



THE CITY OF WINNIPEG

BID OPPORTUNITY

BID OPPORTUNITY NO. 52-2006

**SUPPLY, DELIVERY AND INITIAL START-UP INSPECTION OF PUMPING
EQUIPMENT FOR VARIOUS WASTEWATER PUMPING STATIONS**

TABLE OF CONTENTS

PART A - BID SUBMISSION

Form A: Bid	1
Form B: Prices	3

PART B - BIDDING PROCEDURES

B1. Project Title	1
B2. Submission Deadline	1
B3. Enquiries	1
B4. Addenda	1
B5. Substitutes	2
B6. Bid Submission	2
B7. Bid	3
B8. Prices	4
B9. Qualification	4
B10. Opening of Bids and Release of Information	5
B11. Irrevocable Bid	5
B12. Withdrawal of Bids	5
B13. Evaluation of Bids	6
B14. Award of Contract	6

PART C - GENERAL CONDITIONS

C1. General Conditions	1
------------------------	---

PART D - SUPPLEMENTAL CONDITIONS

General

D1. General Conditions	1
D2. Scope of Work	1
D3. Definitions	1
D4. Contract Administrator	1
D5. Notices	1

Submissions

D6. Authority to Carry on Business	2
------------------------------------	---

Schedule of Work

D7. Commencement	2
D8. Critical Stages	3
D9. Liquidated Damages	3

Measurement and Payment

D10. Payment Schedule	3
-----------------------	---

Warranty

D11. Warranty	3
---------------	---

PART E - SPECIFICATIONS

General

E1. General	1
E2. Goods	1
E3. Delivery	1
E4. Shop Drawings	1
E5. Operating and Maintenance Manuals	2
E6. Pumping Equipment	2
E7. Spare Pumps	11

E8. Initial Start-up Inspection

11

PART B - BIDDING PROCEDURES

B1. PROJECT TITLE

- B1.1 SUPPLY, DELIVERY AND INITIAL START-UP INSPECTION OF PUMPING EQUIPMENT FOR VARIOUS WASTEWATER PUMPING STATIONS

B2. SUBMISSION DEADLINE

- B2.1 The Submission Deadline is 4:00 p.m. Winnipeg time, February 8, 2006.
- B2.2 Bid Submissions 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 notify the Contract Administrator of the error, discrepancy or omission, or request a clarification as to the meaning or intent of the provision at least five (5) Business Days prior to the Submission Deadline.
- B3.3 Responses to enquiries which, in the sole judgment of the Contract Administrator, require a correction to or a clarification of the Bid Opportunity will be provided by the Contract Administrator to all Bidders by issuing an addendum.
- B3.4 Responses to enquiries which, in the sole judgment of the Contract Administrator, do not require a correction to or a clarification of the Bid Opportunity will be provided by the Contract Administrator only to the Bidder who made the enquiry.
- B3.5 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. ADDENDA

- B4.1 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.
- B4.2 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.
- B4.2.1 Addenda will be available on the Bid Opportunities page at The City of Winnipeg, Corporate Finance, Materials Management Branch internet site at <http://www.winnipeg.ca/matmgt>.
- B4.2.2 The Bidder is responsible for ensuring that he has received all addenda and is advised to check the Materials Management Branch internet site for addenda shortly before submitting his Bid.
- B4.3 The Bidder shall acknowledge receipt of each addendum in Paragraph 8 of Form A: Bid. Failure to acknowledge receipt of an addendum may render a Bid non-responsive.

B5. SUBSTITUTES

- B5.1 The Work is based on the materials, equipment, methods and products specified in the Bid Opportunity.
- B5.2 Substitutions shall not be allowed unless application has been made to and prior approval has been granted by the Contract Administrator in writing.
- B5.3 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.
- B5.4 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.
- B5.5 The Contract Administrator, after assessing the request for approval of a substitute, may in his 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.
- B5.6 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.
- B5.6.1 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 wishes to inform.
- B5.7 If the Contract Administrator approves a substitute as an “approved equal”, any Bidder may use the approved equal in place of the specified item.
- B5.8 If the Contract Administrator approves a substitute as an “approved alternative”, any Bidder bidding that approved alternative shall base his 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 B13.
- B5.9 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. BID SUBMISSION

