



THE CITY OF WINNIPEG

BID OPPORTUNITY

BID OPPORTUNITY NO. 255-2017

**SUPPLY, DELIVERY, AND INITIAL START-UP INSPECTION OF PUMPING
EQUIPMENT FOR COMMUNITY ROW WASTEWATER PUMPING STATION**

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PART B - BIDDING PROCEDURES

B1. CONTRACT TITLE

B1.1 SUPPLY, DELIVERY, AND INITIAL START-UP INSPECTION OF PUMPING EQUIPMENT FOR COMMUNITY ROW WASTEWATER PUMPING STATION

B2. SUBMISSION DEADLINE

B2.1 The Submission Deadline is 4:00 p.m. Winnipeg time, April 10, 2017.

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, the Contract Administrator or an authorized representative will be available at the Site at 1:00 pm on Wednesday, March 29, 2017 to provide Bidders access to the Site.

B3.2 The Bidder is advised that they are responsible for providing their own Personal Protective Equipment (PPE) while at the Site including but not limited to safety footwear, hard hat, and glasses.

B3.3 The Bidder shall not be entitled to rely on any information or interpretation received at the Site investigation unless that information or interpretation is the Bidder's direct observation, or is provided by the Contract Administrator in writing.

B4. ENQUIRIES

B4.1 All enquiries shall be directed to the Contract Administrator identified in 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 promptly notify the Contract Administrator of the error, discrepancy or omission at least five (5) Business Days prior to the Submission Deadline.

B4.3 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.

B4.4 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.

B4.5 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.

B4.6 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.

B5. CONFIDENTIALITY

B5.1 Information provided to a Bidder by the City or acquired by a Bidder by way of further enquiries or through investigation is confidential. Such information shall not be used or disclosed in any way without the prior written authorization of the Contract Administrator. The use and disclosure of the confidential information shall not apply to information which:

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

B5.2 The Bidder shall not make any statement of fact or opinion regarding any aspect of the Bid Opportunity to the media or any member of the public without the prior written authorization of the Contract Administrator.

B6. ADDENDA

B6.1 The Contract Administrator may, at any time prior to the Submission deadline, issue addenda correcting errors, discrepancies or omissions in the Bid Opportunity, or clarifying the meaning or intent of any provision therein.

B6.2 The Contract Administrator will issue each addendum at least two (2) Business Days prior to the Submission Deadline, or provide at least two (2) Business Days by extending the Submission Deadline.

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

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

B6.3 The Bidder shall acknowledge receipt of each addendum in Paragraph 9 of Form A: Bid. Failure to acknowledge receipt of an addendum may render a Bid non-responsive.

B7. SUBSTITUTES

B7.1 The Work is based on the materials, equipment, methods and products specified in the Bid Opportunity.

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

B7.3 Requests for approval of a substitute will not be considered unless received in writing by the Contract Administrator at least seven (7) Business Days prior to the Submission Deadline.

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

- (a) provide sufficient information and details to enable the Contract Administrator to determine the acceptability of the 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.

- B7.5 The Contract Administrator, after assessing the request for approval of a substitute, may in his/her sole discretion grant approval for the use of a substitute as an “approved equal” or as an “approved alternative”, or may refuse to grant approval of the substitute.
- B7.6 The Contract Administrator will provide a response in writing, at least two (2) Business Days prior to the Submission Deadline, to the Bidder who requested approval of the substitute.
- B7.6.1 The Contract Administrator will issue an Addendum, disclosing the approved materials, equipment, methods and products to all potential Bidders. The Bidder requesting and obtaining the approval of a substitute shall be responsible for disseminating information regarding the approval to any person or persons he/she wishes to inform.
- B7.7 If the Contract Administrator approves a substitute as an “approved equal”, any Bidder may use the approved equal in place of the specified item.
- B7.8 If the Contract Administrator approves a substitute as an “approved alternative”, any Bidder bidding that approved alternative may base his/her Total Bid Price upon the specified item but may also indicate an alternative price based upon the approved alternative. Such alternatives will be evaluated in accordance with B16.
- B7.9 No later claim by the Contractor for an addition to the 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.

B8. BID SUBMISSION

- B8.1 The Bid shall consist of the following components:
- (a) Form A: Bid;
 - (b) Form B: Prices;
- B8.2 Further to B8.1, the Bidder should include the written correspondence from the Contract Administrator approving a substitute in accordance with B7.
- B8.3 All components of the Bid shall be fully completed or provided, and submitted by the Bidder no later than the Submission Deadline, with all required entries made clearly and completely.
- B8.4 The Bid Submission may be submitted by mail, courier or personal delivery, or by facsimile transmission.
- B8.5 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
- B8.5.1 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.
- B8.6 Bidders are advised not to include any information/literature except as requested in accordance with B8.1.
- B8.7 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 B16.1(a).

B8.8 If the Bid Submission is submitted by facsimile transmission, it shall be submitted to 204-949-1178.

B8.8.1 The Bidder is advised that the City cannot take responsibility for the availability of the facsimile machine at any time.

B8.9 Bids submitted by internet electronic mail (e-mail) will not be accepted.

B9. BID

B9.1 The Bidder shall complete Form A: Bid, making all required entries.

B9.2 Paragraph 2 of Form A: Bid shall be completed in accordance with the following requirements:

- (a) if the Bidder is a sole proprietor carrying on business in his/her own name, his/her name shall be inserted;
- (b) if the Bidder is a partnership, the full name of the partnership shall be inserted;
- (c) if the Bidder is a corporation, the full name of the corporation shall be inserted;
- (d) if the Bidder is carrying on business under a name other than his/her own, the business name and the name of every partner or corporation who is the owner of such business name shall be inserted.

