



THE CITY OF WINNIPEG

BID OPPORTUNITY

BID OPPORTUNITY NO. 651-2013

SUPPLY AND DELIVERY OF CAST IRON SLUICE GATES AND FLAP GATES

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PART B - BIDDING PROCEDURES

B1. CONTRACT TITLE

B1.1 SUPPLY AND DELIVERY OF CAST IRON SLUICE GATES AND FLAP GATES

B2. SUBMISSION DEADLINE

B2.1 The Submission Deadline is 4:00 p.m. Winnipeg time, August 6, 2013.

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. ENQUIRIES

B3.1 All enquiries shall be directed to the Contract Administrator identified in D4.1.

B3.2 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 promptly notify the Contract Administrator of the error, discrepancy or omission at least five (5) Business Days prior to the Submission Deadline.

B3.3 If the Bidder is unsure of the meaning or intent of any provision therein, the Bidder should request clarification as to the meaning or intent prior to the Submission Deadline.

B3.4 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.

B3.5 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.

B3.6 The Bidder shall not be entitled to rely on any response or interpretation received pursuant to B3 unless that response or interpretation is provided by the Contract Administrator in writing.

B4. CONFIDENTIALITY

B4.1 Information provided to a Bidder by the City or acquired by a Bidder by way of further enquiries or through investigation is confidential. Such information shall not be used or disclosed in any way without the prior written authorization of the Contract Administrator. The use and disclosure of the confidential information shall not apply to information which:

- (a) was known to the Bidder before receipt hereof; or
- (b) becomes publicly known other than through the Bidder; or
- (c) is disclosed pursuant to the requirements of a governmental authority or judicial order.

B4.2 The Bidder shall not make any statement of fact or opinion regarding any aspect of the Bid Opportunity to the media or any member of the public without the prior written authorization of the Contract Administrator.

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 9 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 materials, equipment, methods and products 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 seven (7) 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 material, equipment, method or product 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 Contract;
 - (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 Contract.
- 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 B14.
- B6.9 No later claim by the Contractor for an addition to the price(s) 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 B7.7, deviations inconsistent with the Bid Opportunity document shall be evaluated in accordance with B14.1(a).

B7. BID SUBMISSION

- B7.1 The Bid shall consist of the following components:
- (a) Form A: Bid;
 - (b) Form B: Prices;
- 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 Submission may be submitted by mail, courier or personal delivery, or by facsimile transmission.
- B7.5 If the Bid Submission is submitted by mail, courier or personal delivery, it shall be enclosed and sealed in an envelope clearly marked with the Bid Opportunity number and the Bidder's name and address, and shall be submitted to:
- The City of Winnipeg
Corporate Finance Department
Materials Management Division
185 King Street, Main Floor
Winnipeg, MB R3B 1J1
- B7.5.1 Samples or other components of the Bid Submission 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 Submission.
- B7.6 Bidders are advised not to include any information/literature except as requested in accordance with B7.1.
- B7.7 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 B14.1(a).
- B7.8 If the Bid Submission is submitted by facsimile transmission, it shall be submitted to 204-949-1178.
- B7.8.1 The Bidder is advised that the City cannot take responsibility for the availability of the facsimile machine at any time.
- B7.9 Bids submitted by internet electronic mail (e-mail) will not be accepted.

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 11 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.
- B9.1.1 Prices on Form B: Prices shall include:
- (a) duty;
 - (b) freight and cartage;
 - (c) Provincial and Federal taxes [except the Goods and Services Tax (GST) and Manitoba Retail Sales Tax (MRST, also known as PST), which shall be extra where applicable] and all charges governmental or otherwise paid;
 - (d) profit and all compensation which shall be due to the Contractor for the Work and all risks and contingencies connected therewith.
- 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.

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, or if the Bidder does not carry on business in Manitoba, in the jurisdiction where the Bidder does carry on business; 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 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.

B10.5 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. OPENING OF BIDS AND RELEASE OF INFORMATION

B11.1 Bids will not be opened publicly.

B11.2 Following the Submission Deadline, the names of the Bidders and their Total Bid Prices (unevaluated, and pending review and verification of conformance with requirements or evaluated prices) 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>

B11.3 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>

B11.4 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.

B12. IRREVOCABLE BID

- B12.1 The Bid(s) submitted by the Bidder shall be irrevocable for the time period specified in Paragraph 10 of Form A: Bid.
- B12.2 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 for the time period specified in Paragraph 10 of Form A: Bid.

B13. WITHDRAWAL OF BIDS

- B13.1 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.
- B13.1.1 Notwithstanding C21, 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.
- B13.1.2 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 11 of Form A: Bid, and only such person, has authority to give notice of withdrawal.
- B13.1.3 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 11 of Form A: Bid; and
 - (c) if the notice has been given by any one of the persons specified in B13.1.3(b), declare the Bid withdrawn.
- B13.2 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 B12.2 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.

B14. EVALUATION OF BIDS

- B14.1 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 therefrom (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;
- B14.2 Further to B14.1(a), the Award Authority may reject a Bid as being non-responsive if the Bid Submission 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.
- B14.3 Further to B14.1(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.
- B14.4 Further to B14.1(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.

B14.4.1 Further to B14.1(a), in the event that a unit price is not provided on Form B: Prices, the City may determine the unit price by dividing the Amount (extended price) by the approximate quantity, for the purposes of evaluation and payment.

B14.5 This Contract will be awarded as a whole.

B15. AWARD OF CONTRACT

B15.1 The City will give notice of the award of the Contract or will give notice that no award will be made.

B15.2 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.

B15.2.1 Without limiting the generality of B15.2, 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.

B15.3 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 B14.