- B6.1 The Bid Submission consists of the following components:

- (a) Form A: Bid;
 - (b) Form B: Prices;
- B6.2 All components of the Bid Submission 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 in ink, to constitute a responsive Bid.
- B6.3 The Bid Submission shall be submitted enclosed and sealed in an envelope clearly marked with the Bid Opportunity number and the Bidder's name and address.
- B6.3.1 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.
- B6.4 Bid Submissions submitted by facsimile transmission (fax) or internet electronic mail (e-mail) will not be accepted.
- B6.5 Bid Submissions shall be submitted to:
The City of Winnipeg
Corporate Finance Department
Materials Management Branch
185 King Street, Main Floor
Winnipeg MB R3B 1J1

B7. BID

- B7.1 The Bidder shall complete Form A: Bid, making all required entries.
- B7.2 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 own name, his 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 own, the business name and the name of every partner or corporation who is the owner of such business name shall be inserted.
- B7.2.1 If a Bid is submitted jointly by two or more persons, each and all such persons shall identify themselves in accordance with B7.2.
- B7.3 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.
- B7.4 Paragraph 10 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 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 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.

B7.4.1 The name and official capacity of all individuals signing Form A: Bid shall be printed below such signatures.

B7.4.2 All signatures shall be original and shall be witnessed except where a corporate seal has been affixed.

B7.5 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 Submission and the Contract, when awarded, shall be both joint and several.

B8. PRICES

B8.1 The Bidder shall state a price in Canadian funds for each item of the Work identified on Form B: Prices.

B8.1.1 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.

B8.1.2 Prices on Form B: Prices shall not include the Manitoba Association for Resource Recovery Corporation (MARRC) Environmental Handling Charge (EHC) which shall be extra where applicable.

B8.2 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.

B8.3 The quantities for which payment will be made to the Contractor are to be determined by the Work actually performed and completed by the Contractor, to be measured as specified in the applicable Specifications.

B9. QUALIFICATION

B9.1 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;
- (b) be responsible and not be suspended, debarred or in default of any obligation to the City;
- (c) be financially capable of carrying out the terms of the Contract;
- (d) have all the necessary experience, capital, organization, and equipment to perform the Work in strict accordance with the terms and provisions of the Contract;
- (e) have successfully carried out work, similar in nature, scope and value to the Work;
- (f) employ only Subcontractors who:

- (i) are responsible and not suspended, debarred or in default of any obligation 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 Branch internet site at <http://www.winnipeg.ca/matmgt>); and
 - (ii) have successfully carried out work similar in nature, scope and value to the portion of the Work proposed to be subcontracted to them, and are fully capable of performing the Work required to be done in accordance with the terms of the Contract;
- (g) have a written workplace safety and health program in accordance with The Workplace Safety and Health Act (Manitoba);

B9.2 The Bidder shall be prepared to 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.

B9.3 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.

B10. OPENING OF BIDS AND RELEASE OF INFORMATION

B10.1 Bid Submissions will not be opened publicly.

B10.2 Within two (2) Business Days following the Submission Deadline, the names of the Bidders and their Total Bid Prices (unevaluated, and pending review and verification of conformance with requirements) will be available on the Closed Bid Opportunities (or Public/Posted Opening & Award Results) page at The City of Winnipeg, Corporate Finance, Materials Management Branch internet site at <http://www.winnipeg.ca/matmgt>.

B10.3 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 Branch internet site at <http://www.winnipeg.ca/matmgt>.

B10.4 The Bidder is advised that any information contained in any Bid Submission 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.

B11. IRREVOCABLE BID

B11.1 The Bid(s) submitted by the Bidder shall be irrevocable for the time period specified in Paragraph 9 of Form A: Bid.

B11.2 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 9 of Form A: Bid.

B12. WITHDRAWAL OF BIDS

B12.1 A Bidder may withdraw his Bid without penalty by giving written notice to the Manager of Materials at any time prior to the Submission Deadline.

B12.1.1 Notwithstanding GC.7.05(2), 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.

