



THE CITY OF WINNIPEG

BID OPPORTUNITY

BID OPPORTUNITY NO. 116-2013

**2013 RIVERWOOD FORCEMAIN REPLACEMENT AND WILLOW PUMPING
STATION UPGRADES – CONTRACT 17**

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PART B - BIDDING PROCEDURES

B1. CONTRACT TITLE

B1.1 2013 RIVERWOOD FORCEMAIN REPLACEMENT AND WILLOW PUMPING STATION UPGRADES – CONTRACT 17

B2. SUBMISSION DEADLINE

B2.1 The Submission Deadline is 12:00 noon Winnipeg time, February 21, 2103.

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

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

B3. SITE INVESTIGATION

B3.1 Further to C3.1, the Contract Administrator or an authorized representative will be available at the Site from 1:00 pm to 1:30 pm on **Wednesday, February 13** to provide Bidders access to the Willow Pumping Station.

(a) Bidders must wear CSA approved safety footwear and a hard hat while in the pumping station

B3.2 The Bidder shall not be entitled to rely on any information or interpretation received at the Site investigation unless that information or interpretation is the Bidder's direct observation, or is provided by the Contract Administrator in writing.

B4. PROVIDED BY THE CONTRACT ADMINISTRATOR IN WRITING. ENQUIRIES

B4.1 All enquiries shall be directed to the Contract Administrator identified in D3.1.

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 B3.1 unless that response or interpretation is provided by the Contract Administrator in writing.

B5. ADDENDA

B5.1 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.

B5.2 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.

- B5.2.1 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>
- B5.2.2 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.
- B5.3 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.
- B6. SUBSTITUTES**
- B6.1 The Work is based on the Plant, Materials and methods specified in the Bid Opportunity.
- B6.2 Substitutions shall not be allowed unless application has been made to and prior approval has been granted by the Contract Administrator in writing.
- B6.3 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.
- B6.4 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.
- B6.5 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.
- B6.6 The Contract Administrator will provide a response in writing, at least two (2) Business Days prior to the Submission Deadline, only to the Bidder who requested approval of the substitute.
- B6.6.1 The Bidder requesting and obtaining the approval of a substitute shall be entirely responsible for disseminating information regarding the approval to any person or persons he/she wishes to inform.
- B6.7 If the Contract Administrator approves a substitute as an "approved equal", any Bidder may use the approved equal in place of the specified item.
- B6.8 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 B15.

- B6.9 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.
- B6.10 Notwithstanding B6.2 to B6.9, and in accordance with B7.6 deviations inconsistent with the Bid Opportunity document shall be evaluated in accordance with B15.1(a).

B7. BID COMPONENTS

- B7.1 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;
- B7.2 Further to B7.1, the Bidder should include the written correspondence from the Contract Administrator approving a substitute in accordance with B6.
- B7.3 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.
- B7.4 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.
- B7.4.1 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.
- B7.5 Bidders are advised not to include any information/literature except as requested in accordance with B7.1.
- B7.6 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 B15.1(a).
- B7.7 Bids submitted by facsimile transmission (fax) or internet electronic mail (e-mail) will not be accepted.
- B7.8 Bids shall be submitted to:
- The City of Winnipeg
Corporate Finance Department
Materials Management Division
185 King Street, Main Floor
Winnipeg MB R3B 1J1

B8. BID

- B8.1 The Bidder shall complete Form A: Bid, making all required entries.
- B8.2 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.

B8.2.1 If a Bid is submitted jointly by two or more persons, each and all such persons shall identify themselves in accordance with B8.2.

B8.3 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.

B8.4 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.

B8.4.1 The name and official capacity of all individuals signing Form A: Bid should be printed below such signatures.

B8.5 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.

B9. PRICES

B9.1 The Bidder shall state a price in Canadian funds for each item of the Work identified on Form B: Prices.

B9.2 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.

B9.3 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.

B9.4 Payments to Non-Resident Contractors are subject to Non-Resident Withholding Tax pursuant to the Income Tax Act (Canada).

B10. QUALIFICATION

B10.1 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.

B10.2 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>

- B10.3 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);
- B10.4 Further to B10.3(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 valid COR certification number under the Certificate of Recognition (COR) Program administered by the Manitoba Construction Safety Association or by the Manitoba Heavy Construction Association's Safety, Health and Environment Program; or
 - (b) a report or letter to that effect from an independent reviewer acceptable to the City. (A list of acceptable reviewers and the review template are available on the Information Connection page at The City of Winnipeg, Corporate Finance, Materials Management Division website at <http://www.winnipeg.ca/matmgt/>)
- B10.5 The Bidder shall submit, within three (3) Business Days of a request by the Contract Administrator, proof satisfactory to the Contract Administrator of the qualifications of the Bidder and of any proposed Subcontractor.
- B10.6 The Bidder shall provide, on the request of the Contract Administrator, full access to any of the Bidder's equipment and facilities to confirm, to the Contract Administrator's satisfaction, that the Bidder's equipment and facilities are adequate to perform the Work.

B11. BID SECURITY

- B11.1 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.
- B11.1.1 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.
- B11.1.2 All signatures on bid securities shall be original.
- B11.1.3 The Bidder shall sign the Bid Bond.
- B11.1.4 The Surety shall sign and affix its corporate seal on the Bid Bond and the Agreement to Bond.

B11.2 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.

B11.2.1 Where the bid security provided by the successful Bidder is in the form of a certified cheque or draft pursuant to B11.1(c), it will be deposited and retained by the City as the performance security and no further submission is required.

B11.2.2 The City will not pay any interest on certified cheques or drafts furnished as bid security or subsequently retained as performance security.

B11.3 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.

B12. OPENING OF BIDS AND RELEASE OF INFORMATION

B12.1 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.

B12.1.1 Bidders or their representatives may attend.

B12.1.2 Bids determined by the Manager of Materials, or his/her designate, to not include the bid security specified in B11 will not be read out.

B12.2 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/>

B12.3 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/>

B12.4 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.

B13. IRREVOCABLE BID

B13.1 The Bid(s) submitted by the Bidder shall be irrevocable for the time period specified in Paragraph 11 of Form A: Bid.

B13.2 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.

B14. WITHDRAWAL OF BIDS

B14.1 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.

B14.1.1 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.

- B14.1.2 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.
- B14.1.3 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 B14.1.3(b), declare the Bid withdrawn.
- B14.2 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 B13.2 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.

B15. EVALUATION OF BIDS

- B15.1 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 B10 (pass/fail);
 - (c) Total Bid Price;
 - (d) economic analysis of any approved alternative pursuant to B6.
- B15.2 Further to B15.1(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.
- B15.3 Further to B15.1(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.
- B15.4 Further to B15.1(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.
- B15.4.1 If there is any discrepancy between the Total Bid Price written in figures, the Total Bid Price written in words and the sum of the quantities multiplied by the unit prices for each item, the sum of the quantities multiplied by the unit prices for each item shall take precedence.
- B15.4.2 Further to B15.1(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.

B16. AWARD OF CONTRACT

- B16.1 The City will give notice of the award of the Contract or will give notice that no award will be made.
- B16.2 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.

- B16.2.1 Without limiting the generality of B16.2, 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.
- B16.3 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 B15.
- B16.3.1 Following the award of contract, a Bidder will be provided with information related to the evaluation of his/her Bid upon written request to the Contract Administrator.

PART C - GENERAL CONDITIONS

C0. GENERAL CONDITIONS

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

PART D - SUPPLEMENTAL CONDITIONS

GENERAL

D1. GENERAL CONDITIONS

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

D2. SCOPE OF WORK

D2.1 The Work to be done under the Contract shall consist of the renewal of the Riverwood Forcemain and Upgrades to the Willow Pumping Station.

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

- (a) Installation of approximately 1160 meters of PVC forcemain pipe;
- (b) Installation of manholes;
- (c) Installation of mainline valves and fittings;
- (d) Piping modifications in the pumping station;
- (e) Installation of a air release valve in the pumping station;
- (f) Installation of a flow meter in the pumping station, and;
- (g) Restoration of pavement and boulevard areas.