B15.3.1 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.

B15.4 Notwithstanding C4 and Paragraph 6 of Form A: Bid, the City will issue a purchase order to the successful Bidder in lieu of the execution of a Contract.

B15.5 The Contract Documents, as defined in C1.1(n) (ii), in their entirety shall be deemed to be incorporated in and to form a part of the purchase order notwithstanding that they are not necessarily attached to or accompany said purchase order.

PART C - GENERAL CONDITIONS

C0. GENERAL CONDITIONS

- C0.1 The *General Conditions for the Supply of Goods* (Revision 2008 05 26) are applicable to the Work of the Contract.
- C0.1.1 The *General Conditions for the Supply of Goods* 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 Supply of Goods*.

PART D - SUPPLEMENTAL CONDITIONS

GENERAL

D1. GENERAL CONDITIONS

D1.1 In addition to the *General Conditions for the Supply of Goods*, 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 supply and delivery of AWWA C560 Sluice Gates and Flap Gates, complete with wall thimbles, mechanical lift operator, electric actuator operator, stems, wall brackets and accessories including assistance in field testing and commissioning the equipment.

D3. DEFINITIONS

D3.1 When used in this Bid Opportunity:

- (a) "ANSI" means American National Standards Institute;
- (b) "ASME" means American Society of Mechanical Engineers;
- (c) "ASTM" means American Society for Testing and Materials;
- (d) "AWWA" means American Water Works Association;
- (e) "CSA" means Canadian Standards Association;
- (f) "ISO" means International Organization for Standardization;
- (g) "NACE" means National Association of Corrosion Engineers;
- (h) "NSF" means National Sanitation Foundation;

D4. CONTRACT ADMINISTRATOR

D4.1 The Contract Administrator is:

Doug Berg, C.E.T.
Project Coordinator

Telephone No.: 204- 986-4452

Facsimile No.: 204- 986-5345

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 Notwithstanding C21.3, 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

SUBMISSIONS

D7. AUTHORITY TO CARRY ON BUSINESS

D7.1 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.

D8. INSURANCE

D8.1 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; such liability policy to also contain a cross-liability clause, non-owned automobile liability and products and completed operations cover, to remain in place at all times during the performance of the Work;
- (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.

D8.2 Deductibles shall be borne by the Contractor.

D8.3 The Contractor shall provide the Contract Administrator 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 for the return of the executed Contract.

D8.4 The Contractor shall not cancel, materially alter, or cause the policy to lapse without providing at least thirty (30) Calendar Days prior written notice to the Contract Administrator.

SCHEDULE OF WORK

D9. COMMENCEMENT

D9.1 The Contractor shall not commence any Work until he/she is in receipt of a notice of award from the City authorizing the commencement of the Work.

D9.2 The Contractor shall not commence any Work until:

- (a) the Contract Administrator has confirmed receipt and approval of:
 - (i) evidence of authority to carry on business specified in D7;
 - (ii) evidence of the workers compensation coverage specified in C6.16;

- (iii) evidence of the insurance specified in D8;
- (b) the Contractor has attended a meeting with the Contract Administrator, or the Contract Administrator has waived the requirement for a meeting.

D10. DELIVERY

D10.1 Goods shall be delivered by the dates specified below, f.o.b. destination, freight prepaid to:

Wastewater Services Division – Collection System and Flood Control Branch

360 McPhillips Street

Winnipeg, Manitoba, R3E 2L1

Attention: Robert Jackson, Regional Wastewater Supervisor

Ph. 204-986-4788

D10.1.1 Wall thimbles, complete with all fastening hardware required for installation, for the sluice and flap gates must be delivered to the site indicated in D11.1 by December 15, 2013.

D10.1.2 All remaining gate hardware, complete with all related equipment for installation, must be delivered to the site indicated D11.1 by February 1, 2014.

D10.2 Goods shall be delivered between 8:30 a.m. and 3:00 p.m. on Business Days.

D10.3 The Contractor shall off-load goods as directed at the delivery location.

D11. LIQUIDATED DAMAGES

D11.1 If the Contractor fails to achieve delivery of the goods within the time specified in D10.1 Delivery, the Contractor shall pay the City one thousand dollars (\$1000.00) per Calendar Day for each and every Calendar Day until the goods have been delivered.

D11.2 The amount specified for liquidated damages in D11.1 is based on a genuine pre-estimate of the City's damages in the event that the Contractor does not achieve Delivery by the day fixed herein for same.

D11.3 The City may reduce any payment to the Contractor by the amount of any liquidated damages assessed.

MEASUREMENT AND PAYMENT

D12. INVOICES

D12.1 Further to C10, the Contractor shall submit an invoice for each order delivered to:

The City of Winnipeg

Corporate Finance - Accounts Payable

4th Floor, Administration Building, 510 Main Street

Winnipeg MB R3B 1B9

Facsimile No.: 204-949-0864

Email: CityWpgAP@winnipeg.ca

D12.2 Invoices must clearly indicate, as a minimum:

- (a) the City's purchase order number;
- (b) date of delivery;
- (c) delivery address;
- (d) type and quantity of goods delivered;
- (e) the amount payable with GST, MRST, and any applicable environmental handling charges/fees identified and shown as separate amounts; and

(f) the Contractor's GST registration number.

D12.3 The City will bear no responsibility for delays in approval of invoices which are improperly submitted.

D12.4 Bids Submissions must be submitted to the address in B7.5.

D13. PAYMENT

D13.1 Further to C10, the City may at its option pay the Contractor by direct deposit to the Contractor's banking institution.