- B12.1.2 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 10 of Form A: Bid, and only such person, has authority to give notice of withdrawal.
- B12.1.3 If a Bidder gives notice of withdrawal prior to the Submission Deadline, the Manager of Materials shall:
- (a) retain the Bid Submission until after the Submission Deadline has elapsed;
 - (b) open the Bid Submission to identify the contact person named in Paragraph 3 of Form A: Bid and the Bidder's authorized representatives named in Paragraph 10 of Form A: Bid; and
 - (c) if the notice has been given by any one of the persons specified in B12.1.3(b), declare the Bid withdrawn.
- B12.2 A Bidder who withdraws his Bid after the Submission Deadline but before his Bid has been released or has lapsed as provided for in B11.2 shall be liable for such damages as are imposed upon the Bidder by law and subject to such sanctions as the Chief Administrative Officer considers appropriate in the circumstances. The City, in such event, shall be entitled to all rights and remedies available to it at law, including the right to retain the Bidder's bid security.

B13. EVALUATION OF BIDS

- B13.1 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 (pass/fail);
 - (b) qualifications of the Bidder and the Subcontractors, if any, pursuant to B9 (pass/fail);
 - (c) Total Bid Price;
 - (d) economic analysis of any approved alternative pursuant to B5.
- B13.2 Further to B13.1(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 if the interests of the City so require.
- B13.3 Further to B13.1(b), the Award Authority shall reject any Bid submitted by a Bidder who does not demonstrate, in his Bid Submission or in other information required to be submitted, that he is responsible and qualified.
- B13.4 Further to B13.1(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.
- B13.4.1 If there is any discrepancy between the Total Bid Price written in figures, the Total Bid Price written in words and the sum of the quantities multiplied by the unit prices for each item, the sum of the quantities multiplied by the unit prices for each item shall take precedence.
- B13.5 This Contract will be awarded as a whole.

B14. AWARD OF CONTRACT

- B14.1 The City will give notice of the award of the Contract or will give notice that no award will be made.

- B14.2 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.
- B14.2.1 Without limiting the generality of B14.2, 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.
- B14.3 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.

PART C - GENERAL CONDITIONS

C1. GENERAL CONDITIONS

C1.1 The *General Conditions for the Supply and Delivery of Goods* (Form 21: 88 03) are applicable to the Work of the Contract.

C1.1.1 The *General Conditions for the Supply and Delivery of Goods* are available on the Information Connection page at The City of Winnipeg, Corporate Finance, Materials Management Branch internet site at <http://www.winnipeg.ca/matmgt>.

PART D - SUPPLEMENTAL CONDITIONS

GENERAL

D1. GENERAL CONDITIONS

- D1.1 In addition to the *General Conditions for the Supply and Delivery of Goods*, these Supplemental Conditions are applicable to the Work of the Contract.
- D1.2 The General Conditions are amended by striking out "The City of Winnipeg Act" wherever it appears in the General Conditions and substituting "The City of Winnipeg Charter".
- D1.3 The General Conditions are amended by striking out "Board of Commissioners" or "Commissioner" wherever it appears in the General Conditions and substituting the "Chief Administrative Officer".
- D1.4 The General Conditions are amended by striking out "Tender Package" wherever it appears in the General Conditions and substituting "Bid Opportunity".
- D1.5 The General Conditions are amended by striking out "Tender Submission" wherever it appears in the General Conditions and substituting "Bid Submission".
- D1.6 The General Conditions are amended by striking out "Bidding Instructions" wherever it appears in the General Conditions and substituting "Bidding Procedures".

D2. SCOPE OF WORK

- D2.1 The Work to be done under the Contract shall consist of the supply of 11 pumps complete with motors, drive shafts and spare parts, 3 spare pumps and provision of initial start-up inspection for the pumping equipment.

