



THE CITY OF WINNIPEG

BID OPPORTUNITY

BID OPPORTUNITY NO. 566-2009

**SUPPLY AND INSTALLATION OF AN AUTOMATED TITRATION SYSTEM FOR THE
DETERMINATION OF PH, ALKALINITY, HARDNESS, FLUORIDE AND
CONDUCTIVITY**

TABLE OF CONTENTS

PART A - BID SUBMISSION

Form A: Bid	1
Form B: Prices	3

PART B - BIDDING PROCEDURES

B1. Contract 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

C0. 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
D7. Material Safety Data Sheets	2

Schedule of Work

D8. Commencement	2
D9. Delivery	2
D10. Insurance	3

Measurement and Payment

D11. Payment	3
D12. Payment Schedule	3

Warranty

D13. Warranty	3
---------------	---

PART E - SPECIFICATIONS

General

E1. Applicable Specifications and Drawings	1
E2. Goods	1
E3. Installation and Training	3

PART B - BIDDING PROCEDURES

B1. CONTRACT TITLE

B1.1 SUPPLY AND INSTALLATION OF AN AUTOMATED TITRATION SYSTEM FOR THE DETERMINATION OF PH, ALKALINITY, HARDNESS, FLUORIDE AND CONDUCTIVITY

B2. SUBMISSION DEADLINE

B2.1 The Submission Deadline is 4:00 p.m. Winnipeg time, August 10, 2009.

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

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

B3. ENQUIRIES

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

B3.2 If the Bidder finds errors, discrepancies or omissions in the Bid Opportunity, or is unsure of the meaning or intent of any provision therein, the Bidder shall promptly notify the Contract Administrator of the error, discrepancy or omission at least five (5) Business Days prior to the Submission Deadline.

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

B3.4 Responses to enquiries which, in the sole judgment of the Contract Administrator, require a correction to or a clarification of the Bid Opportunity will be provided by the Contract Administrator to all Bidders by issuing an addendum.

B3.5 Responses to enquiries which, in the sole judgment of the Contract Administrator, do not require a correction to or a clarification of the Bid Opportunity will be provided by the Contract Administrator only to the Bidder who made the enquiry.

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

B4. 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 Division website at <http://www.winnipeg.ca/matmgt/bidopp.asp>

B4.2.2 The Bidder is responsible for ensuring that he 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.

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 may 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.
- B5.10 Notwithstanding B5.2 to B5.9, and in accordance with B6.7, deviations inconsistent with the Bid Opportunity document shall be evaluated in accordance with B13.1(a).

B6. BID SUBMISSION

- B6.1 The Bid shall consist of the following components:

- (a) Form A: Bid;
- (b) Form B: Prices.

- B6.2 Further to B6.1, the Bidder should include the written correspondence from the Contract Administrator approving a substitute in accordance with B5.
- B6.3 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 in ink, to constitute a responsive Bid.
- B6.4 The Bid Submission may be submitted by mail, courier or personal delivery, or by facsimile transmission.
- B6.5 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
- B6.5.1 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.
- B6.6 Bidders are advised not to include any information/literature except as requested in accordance with B6.1.
- B6.7 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 B13.1(a).
- B6.8 If the Bid Submission is submitted by facsimile transmission, it shall be submitted to (204) 949-1178.
- B6.8.1 The Bidder is advised that the City cannot take responsibility for the availability of the facsimile machine at any time.
- B6.9 Bids submitted by internet electronic mail (e-mail) will not be accepted.

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;
 - (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 should be printed below such signatures.
- B7.4.2 All signatures shall be original.
- 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 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.
- B8.2 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; 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.
- B9.2 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>

B9.3 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);

B9.4 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.

B9.5 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.

B10. OPENING OF BIDS AND RELEASE OF INFORMATION

B10.1 Bids will not be opened publicly.

B10.2 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>

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 Division website at <http://www.winnipeg.ca/matmgt>

B10.4 The Bidder is advised that any information contained in any Bid may be released if required by City policy or procedures, by The Freedom of Information and Protection of Privacy Act (Manitoba), by other authorities having jurisdiction, or by law.

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 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.

- 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 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 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.

