and shall cover supply, preparation and placement of topsoil and growing medium, including preparation of existing grade, finish grading and fertilizer application for restoration seeding.

E14.2 Quality Control

E14.2.1 Testing and Samples:

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

E14.2.2 Deliver and store fertilizer in waterproof bags showing weight, analysis and name of manufacturer.

E14.3 Materials

E14.3.1 Peatmoss shall be derived from partially decomposed species of Sphagnum Mosses, elastic and homogenous, brown in colour; free of decomposed colloidal residue, wood, sulphur and iron or other deleterious material which could affect healthy plant growth; containing a minimum 60% organic matter by weight, and moisture content not exceeding 15%. Shredded particles may not exceed 5 mm in size. Minimum pH value of peat, 4.5; maximum, 7.0.

E14.3.2 Sand shall be medium to coarse textured silica sand to CSA A82.56-M1976, well washed and free of impurities, chemical or organic matter.

E14.3.3 Bonemeal shall be raw bonemeal, finely ground with a minimum analysis of 3% nitrogen and 20% phosphoric acid.

E14.3.4 Fertilizer: chemical fertilizers shall have N-P-K compositions as recommended by an agricultural soil testing laboratory approved by the Contract Administrator, provided for each of the following:

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

E14.4 Construction Methods

E14.4.1 Growing Medium for Planting Individual Trees and Shrubs:

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

E14.4.2 Fertilizer:

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

E14.5 Measurement and Payment

E14.5.1 Growing Medium for Planting Individual Trees and Shrubs

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

E15. TREE AND SHRUB PLANTINGS

E15.1 Description:

E15.1.1 This Specification shall deal with the supply and installation of trees and shrub plantings in areas as indicated on the Drawings, including: preparation, digging, transport and planting.

E15.2 General

E15.2.1 Nomenclature of specified nursery stock and collected plantings shall conform to the International Code of Nomenclature for Cultivated Plants and shall be in accordance with the approved scientific names given in the latest edition of Standardized Plant Names. The names of varieties not named therein are generally in conformity with the names accepted in the nursery trade.

E15.2.2 Source Quality Control:

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

E15.2.3 Shipment and Pre-Planting Care:

- (a) Coordinate shipping of plants and excavation of holes to ensure minimum time lapse between digging and planting.
- (b) Tie branches of trees and shrubs securely and protect plant material against abrasion, exposure and extreme temperature change during transit. Avoid binding of planting stock with rope or wire, which would damage bark, break branches or destroy natural shape of plant. Give full support to root balls during movement.
- (c) Cover plant foliage with tarpaulin, and protect bare roots by means of dampened straw, peat, saw dust or other acceptable material to prevent loss of moisture during transit and storage.

- (d) Remove broken and damaged roots with sharp pruning shears. Make clean cut and cover cuts over 50 mm diameter with wound dressing.
- (e) Keep roots moist and protected from sun and wind. Heel-in trees and shrubs which cannot be planted immediately in shaded areas and water well.

E15.3 Materials

- E15.3.1 Water shall be potable and free of minerals which may be detrimental to plant growth.
- E15.3.2 Fertilizer shall be slow release organic. Fertilizer shall contain N-P-K in ratio as recommended by soil test results.
- E15.3.3 Root ball burlap shall be 150 g Hessian burlap.
- E15.3.4 Anti-desiccant shall be wax-like emulsion to provide film over plant surfaces reducing evaporation but permeable enough to permit transpiration.
- E15.3.5 Wound dressing shall be horticultural accepted non-toxic, non-hardening emulsion.
- E15.3.6 The following shrubs shall be planted:

PLANT LIST AND NOTES – per 10 m²				
Qty	Botanical Name	Common Name	Size	Planting Notes:
3	Cornus alba	Redosier Dogwood	Whip - 300mm to 450 ht. min., 1 litre pot min.	1 m o.c. - 3 to 6 plants per grouping if possible
3	Salix exigua	Coyote or Sandbar willow	Whip - 300mm to 450 ht. min., 1 litre pot min.	1 m o.c. - 3 to 6 plants per grouping if possible. - to be planted closest to the river's edge.
2	Viburnum lentago	Nannyberry	Whip - 300mm to 450 ht. min., 1 litre pot min.	1 m o.c. - 3 to 6 plants per grouping if possible
2	Viburnum rafinesquianum	Downy Arrowwood	Whip - 300mm to 450 ht. min., 1 litre pot min.	1 m o.c. - 3 to 6 plants per grouping if possible

