



THE CITY OF WINNIPEG

BID OPPORTUNITY

BID OPPORTUNITY NO. 728-2008

SUPPLY AND APPLICATION OF ANTI-ICING LIQUID

Note to Bidders:

This is a one time contract for the application of anti-icing materials. The City of Winnipeg is in the process of purchasing its own equipment for the application of anti-icing liquids. It is, therefore, unlikely that this work will be contracted in future years.

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PART B - BIDDING PROCEDURES

B1. CONTRACT TITLE

B1.1 SUPPLY AND APPLICATION OF ANTI-ICING LIQUID

B2. SUBMISSION DEADLINE

B2.1 The Submission Deadline is 4:00 p.m. Winnipeg time, October 14, 2008.

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 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 Division internet site 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.

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, 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, may result in the Bid being determined to be non-responsive.
- 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 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 should be printed below such signatures.

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.

B8.1.2 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; 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 internet site 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 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 Division internet site 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 (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;
 - (e) costs to the City of administering multiple contracts
- 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.

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, 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.
- B14.6 The City intends to award this Bid Opportunity by October 20, 2008.

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 internet site 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 supply and application of anti-icing liquid products for the period of November 1, 2008 to April 15, 2009.

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

- (a) Supply and application of approximately 50,000 litres of anti-icing liquid products to bridge decks and approaches.

D2.3 The Work shall be done on an "as required" basis during the term of the Contract.

D2.3.1 The type and quantity of Work to be performed under this Contract shall be as authorized from time to time by the Contract Administrator and/or Users.

D3. DEFINITIONS

D3.1 When used in this Bid Opportunity:

- (a) "**Award Authority**" means the authority having the jurisdiction to award the Contract according to the City's by-laws, policies or procedures;
- (b) "**Business Day**" means any Calendar Day, other than a Saturday, Sunday, or a Statutory or Civic Holiday;
- (c) "**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

Mr. Ken Boyd, P. Eng
Support Service Engineer
Public Works
104 – 1155 Pacific Avenue
Winnipeg, MB R3E 3P1

Telephone No. (204) 986-5076
Facsimile No. (204) 986-5566

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. WORKERS COMPENSATION

D7.1 The Contractor shall be registered with the Workers Compensation Board of Manitoba, shall provide and maintain Workers Compensation coverage throughout the term of the Contract, and shall provide the Contract Administrator with evidence thereof upon request.

D8. INSURANCE

D8.1 The Contractor shall provide and maintain the following insurance coverage:

- (a) commercial general liability insurance, in the amount of at least two million dollars (\$2,000,000.00) inclusive, with The City of Winnipeg added as an additional insured; such liability policy to also contain a cross-liability clause, non-owned automobile liability and products and completed operations cover, to remain in place at all times during the performance of the Work;
- (b) if required, automobile liability insurance for owned automobiles used for or in connection with the Work in the amount of at least two million dollars (\$2,000,000.00), to remain in place at all times during the performance of the Work.

D8.2 Deductibles shall be borne by the Contractor.

D8.3 The Contractor shall provide the Contract Administrator with a certificate(s) of insurance, in a form satisfactory to the City Solicitor, at least two (2) Business Days prior to the commencement of any Work but in no event later than the date specified in C4 for the return of the executed Contract.

D8.4 The Contractor shall not cancel, materially alter, or cause the policy to lapse without providing at least fifteen (15) Calendar Days prior written notice to the Contract Administrator.

D9. MATERIAL SAFETY DATA SHEETS

D9.1 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.

D9.2 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

D10. COMMENCEMENT

D10.1 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.

D10.2 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.
- (b) the Contractor has attended a meeting with the Contract Administrator, or the Contract Administrator has waived the requirement for a meeting.

MEASUREMENT AND PAYMENT

D11. PAYMENT

D11.1 Further to C10, effective January 1, 2007 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 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 B5 prior to the Bid Submission.