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, or acceptable deviation therefrom (pass/fail);
 - (b) qualifications of the Bidder and the Subcontractors, if any, pursuant to B8.2 (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 or minor informalities or irregularities 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 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.
- B13.4.2 Further to B13.1(a), in the event that a unit price is not provided on Form B: Prices, the City will determine the unit price by dividing the Amount (extended price) by the approximate quantity, for the purposes of evaluation and payment.
- 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, in accordance with B13.
- B14.3.1 Following the award of contract, a Bidder will be provided with information related to the evaluation of his Bid upon written request to the Contract Administrator.
- B14.4 Notwithstanding C4 and Paragraph 6 of Form A:Bid, the City will issue a Purchase Order to the successful Bidder in lieu of the execution of a Contract.
- B14.5 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 and Delivery of Goods* (Revision 2008 05 26) are applicable to the Work of the Contract.
- C0.1.1 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 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 and Delivery of Goods*, these Supplemental Conditions are applicable to the Work of the Contract.

D2. SCOPE OF WORK

D2.1 The Work to be done under the Contract shall consist of the Supply and Installation of the Auto Titrator

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

- (a) Supply the equipment;
- (b) Installation of the equipment;
- (c) Method development/performance evaluation;
- (d) In-house training of two or more analysts.

D3. DEFINITIONS

D3.1 When used in this Bid Opportunity:

- (a) "**mv**" means millivolt;
- (b) "**redox**" means reduction-oxidation titration;
- (c) "**uS/cm**" means micro Siemens per centimetre which is a measurement unit of Conductivity;
- (d) "**mS/cm**" means milli Siemens per centimetre which is a measurement unit of Conductivity;
- (e) ">" means greater than;
- (f) "**ISE**" means ion selective electrode;
- (g) "**ppm**" means parts per million.

D4. CONTRACT ADMINISTRATOR

D4.1 The Contract Administrator is:

Steve Fletcher
Supervisor of Analytical Services Branch
2230 Main Street, Winnipeg, MB
Telephone No.: (204) 986-4752
Facsimile No.: (204) 986-4809

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 address or facsimile number:

The City of Winnipeg
Chief Financial Officer
Administration Building, 3rd Floor
510 Main Street
Winnipeg MB R3B 1B9
Facsimile No.: (204) 949-1174

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. MATERIAL SAFETY DATA SHEETS

D7.1 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 seven (7) Calendar Days from notification of the award of Contract.

D7.2 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

D8. COMMENCEMENT

D8.1 The Contractor shall not commence any Work until he is in receipt of a notice of award from the City authorizing the commencement of the Work.

D8.2 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 qualified personnel, installing equipment, having an instrumentation or science degree or equivalent education acceptable to the Contract Administrator in accordance with E3.2(b);
 - (iv) evidence of qualified personnel, who will be providing training, having a science degree or equivalent education acceptable to the Contract Administrator in accordance with E3.5(b).
- (b) the Contractor has attended a meeting with the Contract Administrator, or the Contract Administrator has waived the requirement for a meeting.

D9. DELIVERY

D9.1 Goods shall be delivered within sixty(60) Calendar Day(s) of the placing of an order, f.o.b. destination, freight prepaid to:

Steve Fletcher
Supervisor of Analytical Services Branch
2230 Main Street, Winnipeg, Manitoba

D9.2 The Contractor shall confirm each delivery with the Contract Administrator or his/her designate, at least two (2) Business Days before delivery.

D9.3 Goods shall be delivered between 8:30 a.m. and 4:00 p.m. on Business Days.

D9.4 The vendor retains full ownership of the goods until complete payment, and all risks of damage and/or loss, with respect to and relating to the goods, shall be assumed by the Contract Administrator or his/her designate as of delivery to the Contract Administrator.

D9.5 The Contractor shall off-load goods as directed at the delivery location (all requiring tracking numbers signage)

D10. INSURANCE

D9.1 Insurance covering the full value of the shipment must be included and billed with transportation charges.

MEASUREMENT AND PAYMENT

D11. PAYMENT

D11.1 Further to C10, the City may at its option pay the Contractor by direct deposit to the Contractor's banking institution.

D12. PAYMENT SCHEDULE

D12.1 Further to C10, payment shall be in Canadian funds net thirty (30) Calendar Days after receipt and approval of the Contractor's invoice.

WARRANTY

D13. WARRANTY

D13.1 Notwithstanding C11, the warranty period shall begin on the date of Total Performance and shall expire two (2) years thereafter unless extended pursuant to C11.3, in which case it shall expire when provided for thereunder.

D13.1 Further to C11, 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.