B9.2.1 If a Bid is submitted jointly by two or more persons, each and all such persons shall identify themselves in accordance with B9.2.

B9.3 In Paragraph 3 of Form A: Bid, the Bidder shall identify a contact person who is authorized to represent the Bidder for purposes of the Bid.

B9.4 Paragraph 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.

B9.4.1 The name and official capacity of all individuals signing Form A: Bid should be printed below such signatures.

B9.5 If a Bid is submitted jointly by two or more persons, the word "Bidder" shall mean each and all such persons, and the undertakings, covenants and obligations of such joint Bidders in the Bid and the Contract, when awarded, shall be both joint and several.

B10. PRICES

B10.1 The Bidder shall state a price in Canadian funds for each item of the Work identified on Form B: Prices.

B10.1.1 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.

B10.2 The quantities listed on Form B: Prices are to be considered approximate only. The City will use said quantities for the purpose of comparing Bids.

B10.3 The quantities for which payment will be made to the Contractor are to be determined by the Work actually performed and completed by the Contractor, to be measured as specified in the applicable Specifications.

B11. DISCLOSURE

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

B11.2 The Persons are:

- (a) N/A.

B12. QUALIFICATION

B12.1 The Bidder shall:

- (a) undertake to be in good standing under The Corporations Act (Manitoba), or properly registered under The Business Names Registration Act (Manitoba), or otherwise properly registered, licensed or permitted by law to carry on business in Manitoba, 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.

B12.2 The Bidder and any proposed Subcontractor (for the portion of the Work proposed to be subcontracted to them) shall:

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

B12.3 The Bidder and/or any proposed Subcontractor (for the portion of the Work proposed to be subcontracted to them) shall:

- (a) have successfully carried out work similar in nature, scope and value to the Work; and
- (b) be fully capable of performing the Work required to be in strict accordance with the terms and provisions of the Contract; and
- (c) have a written workplace safety and health program, if required, pursuant to The Workplace Safety and Health Act (Manitoba);

B12.4 The Bidder shall submit, within three (3) Business Days of a request by the Contract Administrator, proof satisfactory to the Contract Administrator of the qualifications of the Bidder and of any proposed Subcontractor.

B12.5 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.

B13. OPENING OF BIDS AND RELEASE OF INFORMATION

- B13.1 Bids will not be opened publicly.
- B13.2 Following the Submission Deadline, the names of the Bidders and their Total Bid Prices (unevaluated, and pending review and verification of conformance with requirements 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>
- B13.3 After award of Contract, the name(s) of the successful Bidder(s) and the Contract amount(s) will be available on the Closed Bid Opportunities (or Public/Posted Opening & Award Results) page at The City of Winnipeg, Corporate Finance, Materials Management Division website at <http://www.winnipeg.ca/matmgt>
- B13.4 The Bidder is advised that any information contained in any Bid may be released if required by The Freedom of Information and Protection of Privacy Act (Manitoba), by other authorities having jurisdiction, or by law or by City policy or procedures (which may include access by members of City Council).

B14. IRREVOCABLE BID

- B14.1 The Bid(s) submitted by the Bidder shall be irrevocable for the time period specified in Paragraph 10 of Form A: Bid.
- B14.2 The acceptance by the City of any Bid shall not release the Bids of the next two lowest evaluated responsive Bidders and these Bidders shall be bound by their Bids on such Work for the time period specified in Paragraph 10 of Form A: Bid.

B15. WITHDRAWAL OF BIDS

- B15.1 A Bidder may withdraw his/her Bid without penalty by giving written notice to the Manager of Materials at any time prior to the Submission Deadline.
- B15.1.1 Notwithstanding 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.
- B15.1.2 The City will assume that any one of the contact persons named in Paragraph 3 of Form A: Bid or the Bidder's authorized representatives named in Paragraph 11 of Form A: Bid, and only such person, has authority to give notice of withdrawal.
- B15.1.3 If a Bidder gives notice of withdrawal prior to the Submission Deadline, the Manager of Materials will:
- (a) retain the Bid until after the Submission Deadline has elapsed;
 - (b) open the Bid to identify the contact person named in Paragraph 3 of Form A: Bid and the Bidder's authorized representatives named in Paragraph 11 of Form A: Bid; and
 - (c) if the notice has been given by any one of the persons specified in B15.1.3(b), declare the Bid withdrawn.
- B15.2 A Bidder who withdraws his/her Bid after the Submission Deadline but before his/her Bid has been released or has lapsed as provided for in B14.2 shall be liable for such damages as are imposed upon the Bidder by law and subject to such sanctions as the Chief Administrative Officer considers appropriate in the circumstances. The City, in such event, shall be entitled to all rights and remedies available to it at law.

B16. EVALUATION OF BIDS

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

- (a) compliance by the Bidder with the requirements of the Bid Opportunity, or acceptable deviation therefrom (pass/fail);
- (b) qualifications of the Bidder and the Subcontractors, if any, pursuant to B12 (pass/fail);
- (c) Total Bid Price;
- (d) economic analysis of any approved alternative pursuant to B7;

B16.2 Further to B16.1(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.

B16.3 Further to B16.1(b), the Award Authority shall reject any Bid submitted by a Bidder who does not demonstrate, in his/her Bid or in other information required to be submitted, that he/she is responsible and qualified.