D14. PAYMENT SCHEDULE

D14.1 Further to C10, payment shall be in accordance with the following payment schedule:

(a) Supply and Delivery in accordance with D10, for Bid Price of each specific Supply and Delivery item [Items A1, i),ii) and B1, i), ii) on Form B: Prices] as detailed below:

- (i) Seventy (70) percent upon delivery. Note that Form 200 – Certificate of Equipment Delivery must be executed for each gate by the Contractor prior to issuance of payment.
- (ii) Twenty (20) percent upon satisfactory completion of all shop and field testing. Note that Form 203 – Certificate of Equipment Satisfactory Performance must be executed for each gate by the Contractor prior to issuance of payment.
- (iii) Seven (7) percent upon successful installation inspection and commissioning of all gates. Note that payment for inspection and commissioning services [Item C i) and ii) on Form B: Prices] will be paid within thirty (30) days of successful provision of site inspection and commissioning services... Provision of additional site inspection services will only be made upon request and approval of the Contract Administrator in accordance with the Specifications.
- (iv) Three (3) percent upon delivery and acceptance of Operation and Maintenance Manuals.

(b) In the event that the equipment supplied under this contract is not installed by others within sixty (60) Calendar Days of the date set out in D10, through no fault of the Contractor, fifteen (15) percent of the Bid Price for each specific Supply and Delivery item [Items A1, i),ii) and B1, i), ii) on Form B: Prices] will be paid out to the Contractor. The balance of payment for these items will be made upon successful testing and commissioning of the equipment in accordance with these Specifications.

WARRANTY

D15. WARRANTY

D15.1 Warranty is as stated in C11.

PART E - SPECIFICATIONS

GENERAL

E1. GOODS

- E1.1 The Contractor shall supply and deliver the following equipment in accordance with the requirements hereinafter specified.
- E1.1.1 One (1) 2743 mm X 2743 mm (108" X108") AWWA C560 Cast Iron Sluice Gate, complete with electric actuator operator, as specified in E4 and E6.
- E1.1.2 One (1) 2438mm X 2438mm (96" X 96") AWWA C560 Cast Iron Sluice Gate, complete with manual Operator as specified in E4.
- E1.1.3 One (1) 2743 mm diameter (108") Cast Iron Flap Gate as specified in E5.
- E1.1.4 One (1) 2438mm X 2438mm (96" X 96") Cast Iron Flap Gate as specified in E5.
- E1.2 Equipment is intended for installation by others in two (2) proposed land drainage system outfall chambers located in the City of Winnipeg.
- E1.3 Inspection of installation, testing and commissioning services in accordance with the requirements herein specified.
- E1.4 Applicable Specification and Drawings
- E1.5 These Specifications shall apply to the Work.
- E1.6 *The City of Winnipeg Standard Construction Specifications* in its entirety, whether or not specifically listed on Form B: Prices, shall apply to the Work.
- E1.6.1 *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>
- E1.6.2 The version in effect three (3) Business Days before the Submission Deadline shall apply.
- E1.6.3 Further to C2.4(d), Specifications included in the Bid Opportunity shall govern over *The City of Winnipeg Standard Construction Specifications*.

E2. EXPEDITED SHOP DRAWINGS

- E2.1 Further to E3, in order to expedite Shop Drawings with critical timeliness, the Lowest Responsive Bidder, as outlined in B14, will be permitted, after receiving written approval from the Contract Administrator, to arrange for the preparation of Shop Drawings for the following items with critical timelines:
- (a) Cast Iron Sluice Gates as indicated in E4.
 - (b) Cast Iron Flap Gates as indicated in E5.
 - (c) Electric Actuators as indicated in E6.
- E2.2 If Award is made to the Lowest Responsive, then as indicated in E3.1(a)(iii), no payment for the preparation of Shop Drawings will be made.
- E2.3 If no contract is awarded, then the City of Winnipeg will pay the requested Bidder up to a maximum of five hundred dollars (\$500.00) for each of the requested submissions noted above, for the preparation and delivery of Shop Drawings. Delivery of the Shop Drawings to the City and payment of the above amounts will constitute full and final consideration of each party to the other, and neither party will have any further liability to the other with respect to this Bid Opportunity.

E3. SHOP DRAWINGS

E3.1 Description

- (a) This Specification shall revise, amend and supplement the requirements of CW 1110 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 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.

E3.2 Measurement and Payment

- E3.2.1 Preparation and submittal of Shop Drawings will be included in the Contract Work and no additional payment will be made for such work.

E4. CAST IRON SLUICE GATES

E4.1 Description

- (a) General
 - (i) This Specification shall cover the supply, delivery, inspection of installation (as described in E7) and testing of cast iron sluice gates, wall thimbles, mechanical lift operator, stems, wall brackets and accessories.
- (b) General Design:
 - (i) Specification Standard: AWWA C560
 - (ii) Type: Rising stem with stop nut, flange back with standard bottom closure.
 - (iii) Mounting: Type F wall thimble.

- (iv) Seating Head: Maximum design seating head for all sluice gates will be from centreline of the gate to the top of the gate chamber which shall be a minimum of 8.0 meters (26.2 ft).
- (v) Unseating Head: Maximum design unseating head shall be equivalent to the seating head in indicated in E5.1(b) (iv).
- (vi) Operator and Lift: Enclosed gear lift with pedestal.
The 2700mm X 2700mm sluice gate operator to have an electric actuator to provide motorized assistance for opening and closing the gate (see section E6.3), and shall be equipped with a manual override for gate operation.
The 2438mm X 2438mm sluice gate operator is to be manual.
Operators to be finished with a 50 millimetre x 50 millimetre square nut suitable for attachment of an electric portable drill for opening.
Operator shall turn counter clock wise to open.
- (vii) Stem Cover: Gear lift to be complete with stem cover with acrylic window with gradations in suitable increments for the entire range of gate operation.
- (viii) Stem Guides: Adjustable in both the horizontal and vertical directions.
- (ix) Stem: The stainless steel stem shall be designed so the slenderness ratio does not exceed 150.operation.