E2. GOODS

- E2.1 The Contractor shall supply and apply the anti-icing product in accordance with the requirements hereinafter specified.
- E2.1.1 The liquid product shall be a corrosion inhibited liquid magnesium chloride product (Category 1).
- E2.1.2 The product shall have a eutectic point of -40° C or lower.
- E2.1.3 The pH level of the product shall be between 6.0 and 9.0.
- E2.1.4 The product shall be at least 70% less corrosive than sodium chloride (NaCl).
- E2.1.5 The product shall not contain greater than 1.0% (V/V) Total Settable Solids and shall have at least 99.0% of the Solids passing through a No. 10 sieve after being stored for 168 hours at -20° C ($\pm 1^\circ$ C).
- E2.1.6 No product shall contain constituents in excess of the following established total concentration limits when tested in accordance with the test methodology in E3. Maximum concentrations are in parts per millions (ppm).

Constituent	Maximum Concentration (ppm)
Arsenic	5.00
Barium	100.00
Cadmium	0.20
Chromium	1.00
Copper	1.00
Selenium	5.00
Zinc	10.00
Cyanide	0.20
Lead	1.00
Mercury	0.05
Phosphorus	2500.00
Oil and Grease	20.00

- E2.1.7 The Contractor shall complete and submit the Liquid De-icer Analysis form within three (3) days of a request by the Contract Administrator. Detailed information on the corrosion inhibitor that is being used shall include identification, concentration in the liquid de-icer product and appropriate laboratory procedures for the verification of concentrations. Proprietary information must be included and will be held confidential by the City of Winnipeg, subject to the Freedom of Information and protection of Privacy Act.

E3. TEST METHODS

- E3.1 Test Method for Per Cent Concentration of Magnesium Chloride and Calcium Chloride: Atomic Absorption or Inductively Coupled Plasma Spectrophotometry as described in "Standard Methods for the Examination of Water and Waste Water", APHA-AWWA-WPCF is acceptable (PNS Test Method 1).
- E3.2 Test Method for Freezing Point: ASTM D1177.
- E3.3 Test Method for pH: ASTM D1293 except a dilution shall be made of 1 part Chemical product to 4 parts distilled water before attempting a reading: (PNS Test Method 4).
- E3.4 Test Method for Corrosion Rate: NACE Standard TM-01-69 (1976 revision) as modified by PNS (PNS Test Method 5).
- E3.5 Test Method for Total Settable Solids and solids Passing the No. 10 Sieve: (PNS Test Method 6).
- E3.6 Test Method for Specific Gravity: ASTM D1429, Test Method A – Pycnometer at 20°C (± 1°C).
- E3.7 Test Method for total Arsenic, Barium, Cadmium, Chromium, Copper, Lead, Selenium and Zonc: Atomic Absorption Spectrophotometry as described in "Standard Methods for the examination of Water and Waste Water", APHA-AWWA-WPCF.
- E3.8 Test Method for Total Cyanide: As described in "Standard Methods for the examination of Water and Waste Water", APHA-AWWA-WPCF.
- E3.9 Test Method for Total Mercury: Cold Vapour Atomic Absorption Spectrophotometry as described in "Standard Methods for the examination of Water and Waste Water", APHA-AWWA=WPCF.
- E3.10 Test Method for Oil and Grease: Standard Method, 5520-B or EPA 413.1, 1664.