B16.4 Further to B16.1(c), the Total Bid Price shall be the sum of the quantities multiplied by the unit prices for each item shown on Form B: Prices.

B16.4.1 Further to B16.1(a), in the event that a unit price is not provided on Form B: Prices, the City may determine the unit price by dividing the Amount (extended price) by the approximate quantity, for the purposes of evaluation and payment.

B16.5 This Contract will be awarded as a whole.

B17. AWARD OF CONTRACT

B17.1 The City will give notice of the award of the Contract or will give notice that no award will be made.

B17.2 The City will have no obligation to award a Contract to a Bidder, even though one or all of the Bidders are determined to be responsible and qualified, and the Bids are determined to be responsive.

B17.2.1 Without limiting the generality of B17.2, the City will have no obligation to award a Contract where:

- (a) the prices exceed the available City funds for the Work;
- (b) the prices are materially in excess of the prices received for similar work in the past;
- (c) the prices are materially in excess of the City's cost to perform the Work, or a significant portion thereof, with its own forces;
- (d) only one Bid is received; or
- (e) in the judgment of the Award Authority, the interests of the City would best be served by not awarding a Contract.

B17.3 Where an award of Contract is made by the City, the award shall be made to the responsible and qualified Bidder submitting the lowest evaluated responsive Bid, in accordance with B16.

B17.3.1 Following the award of contract, a Bidder will be provided with information related to the evaluation of his/her Bid upon written request to the Contract Administrator.

B17.4 Notwithstanding C4 and Paragraph 6 of Form A: Bid, the City may issue a purchase order to the successful Bidder in lieu of the execution of a Contract.

B17.5 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 supply and delivery of three (3) pumps complete with motors, drive shafts, draft shaft guards, pump suction elbows, supports, and spare parts, three (3) pump discharge gate valves, three (3) pump suction gate valves, three (3) pump discharge check valves, the provision of initial start-up inspection, and on-site training, for all of the equipment supplied under this Contract.

D3. CONTRACT ADMINISTRATOR

D3.1 The Contract Administrator is SNC-Lavalin Inc., represented by:

Brian Cleven, P. Eng.
Project Manager

Telephone No.: 204- 786-8080

Email Address:. brian.cleven@snclavalin.com

D4. OWNERSHIP OF INFORMATION, CONFIDENTIALITY AND NON DISCLOSURE

D4.1 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.

D4.2 The Contractor shall not make any public announcements or press releases regarding the Contract, without the prior written authorization of the Contract Administrator.

D4.3 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.

D4.4 A Contractor who violates any provision of D4 may be determined to be in breach of Contract.

D5. NOTICES

D5.1 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

D5.2 **Bid Submissions must not be submitted to this facsimile number. Bids must be submitted in accordance with B8.**

SUBMISSIONS

D6. AUTHORITY TO CARRY ON BUSINESS

D6.1 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.

D7. INSURANCE

D7.1 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, to remain in place at all times during the performance of the Work and during 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 Service. 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) Motor Truck cargo insurance (Trip Transit) in the amount of a minimum value of \$200,000 for each motor that is shipped. Coverage to include loading and unloading.

D7.2 Deductibles shall be borne by the Contractor.

D7.3 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 on the Site.

D7.4 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.

D7.5 The City shall have the right to alter the limits and/or coverages as reasonably required from time to time during the continuance of this agreement.

D8. MATERIAL SAFETY DATA SHEETS

D8.1 The Contractor shall provide the Contract Administrator with one (1) copy of Material Safety Data Sheets (MSDS's) for each product to be supplied under the Contract at least two (2) Business Days prior to the commencement of Work but in no event later than the date specified in C4 for the return of the executed Contract.

D8.2 Throughout the term of the Contract, the Contractor shall provide the Contract Administrator with revisions or updates of the MSDS's as soon as may be reasonably possible.

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 D6;
 - (ii) evidence of the workers compensation coverage specified in C6.16;
 - (iii) evidence of the insurance specified in D7;
 - (iv) the Material Safety Data Sheets 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 November 30, 2017, f.o.b. destination, freight prepaid to:
Collections Supervisor
360 McPhillips Street
Winnipeg, MB R3E 2L1
(204) 986-4788
- D10.2 The Contractor shall confirm the delivery with the Contract Administrator or his/her designate, at least two (2) Business Days before delivery.
- D10.3 Goods shall be delivered between 8:00 a.m. and 2:30 p.m. on Business Days.
- D10.4 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 five hundred dollars (\$500.00) 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 **Bid Submissions must not be submitted to the above facsimile number. Bids must be submitted in accordance with B8.**

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) Seventy five (75) percent upon delivery to the location identified in D9.
- (b) Twenty (20) percent upon successful installation (by others) and commissioning of the goods.
- (c) Five (5) percent upon delivery and acceptance of operation and maintenance manuals.

WARRANTY

D15. WARRANTY

D15.1 Warranty is as stated in C11.

PART E - SPECIFICATIONS

GENERAL

E1. APPLICABLE SPECIFICATIONS AND DRAWINGS

- E1.1 These Specifications shall apply to the Work.
- E1.2 Bidders are reminded that requests for approval of substitutes as an approved equal or an approved alternative shall be made in accordance with B7.