D3. CONTRACT ADMINISTRATOR

D3.1 The Contract Administrator is:

Mr. Duane Baker C.E.T
Construction Services Coordinator
The City of Winnipeg
Water and Waste Department
110-1199 Pacific Avenue
Winnipeg, Manitoba
R3E 3S8

Telephone No. 204 986-4289

Facsimile No. 204 986-5345

D3.2 At the pre-construction meeting, the Contract Administrator will identify additional personnel representing the Contract Administrator and their respective roles and responsibilities for the Work.

D3.3 Bids Submissions must be submitted to the address in B7.8

D4. CONTRACTOR'S SUPERVISOR

D4.1 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.

D5. OWNERSHIP OF INFORMATION, CONFIDENTIALITY AND NON DISCLOSURE

D5.1 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.

- D5.2 The Contractor shall not make any public announcements or press releases regarding the Contract, without the prior written authorization of the Contract Administrator.
- D5.3 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.
- D5.4 A Contractor who violates any provision of D5 may be determined to be in breach of Contract.

D6. NOTICES

- D6.1 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.
- D6.2 All notices, requests, nominations, proposals, consents, approvals, statements, authorizations, documents or other communications to the City, except as expressly otherwise required in D6.3, D6.4 or elsewhere in the Contract, shall be sent to the attention of the Contract Administrator at the facsimile number identified in D3.1.
- D6.3 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
- D6.4 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. FURNISHING OF DOCUMENTS

- D7.1 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

D8. AUTHORITY TO CARRY ON BUSINESS

- D8.1 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.

D9. SAFE WORK PLAN

- D9.1 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.
- D9.2 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. INSURANCE

- D10.1 The Contractor shall provide and maintain the following insurance coverage:
- (a) commercial general liability insurance, in the amount of at least two million dollars (\$2,000,000.00) inclusive, with The City of Winnipeg added as an additional insured, with a cross-liability clause, such liability policy to also contain contractual liability, unlicensed motor vehicle liability, non-owned automobile liability, broad form property damage cover and products and completed operations, to remain in place at all times during the performance of the Work and throughout the warranty period;
 - (b) if applicable, Automobile Liability Insurance covering all motor vehicles, owned and operated and used or to be used by the Contractor directly or indirectly in the performance of the Work. The Limit of Liability shall not be less than \$2,000,000 inclusive for loss or damage including personal injuries and death resulting from any one accident or occurrence.
 - (c) an all risks Installation Floater carrying adequate limits to cover all machinery, equipment, supplies and/or materials intended to enter into and form part of any installation.
- D10.2 Deductibles shall be borne by the Contractor.
- D10.3 The Contractor shall provide the City Solicitor with a certificate(s) of insurance, in a form satisfactory to the City Solicitor, at least two (2) Business Days prior to the commencement of any Work but in no event later than the date specified in C4.1 for the return of the executed Contract.
- D10.4 The Contractor shall not cancel, materially alter, or cause each policy to lapse without providing at least thirty (30) Calendar Days prior written notice to the Contract Administrator.

D11. DETAILED WORK SCHEDULE

- D11.1 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.
- D11.2 The detailed work schedule shall consist of the following:
- (a) a Gantt chart for the Work
all acceptable to the Contract Administrator.
- D11.3 Further to D11.2(a), the Gantt chart shall show the time on a weekly basis, required to carry out the Work of activity or task. The time shall be on the horizontal axis, and the activity or task shall be on the vertical axis.

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 If the bid security provided in his/her Bid was not a certified cheque or draft pursuant to B11.1(c), 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.

SCHEDULE OF WORK

D13. COMMENCEMENT

D13.1 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.

D13.2 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 D8;
 - (ii) evidence of the workers compensation coverage specified in C6.15;
 - (iii) the Safe Work Plan specified in D9;
 - (iv) evidence of the insurance specified in D10;
 - (v) the detailed work schedule specified in D11;
 - (vi) the performance security specified in D12; and
- (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.

D13.3 Commencement of the Work shall be at the discretion of the Contractor provided the commencement date will allow the achievement of Substantial Performance of the work in accordance with D15, and Total Performance of the work in accordance with D16.

D14. SEQUENCE OF WORK

D14.1 Further to GC:6.1, the sequence of work shall be as follows:

- (a) Completely install the forcemain including piping, manholes, fittings, connections and other related work from and including the new by-pass pumping manhole to the connection at the discharge manhole.
- (b) Swab and pressure test the forcemain.
- (c) Begin by-pass pumping.
- (d) Install remaining forcemain and complete station upgrades.

D15. SUBSTANTIAL PERFORMANCE

- D15.1 The Contractor shall achieve Substantial Performance within sixty (60) consecutive Working Days of the commencement of the Work as specified in D13 or by July 19, 2013, whichever comes first.
- D15.2 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.
- D15.3 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.

D16. TOTAL PERFORMANCE

- D16.1 The Contractor shall achieve Total Performance within seventy five (75) consecutive Working Days of the commencement of the Work as specified in D13 or by August 9, 2013, whichever comes first.
- D16.2 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.
- D16.3 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.

D17. LIQUIDATED DAMAGES

- D17.1 If the Contractor fails to achieve Substantial Performance or Total Performance in accordance with the Contract by the days fixed herein for same, the Contractor shall pay the City the following amounts for each and every Working Day following the days fixed herein for same during which such failure continues.
- (a) Substantial Performance - One Thousand dollars (\$1,000.00);
 - (b) Total Performance – Five Hundred dollars (\$500.00).
- D17.2 The amount specified for liquidated damages in D17.1 is based on a genuine pre-estimate of the City's damages in the event that the Contractor does not achieve Substantial Performance by the day fixed herein for same.
- D17.3 The City may reduce any payment to the Contractor by the amount of any liquidated damages assessed.

D18. SCHEDULED MAINTENANCE

- D18.1 The Contractor shall perform the following scheduled maintenance in the manner and within the time periods required by the Specifications:
- (a) Landscape maintenance as specified in CW 3510.
- D18.2 Determination of Substantial Performance and Total Performance shall be exclusive of scheduled maintenance identified herein. All scheduled maintenance shall be completed prior to the expiration of the warranty period. Where the scheduled maintenance cannot be

completed during the warranty period, the warranty period shall be extended for such period of time as it takes the Contractor to complete the scheduled maintenance.

CONTROL OF WORK

D19. JOB MEETINGS

D19.1 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.

D19.2 The Contract Administrator reserves the right to cancel any job meeting or call additional job meetings whenever he/she deems it necessary.

D20. PRIME CONTRACTOR – THE WORKPLACE SAFETY AND HEALTH ACT (MANITOBA)

D20.1 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).

D21. TRAFFIC CONTROL AND MAINTENANCE OF ACCESS

D21.1 Traffic control shall be carried out in accordance with Section 3.7 of CW 1130.

D21.2 Further to D21.1, should the Contract Administrator require that Work on Regional Streets be carried out at night, on Sundays, on public holidays or that Work be restricted or suspended during peak traffic hours, the Contractor shall comply without additional compensation being considered to meet these requirements.

D21.3 Traffic control on Non-Regional Streets during construction shall be as follows:

- (a) Maintain one lane of traffic with street signed as "Road Closed - Local Access Only".
- (b) Intersecting streets and private approaches will be maintained at all times.
- (c) Bus traffic will be maintained at all times.

D21.4 Construction activities on Regional Streets shall be restricted to the closed lanes between 07:00 to 09:00 hours and 15:30 to 17:30 hours Monday to Friday and other hours as directed by the Contract Administrator.

D21.5 The Contractor will have access to the open lanes of traffic during non-restricted hours provided flag persons are used in accordance with Section 3.12 of The City of Winnipeg, "Manual of Temporary Traffic Control in Work Areas on City Streets" to maintain traffic safety.