E4.2 Materials

- (a) Frame, Slide, guides and yoke ASTM A48 Cast Iron, Class 30
- (b) Seating Faces ASTM B21 Naval Bronze, Alloy 482
- (c) Wall Thimble ASTM A48 Cast Iron, Class 30
- (d) Wedges ASTM B564 Manganese Bronze, Alloy 865
- (e) Wedge Blocks ASTM A48 Cast Iron, Class 30
- (f) Fasteners & Anchors ASTM A276 Type 316 Stainless Steel
- (g) Stem ASTM A276 Type 304 Stainless Steel
- (h) Stem Couplings ASTM A276 Type 304 Stainless Steel
- (i) Stem Guide ASTM A48 Cast iron, Class 30 with Bronze bushings
- (j) Operator Pedestal ASTM A48 Cast Iron, Class 30 or Steel
- (k) Stem cover Aluminium or galvanized steel
- (l) Shop Drawings
 - (i) Submit shop drawings of cast iron sluice gates, wall thimbles, mechanical lift operator, stems, wall brackets and accessories in accordance with E3 of this specification.
- (m) Operating and Maintenance Manuals
 - (i) Provide five (5) copies of all the manufacturer's brochures and technical literature detailing correct installation procedure and recommended operating and maintenance instructions. Manuals shall be bound with the project title and gate description identified on the front cover. One set of manuals shall be provided for each size of gate. Final payment for sluice gates will not be made until the above information has been provided to the Contract Administrator.
- (n) Delivery and Shipping
 - (i) The Contract Administrator will examine the sluice gate assemblies, thimbles, frames, stems, operators and accessories upon delivery and will reject any equipment that is found to be damaged to the extent that, in the Contract Administrator's opinion, it cannot be put to the use for which it was intended. The

Contractor shall arrange with the gate supplier to repair any superficially damaged equipment to the satisfaction of the Contract Administrator.

- (ii) It shall be the responsibility of the Contractor to negotiate any claims for damage with the carrier and to make arrangements to have any rejected equipment replaced as soon as possible at no extra expense to the City.
- (o) Shop Testing
 - (i) The fully assembled gate shall be shop inspected, adjusted and tested for operation and leakage at the design head before shipping.
 - (ii) Provide the following information to the Contract Administrator prior to delivery of sluice gate and operator assemblies:
 - (i) A certified copy of the Chemical and Physical Analysis on all materials used in the manufacture of the sluice gate, wall thimble, stems, operator and accessories or certification that the materials used are in strict accordance with this specification.
 - (ii) Copies of the test reports for Performance and Leakage tests. Included on the report shall be the signature of the official who is responsible for the gate assembly and testing.
- (p) Field Testing
 - (i) The Contractor shall coordinate and arrange for a qualified field representative of the sluice gate supplier/manufacturer to be present during field testing operations of the sluice gates.
 - (ii) Sluice Gates will be installed by others (Installation Contractor) and the Installation Contractor will be responsible for provision of field testing at the time of installation. Installation of the sluice gates is tentatively scheduled to be completed by March 15, 2013.

E5. CAST IRON FLAP GATES

E5.1 Description

- (a) General
 - (i) This Specification shall cover the supply, delivery, inspection of installation (as described in E7) and testing of cast iron flap gates and wall thimbles.
- (b) General Design:
 - (i) Leakage rate Specification Standard: AWWA C560
 - (ii) Type: Flange Back for mounting on a wall thimble or flat concrete wall.
 - (iii) Mounting: Type F wall thimble
 - (iv) Seating Head: Maximum design seating head for all sluice gates will be from centreline of the gate to the top of the gate chamber which shall be a minimum of 8.0 meters (26.2 ft).
 - (v) Cover: One piece cast iron with lifting eye for manual operation
 - (vi) Seat: One piece cast iron raised surface and inclined to assure positive closure.
 - (vii) Links: Complete with grease nipples at pivot pints and adjusting screws to align seating faces.
 - (viii) Pivot Lugs: One piece cast iron adjustable in the horizontal plane without removal of cover, complete with grease nipples.
 - (ix) Flap Gate Sizes: One (1) gate shall be 2743mm diameter (round dimension).
One (1) gate shall be 2438mm X 2438mm (square dimension).

E5.2 Materials

- (a) Cast Iron pieces: ASTM A48 Cast Iron, Class 30
- (b) Seating Faces: ASTM B21 Bronze, Alloy 482