E2. SHOP DRAWINGS

- E2.1 Submit shop drawings for all Goods to be supplied and receive a release for construction from the Contract Administrator before Goods are produced for this Contract.
- E2.2 At the time of submission inform the Contract Administrator in writing of any deviation in the shop drawings from the requirements of the Contract documents.
- E2.3 Submit 5 prints on a sheet size appropriate for item and information being depicted or an electronic file in a format acceptable to the Contract Administrator.
- E2.4 Shop drawings should include, at minimum, but not be limited to, the following:
- (a) Detailed information of the proposed equipment in the capacity, size, and arrangement as indicated and specified.
 - (b) Data for accessory items.
 - (c) Certified (if required) setting plans with tolerances for anchor bolts and/or mounting details.
 - (d) Certified results of shop testing.
 - (e) List of recommended spare parts other than those specified.
 - (f) Special tools required for the installation, setup or maintenance of the equipment.
- E2.5 Show following information in the lower right hand corner of each shop drawing:
- (a) Name of pumping station;
 - (b) City's Bid Opportunity Number;
 - (c) Manufacturer's name and description or model number of the item;
 - (d) Serial number(s) of Goods; and
 - (e) Date (to be revised per resubmission).
- E2.6 With the shop drawings, the vendor shall submit calculations regarding the thermal expansion of the shaft and coupling connecting the pump and the motor, as well as the calculations regarding the harmonic frequency of the system.
- E2.7 The Contract Administrator will review the shop drawings and will release them for construction with reasonable promptness so as to cause no delays. The review is only for conformance with the design concept of the project and with the information given in the specifications. The Contract Administrator's review of a separate item shall not indicate approval of an assembly in which the item functions.
- E2.8 Make any corrections required by the Contract Administrator and resubmit the specified number of corrected copies of each shop drawing. Direct specific attention in writing or on resubmitted shop drawings for revisions other than the corrections requested by the Contract Administrator on previous submissions.
- E2.9 By approving and submitting shop drawings, the Contractor hereby represents that he has determined and verified all field measurements, field construction criteria, materials, catalogue

numbers and similar data, or will do so, and that he has checked and coordinated each shop drawing and sample with the requirements of the Work and of the Specifications.

E2.10 Provision of Shop Drawings will be considered incidental to the price for supply and delivery of Goods and materials.

E2.11 Expedited shop drawings, in accordance with E3, may be requested by the Contract Administrator.

E3. EXPEDITED SHOP DRAWINGS

E3.1 Further to E2, in order to expedite Shop Drawings with critical timeliness, the Contractor as outlined in B16, after receiving a written request from the Contract Administrator, shall submit Shop Drawings for all of the items to be purchased through this Bid Opportunity.

E3.2 If Award is made to the Lowest Responsive Bidder then no payment for the preparation of Shop Drawings will be made.

E3.3 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 set of items to be purchased through this Bid Opportunity for the preparation and delivery of Shop Drawings. Delivery of the Shop Drawings to the City and payment for same, 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.

E4. OPERATING AND MAINTENANCE MANUALS

E4.1 Provide the Contract Administrator with five (5) copies of the manufacturer's technical literature for each component supplied detailing correct installation procedure and recommended operating and maintenance schedule, grades of lubricants required and assembly/disassembly instructions.

E4.2 The Contractor shall provide the manuals ten (10) Calendar Days before commencement of equipment start-up and commissioning.

E4.3 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.

E4.4 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 should 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 Goods.

E4.5 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 Goods;
- (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 Goods 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 Goods 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; and
- (k) Troubleshooting chart covering the complete controls/electrical power systems, showing description of trouble, probable cause, and suggested remedy.

E4.6 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 for installation and commissioning of the Goods.

E5. PUMPS COMPLETE WITH MOTORS, DRIVE SHAFTS, GUARDS, AND ACCESSORIES

E5.1 Description

- E5.1.1 This Specification shall cover the supply of pumping equipment, spare parts and initial on Site start-up inspection of the Goods after installation in the Community Row wastewater pumping station.
- E5.1.2 Pumps will be used to pump raw sewage having a temperature range of 0°C to 30°C and will operate under conditions of flooded suction.
- E5.1.3 Each pump shall be a single stage, non-clogging, centrifugal flow, vertical mounted, pump coupled with a drive shaft to an electric motor suitable for dry pit installation.
- E5.1.4 Durable metal nameplates shall be securely attached to each pumping unit supplied. Pump nameplates shall indicate the serial number, capacity, head, rpm, and other pertinent data. Motor nameplates shall indicate the serial number, voltage, phase, hertz, rpm, horsepower, service factor, NEMA Design, insulation class and any other pertinent data.

E5.2 Products

E5.2.1 Pumps

(a) General Requirements

- (i) Duty point: 450 l/sec @ 13 m head
(9 m static head)
- (ii) Flow range (minimum): 240 l/s - 450 l/s
- (iii) Nominal speed: 1175 to 1200 rpm
- (iv) Rotation (viewed from above): CW
- (v) Type of impeller: Non-clog
- (vi) Size of sphere impeller shall pass: 135 mm dia. (minimum)
- (vii) Diameter of pump suction: 350 mm (14")
- (viii) Diameter of pump discharge: 350 mm (14")
- (ix) Pump efficiency at duty point: 80% minimum

(b) Unspecified Materials

- (i) All unspecified materials shall be selected specifically for their suitability considering their duty.

(c) Casing

- (i) Pump casing: cast iron conforming to ASTM Specification A48 or A278, for Gray Iron Castings, Class 30 or approved equal in accordance with B7.