D21.6 Further to Section 3.6 of CW 1130, the Contractor shall maintain safe pedestrian crossing at intersections at all times. If possible, only one pedestrian crossing at an intersection is to be blocked by construction at any one time. If more than one pedestrian crossing is blocked by construction at an intersection at the same time the Contractor shall provide flag persons to safely escort pedestrians across the intersection. The Contractor shall leave pedestrian crossing locations safe and free of equipment that may hamper pedestrians when no construction activities are being performed at a particular crossing location.

D21.7 The Contractor shall not park company or private vehicles inside the barricaded work zone in a manner that will block sightlines for vehicles and pedestrians approaching and crossing

MEASUREMENT AND PAYMENT

D22. PAYMENT

D22.1 Further to C12, the City may at its option pay the Contractor by direct deposit to the Contractor's banking institution.

D23. WATER USED ON CITY OF WINNIPEG CONSTRUCTION PROJECTS

D23.1 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.

WARRANTY

D24. WARRANTY

D24.1 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. 116-2013

2013 RIVERWOOD FORCEMAIN REPLACEMENT AND WILLOW PUMPING STATION UPGRADES –
CONTRACT 17

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. 116-2013

2013 RIVERWOOD FORCEMAIN REPLACEMENT AND WILLOW PUMPING STATION
UPGRADES – CONTRACT 17

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 (1993 Revision), International Chamber of Commerce Publication Number 500.

(Name of bank or financial institution)

Per: _____
(Authorized Signing Officer)

Per: _____
(Authorized Signing Officer)

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>Drawing No.</u>	<u>Drawing Name/Title</u>
	Cover Sheet
D-10491	Index Page
D-10492	South Drive – Crane Avenue to 375 N of Crane Avenue
D-10493	South Drive – 375 N of Crane Avenue to 260 N of Dowker Avenue
D-10494	South Drive – 260 N of Dowker Avenue to Point Road
D-10495	Point Road – South Drive to Manchester Boulevard N and Oakenwald Avenue to Manchester Boulevard N
D-10496	Oakenwald Avenue – Point Road to Netley Street Netley Street – Oakenwald Avenue to Riverwood Avenue
D-10497	Proposed By-Pass Manhole – Sections and Detail
D-10498	Willow Pumping Station Upgrades

- E1.4 The following historic drawing is provided in Appendix A for information purposes only.
- (a) Drawing No. 680: Willow Lift Station and Connections - Substructure

E2. SOILS INVESTIGATION REPORT

- E2.1 Further to C3.1, copies of the soil investigation report can be provided upon request.

E3. PROVISIONAL ITEMS

- E3.1 The Provisional Items listed in the Schedule of Prices are part of the Contract
- E3.2 The Contractor shall not perform Work included in Provisional Items without prior authorization from the Contract Administrator. All work included in the Provisional Items will be carried out within the construction areas shown on the Drawings.
- E3.3 Notwithstanding C7, the City reserves the right to diminish all or any portion of the Items of Work listed in the Provisional Items and no claim shall be made for damages on grounds of loss of anticipated profit or for any other reason.

E4. PROTECTION OF EXISTING TREES

- E4.1 The Contractor shall take the following precautionary steps to avoid damage from his construction activities to existing boulevard trees within the limits of the construction area.

- E4.1.1 Do not stockpile materials and soil or park vehicles and equipment on boulevards within 2 metres of trees.
- E4.1.2 Strap mature tree trunks with 25 x 150 x 2400 wood planks. Smaller trees shall be similarly protected using appropriately sized wood planks.
- E4.1.3 Excavations shall be carried out in a manner to minimize damage to existing root systems. Where roots must be cut to facilitate an excavation they shall be neatly pruned at the face of the excavation.
- E4.1.4 Work on site shall be carried out in a manner to minimize damage to existing tree branches. Where damage to tree branches does occur, the Contractor shall neatly prune the damaged branch.
- E4.1.5 American elm trees shall not be pruned between April 1st and August 1st and Siberian elm trees between April 1st and July 1st of any year under provisions of The Dutch Elm Disease Act.

E4.2 All damage to existing trees due to the Contractor's construction activities shall be repaired to the requirements and satisfaction of the City of Winnipeg, Public Works Department, Forestry Branch.

E4.3 No separate measurement or payment will be made for protection of trees.

E5. MISCELLANEOUS CONCRETE SLAB RENEWALS - SIDEWALKS

E5.1 Construct miscellaneous concrete slab renewals in accordance with CW 3235. Miscellaneous Concrete slab renewals for sidewalk shall be measured on an area basis and paid for at the Contract Unit Price per square metre for "Miscellaneous Concrete Slab Renewals – Sidewalk" in Form B of the Bid Submission.

E6. CONCRETE CURB RENEWALS

E6.1 Construct concrete curb renewal in accordance with CW 3240. Concrete curb renewal shall be measured on a length basis and paid for at the Contract Unit Price per metre for "Concrete Curb Renewal" in Form B of the Bid Submission.

E7. PARTIAL SLAB PATCHES

E7.1 Construct full depth partial slab patches in accordance with CW 3230.

E7.2 Full depth partial slab patches shall be measured on an area basis and paid for at the Contract Unit price per square meter for "Partial Slab Patches" for each type of pavement.

E7.3 No differentiation will be made for class of patch. No separate measurement of payment will be made for Drilled Dowels or Tie Bars, the cost for which shall be included in the prices bid for "Partial Slab Patches".

E8. TEMPORARY SURFACE RESTORATIONS

E8.1 Further to clause 3.3 of CW 1130, where permanent surface restorations cannot be made due to cold weather, the Contractor shall temporarily restore surfaces as follows:

- (a) backfill and level boulevards and grassed areas to match existing surface elevations,
- (b) cap excavations in street pavement with a 100 millimetre thick layer of "Concrete for Temporary Restoration of Utility Pavement Cuts" as specified in CW 3310,
- (c) cap excavations in sidewalk pavement with a 50 millimetre thick layer of "Concrete for Temporary Restoration of Utility Pavement Cuts" as specified in CW 3310,
- (d) insulate temporary concrete where required during 24hr curing period,

- (e) where curb has been removed as part of the pavement cut pour temporary curb using “Concrete for Temporary Restoration of Utility Pavement Cuts” as specified in CW 3310.
- (f) remove all temporary pavements prior to permanent restorations.

E8.2 The Contractor shall monitor and maintain temporarily restored surfaces as required until permanent restoration is complete.

E8.3 If, in the opinion of the Contract Administrator, temporarily restored surfaces are not being adequately maintained or were not properly constructed and pose a danger to the public, maintenance or reconstruction will be done by the City forces with no advance notification the Contractor.

E8.4 All costs associated with the maintenance or reconstruction of temporary pavement incurred by the City shall be deducted from future payments to the Contractor.

E8.5 Temporary surface restorations shall be measured on an area basis and paid for at the contract unit price for “Temporary Surface Restorations”, “a) street pavement” or “b) sidewalk”. The area to be paid for shall be the total number of square metres of street pavement or sidewalk temporarily restored, accepted and measured by the Contract Administrator.

E8.5.1 No measurement or payment will be made for the temporary restoration of barrier or lip curb.

E8.5.2 No measurement or payment will be made for the temporary restorations of boulevards and grassed areas/

E8.5.3 No measurement or payment will be made for the removal of temporary pavement prior to permanent restoration.

E9. BACKFILL UNDER TEMPORARY SURFACE RESTORATIONS

E9.1 Use class 2 back fill in excavation under temporary street pavement and sidewalk where Class 3 backfill cannot be jetted and flooded due to cold weather.

E9.2 Class 2 backfill may be compacted in 600mm lifts where backhoe operated pneumatic plate compactors are used.

E9.3 Jet and flood Class 2, Class 3 and Class 5 backfilled excavations in spring when ground is not frozen prior to permanent restoration.

E9.4 No extra payment will be made for the installation of Class 2 backfill under temporary street pavement and sidewalk.

E10. SNOW CLEARING

E10.1 The Contractor will be required to perform snow clearing and sanding operations on City streets and sidewalks within the Site where access to City snow clearing and sanding crews is blocked due to construction activities or where construction activities have created unsafe, icy conditions.

E10.2 Snow built-up on sidewalks and roadway shall be maintained to the condition of the surrounding sidewalks and roadways.