E4. EQUIPMENT

- E4.1 The application equipment shall be a truck or trailer mounted tank with a minimum capacity of 8,000 litres.
 - E4.1.1 The truck shall be equipped with ground speed sensors for application control and shall be capable of variable rates of application (ranging from 40 litres per lane kilometre to 80 litres per lane kilometre).
 - E4.1.2 The equipment shall have in cab on/off controls.
 - E4.1.3 The equipment shall be capable of spraying a minimum of two lanes (7.5m width) at a time.
 - E4.1.4 The spray booms shall be equipped with straight stream nozzles at 300 mm spacing capable of a uniform pencil spray pattern across the lanes of application.
 - E4.1.5 The spray booms shall not protrude into the adjacent lane.
- E4.2 The equipment shall be outfitted with standard safety equipment for street operations.
 - E4.2.1 The application unit shall have front and rear amber beacons and shall have front, rear and side reflectorization.
 - E4.2.2 The rear of the application unit shall have a sign indicating "Caution: Anti-Icing In Progress" capable of being read at a distance of 25m.
- E4.3 The operator of the application shall have a cell phone for communication with City of Winnipeg staff. The cell phone number shall be provided prior to commencement of applications.

E5. APPLICATION

- E5.1 The application rate shall range from 50 to 60 litres per lane kilometre or as otherwise directed by the Contract Administrator.
- E5.2 The application shall be completed within 8 hours of the start time indicated by the Contract Administrator. The application shall be typically done in non-rush hour periods after 19:00 hours.
- E5.3 The Contractor shall commence application within 6 hours of being notified, unless otherwise agreed at the time of notification.
- E5.4 The Contractor shall supply the Contract Administrator documentation that the application unit has been calibrated to provide the desired rates of application.

E6. LOCATIONS

- E6.1 Table A of these Specifications identifies and lists the locations and the number of lane kilometres for the sites to be completed with each application.

**TABLE A
 ANTI-ICING TRUCK SPRAY LOCATIONS**

NO	DESCRIPTION	TOTAL	RUNNING	Shift Done D
1	Concordia Over Pass	8	8	
2	Lagimodiere @ Warmen Over Pass	3.6	11.6	
3	Dugald Over Pass	2.8	14.4	
4	Chief Peguis Bridge	2.5	16.9	
5	Slaw Rebchuck Bridge	4.1	21	
6	Redwood Bridge	0.6	21.6	
7	Disraeli Fwy.	8.4	30	
8	Louise Bridge	1	31	
9	Naim Over Pass	2.9	33.9	
10	Provencher @ Seine River Bridge	0.2	34.1	
11	Provencher Bridge	2	36.1	
12	Main/Norwood Bridge	6.3	42.4	
13	Donald St. Bridge	2	44.4	
14	Osborne Bridge	1.2	45.6	
15	Sherbrook/Maryland Bridges	1.7	47.3	
16	Portage Ave. @ Empress Over Pass	1.1	48.4	
17	St. James Bridge	8.7	57.1	
18	Moray St. Bridge	1.5	58.6	
19	Portage Ave. @ Sturgeon Bridge	0.7	59.3	
20	Pembina Hwy. Over Pass @ Bishop Grandin	7	66.3	
21	Bishop Grandin @ Red River Bridge	1.2	67.5	
22	St. Norbert Bridge	2	69.5	
23	Jubilee Over Pass	1.5	71	
24	St. Vital Bridge	5.9	76.9	
25	Fermor Ave. @ Seine River Bridge	1.1	78	
26	Southglen/Shorehill Bridge	1	79	
27	Lagimodiere @ Navin Drain Bridge	0.1	79.1	

TOTAL 79.1

LIQUID DE-ICER ANALYSIS

Product Name: _____

Corrosion Inhibitor Identification: _____

Corrosion Inhibitor Concentration (%) _____

(Attached laboratory procedures for verification of inhibitor and concentration)

Liquid De-Icer Properties	Bidder's Statement of Analysis
MgCl ₂ (%)	
Ca Cl ₂ (%)	
Freezing Point °C	
pH	
Corrosion Rate	
Total Settleable Solids (%)	
Solids Passing No. 10 Sieve (%)	
Specific Gravity	
Hazardous Constituents (ppm)	
Arsenic	
Barium	
Cadmium	
Chromium	
Copper	
Selenium	
Zinc	
Cyanide	
Lead	
Mercury	
Phosphorus	
Oil and Grease	

NOTE: See E3 TEST METHODS for Methods to be used in the determination of properties.

 Name of Bidder