- (d) Backhead and Stuffing Box
 - (i) Backhead: cast iron conforming to ASTM Specification A48 or A278, for Gray Iron Castings, Class 30 or approved equal in accordance with B7.
- (e) Bearing Frame
 - (i) Bearing Frame: cast iron conforming to ASTM Specification A48 or A278, for Gray Iron Castings, Class 30.
- (f) Non Clog Impeller
 - (i) Impeller: cast iron conforming to ASTM Specification A48 or A278, for Gray Iron Castings, Class 30 or approved equal in accordance with B7. The cast iron shall contain not less than 3 percent nickel.
 - (ii) The impeller to be of the non-clog enclosed channel type.
- (g) Wear Rings
 - (i) Wear Rings: fabricated from stainless steel conforming to ASTM Standard A296, for Corrosion-Resistant Iron Chromium, Iron-Chromium-Nickel, and Nickel-Base Alloy Castings for General Application, Grade CA-15 or approved equal in accordance with B7.
 - (ii) Impeller ring hardness to be at least 300 Brinell (RC 32.1).
 - (iii) Casing wear ring to exceed impeller wear ring by at least 50 Brinell.
- (h) Impeller Shaft Assembly
 - (i) Shaft Assembly: fabricated from steel conforming to ASTM A108, Grade 1045 or approved equal in accordance with B7.
- (i) Shaft Sleeve
 - (i) Shaft sleeve where shaft passes through stuffing box: fabricated from 316L stainless steel conforming to ASTM A240 or approved equal in accordance with B7.
- (j) Bearings
 - (i) Bearings: shall be of the heavy duty anti-friction type suitable for oil or grease lubrication. Radial bearings shall be of the self-aligning plain roller or ball type and thrust bearings shall be of the tapered roller or angular contact type.
 - (ii) Design bearings for a B-10 life of not less than 100,000 hours in accordance with AFBMA.
- (k) Mechanical Seals
 - (i) Mechanical Seals: Double mechanical seals, cartridge type.
 - (ii) Primary sealing mating faces to be silicon carbide to silicon carbide and secondary sealing mating faces to be carbon to silicon carbide or silicon carbide to silicon carbide.
 - (iii) As manufactured by John Crane, Durametallic, Burgmann, or approved equal in accordance with B7.
- (l) Mechanical Seal Water Solenoid Valves
 - (i) Where mechanical seals require external seal water, supply one (1) solenoid valve per pump for the purpose of controlling seal water flow.
 - (ii) Seal water solenoid valves are not required to be provided if the pumps utilize an internal sealed oil reservoir.
 - (iii) Solenoid valves to operate off 120Vac, 60Hz supply.
- (m) Paint
 - (i) One prime coat of a rust inhibitive primer, a second adhesive prime coat and one finish coat of manufacturer's standard enamel.
- (n) Shop drawing submittals:
 - (i) Submit shop drawings of the pumps in accordance with E2.
- (o) Approved products:

- (i) Flowserve 14MN16A,
- (ii) KSB Pumps Sewatec series,
- (iii) Or approved equal in accordance with B7.

E5.2.2 Motors

- (a) General Requirements – Motors
 - (i) Power supply: 600V / 3 phase / 60 Hz
 - (ii) Power rating: 93.2 kW (125 hp)
 - (iii) Nominal Speed: 1175 to 1200 rpm
 - (iv) Motor Service Factor: 1.15
 - (v) Motor Efficiency: NEMA premium efficiency motor
 - (vi) Full load amps at operating point: 90% of max.
 - (vii) Motor Speed Torque characteristics: NEMA Design B
 - (viii) Starts per hour capability: 10
 - (ix) CSA Specification conformance: C22.2 No.100
 - (x) Inverter Duty Rated for VFD Compatibility
- (b) Vertical shaft, squirrel cage, totally enclosed fan cooled, NEMA premium efficiency induction motor conforming to CSA Specification C22.2 No. 100 and all other CSA Specifications referenced therein.
- (c) Suitable for inverter duty.
- (d) Suitable for full voltage or reduced voltage starting.
- (e) Suitable for reverse rotation capability.
- (f) Able to operate, without damage, at full load with voltages from 10% below to 10% above rated volts. Motor horsepower shall not be less than 5% in excess of the maximum power requirement of the pump at any point on the pump characteristic curve. This rating shall be exclusive of the motor service factor.
- (g) Motors will be subject to a maximum of ten (10) start/stop cycles per hour and the stator winding insulation suitable for such operation. In no case shall stator winding insulation be less than Class F.
- (h) Equipped with heavy duty grease-lubricated and anti-friction bearings with an AFBMA B10 rating of 100,000 hours.
- (i) Equipped with electrically insulated non-drive end bearing or housing, suitable for VFD (inverter) application.
- (j) Equipped with motor shaft grounding ring, suitable for VFD (inverter) application.
 - (i) Approved products:
 - ◆ AEGIS SGR Bearing Protection Ring,
 - ◆ Or approved equal in accordance with B7.
- (k) Maximum noise level of 85 dBA at 1.2 meter distance.
- (l) Motors to be suitable for vertical mounting either to the concrete floor or base stand.
- (m) Paint:
 - (i) Primer and manufacturer's standard enamel.
- (n) Shop drawing submittals:
 - (i) Submit shop drawings of the motors in accordance with E2.
- (o) Approved motor manufacturers:
 - (i) Westinghouse,
 - (ii) General Electric,
 - (iii) Toshiba,
 - (iv) Baldor,

- (v) U.S. Electric,
- (vi) TECO,
- (vii) WEG,
- (viii) Or approved equal in accordance with B7.