E10.3 No extra payment will be made for snow clearing.

E11. SHOP DRAWINGS

E11.1 Description

- (a) This Specification shall revise, amend and supplement the requirements of CW 1100 of the City of Winnipeg's Standard Construction Specifications.

- (i) The term 'shop drawings' means drawings, diagrams, illustrations, schedules, performance charts, brochures, and other data, which are to be provided by the Contractor to illustrate details of a portion of the Work.
 - (ii) The Contractor shall submit specified shop drawings to the Contract Administrator for review. All submissions must be in metric units. Where data is in imperial units, the correct metric equivalent shall also be show on all submissions for Engineering review.
 - (iii) Provision of Shop Drawings will be considered incidental to the price for supply and delivery of equipment and materials.
- (b) Shop Drawings
 - (i) Original drawings are to be prepared by the Contractor, Subcontractor, Supplier, Distributor, or Manufacturer, which illustrate appropriate portion of Work; showing fabrication, layout, setting or erection details as specified in appropriate sections.
- (c) Contractor's Responsibilities
 - (i) Review shop drawings, product data and samples prior to submission and stamp and sign drawings indicating conformance to the Contract requirements.
 - (ii) Verify:
 - (a) Field measurements
 - (b) Field construction criteria
 - (c) Catalogue numbers and similar data
 - (iii) Coordinate each submission with requirements of Work and Contract Documents. Shop drawings of separate components of a larger system will not be reviewed until all related drawings are available.
 - (iv) Notify Contract Administrator, in writing at time of submission, of deviations from requirements of Contract Documents.
 - (v) Responsibility for deviations in submission from requirements of Contract Documents is not relieved by Contract Administrator's review of submission, unless Contract Administrator gives written acceptance of specified deviations.
 - (vi) Responsibility for errors and omissions in submission is not relieved by Contract Administrator's review of submittals.
 - (vii) The Contractor shall make any corrections required by the Contract Administrator and shall resubmit the required number of corrected copies of Shop Drawings. The Contractor shall direct specific attention in writing or on resubmitted Shop Drawings to revisions other than the corrections requested by the Contract Administrator on previous submission.
 - (viii) After Contract Administrator's review and return of copies, distribute copies to sub-trades as appropriate.
 - (ix) Maintain one (1) complete set of reviewed shop drawings, filed by Specification Section Number, at the Site for use and reference of the Contract Administrator and Subcontractors.
- (d) Submission Requirements
 - (i) Schedule submissions at least fourteen (14) Calendar days before dates reviewed submissions will be needed, and allow for a (14) Calendar day period for review by the Contract Administrator of each individual submission and re-submission, unless noted otherwise in the Contract Documents.
 - (ii) Submit five (5) paper prints of shop drawings. The Contractor is advised that the Contract Administrator will retain three (3) copies of all submittals and return two (2) copies to the Contractor.
 - (iii) Accompany submissions with transmittal letter, containing:
 - (a) Date
 - (b) Project title and Bid Opportunity number
 - (c) Contractor's name and address
 - (d) Number of each shop drawing, product data and sample submitted
 - (e) Specification Section, Title, Number and Clause

- (f) Drawing Number and Detail/Section Number
- (g) Other pertinent data
- (iv) Submissions shall include:
 - (a) Date and revision dates.
 - (b) Project title and Bid Opportunity number.
 - (c) Name of:
 - ◆ Contractor
 - ◆ Subcontractor
 - ◆ Supplier
 - ◆ Manufacturer
 - ◆ Separate detailer when pertinent
 - (d) Identification of product of material.
 - (e) Relation to adjacent structure or materials.
 - (f) Field dimensions, clearly identified as such.
 - (g) Specification section name, number and clause number or drawing number and detail/section number.
 - (h) Applicable standards, such as CSA or CGSB numbers.
 - (i) Contractor's stamp, initialed or signed, certifying review of submission, verification of field measurements and compliance with Contract Documents.
- (e) Other Considerations
 - (i) Fabrication, erection, installation or commissioning may require modifications to equipment or systems to conform to the design intent. Revise pertinent shop drawings and resubmit.
 - (ii) Material and equipment delivered to the Site will not be paid for until pertinent shop drawings have been submitted and reviewed.
 - (iii) Incomplete shop drawing information will be considered as stipulated deductions for the purposes of progress payment certificates.
 - (iv) No delay or cost claims will be allowed that arise because of delays in submissions, re-submissions and review of shop drawings.

E11.1.1 Preparation and submittal of Shop Drawings will be included in the Contract Work and no additional payment will be made for such work.

E12. FORCEMAIN MATERIALS

E12.1 Pipe

- (a) Piping shall be Polyvinyl Chloride (PVC) Cast Iron Outside Diameter (CIOD) DR25 conforming to the latest revision of AWWA C905 and CSA B137.3 and produced by a manufacturer that is approved for DR18 use in the City of Winnipeg in accordance with the City's Standard Construction Specifications. Piping shall be installed in accordance with the City's Standard Construction Specifications. Piping shall be measured on a length basis and paid for at the Contract Unit Price per metre for "Wastewater Sewer - 400mm PVC (DR25)" in Form B of the Bid Submission.
- (b) Manhole piping shall be Class 52 ductile iron or ASTM carbon steel schedule 80 thickness. Manhole piping shall be installed as shown on the drawings. Manhole piping shall be measured on a length basis and paid for at the Contract Unit Price per metre for "Wastewater Sewer - 400mm Ductile Iron/Steel" in Form B of the Bid Submission.
- (c) Submit shop drawings of piping in accordance with E11 of this specification.

E12.2 Fittings

- (a) Fabricated PVC bends shall be CIOD DR25 conforming to the latest revision AWWA C905 and CSA B137.3 and produced by a manufacturer that is approved for 300mm use in the City of Winnipeg in accordance with the City's Standard Construction Specifications. Fabricated PVC fittings shall be installed in accordance with the City's

Standard Construction Specifications. Fabricated PVC bends shall be measured on a unit basis and paid for at the Contract Unit Price per unit for "Fittings – Bends" in Form B of the Bid Submission.

- (b) Cast or ductile iron push on bends shall be approved for use in the City of Winnipeg in accordance with the City's Standard Construction Specifications. Cast and ductile iron push on bends shall be installed in accordance with the City's Standard Construction Specifications. Cast and ductile iron push on bends shall be measured on a unit basis and paid for at the Contract Unit Price per unit for "Fittings – Bends" in Form B of the Bid Submission.
- (c) Cast or ductile iron flanged tee shall conform to AWWA C110 and ANSI/ASME 16.1, Class 125. Flanged tee shall be installed as shown on the drawings. Flanged tee shall be measured on a unit basis and paid for at the Contract Unit Price per unit for "Fittings – Flanged Tee" in Form B of the Bid Submission.
- (d) Cast or ductile iron blind flange shall conform to AWWA C110 and ANSI/ASME 16.1, Class 125. Blind flange shall be installed as shown on the drawings. Blind flange shall be measured on a unit basis and paid for at the Contract Unit Price per unit for "Blind Flange" in Form B of the Bid Submission.
- (e) Submit shop drawings of fabricated PVC fittings in accordance with E11 of this specification.

E12.3 Manhole

- (a) Manhole materials shall be approved for use and installed in accordance with the City of Winnipeg Standard Construction Specifications.
- (b) Manholes shall be installed, measured and paid for in accordance with the City's Standard Construction Specifications.
- (c) Sump and Fibre Reinforced Plastic grate to be installed with the manhole shall be installed as shown on the drawings. Sump and grate will be included in the Contract Work and no additional payment will be made for such work.