D13.2 Extended warranty beginning on the expiry date of the standard warranty for a period of two (2) additional years. During the warranty period, the bidder will respond verbally or in writing to any service requests or phone call within forty-eight (48) hours. If the instrument is not functioning or is malfunctioning, then an estimate for repairs that includes an estimated date of completion shall be completed by the Contractor. If the estimated date exceeds ten (10) Working Days, the Contractor shall have a replacement available, at a cost incurred by the City of Winnipeg, until the repairs are completed and the instrument is returned to service.

PART E - SPECIFICATIONS

GENERAL

E1. APPLICABLE SPECIFICATIONS AND DRAWINGS

- E1.3 These Specifications shall apply to the Work.
- E1.4 Bidders are reminded that requests for approval of substitutes as an approved equal or an approved alternative shall be made in accordance with B5.

E2. GOODS

- E2.1 The Contractor shall supply and install an automated titration system in accordance with the requirements hereinafter specified. The instrument is an integrated modular design consisting of the following items;
- E2.2 Item No. 1 - Titrator shall be the main unit capable of:
- (a) remote operation via computer and using a touch screen/terminal;
 - (b) having all the test methods built-in the memory or database;
 - (c) storing calibrations, standards, results, and user defined methods;
 - (d) statistical calculations such as standard deviations and measurement of uncertainty;
 - (e) equipped with RIF or similar technology for auto-recognition of burettes, Electrodes, and titrants;
 - (f) security features such as restricted or user-defined access;
 - (g) ability to view and print the titration curve from the main unit and software;
 - (h) endpoint titrations, equivalence point titrations, redox titrations, titration to fixed pH, volume, potential and inflection, first, second and third derivative titration;
 - (i) expandable to at least four dosing units and four reagent pumps;
 - (j) connecting to a Barcode Reader;
 - (k) equipped with a power supply of 120V, 50/60 Hz.
- E2.3 Item No. 2 – Three (3) dosing units, (burette drive) or however named, shall be controlled by the main unit and be able to dose with a variety of burette sizes such as one, five, ten and twenty millimetre sizes.
- E2.4 Item No. 3 – Two (2) ten millilitre (10 mL) Burettes shall be supplied with tubing to connect onto main unit.
- E2.5 Item No. 4 – Two (2) twenty millilitre (20 mL) Burettes shall be supplied with tubing to connect onto main unit.
- E2.6 Item No. 5 – Reagent pump/dispenser shall be:
- (a) controlled automatically as part of the method sequence;
 - (b) adjustable volumes;
 - (c) supplied with tubing.
- E2.7 Item No. 6 – Automatic sampler shall be:
- (a) compatible and operated through the terminal or software;
 - (b) equipped with an electrode washing/rinsing device;
 - (c) supplied with two (2) sample tray as specified in E2.8.

- (d) hold no less than 20 sample cups as specified in E2.9.
 - (e) have a lid handling device or equivalent feature that will protect samples from contamination.
- E2.8 Item No. 7 – Sample tray shall be removable and made of plastic or epoxy coated material which is washable and impervious to damage by acids or bases. One (1) tray will be supplied with a lid or similar device to protect samples from air-borne contamination.
- E2.9 Item No. 8 – Sample cups shall be:
- (a) Twenty (20), between 50 to 100 mL polyethylene or polypropylene cups;
 - (b) Twenty (20), between 50 to 100 mL glass beakers.
- E2.10 Item No. 9 – pH Electrode (sensor) shall:
- (a) be a combined pH and reference electrode with readout in pH or mV;
 - (b) be capable of a sensitivity of 0.1 mV;
 - (c) be a Plug and Play device;
 - (d) have automatic recognition of pH buffers;
 - (e) capable of updating the firmware using a USB device.
- E2.11 Item No. 10 – Photometric Electrode shall be:
- (a) capable of five selectable wavelengths;
 - (b) capable of automated determination of metal ions with EDTA;
 - (c) plug and play device;
 - (d) capable of updating the firmware using a USB device.
- E2.12 Item No. 11 – Fluoride Selective Electrode shall be:
- (a) a specific ion electrode for the measurement of Fluoride by direct calibration and by standard addition;
 - (b) Plug and play device;
 - (c) capable of updating the firmware using a USB device;
 - (d) capable of automatic recognition of Tisab buffers.
- E2.13 Item No. 12 – Reference Electrode shall be:
- (a) capable of updating the firmware using a USB device;
 - (b) Plug and play device.
- E2.14 Item No. 13 – Conductivity Board shall be:
- (a) installed and compatible with the main unit or as per Contractor's specifications to enable fully automated Conductivity Measurements;
 - (b) capable of having other inputs such as temperature and pH.
- E2.15 Item No. 14 – Conductivity Electrode shall be:
- (a) for the measurement of specific conductance in aqueous solution in the range of 10 uS/cm to >100 mS/cm;
 - (b) capable of having a resolution of .001 mS or .01 uS;
 - (c) capable of updating the firmware using a USB device;
 - (d) Plug and play device.
- E2.16 Item No. 15 – Temperature Sensor shall be supplied with any adapter or necessary cable and installed on the Titrator.