D3. DEFINITIONS

- D3.1 When used in this Bid Opportunity:
- (a) "**Business Day**" means any Calendar Day, other than a Saturday, Sunday, or a Statutory or Civic Holiday;
 - (b) "**Submission Deadline**" and "**Time and Date Set for the Final Receipt of Bids**" mean the time and date set out in the Bidding Procedures for final receipt of Bids;

D4. CONTRACT ADMINISTRATOR

- D4.1 The Contract Administrator is:
Mr. Terry Whiteside, C.E.T.
Design and Specifications Coordinator
849 Ravelston Ave W
Winnipeg, Manitoba, R3W 1S8
Telephone No. (204) 986-4451
Facsimile No. (204) 986-5345

D5. NOTICES

- D5.1 GC.7.05 is hereby amended to delete reference to "registered mail" and to replace same with "ordinary mail".

- D5.2 GC.7.05 is further amended hereby to include delivery by facsimile transmission (fax) as an acceptable means of delivering notices, consents, approvals, statements, authorizations, documents or other communications required or permitted to be given under this Contract. Deliveries by fax will be deemed to have been received on the day of delivery, if a business day, or if not a business day, on the business day next following the day of delivery.
- D5.3 Further to GC.7.05, all notices, consents, approvals, statements, authorizations, documents or other communications to the City, except as expressly otherwise required in D5.4, D5.5 or elsewhere in the Contract, shall be sent to the attention of the Contract Administrator at the address or facsimile number identified in D4.1.
- D5.4 All notices of appeal to the Chief Administrative Officer shall be sent to the attention of the Chief Financial Officer at the following address or facsimile number:
- The City of Winnipeg
Chief Administrative Officer Secretariat
Administration Building, 3rd Floor
510 Main Street
Winnipeg MB R3B 1B9
Facsimile No.: (204) 949-1174
- D5.5 All notices, requests, nominations, proposals, consents, approvals, statements, authorizations, documents or other communications required to be submitted or returned to the City Solicitor shall be sent to the following address or facsimile number:
- The City of Winnipeg
Corporate Services Department
Legal Services Division
185 King Street, 3rd Floor
Winnipeg MB R3B 1J1
Facsimile No.: (204) 947-9155

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.

SCHEDULE OF WORK

D7. COMMENCEMENT

- D7.1 The Contractor shall not commence any Work until he is in receipt of a letter of intent from the Award Authority authorizing the commencement of the Work.
- D7.2 The Contractor shall not commence any Work until:
- (a) the Contract Administrator has confirmed receipt and approval of:
 - (i) evidence that the Contractor is 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;

D8. CRITICAL STAGES

D8.1 Delivery of all pumping equipment and spare parts shall be by June 15, 2006.

D9. LIQUIDATED DAMAGES

D9.1 If the Contractor fails to achieve the delivery date specified in D8.1, the Contractor shall pay the City one hundred dollars (\$100.00) per pumping unit per Calendar Day for each and every Calendar Day following this date which such failure continues:

D9.2 The amount specified for liquidated damages in D9.1 is based on a genuine pre-estimate of the City's losses in the event the Contractor does not achieve critical stage by the day specified.

D9.3 The City may reduce any payment to the Contractor by the amount of any liquidated damages assessed.

MEASUREMENT AND PAYMENT

D10. PAYMENT SCHEDULE

D10.1 Further to GC.9.01 and GC.9.03, payment shall be in accordance with the following payment schedule:

(a) Pumping Equipment

- (i) Delivery of all items to McPhillips Pumping Station - 75%;
- (ii) Successful operation of the pumps or six (6) months after delivery, whichever comes first, submission and acceptance of the certified pump curves and operating and maintenance manuals – 25%

(b) Spare Pumps

- (i) Delivery of all items to McPhillips Pumping Station - 75%;
- (ii) Successful operation of the pumps or six (6) months after delivery, whichever comes first, submission and acceptance of the certified pump curves and operating and maintenance manuals – 25%

(c) Initial Start-Up Inspection

- (i) Completion of all inspections – 100%

WARRANTY

D11. WARRANTY

D11.1 Further to GC.10.01, if a defect or deficiency prevents the full and normal use or operation of the Work or any portion thereof, for purposes of calculating the warranty period, time shall be deemed to cease to elapse for the defective or deficient portion, and for any portion of the Work whose use or operation is prevented by such defect or deficiency, as of the date on which the defect or deficiency is observed or the use or operation is prevented and shall begin to run again when the defect or deficiency has been corrected or the Work may be used or operated to the satisfaction of the Contract Administrator.