E5.2.3 Drive Shaft Assembly

- (a) Vertical hollow steel drive shaft with flexible coupling(s) to transmit power from the motor to the pump.
- (b) Drive shaft and coupling(s) shall have a service factor of 2.5 to ensure ample capacity to transmit power continuously for all operating conditions with up to 3 degrees of misalignment which may occur during or develop after installation and should accommodate any thermal expansion based on a temperature differential of 100 degrees Fahrenheit.
- (c) Shop drawing submittals:
 - (i) Submit shop drawings of the drive shaft assembly in accordance with E2.

E5.2.4 Drive Shaft Guard

- (a) Removable (with tools), minimum 1.6 millimetre thick galvanized expanded metal steel mesh constructed to OSHA standards.
- (b) Fasteners: ASTM A276 Type 316 stainless steel.
- (c) Shop drawing submittals:
 - (i) Submit shop drawings of the drive shaft guard in accordance with E2.

E5.2.5 Pump Support

- (a) Provide one rigid four-legged stand or a cast suction elbow/cast stand combination for each pump. Pump support shall firmly support the entire weight of the pump and withstand the full motor torque.
 - (i) The pump support shall provide clear access to the cleanout ports on the suction elbow and the pump volute.
- (b) The pump support should be suitable for mounting onto the existing concrete base using anchor bolts.
 - (i) The installation contractor will have the capability to modify the existing concrete base to suite the pump and pump support.
- (c) Shop drawing submittals:
 - (i) Submit shop drawings of the pump support in accordance with E2.

E5.3 Construction Methods

E5.3.1 General

- (a) Castings to be free from flaws and imperfections and machined surfaces finished true.
- (b) Round off inside and outside corners and edges of all castings.
- (c) Provide means to prevent nuts and bolts from becoming loose (pins, spring or friction washered fasteners).
- (d) Obtain written permission of the Contract Administrator to patch, plug, shim or employ other means of overcoming defects, discrepancies or errors in manufacturing.
- (e) Statically and dynamically balance all rotating components as an assembled unit in accordance with ISO 1940 G6.3.

E5.3.2 Casing

- (a) Centrifugal volute type design of ample thickness and rigidity to withstand stresses due to hydraulic forces, weight of piping, erection loads, operating and testing.
- (b) Inside water passages shall be smooth and free from any significant projections that would hinder the flow of any solid waste.

- (c) Proportion casings so change in energy of the sewage from the kinetic form, as it leaves the impeller, to the pressure form as it leaves the casing will take place gradually with minimum eddy formation or shock.
- (d) Front head to permit equal distribution of sewage to all parts of the impeller without the use of stationary guides or vanes on the suction side of the impeller.
- (e) Design to permit the removal of the rotating assembly without disturbing the suction and discharge piping.
- (f) Provide a hand hole with bolted cover on the volute to permit access to the inside for cleaning and unclogging of the volute.
- (g) Provide a tapped 10 millimetre (3/8") NPT hole on the top of the volute with a suitable length of brass pipe and a shut off ball valve to allow trapped air within the volute to be bled off.
- (h) Shop test and provide certification that the fully assembled casing is successfully able withstand a hydrostatic test pressure of not less than 1.5 times the shut-off head of the largest impeller size as shown by the characteristic curve.

E5.3.3 Suction and Discharge

- (a) Suction and discharge shall be flanged, faced and drilled to conform to ASME Specification B 16.1 Class 125.
- (b) Provide a cast 90° suction elbow with hand hole and cover plate fastened with bolts, to permit access to the suction side of the impeller for cleaning and inspection.
- (c) Provide gauge connections tapped for 10 millimetre (3/8") NPT threaded pipe on each suction and discharge nozzle. Locate tapped connection close to flange ends. Provide pipe plugs in tapped holes.
- (d) Orient the suction and discharge horizontally opposite each other on the centreline of the pump.
- (e) Suction elbow is to connect directly to the suction gate valve with a flanged connection.

E5.3.4 Backhead and Stuffing Box

- (a) Backhead shall be a separate piece from the volute casing.
- (b) Backhead shall be designed to rigidly support the bearing frame and be a self-centering and self-indexing fit with the volute casing to ensure proper alignment.
- (c) Provide a minimum of two large openings opposite each other adjacent to the stuffing box to allow access for maintenance.
- (d) Provide for external axial adjustment of the rotating element to maintain proper clearance between the impeller and front head wearing rings.
- (e) Stuffing box shall be integral with the backhead and suitable for the use of a double mechanical seal.
- (f) Provide tapped 10 millimetre NPT inlet and vent holes complete with suitable lengths of brass pipe and shut-off ball valves on opposite sides of the stuffing box for seal water inlet and outlet.
- (g) Provide a tapped drain hole on the stuffing box complete with pipe plug.

E5.3.5 Bearing Frame

- (a) Bearing frame shall rigidly support the motor adapter frame with a self-centering and self-indexing fit with the backhead to ensure proper alignment.
- (b) Machine bearing frame for accurate and permanent bearing alignment.
- (c) Completely enclose the shaft between the bearings.
- (d) Provide lip type seals in contact with the shaft.
- (e) Include grease fittings in the bearing frame for bearing lubrication.

E5.3.6 Impeller

- (a) Design impeller to ensure smooth operation without cavitation in the operating range and with minimum vibration.
- (b) Cast impeller in one piece and balance both statically and dynamically to ISO 1940 G6.3.
- (c) Trim impeller over its full height if the impeller supplied has been trimmed from a larger impeller leaving no lip or protrusion around the bottom edge.
- (d) Balance trimmed impeller after trimming.
- (e) Machined and polish impeller to Ra12 μ inches.
- (f) Securely key the impeller to the tapered shaft and hold in place with an impeller nut.
- (g) The impeller nut shall be dome shaped with a smooth face and blend into the hub so as not to allow any stringy material to accumulate around the nut. Hex shaped nuts shall not be used.
- (h) Design the impeller and retaining nut so that the impeller cannot loosen on the shaft due to torque resulting from rotation.