E12.4 Gate Valve

- (a) Cast iron body with flanged ends; bronze trimmed cast iron wedge; bronze stem, double O-ring stem seals and fifty (50) millimetre square operating nut.
 - (i) One (1) 200 millimetre gate valve shall be equipped with non-rising stem and flanged ends will be installed in the manhole where indicated on the drawings.
- (b) Flanges shall conform in dimension and drilling to ANSI/ASME B16.1, Class 125.
- (c) Direction of opening shall be counter clockwise and shall be clearly stamped or indicated with raised letters and arrow.
- (d) Manufacturer's nameplate shall be attached to the valve body with stainless steel fasteners.
- (e) Acceptable Products: Clow Canada, Crane, Mueller Canada or approved equal.
- (f) Knife gate valves are not acceptable.
- (g) Gate valves shall be installed, measured and paid for in accordance with the drawings and the City's Standard Construction Specifications.
- (h) Submit shop drawings of gate valves in accordance with E11 of this specification.

E12.5 Rotating-Revolving Disk Valve

- (a) Rotating-Revolving Disk type gate valve manufactured in accordance with AWWA 500 for sewage service with flanged ends and fifty (50) millimetre square operating nut.
 - (i) One (1) 400 millimetre Rotating-Revolving Disk type gate valve shall be equipped with non-rising stem and spur gear, epoxy coated, and will be installed in the by-pass manhole where indicated on the drawings.

- (ii) One (1) 400 millimetre Rotating-Revolving Disk type gate valve shall be equipped with non-rising stem and spur gear, epoxy coated, and will be direct buried where indicated on the drawings.
- (b) Flanges shall conform in dimension and drilling to ANSI/ASME B16.1, Class 125.
- (c) Direction of opening shall be counter clockwise and shall be clearly stamped or indicated with raised letters and arrow.
- (d) Manufacturer's nameplate shall be attached to the valve body with stainless steel fasteners.
- (e) Acceptable Product: American R/D Rotating-Revolving Disk Gate Valve, Model 52
- (f) Rotating-Revolving Disk Gate Valve shall be installed, measured and paid for in accordance with the drawings and the City's Standard Construction Specifications.
- (g) Submit shop drawings of gate valves in accordance with E11 of this specification.

E12.6 Pipe Couplings

- (a) Pipe couplings shall be "Mainline Ductile Iron Wide Range Couplings" approved for use in the City of Winnipeg in accordance with the City's Standard Construction Specifications. Pipe couplings shall be installed in accordance with the City's Standard Construction Specifications. Pipe couplings shall be measured on a unit basis and paid for at the Contract Unit Price per unit for "Pipe Couplings" in Form B of the Bid Submission.

E12.7 Adaptor Flange

- (a) Ductile Iron, Grade 65-45-12, conforms to the current ASTM Standard A536 for Ductile Iron Castings. Bolt holes shall be drilled in accordance with ANSI/ASME B16.1.
- (b) Clamping screws on adaptor flanges shall be zinc plated, heat treated steel with a minimum tensile strength of 28 Mpa.
- (c) Bolting hardware shall be type 316 stainless steel in accordance with ASTM A276.
- (d) Acceptable Product: Uni-Flange Series 400 or approved equal.
- (e) Adaptor flange shall be installed as shown on the drawings and in accordance with the Manufacturer's Specifications. Adaptor flanges shall be measured on a unit basis and paid for at the Contract Unit Price per unit for "Adaptor Flange" in Form B of the Bid Submission.
- (f) Submit shop drawings of adaptor flanges in accordance with E11 of this specification.

E12.8 Flanged Adaptor Coupling

- (a) Ductile Iron, Grade 65-45-12, conforms to the current ASTM Standard A536 for Ductile Iron Castings. Bolt holes shall be drilled in accordance with ANSI/ASME B16.1.
- (b) Bolting hardware shall be type 316 stainless steel in accordance with ASTM A276.
- (c) Acceptable Product: Romc Industries FCA501 or approved equal.
- (d) Flanged adaptor couplings shall be installed to couple the buried valve to the PVC forcemain and in accordance with the Manufacturer's Specifications. Flanged adaptor couplings shall be measured on a unit basis and paid for at the Contract Unit Price per unit for "Flanged Adaptor Coupling" in Form B of the Bid Submission.
- (e) Submit shop drawings of adaptor flanges in accordance with E11 of this specification.

E12.9 Restraining Devices

- (a) PVC fitting joint restraints shall be constructed of ductile iron to ASTM A536 Grade 65-45-12.
- (b) Bolting hardware shall be type 316 stainless steel in accordance with ASTM A276.

- (c) Restraining devices shall be used to restrain 3.0 meters on both sides of a 45 degree bend and 1.5 meters on both sides of a 22.5 degree bend.
- (d) Restraining device shall be used to restrain 20.0 meters at the outlet gate valve.
- (e) Restraining devices shall be installed in accordance with the Manufacturer's Specifications
- (f) Restraining devices will be included in the Contract Work and no additional payment will be made for such work.
- (g) Submit shop drawings of restraining devices in accordance with E11 of this specification.

E12.10 Thrust Blocks

- (a) Thrust blocks shall be installed in accordance with the City's Standard Construction Specifications Standard Detail SD-004.

E12.11 Valve Stems and Valve Box Upper Casing

- (a) Valve stems and valve box upper casing shall be approved for use in the City of Winnipeg in accordance with the City's Standard Construction Specifications.
- (b) Valve stems and valve box upper casing will be included in the Contract Work and no additional payment will be made for such work.

E12.12 Water Stops

- (a) Waterstops and associated work shall be installed in accordance with the Manufacturer's Specifications and as indicated on the drawings.
- (b) Water Stops and associated work will be included in the Contract Work and no additional payment will be made for such work.

E12.13 Forcemain Drain

- (a) Forcemain drain shall be installed as per the drawings including the pipe, ball valve, bend and flange. Forcemain drain shall be measured on a unit basis and paid for at the Contract Unit Price per unit for "Forcemain Drain" in Form B of the Bid Submission.

E13. PUMPING STATION UPGRADES

E13.1 Materials

E13.1.1 Pipe

- (a) All piping shall be Class 52 ductile iron or ASTM carbon steel schedule 80 thickness.

E13.1.2 Fittings

- (a) Cast or ductile iron tee shall conform to AWWA C110 and ANSI/ASME 16.1, Class 125.
- (b) Cast or ductile blind flange shall conform to AWWA C110 and ANSI/ASME 16.1, Class 125

E13.1.3 Sewage Air Release Valve and Air Discharge Pipe

- (a) Air Release Valve
 - (i) Compact tubular design in Stainless Steel body, hollow direct acting float with solid large orifice in HDPE.
 - (ii) Seals are EPDM rubber on EPDM seats.
 - (iii) Shall have integral anti-surge orifice mechanism to limit pressure due to transient pressure rise induced by closure to less than 1.5 times valve rated pressure.
 - (iv) Intake orifice equal to large discharge orifice shall be 50 mm NB.

- (v) No air discharge shall be allowed to enter into the pumping station.
- (vi) Acceptable Air Release Valve: Vent-O-Mat RGXv (Air-Release Only).
- (vii) Submit shop drawings of air release valve in accordance with E11 of this specification.

(b) Air Discharge Pipe

- (i) Air discharge pipeline to be routed back to 150mm below service platform. Connection to be NPT threaded in field.
- (ii) Air line pipe: 38mm PVC, Schedule 40, to ASTM D1785-06.
- (iii) Joints: Solvent weld for PVC: to ASTM D2564
- (iv) Fittings: PVC fittings to ASTM D2466
- (v) Pipe supports: Pipe supports to be non metallic.

E13.1.4 Pressure Gauge and Fittings

- (a) Glycerin-filled, 100 mm diameter pressure gauge, Stainless Steel, 0 to 100 psi range, 1/4" or 1/2" NPT connection on the forcemain header as indicated on the drawings.
- (b) Diaphragm seal connection suitable for use with municipal wastewater, stainless steel, 1/4" or 1/2" NPT connector, fill and bleed connections to permit both diaphragm and instrument to filled and evacuated.
- (c) Couplings and Ball Valve to connect to 1/2" NPT nipple on header pipe.

E13.1.5 Ball Valves

- (a) Ball valve shall be 304/316 stainless steel, full port in accordance with ASTM A351.
- (b) Submit shop drawings of ball valves in accordance with E11 of this specification.