D11.2 Notwithstanding GC.10.01, GC.10.02 and D11.1, if any law of Manitoba or of the jurisdiction in which the Work was manufactured requires, or if the manufacturer provides, a longer warranty

period or a warranty which is more extensive in its nature, then the provisions of such law or manufacturer's warranty shall apply.

PART E - SPECIFICATIONS

GENERAL

E1. GENERAL

E1.1 These Specifications shall apply to the Work.

E2. GOODS

E2.1 The Contractor shall supply 11 pumps complete with motors, drive shafts and spare parts, 3 spare pumps and shall provide initial start-up inspection for the pumping equipment in accordance with the Specifications.

E3. DELIVERY

E3.1 Deliver all goods, f.o.b. destination, freight prepaid to the McPhillips Pumping Station, 360 McPhillips Street, Winnipeg, Manitoba between 8:30 a.m. and 4:30 p.m. on Business Days.

E3.2 Provide forty-eight (48) hours notice to the Contract Administrator before delivery so that arrangements for receiving can be made.

E3.3 Unload pumping equipment and place into storage at the delivery location as directed by the Contract Administrator or representative.

E3.4 Carefully prepare equipment for delivery as follows

- (a) Clearly tag and identify each item.
- (b) Cover or plug openings in the equipment.
- (c) Securely crate or strap equipment to pallets and cover to prevent movement and damage during transport.
- (d) Ensure corners or castings do not extend beyond the crate or pallet.
- (e) Provide suitable lifting hooks for handling crates, boxes and heavy pieces.

E3.5 The Contract Administrator or a representative will inspect and record the condition of all equipment upon delivery and will reject equipment found to be damaged to the extent that it cannot be put to the use for which it was intended.

E3.6 The Contract Administrator or a representative will check for sphere handling capability by passing a wooden test sphere through each pump. Pumps not passing the required sphere size will be rejected.

E3.7 The Contractor shall take possession of rejected equipment, make the necessary arrangements and pay the costs for the prompt repair and return or replacement of the equipment to not delay installation to the Contract Administrator's satisfaction.

E3.8 The Contractor shall promptly repair superficially damaged equipment at their own expense and to the Contract Administrator's satisfaction to not delay installation.

E4. SHOP DRAWINGS

E4.1 Submit shop drawings for all equipment to be supplied and receive a release for construction from the Contract Administrator before equipment is produced for this Contract.

- E4.2 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.
- E4.3 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.
- E4.4 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 equipment.
 - (e) Date (to be revised per resubmission)
- E4.5 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.
- E4.6 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.
- E4.7 By approving and submitting shop drawings, the Contractor thereby 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.

E5. OPERATING AND MAINTENANCE MANUALS

- E5.1 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. Provide one set of manuals for each different pumping unit provided.

E6. PUMPING EQUIPMENT

- E6.1 Description
- E6.1.1 This Specification shall cover the supply of pumping equipment, spare parts and initial start-up inspection of the pumping equipment after installation in various wastewater pumping stations.
 - E6.1.2 Pumps will be used to pump raw sewage having a temperature range of 0° to 30°C and will operate under conditions of flooded suction.
 - E6.1.3 Each pump shall be a single stage, non-clogging, centrifugal flow, vertical mounted, pump coupled to an electric motor suitable for dry pit installation.
 - E6.1.4 Pumps of a same discharge size shall be identical.

E6.1.5	General Requirements - Pumps	
(a)	Operating point:	as shown in Table E6.1.6
(b)	Rotation (viewed from above):	CW
(c)	Type of impeller:	non-clog
(d)	Size of sphere pump impeller shall pass:	75mm dia. minimum
(e)	Required size of Discharge:	as shown in Table E6.1.6
(f)	Net Positive Suction (NPSH) Head Available:	as shown in Table E6.1.6
E6.1.6	General Requirements - Motors	
(a)	Power Supply:	575 Volt, 3 ph
(b)	Speed:	1200 rpm
(c)	Motor Service Factor:	1.15
(d)	Motor Efficiency:	High Efficiency Motor
(e)	Percent of Full Load Amps at Given Operating Point:	90% max.
(f)	Motor Speed Torque Characteristics:	Nema Design B
(g)	Starts Per Hour Capability:	6 maximum
(h)	CSA Specification Conformance:	C 22.2 No. 100