- (c) Links: Cast iron or high tensile Bronze B584 – C865
- (d) Bushings: Bronze B21, Alloy 482
- (e) Hinge Pins: ASTM A276, Type 316 stainless steel or silicon Bronze B98-CA655
- (f) Fasteners: ASTM A276, Type 316 stainless steel
- (g) Shop Drawings
 - (i) Submit shop drawings of cast iron flap gates and wall thimbles in accordance with E3 of this specification.
- (h) Operating and Maintenance Manuals
 - (i) Provide five (5) copies of all the manufacturer's brochures and technical literature detailing correct installation procedure and recommended operating and maintenance instructions. Manuals shall be bound with the project title and gate description identified on the front cover. One set of manuals shall be provided for each size of gate. Final payment for flap gates will not be made until the above information has been provided to the Contract Administrator.
- (i) Delivery and Shipping
 - (i) The Contract Administrator will examine the flap gate assemblies and wall thimbles upon delivery and will reject any equipment that is found to be damaged to the extent that, in the Contract Administrator's opinion, it cannot be put to the use for which it was intended. The Contractor shall arrange with the gate supplier to repair any superficially damaged equipment to the satisfaction of the Contract Administrator.
 - (ii) It shall be the responsibility of the Contractor to negotiate any claims for damage with the carrier and to make arrangements to have any rejected equipment replaced as soon as possible at no extra expense to the City.
- (j) Shop Testing
 - (i) The fully assembled gate shall be shop inspected, adjusted and tested for operation and leakage at the design head before shipping.
 - (ii) Provide the following information to the Contract Administrator prior to delivery of flap gate and wall thimble:
 - (i) A certified copy of the Chemical and Physical Analysis on all materials used in the manufacture of the flap gate and wall thimble or certification that the materials used are in strict accordance with this specification.
 - (ii) Copies of the test reports for Performance and Leakage tests. Included on the report shall be the signature of the official who is responsible for the gate assembly and testing.
- (k) Field Testing
 - (i) The Contractor shall coordinate and arrange for a qualified field representative of the flap gate supplier/manufacturer to be present during field testing operations of the flap gates.
 - (ii) Flap Gates will be installed by others (Installation Contractor) and the Installation Contractor will be responsible for provision of field testing at the time of installation. Installation of the flap gates is tentatively scheduled to be completed by March 15, 2013.

E6. SLUICE GATE ELECTRIC ACTUATOR

E6.1 Description

- (a) This specification shall cover the design and manufacture of electric actuators for sluice gates to be supplied under this contract.
- (b) Electric actuators to be supplied under this contract shall be designed and manufactured by a company having at least five (5) years prior experience in manufacturing these types of products in the size and to the pressure ratings as those specified herein.

- (c) Actuators shall be counter clockwise to open.

E6.2 Submittals

E6.2.1 Shop Drawings

- (a) Submit Shop Drawings in accordance to E3.
- (b) Shop Drawings shall state all performance and design criteria.
- (c) Allow fourteen (14) calendar days in delivery schedule for review of Shop Drawings, commencing at the date of receipt by the Contract Administrator.
- (d) At the time of submission, the Contractor shall inform the Contract Administrator in writing of any deviation in the Shop Drawings from the requirements of the contract documents. The Shop Drawings shall include a copy of the Specifications attached in Part E and marked by the Contractor as either in "compliance" or "deviation" with comment.
- (e) Provide valve torque calculations for operating conditions listed.

E6.2.2 Testing

- (a) Provide all factory pressure test reports.
- (b) In the absence of factory inspection and the witness of tests by the Contract Administrator, the Contractor shall provide copies of the following test reports prior to delivery of the actuators:
 - (i) Proof-of-Design test and,
 - (ii) Performance tests

E6.3 Electric Actuators

E6.3.1 General Design Requirements

- (a) This specification is supplementary to and shall be read together with the latest revision of AWWA Standard C540 – "Power-Actuating Devices for Valves and Sluice Gates".
- (b) All technologies and devices used in the actuator shall have a minimum five (5) years of commercial operating experience for that specific manufacturer. This is to include torque and position sensing, lubrication and electrical compartment design.
- (c) Sluice gates requiring electric actuators shall be identified as such in the items listed as same in Form B: Prices.

E6.3.2 Acceptable Products

- (a) Electric valve actuators shall be:
 - (i) Solid State Type - Rotork IQ Range,
 - (ii) Solid state Type – Limitorque MX series or,
 - (iii) Approved Equal in accordance with B6.
- (b) Multi-Turn gearbox
 - (i) Rotork,
 - (ii) Limitorque,
 - (iii) Approved Equal in accordance with B6.

E6.3.3 Design Requirements

- (a) Design Parameters
 - (i) Opening Multi-Turn, Counter Clockwise to open
 - (ii) Service Condition On/Off Service
 - (iii) Service Temperature -40°C to +70°C (-22°F to +158°F)
 - (iv) Power Supply 120 V/1 ph/60 Hz
 - (v) Actuator Mounting Remote floor stand

E6.3.4 Actuator Sizing

- (a) The electric actuators shall be sized to provide the torque required to close or open the gate as per the latest revision of AWWA C540.

E6.3.5 Mounting

- (a) Electric actuator shall be designed and constructed for remote mounting on a floor stand, coupled to multi-turn gear actuator with a connection shaft. Connection shafts shall be type 304 stainless steel. The length of the extension shafts shall be confirmed by field measurement prior to manufacture.
- (b) Connection shaft shall be designed to accommodate actuator torque for the length of connection shaft required.

E6.3.6 Motor

- (a) Motors shall be CSA approved, of the totally-enclosed, reversing, squirrel cage induction type with Class 'F' insulated windings and suitable for operation at 10% above and below normal specified power supply. Motor duty rating shall be sufficient for one complete operating cycle (open-close-open) without exceeding its temperature rating. Motor bearings shall be amply proportioned of the anti-friction type and permanently lubricated.
- (b) The motor shall be of a design that allows for electrical and mechanical disconnection without disturbing the gear case or gate position. Electrical and mechanical disconnection of the motor should be possible without draining the lubricant from the actuator gear case. Plugs and sockets shall not be acceptable as a means of electrical connection for the motor.
- (c) The actuator shall include circuitry to ensure the motor runs with the correct rotation for the required direction of operation.

E6.3.7 Motor Protection

- (a) Protection shall be provided for the motor as follows:
 - (i) The motor shall be de-energized in the event of a stall, when attempting to unseat a jammed gate.
 - (ii) Motor temperature shall be sensed by a thermostat to protect against overheating.
 - (iii) Instantaneous reversal protection whereby an automatic time delay circuit limits the current surges when the actuator is signalled to instantaneously reverse direction – for solid state type actuators only.