E13.1.6 Restraining Rods

- (a) Restraining rods shall be 25mm threaded ends, type 316 stainless steel in accordance with ASTM A276.
- (b) Hex nuts shall be type 316 stainless steel in accordance with ASTM A276.

E13.1.7 Magnetic Flow Meter

- (a) Magnetic flow meter shall be in accordance with E15 of this specification

E13.1.8 Paint

- (a) Painting shall be in a accordance with E14 of this specification

E13.1.9 Restraining Devices

- (a) Restraining devices shall be in accordance with E12.9 of this specification

E13.1.10 Adaptor Flange

- (a) Adaptor flanges shall be in accordance with E12.6 of this specification.

E13.2 Installation

E13.2.1 All materials used in the Pumping Station Upgrades shall be installed as indicated in this specification, on the drawings and in accordance with the Manufacture's Specifications.

E13.3 Measurement and Payment

E13.3.1 All materials and installation required for the Pumping Station Upgrades shall be measured on a lump basis and paid for at the Contract Unit Price per unit for "Pumping Station Upgrades" in Form B of the Bid Submission.

E14. PAINT

E14.1 General

- (a) This specification shall cover supply and application of paint and associated work for the items included.
- (b) All interior piping shall be painted in accordance with this specification.
- (c) Any new metal surfaces, not already factory finished, shall be painted in accordance with this specification.

E14.2 Materials

E14.2.1 Paint

- (a) Paint materials are to be products of a single manufacturer.
- (b) Colour schedule will be determined by the Contract Administrator from a selection of the manufacturer's full range of colours.

E14.2.2 Paint Finishes

- (a) Formula 1 (Alkyd): for shop primed and unprimed ferrous metal surfaces:
 - (i) Touch-up shop primer (if used) with primer provided by the manufacturer.
 - (ii) One coat marine alkyd metal primer CGSB-1-GP-48M.
 - (iii) Two coats semi-gloss enamel CAN/CGSB-1.57.
 - (iv) Acceptable products: Pratt and Lambert, Benjamin Moore, Glidden, Cloverdale or Northern Paint.
 - (v) Provide color samples to the Contract Administrator for approval before application.
 - (vi) Paint and primer shall be from the same manufacturer.

E14.3 Construction Methods

E14.3.1 Standard of Acceptance

- (a) Piping, valves and pumping equipment: No visible defects from a distance of 1000 millimetres at 90 degrees to surface when viewed using final lighting source.
- (b) Final coat to exhibit uniformity of colour and uniformity of sheen across full surface area.

E14.3.2 Delivery, Storage and Handling

- (a) Deliver and store materials in original containers, sealed with labels intact.
- (b) Indicate on containers or wrappings:
 - (i) Manufacturer's name and address.
 - (ii) Type of coating.
 - (iii) Compliance with applicable standard.
 - (iv) Colour number in accordance with colour schedule provided by Contract Administrator.
- (c) Observe manufacturer's recommendations for storage and handling.

E14.3.3 Safety Requirements

- (a) Comply with requirements of Workplace Hazardous Materials Information System (WHMIS) regarding use, handling storage, and disposal of hazardous materials.

E14.3.4 Protection

- (a) Cover or mask floors, walls, and equipment adjacent to areas being coated to prevent damage and to protect from drops and splatters. Use non-staining coverings.
- (b) Protect items that are permanently attached such as Fire Labels on hatch doors, frames, and name plates on equipment.
- (c) Protect factory finished products and equipment.

E14.3.5 Cleaning and Surface Preparation

- (a) Clean and prepare surfaces in accordance with the Manufacturer's instructions and the MPI Painting Specification Manual requirements. Refer to MPI Manual in regard to specific requirements and as follows:
 - (i) Remove dust, dirt, and other surface debris by scrubbing, vacuuming and wiping with dry, clean cloths or compressed air.
 - (ii) Wash surfaces with a biodegradable detergent and bleach where applicable and clean warm water using a stiff bristle brush to remove dirt, oil and other surface contaminants.
 - (iii) Rinse prepared surfaces with clean water until foreign matter is flushed from surface.
 - (iv) Allow surfaces to drain and dry sufficiently as per manufacturer's instruction to allow for painting application.
- (b) Apply primer coat or paint to prepared surfaces if required by the manufacturer.
- (c) Prevent contamination of cleaned surfaces by salts, acids, alkalis, other corrosive chemicals, grease, oil and solvents before protective coating is applied. Apply primer and paint as soon as possible after cleaning before any surface deterioration occurs.
- (d) Clean metal surfaces to be coated by removing rust, loose mill scale, welding slag, dirt, oil, grease and other foreign substances in accordance with section this specification. Remove traces of blast products from surfaces, pockets and corners to be coated.
- (e) Touch up of shop primers with primer as specified in applicable section. Major touch-up including cleaning and painting of field connections, welds, rivets, nuts, washers, bolts, and damaged or defective paint and rusted areas, shall be by supplier of fabricated material.
- (f) Do not apply primer or paint to air release valve, flow monitor, or ball valves.

E14.3.6 Application

- (a) Apply primer and paint using spray, roller or brush methods in accordance with the paint manufacturer's instructions. Surfaces to be painted shall be thoroughly cleaned of dirt, concrete, grease, weld slag and foreign matter before application. Sufficient drop clothes, shields or other protection shall be provided to protect adjacent piping, equipment, walls and floors from drips or splatters.
- (b) Do not paint over galvanized metal, aluminium, stainless steel, brass or bronze, rubber, plated surfaces, machined surfaces, hangers and nameplates.
- (c) Ventilate area of work by use of approved portable supply and exhaust fans.
- (d) Provide temporary heating where permanent facilities are not available to maintain minimum recommended temperatures.
- (e) Apply paint finish only in areas where dust is no longer being generated by related construction operations such that airborne particles will not affect the quality of the finished surface.
- (f) Apply paint only when surface to be painted is dry, properly cured, and adequately prepared.
- (g) Apply each coat of paint as a continuous film of uniform thickness. Repaint thin spots or bare areas before next coat of paint is applied.
- (h) Allow surfaces to dry and properly cure after cleaning and between subsequent coats for minimum time period as recommended by manufacturer.
- (i) Sand and dust between each coat to remove visible defects.
- (j) Touch up scratches and marks on factory painted finishes and equipment with paint as supplied by manufacturer of equipment.

E14.3.7 Cleanup

- (a) Remove over-spray, paint splatter and spills from exposed surfaces that were not intended for painting. Remove smears and spatter immediately as operations progress, using appropriate methods as per manufacturer's instructions.

E15. MAGNETIC FLOW METER

E15.1 The magnetic flow meter, shall consist of a separate flow tube and remote transmitter, complete with cabling, which meets the following specifications:

- (a) Service:
 - (i) Fluid: Wastewater
 - (ii) Fluid Temperature: -10°C to 50°C
 - (iii) Ambient Temperature (flowtube): -30°C to 50°C
 - (iv) Ambient Temperature (transmitter): 0°C to 40°C
 - (v) Pressure: 0 to 100 kPa
- (b) Accuracy:
 - (i) 0.5% of rate ± 1.0 mm/sec from 0.01 to 2 m/s
 - (ii) 0.5% of rate ± 1.5 mm/sec. above 2 m/s
 - (iii) Specified accuracy to include flow rate the combined effects of linearity, hysteresis, repeatability, and calibration uncertainty.
 - (iv) The electronics must be temperature compensated to maintain system accuracy of 0.5% or better across the stated temperature range.
- (c) Flow tube Requirements:
 - (i) Size: 300mm
 - (ii) Flange Material: Carbon Steel
 - (iii) Flange Type: Class 150
 - (iv) Junction Box Enclosure: NEMA 4X
 - (v) Design: flanged and all welded flanged flow tube bodies must be a fully welded steel design, and must not rely on gaskets to fully protect the coils and electrode wiring
 - (vi) Electrodes: 316L Stainless Steel or Tantalum
 - (vii) Electrode Housing: Sealed, welded housing
 - (viii) Lining: Neoprene or Teflon
 - (ix) Grounding: Grounding Rings (to be included)
 - (x) Hazardous Area Approvals: Class I, Zone 2
 - (xi) Approvals: CSA or equivalent
 - (xii) The transition between the flow tube and the junction box must be potted to prevent process fluids from reaching the electronics or conduit in the event of a lining or electrode failure.
 - (xiii) The field termination and electronics must be in separate, fully isolated compartments to prevent moisture or contamination to enter these compartments.
 - (xiv) All flow tubes must be hydrostatically tested to 1.5 times their rated pressure.
 - (xv) Provide epoxy paint coating for the entire flowtube.
- (d) Transmitter Requirements:
 - (i) Mounting: Wall (remote from flow tube)
 - (ii) Local Display: LCD, capable if indicating flow rates, flow totalizer, etc., and display 2 lines of a minimum of 20 characters.
 - (iii) Local Control: Keypad
 - (iv) Programming and configuration:
 - (i) Fully configurable via transmitter keypad