E5.3.7 Wear Rings

- (a) Provide removable wear rings of the axial or radial type for the front head and impeller.
- (b) Machine the rings for a close fit to minimize the leakage of sewage from the discharge to the suction.
- (c) Attach the rings in such a way as to allow for ready adjustment or replacement and to prevent loosening under normal operation or under reverse pump rotation.

E5.3.8 Impeller Shaft Assembly

- (a) Shaft assembly to be of sufficient diameter to assure rigid support of the impeller and to transmit loads without slip, vibration or undue deflection at all operating speeds and loads.
- (b) Accurately machine the shaft along its entire length and provide keyways at both ends.

E5.3.9 Shaft Sleeve

- (a) Fit and securely fasten the shaft sleeve in place after shaft grinding.
- (b) Seal shaft sleeve to prevent leakage between the sleeve and shaft.
- (c) Extend shaft sleeve at least 2 millimetres above the top of the gland cover.

E5.3.10 Bearings

- (a) Rigidly support bearings to counteract any possible tendency towards vibration.
- (b) Grind and match duplex bearings, if used.
- (c) Adapt lubrication of the bearings to the operation of the units without full-time attendance.

E5.3.11 Mechanical Seals

- (a) Seals to be oil lubricated or water lubricated.
 - (i) If oil lubricated, oil reservoir to be sealed and integral to pump casing. Oil to be non-toxic with minimum life of 10,000 hrs.
 - (ii) If water lubricated, seals will be continually flushed and lubricated by filtered domestic water while the pump is operating. Provide solenoids on seal flush lines to stop seal flush water flow to pumps while pumps are off. Solenoids to operate off of a 120Vac, 60Hz supply.

E5.3.12 Drive Shaft Assembly

- (a) The drive shaft assembly coupling arrangement shall permit easy removal of either the pump or motor without disturbing the other. Only one length of shaft shall be used between the pump and motor.
- (b) Statically and dynamically balance the drive shaft to obtain vibration free operation. Design shaft to ensure a separation of 50% between the operating speed and the first harmonic frequency of the system (motor, couplings, shaft and pump).
- (c) The approximate elevations of the pump room floor, suction centre line, and motor room floor for the pumping station is shown in Table E13. The Bidder shall use this to approximate the drive shaft length for bidding purposes. Bidder shall confirm distances prior to manufacture.
- (d) After award of this Contract, the Supplier shall be responsible to take exact measurements for final sizing of the drive shaft lengths.

E5.3.13 Drive Shaft Guard

- (a) Drive shaft guards, as supplied, shall meet OSHA standards upon installation without requiring any modification. Installation by others.

E5.3.14 Paint

- (a) Apply one prime coat of a rust inhibitive primer, a second adhesive prime coat and one finish coat of manufacturer's standard enamel to all exterior metal surfaces, except machined surfaces.
- (b) Do not paint over nameplates.

E6. GATE VALVES

E6.1 Application: Pump suction and discharge gate valves for 450 l/s pumps.

E6.2 Size: 400 mm

E6.3 Ductile 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.

E6.4 Gate valves to be equipped with outside rising stems, screws and yokes and complete with handwheels.

- (a) The handwheels shall be a minimum 400 mm (16") in diameter.

E6.5 Flanges shall conform in dimension and drilling to ANSI/ASME B16.1, Class 125 with holes straddling centreline.

E6.6 Direction of opening shall be counter clockwise and shall be clearly stamped or indicated with raised letters and arrow.

E6.7 Manufacturer's nameplate shall be attached to the valve body with stainless steel fasteners.

E6.8 Knife gate valves are not acceptable.

E6.9 Submit shop drawings of gate valves in accordance with E2.

E6.10 Approved gate valve manufacturers:

- (a) American Valve Company,
- (b) Clow Canada,
- (c) Dezurik,
- (d) Mueller Canada,
- (e) Or approved equal in accordance with B7.

E7. CHECK VALVES

- E7.1 Application: Pump discharge check valves for 450 l/s pumps.
- E7.2 Size: 400 mm
- E7.3 The valves shall be designed, manufactured, tested and certified to American Water Works Association Standard ANSI/AWWA C508.
- E7.4 The valves shall have flanges with drilling to ANSI B16.1, Class 125 with holes straddling centreline.
- E7.5 Check valve to be rapid closure lever and weight type valve designed for vertical installation.
- E7.6 The valve body shall be full flow equal to nominal pipe diameter at all points through the valve. The top access port shall be full size, allowing removal of the disc without removing the valve from the line. The access cover shall be domed in shape to provide flushing action over the disc for operating in lines containing high solids content. A threaded port with pipe plug shall be provided in the access cover to allow for field installation of a mechanical disc position indicator.
- E7.7 The disc shall be of one-piece construction, precision molded with an integral O-ring type sealing surface and reinforced with alloy steel.
- E7.8 The valve body and cover shall be constructed of ASTM A536 Grade 65-45-12 ductile iron.
- E7.9 The disc shall be precision molded Buna-N (NBR), ASTM D2000-BG. Optional disc material includes Viton, EPDM, Hypalon.
- E7.10 Hinge pin to be stainless steel (303/316).
- E7.11 The exterior and interior of the valve shall be coated with an NSF/ANSI 61 approved fusion bonded epoxy coating.
- E7.12 All valves shall be hydrostatically tested and seat tested to demonstrate zero leakage. The manufacturer shall provide test certificates, dimensional drawings, parts list drawings, and operation and maintenance manuals.
- E7.13 Submit shop drawings of check valves in accordance with E2.
- E7.14 Approved check valve manufacturers:
- (a) American Valve Company,
 - (b) Clow Canada,
 - (c) Dezurik,
 - (d) Mueller Canada,
 - (e) Or approved equal in accordance with B7.