E6.3.8 Integral Starter and Transformer

- (a) The reversing starter, control transformer, and local controls shall be integral with the valve actuator, suitably housed to prevent breathing and condensation built-up. For ON/Off service, the starter shall be a solid state type and of rating appropriate to motor size. The controls supply transformer shall have the necessary tapings and be adequately rated to provide power for the following functions:
 - (i) 120V AC energization of the contactor coils,
 - (ii) 24V DC output where required for remote controls, and
 - (iii) supply for all the internal electrical circuits
- (b) The primary and secondary windings shall be protected by easily replaceable fuses.
- (c) The reversing motor controller shall consist of separate contactors for controlling gate movement in either the opening or closing direction. Each contactor shall be either magnetic or solid state, full voltage across-the-line type, sized to suit the motor power rating. The contactors shall be of robust construction with double break contacts requiring a minimum of maintenance and being easily replaceable. Mechanical and electrical interlocks shall be provided.

E6.3.9 Gearing

- (a) The actuator gearing shall be totally encased in an oil filled or sealed gear case complete with fill and drain taps, suitable for operation at any angle. All gearing shall be of hardened steel alloy and alloy bronze construction with machine cut teeth. Thrust bearings of the ball or roller type shall be provided at the base of the operator. The gear case shall be designed to be opened for inspection or repair without releasing the stem thrust or taking the valve out of service.

E6.3.10 Manual Operation

- (a) Motorized actuators shall be provided with a 50 millimetre x 50 millimetre square operating nut, which shall not rotate during motor operation. The nut operation shall be accomplished by a declutch lever, capable of lockout by padlock. The nut shall disengage automatically from the operating mechanism once the motor is capable of operation. The nut shall be located sufficiently away from the flanges, housings, etc. such that personnel will be able to attach a portable drill on it.

E6.3.11 Drive Bushing

- (a) The actuator shall be furnished with an easily detachable drive bushing for machining to suit the gate stem or gearbox input shaft. The drive bushing shall be positioned in the base of the actuator to facilitate the valve stem extensions.
- (b) Thrust bearings, when housed in a separate thrust base, should be of the sealed-for-life type.

E6.3.12 Turns Limit and Torque Limit Switches for Solid State Type

- (a) Torque and turns limitation to be adjustable as follows:
 - (i) Position setting range: Gate fully opened to gate fully closed; and to gate fully opened again.
 - (ii) Torque setting: 40% to 100% rated torque.
 - (iii) Torque sensing shall be by purely electrical or electronical methods. Extrapolation of torque from mechanically measured motor speed will not be acceptable due to response time.
 - (iv) "Latching" shall be provided for the torque sensing system to inhibit torque off during unseating or during starting in mid-travel against high inertia loads.

E6.3.13 Remote Gate Position Indication

- (a) Four contacts shall be provided to indicate open position, close position, remote selected, and thermostat tripped.
- (b) Contacts to be rated at 5A, 250 VAC, 30V DC.

E6.3.14 Local Position Indication

- (a) The actuator shall incorporate an illuminated, mechanical dial indicator or digital readout to show continuous movement from fully open to fully closed in 1% increments. The digital display shall be maintained even when the power to the actuator is isolated.
- (b) The local display shall be large enough to be viewed from a distance of 1.83 metres when the actuator is powered up.

E6.3.15 Push Buttons and Selector Switches

- (a) Each actuator shall be complete with a local Open-Stop-Close push-button station with external Red-Open, Green-Closed indicating lights and a Local-Off-Remote selector switch padlockable in any one of the following three positions:
 - (i) Local Control Only,
 - (ii) Off (No Electrical Operation),and
 - (iii) Remote Control.
- (b) It shall be possible to select maintained or non-maintained local control.
- (c) The local controls shall be arranged so that the direction of valve travel can be reversed without the necessity of stopping the actuator.

- (d) All push buttons, selector switches and local controls shall be housed in a secure, tamper-proof, weather-proof and padlockable enclosure to prevent any unauthorized use of the electric motorized gate actuation.

E6.3.16 Controls

- (a) The internal control and monitoring circuits shall operate at nominal 24 VDC or 120 VAC. Customer control interface shall operate at 120 VAC. All necessary transformers shall be provided.
- (b) The necessary wiring and terminals shall be provided in the actuator for the following control functions:
 - (i) Removable links for substitution by external interlocks to inhibit gate opening and/or closing.
 - (ii) Control Method:
 - Open and Close maintained contact closure.
 - (iii) Selection of maintained or push-to-run control for modes a) and b) above shall be provided by links.
 - (iv) The internal circuits associated with the control and monitoring functions shall be designed to withstand simulated lightning impulses of up to 1 kilovolt.

E6.3.17 Monitoring Facilities

- (a) Facilities shall be provided for monitoring actuator operation and availability as follows:
 - (i) Motor (availability) relay, having one normally open contact, the relay being energized from the control transformer only when the Local/Off/Remote selector switch is in the remote position to indicate that the actuator is available for remote (control room) operation.
 - (ii) Where required, it shall be possible to provide indication of thermostat trip and "Remote" selected as discrete signals.
- (b) Solid State type only:
 - (i) Provision shall be made for the addition of diagnostic module which will store and enable download of historical actuator data to permit analysis of changes in actuator or valve performance.
 - (ii) Diagnostic status screens shall be provided to show multiple functions simultaneously so troubleshooting can be affected rapidly and efficiently.