- (ii) Configurable via HART field communicator on 4 to 20mA output loop
 - (v) Units of Operation:
 - (i) Flow Rate: l/s
 - (ii) Flow Totalizer: m³
 - (vi) Power Supply: 120 VAC
 - (vii) Output:
 - (i) 4 to 20mA (with HART protocol) for flow rate
 - (ii) Pulse output for flow totalization (24VDC), independently scalable
 - (viii) Enclosure: NEMA 4X rated
 - (ix) Approvals: CSA or equivalent
 - (x) Contain non-volatile memory for all data, including the totalizer.
- (e) Cable Requirements (between flow tube and transmitter):
- (i) The remote mounted transmitter shall utilize readily available Beldon cables between the flow tube and the transmitter.
 - (ii) Installation: Conduit
 - (iii) Purpose: Signal and coil drive (between flow tube and transmitter)
 - (iv) Size: As per manufacturer's recommendations for the length specified.
 - (v) Ratings: Wet and dry, Class I Zone 2 (in conduit)
 - (vi) Length: 50 meters (per flow meter)
 - (vii) Supply of cables to be provided with the flow meters.

E15.2 Acceptable Products

- (a) Rosemount 8705 flow tube with Rosemount 8712E transmitter
- (b) Endress & Hauser Promag 50W with remote transmitter
- (c) Krohne OPTIFLUX 2000 with IFC 100 remote transmitter
- (d) Or approved equal in accordance with B6.

E15.2.1 Submit shop drawings of flow meter in accordance with E11 of this specification.

E15.3 Installation of Equipment

E15.3.1 The Contractor will install the flow meter, flow transmitter, and interconnecting wiring between the flow meter and flow transmitter in accordance with the manufacturer's instruction. The manufacturer's installation instructions will be provided to the contractor prior to work beginning.

E15.3.2 The flow transmitter shall be installed on the main floor of the building near the electrical panel as directed by the Contract Administrator.

E15.3.3 City of Winnipeg staff will be responsible to complete the electrical connections to the flow meter.

E15.4 Inspection of Installation of Equipment

E15.4.1 General

- (a) The equipment will be installed by the Installation Contractor forces and the supply Contractor (the Contractor) will be required to provide a qualified technical representative to :
 - (i) Provide training for the installation of the equipment,
 - (ii) Inspect the installation of the equipment,
 - (iii) Be present during the field testing of the equipment,
 - (iv) Provide training to City personnel in the operation and maintenance of the equipment, and

- (v) Supervise commissioning.
- (b) The Contractor shall attend a turn over inspection with the Contract Administrator and the Installation Contractor, at which time the care and control of the equipment will be assumed by the Installation Contractor.
- (c) Unless otherwise specifically stated in the Specifications, the Contractor shall provide, and shall allow for in his Bid, a factory-trained representative who, in conjunction with the Contract Administrator, shall give instructions regarding the installation of the equipment.
- (d) The Contractor's factory-trained representative shall visit the site as required to ensure that the installation work is being performed in a proper and workmanlike manner. The Contractor shall allow for a minimum of one (1) full working day.
- (e) The Contractor's representative shall be present to supervise the commissioning, initial operation, and functional testing of the equipment. The scheduling of the Contractor's factory-trained representative's visits to the site shall be to the mutual satisfaction of the Contractor and the Installation Contractor, and shall be agreed upon before the work of installing the equipment begins. The Contractor shall allow for a minimum of one (1) full working day for commissioning, testing, and training services.
- (f) Operating equipment and systems shall be performance tested by the Contractor in the presence of the Contract Administrator to demonstrate compliance with the specified operating requirements. Functional testing shall be conducted under the specified design operating conditions or under such simulated operating conditions as recommended or approved by the Contract Administrator.
- (g) The Contractor shall provide training to City staff in accordance with Clause E15.5.
- (h) Immediately following the Training, the City reserves the right to operate this equipment to suit system requirements.

E15.5 Training

- E15.5.1 The Contractor shall include costs for providing training to City staff by a factory-trained representative on the operation and maintenance of the equipment.
- E15.5.2 Training for the equipment shall be conducted on site, in conjunction with commissioning. The Contractor shall provide a qualified instructor as well as the necessary course materials.
- E15.5.3 Training shall be provided in one (1) session for operation and maintenance staff. And one (1) session for Electrical and Instrumentation staff.
- E15.5.4 Training shall be completed in conjunction with commissioning of the equipment. The Contract shall not be considered complete until the training has been provided.

E16. PIPE SWABBING AND HYDROSTATIC LEAKAGE TESTING

- E16.1 Pipe swabbing and hydrostatic pressure testing to be completed before forcemain connection to the lift station
- E16.2 Pipe Swabbing
 - (a) The contractor shall slowly fill the forcemain to expel as much air as possible by flushing.
 - (b) Swabs shall be open cell polyurethane foam with a density of 16-30 kg/m³ (1 to 2 lb/ft³).
 - (c) Swabs shall be able to traverse standard piping configurations such as 45° elbows, tees, and valves.
 - (d) Three swabs shall be passed through the forcemain consecutively.

- (e) Insert swabs from the station end of the forcemain, ensuring that the pipe is full of water while swabbing.
- (f) Contractor to employ a method to ensure that the swabs being discharged at the downstream manhole are retrieved.
- (g) Ensure no air is introduced into the forcemain after swabbing and before leakage testing.
- (h) Submit a swabbing procedure to the Contract Administrator for approval prior to swabbing.

E16.2.2 Pipe swabbing will be included in the Contract Work and no additional payment will be made for such work.

E16.3 Hydrostatic Leakage Testing

- (a) When flushing and swabbing are completed, test the forcemain in accordance with CW2125 except as modified below.
- (b) The forcemain will be tested to a pressure of 690 kPa (100 psi)
- (c) The forcemain shall be tested in one operation and the allowable apparent leakage calculated as per the latest edition of AWWA C605.
- (d) The forcemain to be pressure tested shall be completed from and including the by-pass manhole to the discharge manhole.

E16.3.2 Hydrostatic Leakage Testing will be included in the Contract Work and no additional payment will be made for such work.

E17. FLOW CONTROL AND TEMPORARY BY-PASS PUMPING

E17.1 Description

E17.1.1 This specification covers flow control in existing sewers and temporary by-pass pumping of flow during station modifications for the Willow Wastewater Pumping Station.

E17.2 Materials

E17.2.1 Inflatable Rubber Sewer Plugs

- (a) Made of rubber, capable of remaining in place when inflated to the pressure required to withstand the expected sewer levels.
- (b) Provided with an inflation/deflation hose, monitoring pressure valve, removal rope or cable and safety chain, all of sufficient length to reach ground elevation for monitoring and removal.

E17.2.2 Temporary By-Pass Pumping Equipment

- (a) Non-clog, submersible pumping units, each sized to meet or exceed the required capacity. Complete with all required piping, fittings, floats and pump controls suitable for temporary installation in a sewer manhole.
- (b) Provide model and capacity curves to the Contract Administrator for approval.
- (c) Power supply to be suitably sized for pumping equipment complete with all required controls. Fuel to be in lockable, tamperproof container, approved by Contract Administrator.