Table E6.1.6 - Pumping Equipment Requirements

Station	Operating Point (If two operating points are shown, pump must meet both points)	Required Discharge Size	NPSH Available	Connection to Motor
Ash	173.3 l/s (2750 USgpm) @ 14.6m (48 ft) of head and 195 l/s (3100 USgpm) @ 13.0m (42.5 ft) of head	250mm	8.2m (26.9')	Driveshaft (pump room floor to motor room floor = 2.49m)
Aubrey	208 l/s (3300 USgpm) @ 18.0m (59 ft) of head	250mm	7.6m (25')	Driveshaft (pump room floor to motor room floor = 2.49m)
Baltimore	113.4 l/s (1800 USgpm) @ 21.2m (69.5') of head and 170.1 l/s (2700 USgpm) @ 18.9m (62') of head	250mm	9.2m (30')	Driveshaft (pump room floor to motor room floor = 4.57m)
Marion	164l/s (2600 USgpm) @ 14.0m (46') of head and 151l/s (2400 USgpm) @ 15.5m (51') of head	200mm	9.63m (31.6')	Driveshaft (pump room floor to motor room floor = 2.41m)
Montcalm	284 l/s (4500 USgpm) @ 17.9m (58.7 ft) of head and 290 l/s (4600 USgpm) @ 16.8m (55 ft) of head	250mm	7.4m (24.4')	Driveshaft (pump room floor to motor room floor = 2.50m)

E6.1.7 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.

E6.2 Materials

E6.2.1 General

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

- E6.2.2 Casing
- (a) Pump casing: cast iron conforming to ASTM Specification A48 or A278, for Gray Iron Castings, Class 30 or approved equal.
- E6.2.3 Backhead and Stuffing Box
- (a) Backhead: cast iron conforming to ASTM Specification A48 or A278, for Gray Iron Castings, Class 30 or approved equal.
- E6.2.4 Bearing Frame
- (a) Bearing Frame: cast iron conforming to ASTM Specification A48 or A278, for Gray Iron Castings, Class 30.
- E6.2.5 Motor Adapter Frame for Close Coupled Motors
- (a) Motor Adapter Frame: cast iron conforming to ASTM Standard A48 or A278, for Gray Iron Castings, Class 30 or approved equal.
- E6.2.6 Impeller
- (a) Impeller: cast iron conforming to ASTM Specification A48 or A278, for Gray Iron Castings, Class 30 or approved equal. The cast iron shall contain not less than 3 percent nickel.
 - (b) The impeller to be of the non-clog enclosed channel type.
- E6.2.7 Wear Rings
- (a) 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.
 - (b) Impeller ring hardness to be at least 300 Brinell and shall exceed the front head ring hardness by at least 50 Brinell.
- E6.2.8 Shaft Assembly
- (a) Shaft Assembly: fabricated from steel conforming to ASTM A108, Grade 1141 or approved equal.
- E6.2.9 Shaft Sleeve
- (a) Shaft sleeve where shaft passes through stuffing box: fabricated from stainless steel conforming to ASTM A296, Grade CA-15 or approved equal.
 - (b) Hardness not be less than 350 Brinell.
- E6.2.10 Bearings
- (a) 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.
 - (b) Design bearings for a B-10 life of not less than 100,000 hours in accordance with AFBMA.
- E6.2.11 Mechanical Seals
- (a) Mechanical Seals: Double mechanical seals.
 - (b) Primary and secondary sealing faces shall be carbon to ceramic.
 - (c) As manufactured by John Crane, Durametallc or approved equal in accordance with B5.

E6.2.12 Pump Support

- (a) Integrally cast support: cast iron conforming to ASTM Specification A48 or A278, for Gray Iron Castings, Class 30 or approved equal
- (b) Fabricated support: structural steel conforming to ASTM A36 if fabricated.