E6.3.18 Wiring and Terminals

- (a) Internal wiring shall be of CSA approved insulated stranded cable of appropriate size for the control. Each wire shall be clearly identified at each end. Permanent heat shrunk labelling shall be used.
- (b) The terminals shall be embedded in terminal block of high tracking-resistance compound.
- (c) The terminal compartment shall be separated from the inner electrical components of the actuator by means of a watertight 'O' ring seal.
- (d) The terminal compartment of the actuator shall be provided with a minimum of two (2) threaded cable entries.
- (e) All wiring supplied as part of the actuator shall be contained within the main enclosure for physical and environmental protection. External conduit connections between components will not be acceptable.
- (f) Control logic circuit boards and relay boards shall be mounted on plastic mounts to comply with double insulated standards. No more than a single primary size fuse shall be provided to minimize the need to remove single covers for replacement.
- (g) A durable terminal identification card showing plan of terminals shall be attached to the inside of the terminal box cover indicating:
 - (i) Serial number,

- (ii) External voltage values,
 - (iii) Wiring diagram number, and
 - (iv) Terminal layout.
- (h) The identification card shall be suitable to inscribe cable core identification alongside terminal numbers.

E6.3.19 Enclosure

- (a) Actuators shall be O-ring sealed, watertight to NEMA 6/IP68 as well as have an inner watertight and dustproof O-ring seal between the terminal compartment and the internal electrical elements of the actuator, fully protecting the switch mechanism, motor and all other internal electrical elements of the actuator from ingress of moisture and dust when the terminal cover is removed on site for cabling.
- (b) Actuators shall be provided with an internal motor and compartment heater.
- (c) All external fasteners shall be of stainless steel.

E6.3.20 Gearbox

- (a) Gearing and Enclosure
 - (i) Actuators shall be geared with, machine cut gear teeth, and be totally enclosed in a sealed housing. Travelling nut type of mechanisms will not be accepted. Gear lubricant shall be of the bulk grease type; synthetic lubricants will not be accepted.
 - (ii) Number of actuator turns to open or close the valve shall be kept to as few as possible to avoid over-torquing and damage to the actuator.
 - (iii) Accessible parts of the actuator requiring lubrication shall be provided with button-head alemite grease fittings.
- (b) Input Limit Stops
 - (i) Adjustable, external stop-limiting devices shall be provided on the actuators to prevent over-travel of the gate in the open and closed position.
 - (ii) Under circumstances where spur gear attachments are installed on the input side of the actuator to facilitate the maximum input operating torque of 356 Newtons (80 ft. pounds), input limit stops shall be installed on the input side of the spur gear attachment.
 - (iii) A shear pin or other torque regulating device shall be provided on the actuator or 50 millimetre x 50 millimetre square operating nut as an extra precaution against actuators being over-torqued.
- (c) Protective Coatings
 - (i) All external ferrous components including adaptor and mounting plates, shall be painted and tested in accordance with AWWA C550 and E6.7.

E6.3.21 Installation

- (a) The actuators will be installed by the Installation Contractor at a later date.

E6.3.22 Start-up Kit

- (a) Each actuator shall be supplied with a start-up kit comprising installation instruction, electrical wiring diagram, and sufficient spare cover screws and seals to make good any site losses during the commissioning period.

E6.3.23 Protective Coatings

- (a) All external ferrous components including floor stands, adaptors and mounting plates, shall be painted with two coats of polyamide epoxy paint, Amerlock 400 or approved equal in accordance to B6.
- (b) Any touch-up paintwork required during installation shall be undertaken by the Installation Contractor. The touch-up paint shall be of the same colour and specifications

used in the above clauses and shall be supplied by the Contractor. The Contractor shall provide a minimum of one (1) litre of paint product for this purpose.

E6.3.24 Testing

- (a) Each electric motorized actuator shall be performance tested by the manufacturer at their facilities prior to shipping. The test shall simulate a typical valve torque load from full-open to full-close and full-close to full-open. The following information shall be recorded:
 - (i) Torque at Maximum Torque Setting,
 - (ii) Current at Maximum Torque Setting,
 - (iii) Test Voltage and Frequency,
 - (iv) Flash Test Voltage,
 - (v) Actuator Output Speed and Operating Time for Full-Open to Full-Close, and
 - (vi) Amperage draw on motors at breakaway and normal operation.
- (b) Copies of the test reports for the above performance tests signed by the official who is responsible for the actuator assembly and testing shall be forwarded to the Contract Administrator as soon as completed.
- (c) In addition, the test reports shall include details of specification such as gear ratios for both manual and automatic drive, closing direction, wiring diagram code number, etc.
- (d) Actuators
 - (i) Electric actuators shall be tested in accordance with the latest revision of AWWA Standard C540.
 - (ii) In addition to factory inspection and the witness of tests by the Contract Administrator, the Contractor shall provide copies of the following test reports prior to delivery of the actuators:
 - proof-of-design test as per AWWA C540, and
 - performance tests.
- (e) Electric Actuators
 - (i) The City will perform voltage, current draw, cycle speed and whatever other tests are deemed appropriate, once the actuators have been delivered to the City of Winnipeg warehouse location.

E7. INSPECTION OF INSTALLATION OF EQUIPMENT

E7.1 General

- (a) The equipment will be installed by the Installation Contractor forces at a later date (winter/spring, 2014) 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.

E7.2 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. The Contractor shall sign Form 200 Certificate of Equipment Delivery, attached in Part F, indicating equipment has been turned over in satisfactory condition.

E7.3 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. The

Contractor's representative shall complete Form 201 Certificate of Instruction, attached in Part F, when he is satisfied that the Installation Contractor has received adequate instruction in the installation of the Contractor's equipment. The completed Form 201 shall be submitted to the Contract Administrator prior to the commencement of equipment installation.