- E2.17 Item No. 16 – Redox Electrode shall be a platinum ring electrode with Plug & Play capability for reduction-oxidation titrations.
- E2.18 Item No. 17 - Software shall be:
- (a) able to run under Windows XP operating system and upwards compatible with future systems;
 - (b) capable of operating/controlling the auto-sampler, burettes and reagent pumps;
 - (c) allow the operator to view the calibration curve during the sample and calibration run;
 - (d) capable of automatically storing the data, the method and instrument conditions/configuration under which the data was acquired;
 - (e) capable of data quality management for quality control samples with ability to monitor and chart quality control samples, to set control limits and alert system when limits are exceeded;
 - (f) capable of pausing the run at any point and resume analysis from the same point;
 - (g) capable of reprocessing the analytical data;
 - (h) capable of exporting the data as an ASCII file, or Excel or database compatible with access or SQL;
 - (i) automatic recognition of Electrodes, burettes and titrants;
 - (j) allow different user levels and security features;
 - (k) supplied with maintenance revisions/upgrades free of charge
- E2.19 Item No. 18 – Analytical Test Methods shall be:
- (a) documented method(s) specific to this equipment for the determination of pH, alkalinity, hardness, fluoride, and conductivity in water and waste water based on “Standard Methods for the Determination of Water and Wastewater”, or EPA or equivalent method(s) as approved by the Contract Administrator. The method(s) will include the preparation of all reagents, sample preparation, instrument set-up conditions, and method performance data such as precision, accuracy, range, reproducibility/repeatability.
- E2.20 Item No. 19 - Cables shall be all the cables necessary to enable remote operation of all modular components without requiring change over or reconfiguration.
- E2.21 Item No. 20 - Consumables shall consist of two (2) years supply or pump tubing, reagents lines or reagent tubing, seals, fittings, or other parts as listed in the maintenance section of the operator’s manual or vendor supplied methods.
- E2.22 Item No. 21 - Training shall include:
- (a) providing guidance, knowledge and vendor referenced standard method(s) or manual(s) for the set-up, programming, running, and preventative maintenance of the auto titrator.
- E2.23 Item No. 22 – Service/Calibration Plan shall include:
- (a) complete instrument installation and qualification according to established quality control standards.
- E2.24 Item No. 23 – Manual Titration Kit shall be a manually controlled titration which includes manual operation of:
- (a) titrants, concentration, drive, fill rate, sensor, temperature, unit selection.

E3. INSTALLATION AND TRAINING

- E3.1 The Contractor or subcontractor will perform the installation of the equipment and training of two analysts. The Contractor will supply a schedule defining the estimated time for equipment set-

up, equipment testing, analysis and evaluation of quality control samples, sample analysis and training.

E3.2 The installation of the equipment shall:

- (a) be scheduled at a time acceptable to the Contract Administrator;
- (b) be performed by qualified personnel with an instrumentation or science degree or equivalent education acceptable to the Contract Administrator. Proof of qualification shall be provided in electronic or paper copy prior to commencement;
- (c) be started and completed within five (5) Working Days except where the City of Winnipeg is the cause of delay, planned or unplanned;
- (d) include a certificate of calibration, traceable to a standard international unit for all measurement devices (Electrodes) supplied with or built-in the equipment. This includes temperature calibration certificate for any temperature sensors, calibration certificate for any timers, and volume calibration certificate for all burettes.
- (e) include a final evaluation report/statement of qualification for each chemistry module based on the analysis of quality control samples to determine the instrument range, instrument MDL, accuracy, and precision or repeatability.

E3.5 The training shall:

- (a) be scheduled at a time acceptable to the Contract Administrator;
- (b) be performed on-site by personnel with a science degree or equivalent education acceptable to the Contract Administrator. Proof of qualification shall be supplied in electronic or paper copy prior to commencement;
- (c) include a written routine and preventative maintenance schedule;
- (d) include instrument set-up procedures;
- (e) include software demonstration(s);
- (f) include equipment calibration and analysis of quality control samples and wastewater/water samples;
- (g) include a written evaluation of analyst competency after completion of the training.