E17.2.3 Fittings and Appurtenances

- (a) Fittings, couplings and appurtenances to be used for repairs to existing forcemains and sewers to be approved products for underground use in the City of Winnipeg.

E17.2.4 Bedding and Backfill

- (a) Bedding and initial backfill material to be sand in accordance with CW 2030.

- (b) Backfill excavations in pavement areas to be Class 3 in accordance with Clause 3.8.3 of CW 2030. Backfill in excavations in boulevard areas to be Class 5 in accordance with Clause 3.8.3 of CW 2030.

E17.3 Construction Methods

E17.3.1 General

- (a) Maintain level of sewage in existing sewers below the critical basement elevation as shown on the drawings at all times. The Contract Administrator will provide a mark at a convenient location for reference.
- (b) There is no allowable shutdown time for this project. The contractor shall begin pumping operations as soon as the temporary plug is installed.
- (c) By-pass pumping discharge shall be directed into the new forcemain through the gate valve in the new by-pass manhole.
- (d) Ensure pumping operations are proceeding satisfactorily before beginning work on the pumping station.
- (e) Temporary by-pass pumping equipment and materials shall remain on-site until station upgrades are completed and normal station pumping operations are proceeding satisfactorily as described in these Specifications and to the satisfaction of the Contract Administrator.
- (f) Provide a flow control plan to the Contract Administrator for review before construction starts.
- (g) Diversion of wastewater flow directly or indirectly to the environment, Land Drainage Sewers or Storm Relief Sewers will not be allowed.

E17.3.2 Expected Wastewater Flow to the Willow Wastewater Pumping Station

- (a) The expected peak dry weather flow (PDWF) to the Willow Wastewater Pumping Station is 67 l/s (1061 US gpm).
- (b) Critical Basement elevation is 225.582 m.
- (c) Sewers can receive flow of an undetermined amount from watermain breaks, snow melt, rain and other unforeseen sources. The Contractor will be responsible to monitor the flow in the sewer and adjust work activities accordingly, such as putting the spare temporary by-pass pump into operation to handle any excessive flows due to unforeseen flow above the amount identified for PDWF.
- (d) There shall be no claim for additional costs or time due to increased by-passing pumping operations from high wet weather flows.

E17.3.3 Inflatable Sewer Plugs

- (a) Only inflatable rubber sewer plugs shall be used to plug sewers.
- (b) Clean sewer pipe as required to properly install inflatable sewer plug(s) in accordance with the manufacturer's instructions at the locations shown on the Drawings to isolate the installation location. Installation of inflatable sewer plugs at other locations to be approved by the Contract Administrator before construction starts.
- (c) Secure inflatable sewer plugs at or near the ground surface.
- (d) Continuously monitor air pressure while sewer plug is in place and have proper inflation equipment available at all times.

E17.3.4 Temporary By-Pass Pumping

- (a) For by-pass pumping operations, provide a minimum of two submersible pumps at all times, each with a capacity equal to or greater than the listed PDWF for that station. Both pumps are to be installed and available for operation. A replacement pump with the required capacity shall be immediately provided if one of the two original pumps has to be removed from the site because of failure or for repairs.

- (i) A combination of smaller sized pumps may be used concurrently if the total discharge flow of the pumps meets the PDWF volumes identified in E17.3.2(a) and providing replacement pumps are available on-site to maintain the PDWF volume.
- (b) Surface mount, vertical lift suction pumps are not acceptable.
- (c) Temporary by-pass pumping may be installed at the following locations:
 - (i) Manholes "A" as shown on the Drawings.
 - (ii) Manholes "B" as shown on the Drawings.
- (d) Provide detailed information for pumping equipment to be used including pump capacity and dimensions, depth of submergence, pump controls and installation details to the Contract Administrator for review before construction starts.
- (e) Power supply to be approved by the Contract Administrator before set-up. Locate the power supply where it will not adversely affect local residences. Location to be approved by the Contract Administrator before construction starts.
- (f) Provide suitable traffic ramps approved by the Contract Administrator if the by-pass pumping discharge pipe and power supply cables are laid across vehicle or pedestrian traffic areas.
- (g) Provide a check valve on the by-pass pumping discharge pipe to prevent cycling when the pumping station is activated.
- (h) The Contractor is advised that the pumping station will remain in service while the forcemain work is being completed. The Contractor shall cooperate and coordinate with the City to allow full access at all times for City staff to carry out maintenance and operational duties.
- (i) Arrange construction activities and schedule to be able to remove temporary inflatable sewer plug(s) and restore pumping station operation at the end by-pass pumping operations.
- (j) The Contractor shall ensure temporary by-pass pumping equipment and materials will be properly insulated and heated, if required, to be protected from freezing and to maintain proper functioning during cold weather.

E17.3.5 Responsibility

- (a) The contractor will take full responsibility for the temporary by-pass pumping, including high water events.
- (b) Provide a 24-hour contact person who can address any issues with the by-pass pumping.

E17.3.6 Flow control and temporary by-pass pumping will be measured on a unit basis and paid for at the Contract Unit Price for "Flow Control and Temporary By-Pass Pumping" for each Station as shown in Form B: Prices, installed in accordance with this specification, accepted and measured by the Contract Administrator.

E18. OPERATION AND MAINTANENCE MANUALS

- E18.1** Operation and Maintenance Manuals for the Magnetic Flowmeter and the Air Release Valve shall be contained in the same binding.
- E18.2** The Contractor shall provide one (1) set of Operation and Maintenance Manuals to the Contract Administrator for review. The Contractor shall provide this manual ten (10) Calendar Days in advance before commencement of equipment startup and commissioning. Provision of Operation and Maintenance Manuals shall be considered incidental to the price paid for supply and installation of equipment.
- E18.3** All instructions in these manuals shall be in the English language to guide the City in the proper operation and maintenance of the equipment.

- E18.4 Bind contents in a three (3)-"D-Ring", hard-covered, plastic-jacketed binder with full cover and spine insert. Organize contents into applicable sections of work, parallel to Specifications breakdown.
- E18.5 Provide all required data in electronic format. Text documents shall be Microsoft Word or Adobe format. Drawings, scanned documents, parts lists, test forms shall be in Adobe format. If possible, documents shall be an original electronic format. Documents that require scanning shall be high quality scans and fully legible. Documents shall be submitted on a high quality compact disk. Compact disk and case shall be labelled in type, with the following;
- (a) Bid opportunity number,
 - (b) Job Title, and
 - (c) Description of Equipment.
- E18.6 In addition to information called for in the Specifications, the following shall be included:
- (a) Title sheet, labelled "Operation and Maintenance Instructions", containing project name and date;
 - (b) List of contents;
 - (c) Reviewed shop drawings of all equipment;
 - (d) Certified factory test results;
 - (e) Full description of entire mechanical system, operation, and control.
 - (f) Names, addresses, and telephone numbers of all major sub-contractors and suppliers;
 - (g) Detailed specification and operating and maintenance instructions for all items of equipment provided including a preventative maintenance program;
 - (h) An itemized list of spare parts recommended for five years of service, particularly those components where failure of which will render the equipment supplied inoperative. Any special tools or other ancillary items necessary for commissioning and/or proper operation and maintenance shall also be listed. These prices shall be available to the City at any time prior to the issuance of the Certificate of Acceptance;
 - (i) Part books that illustrate and list all assemblies, sub-assemblies, and components.
 - (j) Routine test procedures for all electronic and electrical circuits;
 - (k) Troubleshooting chart covering the complete controls/electrical power systems, showing description of trouble, probable cause, and suggested remedy;
- E18.7 The Contractor shall modify and supplement the manual as required by the Contract Administrator. When accepted, five (5) additional copies, including electronic versions, shall be provided by the Contractor for distribution purposes. The City's staff shall be in receipt of these manuals prior to the date set out installation and commissioning of the equipment.

E19. PLANING ASPHALTIC CONCRETE

- E19.1 Plane asphaltic concrete in accordance with CW 3450. Planing shall be measured on an area basis and paid for at the Contract Unit Price per square metre for "Planing 0-50mm Depth – Asphaltic Concrete" in Form B of the Bid Submission.