- E7.4 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's representative shall complete Form 202 Certificate of Satisfactory Installation, attached in Part F, following installation of the equipment. The completed Form 202 shall be submitted to the Contract Administrator prior to the commencement of functional testing. The Contractor shall allow for a minimum of one (1) full working day at each worksite. Additional days beyond time noted above shall be approved by Contract Administrator.
- E7.5 The Contractor's representative shall be present to supervise the commissioning, initial operation, and functional testing of the equipment. The Contractor shall be required to complete Form 203 Certificate of Equipment Satisfactory Performance, attached in Part F, stating that his qualified representative has checked the installed equipment and found the equipment to be satisfactorily installed and in specified working operation. The completed Form 203 shall be received by the Contract Administrator prior to commencement of the Warranty period. 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 at each worksite for commissioning, testing, and training services.
- E7.6 If the Contractor is requested by the Installation Contractor or the Contract Administrator to send a representative to the jobsite to investigate or rectify a suspected fault in the equipment furnished by the Contractor but it is found that the said equipment or Contractor is not at fault, the Contractor shall be entitled to be reimbursed for all reasonable costs and expenses incurred by him in sending his representative to the jobsite, at the per diem rate listed in Form B Prices.
- E7.7 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.
- E7.8 The Contractor shall provide training to City staff in accordance with Clause E9. Form 204 Certificate of Training shall not be issued until after training has been provided to the satisfaction of the City.
- E7.9 Immediately following issuance of Form 204 Certificate of Training, the City reserves the right to operate this equipment to suit system requirements.

E8. OPERATION AND MAINTENANCE MANUALS INCLUDING SPARE PARTS LISTS

- E8.1 For each type of equipment, five (5) sets of Operation and Maintenance Manuals shall be submitted to the Contract Administrator for review. The Contractor shall provide these manuals 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 of equipment.
- E8.2 All instructions in these manuals shall be in the English language to guide the City in the proper operation and maintenance of the equipment.
- E8.3 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.
- E8.4 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.

E8.5 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. Provide "as programmed" parameter list for each electric valve actuator;
- (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;

E8.6 The Contractor shall modify and supplement the manual as required by the Contract Administrator. When accepted, six (6) 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 for Substantial Performance. The Contract shall not be considered complete, for the purpose of issuing a Certificate of Substantial Performance, until the above manuals have been completed and submitted to the satisfaction of the Contract Administrator.

E9. TRAINING

E9.1 The Contractor shall include costs for providing training to City staff by a factory-trained representative on the operation and maintenance of the equipment.

E9.2 Training for the equipment shall be conducted before the operation period as described in Form 203 Certificate of Equipment Satisfactory Performance. The training session shall be conducted on site, in conjunction with commissioning. The Contractor shall provide a qualified instructor as well as the necessary course materials.

E9.3 Training shall be provided in one session for operation and maintenance staff. The training shall cover operation and maintenance.

E9.4 Training shall be completed in conjunction with commissioning of the equipment. The Contract shall not be considered complete until the training has been provided and Form 204 Certificate of Training has been signed.

PART F – FORMS

Form 200 Certificate of Equipment Delivery

Form 201 Certificate of Instruction

Form 202 Certificate of Satisfactory Installation

Form 203 Certificate of Equipment Satisfactory Performance

Form 204.....Certificate of Training

FORM 200:
CERTIFICATE OF EQUIPMENT DELIVERY

We certify that the equipment listed below has been delivered into the care of the Installation Contractor. The equipment has been found to be in satisfactory condition and meets its Basic Design Criteria. No defects in the equipment were found.

Project: _____

Item of Equipment: _____

Tag No.: _____

Reference Specification: _____

(Authorized Signing Representative of the Installation Contractor)

(Date)

(Authorized Signing Representative of the Contractor)

(Date)

(Authorized Signing Representative of the Contract Administrator)

(Date)

FORM 201:
CERTIFICATE OF INSTRUCTION

I have completed instruction of the installation of the equipment listed below:

Project: _____

Item of Equipment: _____

Tag No.: _____

Reference Specification: _____

(Authorized Signing Representative of the Contractor)

(Date)

I certify that the party responsible for the installation of the equipment listed below has received instructions from the Contractor.

(Authorized Signing Representative of the Installation Contractor)

(Date)

FORM 202:
CERTIFICATE OF SATISFACTORY INSTALLATION

I have completed my check and inspection of the installation listed below and confirm that it is satisfactory and that defects have been remedied to my satisfaction except any as noted below:

Project: _____

Item of Equipment: _____

Tag No.: _____

Reference Specification: _____

Outstanding Defects : _____

(Authorized Signing Representative of the Contractor)

(Date)

FORM 203:
CERTIFICATE OF EQUIPMENT SATISFACTORY PERFORMANCE

We certify that the equipment listed below has been validated and has been operated for at least seven (7) consecutive days and that the equipment operated satisfactory and meet its Basic Design Criteria. No defects in the equipment were found. The equipment is therefore classed as "conforming"

Project: _____

Item of Equipment: _____

Tag No.: _____

Reference Specification: _____

(Authorized Signing Representative of the Contractor)

(Date)

(Authorized Signing Representative of the Installation Contractor)

(Date)

(Authorized Signing Representative of the Contract Administrator)

(Date)

FORM 204:
CERTIFICATE OF TRAINING

We certify that we have received the appropriate training in the operation and maintenance of the supplied equipment in accordance with these Specifications.

Project: _____

Item of Equipment: _____

Tag No.: _____

Reference Specification: _____

(Authorized Signing Representative of the Contractor)

(Date)

(Authorized Signing Representative of the City)

(Date)

(Authorized Signing Representative of the Contract Administrator)

(Date)