E6.2.13 Motors

- (a) Vertical shaft, squirrel cage, totally enclosed fan cooled, high efficiency induction motor conforming to CSA Specification C22.2 No. 100 and all other CSA Specifications referenced therein.
- (b) Suitable for full voltage or reduced voltage starting.
- (c) 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.
- (d) Motors will be subject to a maximum of six (6) 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.
- (e) Equipped with heavy duty grease-lubricated and anti-friction bearings with an AFBMA B10 rating of 100,000 hours.
- (f) Maximum noise level of 85 dBa at 1.2m distance.
- (g) Acceptable motor manufacturers: Westinghouse, General Electric, Toshiba, Baldor, U.S. Electric, TECO or approved equal.

E6.2.14 Drive Shaft Assembly

- (a) Vertical hollow steel drive shaft with flexible coupling(s) to transmit power from the motor to the pump of "Hayes-Dana" design or approved equal.
- (b) Drive shaft and coupling(s) shall have 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.

E6.2.15 Drive Shaft Guard

- (a) Flexible, removable, U-shaped, minimum 1.6 millimetre thick galvanized steel mesh constructed to OSHA standards.
- (b) Fasteners: ASTM A276 Type 316 stainless steel.

E6.2.16 Flexible Coupling for Close Coupled Motors

- (a) Flexible coupling such as Atraflex or approved equal.
- (b) Coupling to be sized and rated for use with the motor size provided.

E6.2.17 Paint

- (a) Two undercoats of a rust inhibitive primer and one coat of an approved enamel

E6.3 Construction Methods

E6.3.1 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 approved means to prevent nuts and bolts from becoming loose (pins, spring or friction washered fasteners, or mastic compound).

- (d) Obtain written permission of the Contract Administrator to patch, plug, shim or other means of overcoming defects, discrepancies or errors in manufacturing.
- (e) Statically and dynamically balance all rotating components as an assembled unit.

E6.3.2 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) Radial forces of the impeller shaft and bearings are to be balanced.
- (c) Inside water passages shall be smooth and free from any projections.
- (d) 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 without eddy formation or shock.
- (e) 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.
- (f) Design to permit the removal of the rotating assembly without disturbing the suction and discharge piping.
- (g) Provide a hand hole with bolted cover on the volute to permit access to the inside for cleaning and unclogging of the volute.
- (h) Provide a tapped 10 millimetre 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.
- (i) Shop test provide certification 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.
- (j) Equip the casing with a lifting ring(s) capable of lifting the entire pumping unit.

E6.3.3 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 90° suction elbow with hand hole with bolted cover plate to permit access to the suction side of the impeller for cleaning and inspection. Suction elbows may be of the increasing type in order to meet the required suction size.
- (c) Provide gauge connections tapped for 10 millimetre NPT threaded pipe on each suction and discharge nozzle. Locate tapped connection close to flange ends. Provide suitable removable plugs in tapped holes.
- (d) Orient the suction and discharge horizontally opposite each other on the centreline of the pump.

E6.3.4 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 a bolt down two piece split gland plate for stuffing box.
- (g) 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.
- (h) Provide a tapped drain hole on the stuffing box.

E6.3.5 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 completely enclosing the shaft between the bearings.
- (c) Provide lip type grease seals in contact with the shaft complete with grease fittings for bearing lubrication.

E6.3.6 Motor Adapter Frame for Close Coupled Motors

- (a) Motor adapter frame to be a self-centering and self-indexing fit with the bearing frame to ensure proper alignment.

E6.3.7 Impeller

- (a) Design impeller to ensure smooth operation without cavitation or vibration.
- (b) Cast impeller in one piece and balance both statically and dynamically.
- (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 a smooth finish.
- (f) Securely key the impeller to the tapered shaft and hold in place with an impeller nut and stainless steel set screw.
- (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) Construct and assemble the impeller to the shaft and interlocked so the impeller cannot become loosened by torque resulting from rotation.

E6.3.8 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.

E6.3.9 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.