E8. TOOLS, ACCESSORIES AND SPARE PARTS

- E8.1 Tools and Accessories
- (a) Provide special tools or accessories required for maintenance, adjustment, assembly or disassembly of the pumping equipment supplied.
- E8.2 Spare Parts
- (a) Provide the following spare parts:
 - (i) Qty 1 set of wear rings;
 - (ii) Qty 1 set of mechanical seals;
 - (iii) Qty 1 set of bearings;

- (iv) Qty 1 pump shaft;
 - (v) Qty 1 impeller (trimmed to size); and
 - (vi) Qty 1 set of volute and casing gaskets.
- (b) Properly package spare parts to resist damage.
 - (c) Clearly identify package as to its contents.
 - (d) Spare parts shall be identical to those supplied in the pumps.

E9. TESTING AND INITIAL START-UP INSPECTION FOR THE PUMPING EQUIPMENT

E9.1 Pump and Motor Testing

- (a) Conduct pump tests in accordance with Hydraulic Institute Standards - Centrifugal Pumps Test Code. All definitions for the purpose of testing shall be as set forth by Hydraulic Institute Standards - Centrifugal Pumps Ratings.
- (b) Pump test to be non-witnessed performance tested as per Hydraulic Institute Standards 14.6 Grade 1B.
- (c) Conduct motor tests in accordance with CSA C22.2 No. 100, EEMAC, MG-2. each motor shall be tested for:
 - (i) Running current,
 - (ii) Locked rotor current,
 - (iii) Hi-pot test, and
 - (iv) Winding resistance.

E9.2 Shop Tests

- (a) Test each pump in the manufacturer's shops over the range of operation from shut-off to run-out.
- (b) Provide a certified test curve in duplicate showing the head, capacity, pump efficiency and power for each pump to the Contract Administrator for review prior to shipping Goods.
- (c) Test curves to be signed by the pump manufacturer's official responsible for the test.
- (d) Final payment for the Goods will be made only after the Contract Administrator has received the certified test curve for each pump supplied.

E9.3 Field Tests

- (a) Field tests will be performed on each pumping unit as soon as possible after the Contractor has inspected the installation. Field tests will be to determine and check for the following:
 - (i) Capacity,
 - (ii) Noise (bearing, mechanical seal, cavitation, other),
 - (iii) Vibration,
 - (iv) Electrical energy supplied to the motors from motor control centre, and
 - (v) The liquid pumped during the field test will be raw sewage with a density taken to be 1.00 kilogram per litre.
- (b) If the field pump tests indicates the Goods supplied does not meet the specified requirements, the Contractor shall promptly correct the problem at his expense to the Contract Administrator's satisfaction.
- (c) If the Contractor is not satisfied with the procedure of the tests or the City's interpretation of the results thereof, the Contractor may have the tests repeated, or their interpretation referred to a referee acceptable to both the City and himself. The cost of the services of such referee shall be borne by the City if the referee rules that the tests as reported by the City were to the detriment of the Contractor but if otherwise, the Contractor shall pay the cost of the services of the referee and of repeating the tests. The decision of the referee shall be final and binding both on the City and the Contractor.

E9.4 Initial Start-up Inspection

- (a) Goods supplied under this Contract will be installed under a separate Contract. The pumping equipment supplier will not be responsible for the installation work.
- (b) The Contract Administrator will provide seven (7) Calendar Days notice of requirement for an initial pump start-up inspection.
- (c) Provide the services of a qualified technical representative to be present at the initial start-up of each pumping unit supplied under this Contract to perform the following:
 - (i) Inspect the pumping equipment to ensure they have been properly installed in accordance with the manufacturer's instructions.
 - (ii) Conduct and document amp draw, rotation and speed tests.
 - (iii) Check for unusual vibration or noises.
 - (iv) Instruct City personnel in the operation and maintenance of the Goods.
- (d) Promptly correct any deficiencies with the pumping equipment at own expense to the Contract Administrator's satisfaction.
- (e) The price provided for "Initial Start-up Inspection" shall cover all costs associated with this item of Work including travel expenses, accommodations, meals, and wages.

E10. APPROXIMATE ELEVATIONS AND DIMENSIONS

E10.1 Table 1 – Approximate Elevations and Dimensions

DETAIL	ELEVATION (M)
Pump Room Floor	223.662
Suction Intake Pipe Centreline	224.196
Motor Room Floor	228.539
Floor Thickness Between Pump And Motor Rooms	305 mm

E11. TRAINING

- E11.1 The Contractor shall include costs for providing training to City staff by a factory-trained representative on the operation and maintenance of the Goods.
- E11.2 Training for the pumping equipment shall be conducted on Site, in conjunction with commissioning. The Contractor shall provide a qualified instructor as well as the necessary course materials.
- E11.3 Training shall be provided in one (1) session for operation and maintenance staff, and one (1) session for Electrical and Instrumentation staff.
- E11.4 Training shall be completed in conjunction with commissioning of the Goods. The Contract shall not be considered complete until the training has been provided