E15.3.7 Plant Material:

- (a) Comply with “Guide Specification for Nursery Stock”, Latest Edition of Canadian Nursery Trades Association (Landscape Canada), referring to quality, size and development of plant material and root ball.
- (b) All nursery stock shall be measured when branches are in their natural position. Height and spread dimensions specified herein refer to the main body of the plant, and not from branch tip to root base or from branch tip to branch tip.
- (c) Use trees and shrub material of No. 1 grade.
- (d) All trees shall have one, only, sturdy, reasonably straight and vertical trunk, and a well-balanced crown with fully developed leader, unless designated “multi-stem”.
- (e) Use trees and shrubs with structurally sound, strong fibrous root systems, and free of disease, insects, defects or injuries, including rodent damage, sun scald, frost cracks, abrasions or scars to the bark. Plants must have been root pruned regularly, but not later than one growing season prior to arrival on site.
- (f) All parts of the nursery stock shall be moist and show live, green cambium tissue when cut.
- (g) At least one (1) plant of each variety supplied shall bear a tag showing both the botanical and common name of the plant.
- (h) Additional Plant Material Qualifications:
 - (i) Approval required for plant material which has been held in cold storage.

- (ii) Container-grown stock acceptable if containers large enough for root development. Trees and shrubs must have grown in container for minimum of one growing season but not longer than two. Root system must be able to hold soil when removed from container. Plants that have become root-bound are not acceptable. Container stock must have been fertilized with slow releasing fertilizer.
- (iii) Balled and burlap deciduous trees must have been dug with firm ball. Root balls must include 75% of fibrous and feeder root system. Secure root balls with burlap, heavy twine and rope.
- (iv) Substitutions to plant material as indicated on the Plant List will not be permitted unless written approval has been obtained as to type, variety and size prior to Award of Contract. Plant substitutions must be of similar species and of equal size to those originally specified.

E15.4 Construction Methods

E15.4.1 Workmanship

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

E15.4.2 Planting Times:

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

E15.4.3 Excavations:

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

E15.4.4 Planting:

- (a) Plant shrubs in evenly spaced groups in accordance with E15.3.6 and approved by the Contract Administrator.
- (b) Loosen bottom of planting hole to depth of 150 to 200 mm. Cover bottom of each excavation with minimum of 150 mm of planting soil mixture.
- (c) Plant trees and shrubs vertically, with roots placed straight out in hole, orient to provide the best aspect as seen from the top of bank.
- (d) Place plant material to depth equal to depth they were originally growing in nursery.

- (e) With ball and burlap root balls, loosen burlap and cut away minimum top 1/3 without disturbing root ball. Do not pull burlap from under root ball. With container stock, remove entire container without disturbing root ball. Non-biodegradable wrappings must be removed.
- (f) Tamp planting soil around root system in layers of 150 mm eliminating air voids. Frozen or saturated planting soil is unacceptable. When 2/3 of planting soil has been placed, fill hole with water. After water has completely penetrated into soil, complete backfilling.
- (g) Build 100 mm deep saucer around outer edge of hole to assist with maintenance watering.
- (h) When planting is completed apply slow release organic fertilizer at minimum rate of 12 kg/100 m for shrub beds or 50 g/mm of caliper for trees, or as recommended by the soil analysis. Mix fertilizer thoroughly with top layer of planting soil and water in well.

E15.4.5 Prune trees and shrubs after planting. Employ clean sharp tools and make cuts flush with main branch, smooth and sloping as to prevent accumulation of water. Remove dead and injured branches and branches that rub causing damage to bark. Trim trees and shrubs without changing their natural shape. Do not damage lead branches or remove smaller twigs along main branches. Treat cuts in excess of 50 mm diameter and damaged parts with application of wound dressing.

E15.4.6 Standards

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

E15.4.7 No maintenance period for lower riverbank planting is required.

E15.5 Measurement and Payment

E15.5.1 Shrub Planting

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

PART F - SECURITY CLEARANCE

F1. SECURITY CLEARANCE

- F1.1 Each individual proposed to perform the following portions of the Work:
- (a) any Work on private property;
 - (b) 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) BackCheck, forms to be completed can be found on the website at: <http://www.backcheck.net/> ; or
 - (b) Commissionaires (Manitoba Division), forms to be completed can be found on the website at: <http://www.commissionaires.mb.ca/> .
- F1.2 Prior to the award of Contract, 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.