- E6.3.10 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.
- E6.3.11 Bearings
- (a) Amply proportion bearings for all possible loads without undue heating.
 - (b) Rigidly support bearings to counteract any possible tendency towards vibration.
 - (c) Grind and match duplex bearings, if used.
 - (d) Adapt lubrication of the bearings to the operation of the units without full-time attendance.
- E6.3.12 Mechanical Seals
- (a) Seals will be pressurized and lubricated by filtered domestic water.
- E6.3.13 Pump Support
- (a) Provide a rigid four legged stand or a support integrally cast with the suction elbow to firmly support the entire weight of the pump.
 - (b) The stand or base shall be suitable for mounting to the existing concrete floor or on a concrete base using anchor bolts.
- E6.3.14 Motors
- (a) Motors to be suitable for vertical mounting either to the concrete floor or base stand or to a motor adapter frame provided on the pump.
- E6.3.15 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 ensure vibration free operation.
 - (c) The distance from the centreline of pump suction to the motor room floor for each pumping station is shown in Table E6.1.6. The Bidder shall use this distance to approximate the drive shaft length for bidding purposes.
 - (d) After award of this Contract, the Contractor shall be responsible to take exact measurements for final sizing of the drive shaft lengths.
- E6.3.16 Drive Shaft Guard
- (a) Install drive shaft guards to OSHA standards.
- E6.3.17 Flexible Coupling for Close Coupled Motors
- (a) Install flexible coupling in accordance with manufacturer's recommendations.
- E6.3.18 Paint
- (a) Apply two undercoats of primer and one top coat to all exterior metal surfaces, except finished and machined surfaces.
 - (b) Do not paint over nameplates.
- E6.3.19 Tools and Accessories
- (a) Provide special tools or accessories required for maintenance, adjustment, assembly or disassembly of the pumping equipment supplied.

E6.3.20 Spare Parts

- (a) Provide the following spare parts for each pump supplied.
 - (i) 1 sets of wear rings.
 - (ii) 1 mechanical seal.
 - (iii) 1 impeller (full size not trimmed).
 - (iv) 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.

E6.3.21 Pumping Equipment Tests

- (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) Conduct motor tests in accordance with CSA 22.2 No. 100, EEMAC, MG-2. each motor shall be tested for:
 - (i) Running current
 - (ii) Locked rotor current
 - (iii) Hi-pot test
 - (iv) Winding resistance

E6.3.22 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 equipment.
- (c) Test curves to be signed by the pump manufacturer's official responsible for the test.
- (d) Final payment for the pumping equipment will be made only after the Contract Administrator has received the certified test curve for each pump supplied.

E6.3.23 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.
- (b) The liquid pumped during the field test will be raw sewage with a density taken to be 1.00 kilogram per litre.
- (c) If the field pump tests indicates the equipment supplied does not meet the specified requirements, the Contractor shall promptly correct the problem at his expense to the Contract Administrator's satisfaction.
- (d) 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.

E7. SPARE PUMPS

- E7.1 Provide spare pumps in accordance with E6 and as follows.
- (a) To be the same manufacturer as the other pumps supplied of that size.
 - (b) Equipped with a mechanical seal in accordance with E6.
 - (c) Able to be run with all of the impeller sizes offered for the pumping equipment supplied for that pump size.
- E7.2 Motors and spare parts are not required for the spare pumps.
- E7.3 Spare pumps will be installed in a pumping station for purposes of determining if the pump runs properly and is acceptable.
- E7.4 Spare pumps will be subject to field testing in accordance with E6.

E8. INITIAL START-UP INSPECTION

- E8.1 Pumping equipment supplied under this Contract will be installed under a separate Contract. The pump supply Contractor will not be responsible for the installation work.
- E8.2 The Contract Administrator will provide 7 calendar days notice of requirement for an initial pump start-up inspection.
- E8.3 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.
- (a) Inspect the pumping equipment to ensure they have been properly installed in accordance with the manufacturer's instructions.
 - (b) Conduct and document amp draw, rotation and speed tests.
 - (c) check for unusual vibration or noises.
 - (d) Instruct City personnel in the operation and maintenance of the equipment.
- E8.4 Promptly correct any deficiencies with the pumping equipment at own expense to the Contract Administrator's satisfaction
- E8.5 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.
- E8.6 If more than one pump has the initial start-up inspection on the same day, only one day shall be paid for initial start-up inspection.